Building Computational Fluency
Grade 4

Excerpts from Bridges in Mathematics
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Building Computational Fluency, Grade 4

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Follow copy instructions on blacklines to run as needed.

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Follow copy instructions on blacklines to run as needed.

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Building Computational Fluency, Grade 4 Overview

Building Computational Fluency, Grade 4 is a supplement designed to provide you with powerful and flexible tools to assess and support students in developing key computational skills and concepts. Organized into three sections, this supplement enables you to assess some or all of your students on computational skills throughout the school year and provide support to students who need extra help in key areas, including:

- place value understandings
- rounding
- multiplication and division facts through 12's
- multi-digit addition and subtraction
- multi-digit multiplication and division
- fraction and decimal sense
- adding and subtracting fractions and decimals

In Section 1, you'll find a set of assessments designed to be administered at key points throughout the school year. These assessments serve as a useful complement to any fourth grade math program. They also provide tools to check students' proficiency with basic multiplication and division facts on a regular basis. In Section 2, you'll find a collection of Support Activities designed to help students who indicate needs in the specific areas assessed. The games in this section are based on visual models and strategies, and help students develop deep conceptual understandings as well as proficiency. They can be used as instructional resources with your entire group, or as tools to remediate targeted students. Section 3 is devoted to Fact Fluency and provides the kind of systematic, strategy-based practice students need to master basic multiplication and division facts. The worksheets and practice games in this section are designed to be tailored to the needs of individuals, and can be used with selected students or with your entire class. Each section is described in more detail below.

Section 1 Assessments

The six assessments in this collection are designed to help you gauge how your students are doing with key computational skills throughout the year. Assessment 1 is intended for use during the first few weeks of school. Depending on your district expectations, this assessment may be useful in determining whether your incoming fourth graders are working at, above, or below grade level.
Even if many of your students perform very well on Assessment 1, you may find that some of them need more practice with multiplication and division facts. Toward that end, another assessment (Assessment 3: Quick Facts) that allows students to choose their own learning targets and track their own progress toward fact mastery has been included in the set. Teachers often introduce the Quick Facts assessment sometime in the fall or early winter and continue to administer it weekly or even twice a week until the majority of their students are fluent with multiplication and division facts. An extensive set of worksheets and games is featured in the third section of Building Computational Fluency to provide the systematic practice students will need to progress through and eventually test out of Assessment 3.

Assessments 2, 4, 5, and 6 are quarterly checkups designed for use at the end of each grading period to support teachers in conferencing with parents and reporting on students’ progress. Each of these assessments offers another look at students’ proficiency with basic facts and a host of other key math skills typically taught in the fall, winter, and spring of the fourth grade year.

All the assessments described above include instructions to the teacher, answer keys, assessment blacklines, and class checklists. Although use of the
class checklists is optional, they allow teachers to easily spot strengths and weaknesses in individual students and in the class as a whole.

### Assessment 1 Class Checklist page 1 of 2

<table>
<thead>
<tr>
<th>Item</th>
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<tbody>
<tr>
<td>1 &amp; 2</td>
<td>24 out of 40 addition and subtraction facts in 2 minutes</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>24 out of 40 multiplication facts in 2 minutes</td>
<td></td>
</tr>
<tr>
<td>4a</td>
<td>Adds with regrouping</td>
<td></td>
</tr>
<tr>
<td>4b</td>
<td>Shows work</td>
<td></td>
</tr>
<tr>
<td>5a</td>
<td>Adds money amounts with regrouping</td>
<td></td>
</tr>
<tr>
<td>5b</td>
<td>Shows work</td>
<td></td>
</tr>
<tr>
<td>6a</td>
<td>Subtracts with regrouping</td>
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</tr>
<tr>
<td>6b</td>
<td>Shows work</td>
<td></td>
</tr>
<tr>
<td>7a</td>
<td>Subtracts money amounts with regrouping</td>
<td></td>
</tr>
<tr>
<td>7b</td>
<td>Shows work</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Orders multi-digit numbers</td>
<td></td>
</tr>
<tr>
<td>9a</td>
<td>Multiplies 14 x 6</td>
<td></td>
</tr>
<tr>
<td>9b</td>
<td>Shows work</td>
<td></td>
</tr>
<tr>
<td>10a</td>
<td>Multiplies 200 x 5</td>
<td></td>
</tr>
<tr>
<td>10b</td>
<td>Shows work</td>
<td></td>
</tr>
<tr>
<td>11a</td>
<td>Divides 24 x 6</td>
<td></td>
</tr>
<tr>
<td>11b</td>
<td>Shows work</td>
<td></td>
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### Assessment 1 Class Checklist page 2 of 2

<table>
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<td>12a</td>
<td>Divides 15 ÷ 4</td>
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<tr>
<td>12b</td>
<td>Shows work</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Identifies area model for</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Identifies fraction equivalent to</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Counts money accurately</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Does a multi-step money story problem</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Calculates elapsed time</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Tells time to the minute</td>
<td></td>
</tr>
</tbody>
</table>
Section 2 Support Activities

In the second section of this packet, you’ll find a set of 29 partner or small group games specifically designed to support the skills tested in the assessments described above. These games provide engaging practice with skills including basic multiplication and division concepts and strategies, multi-digit computation (addition, subtraction, multiplication, and division), rounding, money, time, decimals, and fractions. Most of these games are based on visual models such as base ten pieces and arrays, and are intended to help students develop conceptual understanding as well as proficiency.

Support Activity 25

Fraction Bingo

You'll need

- Instructions for Fraction Bingo (Blackline S 25.2)
- Fraction Bingo Boards (Blackline S 25.3, 1 copy for each player)
- Fraction Bingo Cards, pages 1–3 (Blacklines NC S 25.4–25.6, 1 copy cut apart and stored in an envelope or resealable plastic bag for each pair or small group of players)
- game markers (Use coins or small objects if you do not have game markers.)

Instructions for Fraction Bingo

1. Each player chooses a different Fraction Bingo Board and gets 9 game markers.
2. Mix up the Fraction Bingo Cards and place them face down in a pile.
3. Let one player draw a card. Talk to each other about what fraction is shown on the card. How would it be shown in numerical form on your bingo boards?
4. Look for that fraction on your board and cover it with a game marker if you have it on your board. Each board is missing some fractions, but if you find a fraction on your board that is equal to the fraction on the card, you can put a game marker on it. You can only cover one fraction for each card, though.
5. Take turns drawing cards until one of you has 3 game markers in a row horizontally, vertically, or diagonally. Decide if you want to keep playing until everyone wins or if you want to start a new game.

Excerpts from Support Activity 25, Fraction Bingo

Although the Support Activities have been designed to complement the assessments in this packet, you can use them as a set of additional instruction resources for your classroom even if you choose not to conduct the assessments. The activities can be used by educational assistants, parent volunteers, resource or title teachers, as well as classroom teachers, and many of them also make effective homework assignments.

Each activity includes:

- instructional considerations
- playing instructions
• blacklines for game components if needed (spinners, gameboards, and/or cards)
• record sheet blacklines if needed

Section 3  Fact Fluency

The Fact Fluency materials are designed to be used in conjunction with the third assessment described above (Assessment 3: Quick Facts), but also stand alone as a systematic and dynamic set of practice sheets for fourth graders who haven't yet mastered their multiplication and division facts. This 82-page section includes worksheets, games, and flashcards for each multiplier from 2 to 12, as well as three different ranges of facts: 2–6, 4–9, and 6–12. Based around such fact strategies as doubles (2’s), double-doubles (4’s), and half-decade facts (5’s), these activities build on one another and provide the kind of practice students need to learn and retain basic multiplication and division facts.

### Fact Fluency with 8’s  Multiplying & Dividing by 8

#### MULTIPLICATION FACT FLUENCY

<table>
<thead>
<tr>
<th>Strategy</th>
<th>How It Works</th>
<th>Example</th>
</tr>
</thead>
</table>
| Double-Double-Doubles | To multiply any number by 8, double the number 3 times. | What is 8 × 7?  
8 is 7 doubled 3 times, 
Double once: 7 + 7 = 14  
Double twice: 14 + 14 = 28  
Double three times: 28 + 28 = 56 |

1. Multiply each number in the grid by 8. Write each product in the box. The first one is done for you.

<p>| | | | | | |</p>
<table>
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<tr>
<th></th>
<th></th>
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<th></th>
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<td>40</td>
<td>3</td>
<td>9</td>
<td>11</td>
<td>8</td>
<td>12</td>
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<tr>
<td>15</td>
<td>8</td>
<td>11</td>
<td>1</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>

2. Use the double-double-doubles strategy to help solve these combinations.

   8 × 15 =  
   8 × 25 =  
   8 × 35 =  
   8 × 50 =  

   14  
   150  
   38  
   8  

3. Use what you know about multiplying by 8 to solve these division problems.

   40 ÷ 8 =  
   88 ÷ 8 =  
   72 ÷ 8 =  
   64 ÷ 8 =  

### Fact Fluency with 8’s  Practice Multiplying by 8 & 4

1. Circle all the double-double-doubles (×8) in blue. Then go back and fill in the answers with regular pencil.

2. Circle all the double-doubles (×4) in red. Then go back and fill in the answers with regular pencil.

3. Write two multiplication and two division facts for each set of numbers.

   **a**  8  56  
   x =  
   x =  
   **b**  8  72  
   x =  
   x =  
   **c**  8  8  
   x =  
   x =  
   **d**  8  48  
   x =  
   x =  

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Fact Fluency with 6’s–12’s Secret Path Problems, Set 1

**MULTIPLICATION FACT FLUENCY**

- Find a path through all of the numbers in each set by multiplying or dividing to get from one number to the next.
- You have to use each number just one time.
- You can move only 1 space at a time. You can move over, up, down, or diagonally.
- Every path has a start point and an end point. Circle them both.
- You can also go backwards. Try to start at the end point and go back to the start point.

**Example**

Try this one. The start and end points have been marked for you.

Find your own start and end points, as well as a path through the numbers.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<td>6</td>
<td>27</td>
<td>6</td>
<td>6</td>
<td>10</td>
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</table>

**Division Capture**

You'll need
- a partner
- 2 pencils or markers in different colors
- paperclip and pencil to use as a spinner

Instructions for Division Capture 6’s–12’s

1. Take turns spinning the spinner. The player who gets the higher number goes first.
2. Take turns spinning the spinner. Use the number you spin to complete one of the division problems below. Be sure to use your own color pencil.
3. If the box you need is already filled, you lose your turn.
4. Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.
5. Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

**Scoring**

3 in a row—1 point
4 in a row—2 points

**Player 1 Points**

**Player 2 Points**

<table>
<thead>
<tr>
<th>42 ÷ 6 = 7</th>
<th>81 ÷ 9 = 9</th>
<th>96 ÷ 12 = 8</th>
<th>121 ÷ 11 = 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>63 ÷ 7 = 9</td>
<td>54 ÷ 9 = 6</td>
<td>49 ÷ 7 = 7</td>
<td>72 ÷ 8 = 6</td>
</tr>
<tr>
<td>54 ÷ 6 = 9</td>
<td>56 ÷ 8 = 7</td>
<td>72 ÷ 12 = 6</td>
<td>72 ÷ 12 = 6</td>
</tr>
<tr>
<td>63 ÷ 9 = 7</td>
<td>108 ÷ 9 = 12</td>
<td>64 ÷ 8 = 8</td>
<td>112 ÷ 12 = 12</td>
</tr>
<tr>
<td>144 ÷ 12 = 12</td>
<td>84 ÷ 12 = 7</td>
<td>88 ÷ 8 = 11</td>
<td>56 ÷ 7 = 8</td>
</tr>
</tbody>
</table>
Assessment 1

Overview
This assessment is designed to help gauge students’ key math skills early in the school year. You’ll find support suggestions on page 9.

Timing
Early in the school year or at any other time appropriate for your students

Skills & Concepts
★ demonstrating fluency with basic addition and subtraction facts
★ demonstrating fluency with multiplication facts through 6 × 6
★ adding and subtracting 2- and 3-digit numbers and money amounts with regrouping
★ identifying place value of digits in whole numbers
★ multiplying and dividing 2- and 3-digit numbers by 1-digit numbers
★ counting and computing with money
★ determining elapsed time
★ telling time to the minute

You’ll need
★ Assessment 1, pages 1–5 (pages 11–15, class set)
★ Assessment 1 Class Checklist, pages 1 and 2 (pages 21 and 22, optional, run 2 or 3 copies as needed)
★ base ten pieces for students who want to use them (Use page 16 to run about a one-third class set of base ten pieces if needed.)
★ money value pieces for students who want to use them (Use pages 17–19 to run about a one-third class set of money value pieces if needed.)
★ paper bills for those students who want to use them (Use page 20 to run copies if needed.)
★ real or plastic coins for students who want to use them (if you have them)
★ half-class set of student clocks

Conducting Assessment 1

We recommend that you administer Assessment 1 within the first two weeks of school to get a sense of students’ comfort level with key concepts and skills. This assessment may also prove useful if you don’t already have your own school or district instrument for gauging the skills of your incoming fourth graders. Plan to conduct the 5-page test during a single math period or break it out over 2 or more days, depending on your schedule and the needs of your students.

The first page is a set of 20 addition facts and a set of 20 subtraction facts, and the second is a set of 40 multiplication facts through 6 × 6. You’ll prob-
ably want to conduct these two pages of the assessment as a timed test, allowing 2 or 3 minutes for each page with a stretch break in between. While we don’t ordinarily advocate timed testing, it is one way to get a quick read on students’ current levels of comfort and fluency with basic facts. Reassure students that if they can’t complete one or both sets of facts in the given time, they’ll have plenty of opportunity to develop and demonstrate their skills with these facts (and more) over the coming months.

For the rest of the assessment, make manipulatives available to those students who want to use them, and encourage students to be as complete as possible in showing their solution methods; the answer alone will not give you enough information about what students understand. While many of your students may be using their own invented algorithms for adding and subtracting multi-digit numbers, and may actually need to show their work to find the answer, we strongly suggest that you also require students who are using the standard algorithms for these computations to explain their thinking and their notation. If, for instance, they have crossed out numbers or placed extra numbers at the tops of columns, have them explain what their cross-outs and extra numbers mean, directly on the assessment sheet, using words, numbers, and sketches if possible.

The material on page 4 examines students’ current skills and strategies with multiplication beyond the basics and division with and without remainders, as well as their understanding of fractions. On the fifth page, students count money, add money, make change, tell time, and calculate elapsed time. Depending on your district expectations, and your students’ experiences in third grade, you may want to reassure students that they’re not expected to be able to complete all of these problems. Invite them to write “I don’t know yet” under the items they are not able to solve or do not know how to begin.

Using Information from Assessment 1

You can use the Assessment 1 Class Checklist to compile assessment results and get an overview of students’ strengths, as well as the areas in which they’ll need more work.

We most often use the results of the Assessment 1 to guide our own instruction but you can also use at least the first three pages of the assessment to gauge whether or not your incoming fourth graders are working at grade level. Depending on your district expectations, you might take a closer look at students who aren’t able to complete at least 24 (70%) of the basic addition and subtraction facts within the 2- or 3-minute period allotted, or 24 (70%) of the multiplication facts on page 2, which only include those facts students are generally expected to master in third grade. (Students who are able to com-
plete 40 facts correctly in 2 minutes are working at a rate of 3 seconds per fact, which is generally deemed to indicate fluency. This early in the school year, however, you might be satisfied with the slightly slower rate of 4.5 seconds per fact allowed by a 3-minute timing.) Likewise, students who have not yet developed efficient methods for adding and subtracting 2- and 3-digit numbers or calculating with money and time will need extra support. We tend to worry less about students who aren’t yet working efficiently with multiplication, division, and fractions, as these are topics that will receive considerable coverage in fourth grade.

SUPPORT ACTIVITIES

You may discover that some of your students need a considerable amount of support in learning either their basic addition and subtraction facts, developing efficient strategies for multi-digit addition or subtraction, working with money, and/or telling time and computing elapsed time. You will find a number of games and activities in the second section of this packet that you can use to provide more support for these students. (See the Support introduction for addional information.)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity 1</td>
<td>Spinning Around Subtraction</td>
<td>Subtraction facts to 20</td>
</tr>
<tr>
<td>Activity 2</td>
<td>More or Less Place Value</td>
<td>Place value to hundreds place</td>
</tr>
<tr>
<td>Activity 3</td>
<td>Make 100</td>
<td>2-digit addition</td>
</tr>
<tr>
<td>Activity 4</td>
<td>Race to 100 &amp; Back</td>
<td>Basic addition and 2-digit addition</td>
</tr>
<tr>
<td>Activity 5</td>
<td>Count Down 400</td>
<td>2- and 3-digit subtraction</td>
</tr>
<tr>
<td>Activity 6</td>
<td>More or Less Addition</td>
<td>2-digit addition</td>
</tr>
<tr>
<td>Activity 7</td>
<td>More or Less Subtraction</td>
<td>2-digit subtraction</td>
</tr>
<tr>
<td>Activity 8</td>
<td>Three Turns to Win</td>
<td>Adding money to $5</td>
</tr>
<tr>
<td>Activity 9</td>
<td>Finish with $10</td>
<td>Adding and subtracting money to $10</td>
</tr>
<tr>
<td>Activity 10</td>
<td>An Hour or Bust to the Minute</td>
<td>Elapsed time to the minute</td>
</tr>
<tr>
<td>Activity 11</td>
<td>Get Me to the Bus on Time</td>
<td>Elapsed time to the minute</td>
</tr>
</tbody>
</table>
Assessment 1 Answer Key

Pages 11–15

1 Row 1: 12, 15, 13, 16, 14, 11
   Row 2: 17, 10, 14, 12, 15, 14, 10
   Row 3: 19, 12, 13, 18, 12, 11
2 Row 1: 7, 4, 5, 8, 7, 3, 6
   Row 2: 5, 10, 4, 7, 6, 10, 8
   Row 3: 8, 8, 9, 5, 6, 5
3 Row 1: 6, 4, 5, 4, 4, 1, 0
   Row 2: 5, 0, 6, 8, 9, 30, 12
   Row 3: 10, 24, 18, 8, 3, 10, 20
   Row 4: 6, 2, 15, 12, 15, 18, 6
   Row 5: 20, 36, 32, 12, 16, 24, 2
   Row 6: 12, 0, 3, 30, 25

4 211
5 $4.92
6 117
7 $1.28
8 123, 254, 1023, 2045
9 84
10 1000
11 4
12 3, remainder 1
13 second choice
14 third choice
15 $11.90
16 $3.40
17 clock a
18 a 7:25
   b 7:15
   c 10:23
   d 8:05
1 Solve these addition problems.

\[
\begin{array}{ccccccc}
6 & 6 & 6 & 8 & 9 & 9 & 8 \\
+ 6 & + 9 & + 7 & + 8 & + 7 & + 5 & + 3 \\
\_ & \_ & \_ & \_ & \_ & \_ & \_ \\
\end{array}
\]

\[
\begin{array}{ccccccc}
8 & 7 & 8 & 8 & 7 & 7 & 4 \\
+ 9 & + 3 & + 6 & + 4 & + 8 & + 7 & + 6 \\
\_ & \_ & \_ & \_ & \_ & \_ & \_ \\
\end{array}
\]

\[
\begin{array}{ccccccc}
9 & 5 & 8 & 9 & 9 & 4 \\
+ 10 & + 7 & + 5 & + 9 & + 3 & + 7 \\
\_ & \_ & \_ & \_ & \_ & \_ \\
\end{array}
\]

2 Solve these subtraction problems.

\[
\begin{array}{ccccccc}
14 & 14 & 15 & 16 & 15 & 11 & 14 \\
- 7 & - 10 & - 10 & - 8 & - 8 & - 8 & - 8 \\
\_ & \_ & \_ & \_ & \_ & \_ & \_ \\
\end{array}
\]

\[
\begin{array}{ccccccc}
14 & 13 & 12 & 16 & 13 & 19 & 18 \\
- 9 & - 3 & - 8 & - 9 & - 7 & - 9 & - 10 \\
\_ & \_ & \_ & \_ & \_ & \_ & \_ \\
\end{array}
\]

\[
\begin{array}{ccccccc}
13 & 17 & 15 & 13 & 15 & 12 \\
- 5 & - 9 & - 6 & - 8 & - 9 & - 7 \\
\_ & \_ & \_ & \_ & \_ & \_ \\
\end{array}
\]
Assessment 1 page 2 of 5

3 Solve these multiplication problems.

\[
\begin{array}{cccccccc}
6 & 1 & 5 & 2 & 4 & 1 & 5 \\
\times & 1 & \times & 4 & \times & 1 & \times & 2 \\
\hline
\end{array}
\]

\[
\begin{array}{cccccccc}
1 & 2 & 3 & 2 & 3 & 5 & 6 \\
\times & 5 & \times & 0 & \times & 2 & \times & 4 \\
\hline
\end{array}
\]

\[
\begin{array}{cccccccc}
5 & 4 & 3 & 4 & 3 & 2 & 4 \\
\times & 2 & \times & 6 & \times & 6 & \times & 2 \\
\hline
\end{array}
\]

\[
\begin{array}{cccccccc}
1 & 1 & 5 & 4 & 3 & 6 & 2 \\
\times & 6 & \times & 2 & \times & 3 & \times & 3 \\
\hline
\end{array}
\]

\[
\begin{array}{cccccccc}
5 & 6 & 8 & 3 & 4 & 6 & 2 \\
\times & 4 & \times & 6 & \times & 4 & \times & 4 \\
\hline
\end{array}
\]

\[
\begin{array}{cccccccc}
2 & 3 & 1 & 6 & 5 \\
\times & 6 & \times & 0 & \times & 3 & \times & 5 \\
\hline
\end{array}
\]
Show all your work and explain your thinking for problems 4, 5, 6, and 7.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>123 + 88</td>
</tr>
<tr>
<td>5</td>
<td>$3.69 + $1.23</td>
</tr>
<tr>
<td>6</td>
<td>304 − 187</td>
</tr>
<tr>
<td>7</td>
<td>$5.00 − $3.72</td>
</tr>
</tbody>
</table>

8 In the spaces below, write the following numbers in order from least to greatest.

2,045  123  254  1,023

least  greatest
Show all your work and explain your thinking for problems 9, 10, 11, and 12.

9. \[ \frac{14}{6} \times 6 \]

10. \[ 200 \times 5 \]

11. \[24 \div 6 = \]

12. \[13 \div 4 = \]

13. Which rectangle is \( \frac{1}{3} \) gray?

14. Which rectangle shows a fraction that is equal to \( \frac{1}{3} \)?
15 How much money does David have to spend at the garage sale? Count all of the money here and record the amount in the box.

![David's Money]

16 If David bought 2 video games, 1 stuffed animal, and 3 action figures, how much money did he have left?

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video Game</td>
<td>$3.50</td>
</tr>
<tr>
<td>Board Game</td>
<td>$1.25</td>
</tr>
<tr>
<td>Action Figure</td>
<td>25¢</td>
</tr>
<tr>
<td>Stuffed Animal</td>
<td>75¢</td>
</tr>
</tbody>
</table>

17 It is 7:10 and Anna has to catch the bus in 15 minutes. Which clock shows the time Anna has to catch the bus?

- a
- b
- c
- d

18 What time does each clock above show?

- a ______________________
- b ______________________
- c ______________________
- d ______________________
Base Ten Pieces
Money Value Pieces  page 1 of 3
Money Value Pieces  page 2 of 3
Money Value Pieces page 3 of 3

Run 1 copy on cardstock for each student as needed and cut out pieces along heavy lines.
Paper Bills
<p>| Student Names | 1 &amp; 2 completes 24 out of 40 addition and subtraction facts in 2 minutes | 3 completes 24 out of 40 multiplication facts in 2 minutes | 4a adds with regrouping | 4b shows work | 5a adds money amounts with regrouping | 5b shows work | 6a subtracts with regrouping | 6b shows work | 7a subtracts money amounts with regrouping | 7b shows work | 8 orders multi-digit numbers | 9a multiplies 14 × 6 | 9b shows work | 10a multiplies 200 × 5 | 10b shows work | 11a divides 24 ÷ 6 | 11b shows work |
|---------------|-------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------|---------------|------------------------------------|---------------|-----------------------------|---------------|------------------------------------|---------------|---------------------------------|----------------|---------------|-----------------------------|---------------|-----------------------------|---------------|-----------------------------|</p>
<table>
<thead>
<tr>
<th>Student Names</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12a</td>
<td>divides $13 \div 4$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12b</td>
<td>shows work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>identifies area model for $\frac{1}{3}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>identifies fraction equivalent to $\frac{1}{3}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>counts money accurately</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>does a multi-step money story problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>calculates elapsed time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>tells time to the minute</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Assessment 2

Overview
This assessment can be used to test key math skills toward the end of the first reporting period.

Timing
Toward the end of your first reporting period (late October/early November)

Skills & Concepts
★ demonstrating fluency with basic addition and subtraction facts
★ identifying place value of digits in whole numbers
★ adding and subtracting 2- and 3-digit numbers with regrouping
★ demonstrating fluency with multiplication facts through 10 × 10
★ carrying out simple unit conversions in the metric system
★ selecting the unit of measure most appropriate for a given situation

You’ll need
★ Assessment 2, pages 1–4 (pages 29–32)
★ Assessment 2 Class Checklist (optional, page 33, 2 or 3 copies as needed)
★ base ten pieces for students who want to use them (Use page 16 to run about a one-third class set of base ten pieces if needed.)

Conducting Assessment 2
You can administer this 4-page skills assessment during a single math period or break it out over 2 or more days, depending on your schedule and the needs of your students.

Page 1 contains 20 addition and 20 subtraction facts. Conduct this page as a timed test, giving students 2 minutes to complete as many of the 40 facts as they can. While we don't ordinarily advocate timed testing, it is one way to get a quick “read” on students' current levels of comfort and fluency with basic addition and subtraction facts. There is no need to time any of the items on the second page.

Page 3 is a set of 40 multiplication facts through 9 × 9. Conduct this page as another timed test to gauge students’ current level of fluency with basic multiplication facts. The amount of time you specify is up to you. The ability to
complete all 40 correctly in 2 minutes, working at a rate of 3 seconds per fact, is generally considered to be an indicator of complete fluency. On the other hand, these 40 facts are harder than the ones presented on Assessment 1 in September, and we don’t expect mastery of multiplication facts until much later in the school year. In our own classrooms, we allow 3 minutes this time around and reassure our students that they'll have plenty of opportunities to develop increased fluency and comfort with these facts if this part of the test seems too hard right now.

For page 4, be sure students understand that they are to choose one addition problem and one subtraction problem, and to show their strategies for solving each as fully as possible, using numbers, labeled sketches, and/or words. Let them know that they can use base ten pieces (or sketches of the base ten pieces) to help them in their work.

**Using Information from Assessment 2**

You can use the class checklist provided to compile the assessment results to get an overview of your students' strengths and the areas in which they'll need more work. Although you may have addressed most or all of the skills and concepts tested here, many of them, especially the basic multiplication facts, place value, measurement, and multi-step story problems, will probably continue to receive attention during your regular math instruction. We would recommend, however, that you look carefully at those students who aren’t able to complete at least 70% (or 24 out of 40) of the basic addition and subtraction facts correctly in 2 minutes.

You’ll also want to take a close look at students' current strategies for adding and subtracting multi-digit numbers. If your students have come out of classrooms using standards-based programs and have been encouraged to invent their own algorithms, they may be using any number of efficient strategies, including the following:
### STRATEGIES FOR ADDITION & SUBTRACTION

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Addition Example</th>
<th>Subtraction Example</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Front-End Loading</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add the hundreds, then the tens, and then the ones; or subtract the hundreds, tens, and then the ones, using negative numbers where appropriate.</td>
<td>257 + 638 = 895</td>
<td>302 – 145 = 157</td>
<td>This strategy is generally quite efficient and indicates a high level of place value understanding. Students using this strategy are aware that they are dealing with hundreds, tens, and ones, rather than treating each digit as if it were in the ones place.</td>
</tr>
<tr>
<td><strong>Labeled Sketches of Base Ten Pieces</strong></td>
<td></td>
<td></td>
<td>Although the strategies shown at left aren’t particularly efficient, they do indicate a good grasp of place value. Students can transition from labeled sketches like these to working with numbers alone for greater efficiency.</td>
</tr>
</tbody>
</table>

#### * Traditional Algorithm*

Begin with the ones place and show tens and hundreds “carried” to the next place value or “borrowed” from the next place value.

<table>
<thead>
<tr>
<th></th>
<th>Addition Example</th>
<th>Subtraction Example</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>257</td>
<td>+ 638</td>
<td>302 – 145</td>
<td>Many fourth graders use the standard algorithm for both adding and subtracting multi-digit numbers. It is an efficient method, and students who are able to explain their work in terms of carrying and borrowing hundreds and tens (regrouping) are operating on very solid ground.</td>
</tr>
</tbody>
</table>

#### Assessment 2 (cont.)

*A Note about the Traditional Algorithm* Brief conversations with individual students may reveal that although they are quite proficient at using standard solution methods, they don’t necessarily understand what they’re doing. For example, a student may explain that the 1 she has placed at the top of the tens column in adding 257 + 638 indicates that she has carried a 1 (rather than a 10). Another student might explain that he crossed out the 3 when calculating 302 – 145 to get some extra 1’s because you can’t subtract 4 from 0, when actually, a hundred has been regrouped into tens to make it possible to subtract 40 from 90 (and to regroup one ten into 10 ones to subtract 5 from 12). Keep an eye on these students, as these place value misunderstandings may present problems and teaching opportunities when you move into computation with decimals later in the school year.
Struggling Students
In your class there will almost certainly be students who are still struggling, more likely with multi-digit subtraction than addition. Below are some of the most common errors you’re likely to see. Unlike minor computational errors, these are quite worrisome in that they indicate little or no understanding of place value or the operation.

<table>
<thead>
<tr>
<th>COMMON ERRORS WITH ADDITION &amp; SUBTRACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error</td>
</tr>
</tbody>
</table>
| No regrouping at all; each column is treated separately, as its own set of 1's. | \[
\begin{array}{c}
257 \\
+ 638 \\
\hline
8815
\end{array}
\] |
| Over-generalized carrying. The student believes you carry a “1” every time. | \[
\begin{array}{c}
257 \\
+ 638 \\
\hline
995
\end{array}
\] |
| Subtracting “upside down.” | \[
\begin{array}{c}
302 \\
- 145 \\
\hline
243
\end{array}
\] |
| Various spins on borrowing that indicate a lack of understanding. | \[
\begin{array}{c}
380 \\
- 145 \\
\hline
367
\end{array}
\] |

SUPPORT
You can use the support activities below with students who need more help with basic subtraction facts, and/or doing multi-digit addition and subtraction with understanding. These activities can also be used by parents, assistants, or resource room teachers with individual students or very small groups.

<table>
<thead>
<tr>
<th>SUPPORT ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
</tr>
<tr>
<td>Activity 1</td>
</tr>
<tr>
<td>Activity 2</td>
</tr>
<tr>
<td>Activity 3</td>
</tr>
<tr>
<td>Activity 4</td>
</tr>
<tr>
<td>Activity 5</td>
</tr>
<tr>
<td>Activity 6</td>
</tr>
<tr>
<td>Activity 7</td>
</tr>
</tbody>
</table>
Assessment 2 Answer Key

Pages 29–32

1. Row 1: 12, 15, 13, 16, 11, 14
   Row 2: 10, 17, 12, 14, 15, 10
   Row 3: 19, 12, 12, 9, 13, 18

2. Row 1: 5, 7, 9, 5, 8, 4, 3
   Row 2: 7, 5, 6, 4, 10, 6, 10
   Row 3: 9, 10, 7, 8, 8, 6

3. 800

4. 2600

5. 200

6. gallons

7. Row 1: 18, 15, 42, 21, 20, 42, 16
   Row 2: 81, 27, 18, 20, 28, 54, 24
   Row 3: 56, 30, 63, 21, 16, 36, 48
   Row 4: 45, 32, 9, 36, 72, 27, 64
   Row 5: 35, 54, 63, 25, 40, 14, 12
   Row 6: 24, 30, 48, 49, 72

8. 95, 103, 895, 727, 1405
   Students’ methods will vary. See page 25 for examples.

9. 34, 36, 134, 258, 157
   Students’ methods will vary. See page 25 for examples.
Assessment 2  page 1 of 4

1 Find the sums below.

\[
\begin{align*}
6 + 6 + 6 + 8 + 9 + 8 + 9 + 5 &= 47 \\
7 + 8 + 8 + 8 + 7 + 7 + 4 + 6 &= 48 \\
9 + 5 + 9 + 3 + 8 + 9 + 9 + 7 &= 51
\end{align*}
\]

2 Find the differences below.

\[
\begin{align*}
12 - 7 - 7 - 9 - 10 - 8 - 10 - 8 &= 9 \\
15 - 8 - 9 - 8 - 8 - 7 - 7 - 9 &= 1 \\
15 - 6 - 3 - 9 - 5 - 9 - 9 &= 6
\end{align*}
\]
Assessment 2  page 2 of 4

3  What value does the 8 represent in the number 1,892?

- 8
- 80
- 800
- 8,000

4  Sarah read that twenty-six hundred people moved into the big city near her town. How would twenty-six hundred be written as a number?

- 26,100
- 2,600
- 260
- 26

5  How many centimeters are there in 2 meters?

- 20,000
- 2,000
- 200
- 20

6  Which would be the best unit to measure the amount of water it takes to fill a bathtub?

- cups
- quarts
- gallons
Assessment 2  page 3 of 4

7 Solve these multiplication facts.

\[
\begin{align*}
2 \times 9 & = \ \_ \_ \\
5 \times 3 & = \ \_ \_ \\
7 \times 6 & = \ \_ \_ \\
3 \times 7 & = \ \_ \_ \\
4 \times 5 & = \ \_ \_ \\
6 \times 7 & = \ \_ \_ \\
8 \times 2 & = \ \_ \_ \\
\end{align*}
\]
8 Choose one of the addition problems below. Circle the one that seems best for you—not too hard and not too easy. Find the answer and be sure to use numbers, sketches, and/or words to show how you got your answer.

\[
\begin{array}{cccc}
57 & 46 & 257 & 568 \\
+ 38 & + 57 & + 638 & + 159 \\
\hline
\end{array}
\]

\[
\begin{array}{cccc}
648 & & & \\
+ 757 & & & \\
\hline
\end{array}
\]

9 Choose one of the subtraction problems below. Circle the one that seems best for you—not too hard and not too easy. Find the answer and be sure to use numbers, sketches, and/or words to show how you got your answer.

\[
\begin{array}{cccc}
43 & 64 & 183 & 415 \\
- 9 & - 28 & - 49 & - 157 \\
\hline
\end{array}
\]

\[
\begin{array}{cccc}
302 & & & \\
- 145 & & & \\
\hline
\end{array}
\]
## Assessment 2 Class Checklist

<table>
<thead>
<tr>
<th>Student Names</th>
<th>1 &amp; 2 completes ____ out of 40 addition and subtraction facts in 2 minutes</th>
<th>3 identifies the value of 8 in 1,892 as 800</th>
<th>4 identifies the number 2,600</th>
<th>5 converts meters to centimeters</th>
<th>6 identifies an appropriate unit of liquid measure</th>
<th>7 completes ____ out of 40 multiplication facts in ____ minutes</th>
<th>8a adds 2- or 3-digit numbers with regrouping</th>
<th>8b explains work</th>
<th>9a subtracts 2- or 3-digit numbers with regrouping</th>
<th>9b explains work</th>
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Assessment 3  Quick Facts

Overview
Even if some of your students did well with the multiplication timings in Assessments 1 and 2, it’s likely that many need more work with basic multiplication and division facts through $12 \times 12$. To help them master their facts, you can use the Fact Fluency section. The practice sheets in the Fact Fluency section can be used during designated seatwork times during the week or assigned as homework. To assess students’ growing fluency with the facts, you may want to administer the Quick Facts exercise described below periodically with some or all of your students. To do so, you’ll need to allot two or even three blocks of about 10 minutes per week to the exercise, which is a timed assessment designed to help assess fluency with groups of facts and with mixed facts. Together with the Fact Fluency section, Quick Facts provides a systematic way for students to choose their own learning targets, practice the facts they’ve selected, and track their own progress toward fact mastery.

Frequency
One day or more per week (optional)

Skills & Concepts
★ fluently using multiplication facts through $12 \times 12$
★ developing efficient strategies for solving basic division facts
★ relating multiplication and division

You’ll need
★ Multiplication Table (page 41, class set)
★ Multiplication Facts Class Checklist (page 42, 1 or 2 copies)
★ Quick Facts Tracking Sheet (page 43 class set and 1 copy on a transparency)
★ Quick Facts Worksheet Forms A–C (pages 44–46, see Advance Preparation and run 1 copy of Form A on a transparency)
★ Quick Facts Worksheet, 2–6 (page 47, see Advance Preparation)
★ Quick Facts Worksheet, 4–9 (page 48, see Advance Preparation)
★ Quick Facts Worksheet, 6–12 (page 49, see Advance Preparation)

Advance Preparation  There are three versions of the Quick Facts Worksheet for single multipliers (Forms A, B, and C). They are identical except that the order of the multipliers is different on each sheet to provide variety and prevent students from getting used to doing the facts in a particular order. Run several class sets of each form, perhaps each on a different color copy paper, mix them, and distribute them at random each time you conduct Quick Facts with your class after introducing the routine. As students master their facts for single multipliers, you’ll need to do the same for the mixed facts worksheets (pages 47–49).
Assessment 3 Quick Facts (cont.)

A Note about Timed Testing  By limiting the time students have to complete a set of multiplication facts, teachers and students can see which facts come quickly and which don’t. It is only through such timed checkups that teachers can see whether students have the speed that is an essential component of computational fluency. These timed exercises are formative assessments designed to help you decide how to tailor practice and support for each student using the Fact Fluency materials, Support Activities, and any other materials you have on hand.

Timed checkups should be used for information purposes only, and we recommend that you don’t grade students on this work. We also do not advocate using timed drills for instructional purposes. Daily timed drill with random collections of problems is not productive to the development of computational fluency. Such practice tends to create undue feelings of pressure and promote negativity toward math among students who feel they cannot compete with their peers or work fast enough. Systematic practice of fact strategies, on the other hand, coupled with an assessment procedure in which students designate their own targets, promotes feelings of competence and mastery.

Introducing the Quick Facts Routine

It will take 15–20 minutes to introduce Quick Facts for the first time, and about 10 minutes to conduct the routine thereafter. To begin, display the Quick Facts Worksheet overhead and explain that students will start a routine today that will help them track their own progress as they continue to develop fluency with multiplication and division facts through the year. Give students a minute or two to examine the sheet and pair-share any observations and/or questions, and then call for whole group sharing.

Distribute copies of the Quick Facts Worksheet and explain that everyone will use the multiplier 2 today to become acquainted with the routine. Let them know that they will have up to 4 minutes to multiply the numbers in the boxes by 2 and record the products in the boxes. Model the recording process by filling in 2 as the multiplier on the overhead, and then multiplying the top row of numbers by 2 with input from the class.

Explain that you’ll keep track of the time while they work. First, you’ll write 0–1 on the whiteboard. Then, after they have been working for a minute, you’ll write 1–2 on the board. After 2 minutes have passed, you’ll write 2–3. After 3 minutes have passed, you’ll write 3–4, and after 4 minutes have passed, you’ll call time. As soon as they have finished the 40 multiplication facts, they will turn their paper over, look up at the board, and record the last range of minutes you recorded. If, for instance, they turn their paper over,
Assessment 3 Quick Facts (cont.)

look up, and see 1–2, they’ll write 1–2 on the back of their paper to indicate that they completed the work in 1–2 minutes.

Let them know that everyone will remain silent for the entire 4 minutes, even if many of them finish before the time is up, so that they can concentrate without distraction. Then use your overhead to show students where to record the amount of time it took to complete the facts once the timing is over.

Reassure students that this exercise is designed to help them see which facts come quickly for them and which facts they need to practice. Assure them that they will not be graded on this work. Ask students to write their names and the date on their own papers, and enter the number 2 in the multiplier box. Then turn off the overhead, give the signal to start, and keep track of the time that has passed as students work. After 4 minutes, ask them to stop, even if they’re not finished. Remind students to transfer the number of minutes it took them to complete the 40 facts from the back of the sheet to the appropriate box at the top of the sheet.

Next, ask students to trade papers and correct each other’s work as a class, using the overhead to provide the answers one row at a time. Remind students to respect one another’s feelings during this process; depending on your classroom community, you may want students to correct their own papers instead. Have them circle any incorrect answers, count the number correct, enter the number correct at the top of the page, and return the sheets to their owners.

While students are returning and reviewing their papers, distribute a copy of the Quick Facts Tracking Sheet to each student. Use the corresponding overhead to review the directions at the top of the Tracking Sheet. Then give students time to record their results. Students who did not complete at least 38 of the 40 facts in 2 minutes or less will need to practice the times-2 facts before the next Quick Facts exercise. Students who did complete at least 38 facts correctly in 2 minutes or less need to choose a new target multiplier.
Note  When students have the opportunity to select a new multiplier, encourage them to choose carefully, thinking about which facts they really need to work on. They don’t necessarily need to do them in order, and we find that students are much more motivated to memorize their facts when they set their own targets. (Let them skip the 2, 5, and 10 facts entirely if they already know them, and advise them to save the 7 facts for last: they are easier to master after fluency has been gained with the other multipliers.) After students have developed fluency with all the individual multipliers, they’ll need to demonstrate proficiency with facts in the 2–6, 4–9, and 6–12 ranges.

If some students completed most or all of the multiplication facts on the first two assessments correctly in 2 minutes or less, you may want to let them “test out” of Quick Facts by selecting the 6–12 range as their target for the following week.

Conclude the introduction by showing students how to complete the division section at the bottom of the page, using the transparency to model the process. Read the instructions out loud and then write 10 different products from the grid in the dividend boxes. Then record a 2 as the divisor on each line. After you have set up 10 division facts, work with students’ help to enter the quotients along the top row, and then have students fill in their own sheets, entering the dividends in any order they choose. This section reinforces the connection between multiplication and division and is not timed because we believe the division facts are best learned in the context of the related multiplication facts.
Continuing with Quick Facts

The Quick Facts routine will go much more quickly after you have done it a few times with students. Each time, you'll need a new class set of the Quick Facts Worksheet. As students begin working with ranges of facts, rather than single multipliers, you'll need to make copies of the Quick Facts Worksheet for each of three ranges of facts: 2–6, 4–9, and 6–12.

Have students keep their Quick Facts Tracking Sheets in their math binders or another safe place where they can find and retrieve them quickly. Try to return students' worksheets within a day or two so they can identify their learning targets and have plenty of time to practice before the next Quick Facts session.

FACT FLUENCY

The Fact Fluency section provides the practice students need to become fluent with their multiplication and related division facts. You can assess their fluency using the Quick Facts routine, or you can use the materials on their own if you choose not to use Quick Facts. The section contains a 6-page sequence for each multiplier from 2 through 12. For each multiplier, you'll find: 2 worksheets, 2 games, and a set of flashcards suitable for use at home or school. These materials are formatted in the same way for every multiplier, and each set refers to a strategy for multiplying by that number. You'll find a guide to the strategies in the introduction to the Fact Fluency section. The section also includes 3 worksheets and a game for each of three ranges of facts (2–6, 4–9, and 6–12).
**Fact Fluency with 8’s** Missing Number Capture 8’s & 4’s

You’ll need
- a partner
- 2 pencils or markers in different colors
- paperclip and pencil to use as a spinner

Instructions for Missing Number Capture 8’s & 4’s
1. Take turns spinning the spinner. The player who gets the higher number goes first.
2. Take turns spinning the spinner. Use the number you spin to complete one of the problems below. Be sure to use your own color pencil.
3. If the box you need is already filled, you lose your turn.

4. Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.
5. Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

### Scoring
- 3 in a Row—1 point
- 4 in a Row—2 points

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**Fact Fluency with 8’s** Flashcard Bingo 8’s

You’ll need
- a partner
- one set of 8’s flashcards and your flashcard pocket
- marker or crayon for each player

Instructions for Flashcard Bingo 8’s
1. Mix up one set of flashcards and arrange them so that the multiplication side is facing up on all of them. Put them in the flashcard pocket.
2. Take turns pulling 1 card. Each time, both players color the product on their board or mark it with an x.
3. The first player to get two rows of 4 going horizontally, vertically, or diagonally, wins.
4. Play the game a second time using the division side of your cards.

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**Scoring**
- 3 in a Row—1 point
- 4 in a Row—2 points
## Multiplication Table

As you learn each set of multiplication facts, shade them in lightly with a new color so you can see what you have left to learn. The \( \times 1 \) facts have been shaded in for you.

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## Multiplication Facts Class Checklist

Use the table below to keep track of which students have mastered the multiplication facts for each multiplier or set of multipliers.

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Quick Facts Tracking Sheet

When you get back your Quick Facts Worksheet from last time:

- Record the date you completed the sheet, the time it took you, and the number of facts you got correct.

- If it took you more than 2 minutes or you got fewer than 38 facts correct, write “no” in the last box in the row and use that same multiplier or set of multipliers again.

- If you completed 38 or more facts correctly in 2 minutes or less, write “yes” the last box in the row and choose another multiplier or set of multipliers.

Cross out each number as you master the facts for that multiplier or range of multipliers. Then circle your next target.

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<thead>
<tr>
<th>Multiplier or Range of Multipliers</th>
<th>Date</th>
<th>Time</th>
<th>Number Correct</th>
<th>Mastered? (at least 38 correct in 2 mins. or less)</th>
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<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2–6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4–9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6–12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Quick Facts Worksheet  Form A

<table>
<thead>
<tr>
<th>What’s your multiplier?</th>
<th>How many minutes?</th>
<th>Number correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Multiply each number in the grid by your multiplier. Write each product in the box.

2 Choose 10 different products from above (except 0) and record them in the boxes below. Then divide each by your multiplier.

_ ÷ _

_ ÷ _

_ ÷ _

_ ÷ _

_ ÷ _

_ ÷ _

_ ÷ _

_ ÷ _

_ ÷ _
Quick Facts Worksheet  Form B

<table>
<thead>
<tr>
<th>What’s your multiplier?</th>
<th>How many minutes?</th>
<th>Number correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Multiply each number in the grid by your multiplier. Write each product in the box.

2. Choose 10 different products from above (except 0) and record them in the boxes below. Then divide each by your multiplier.

   \[ \frac{\_}{\_} \]
   \[ \frac{\_}{\_} \]
   \[ \frac{\_}{\_} \]
   \[ \frac{\_}{\_} \]
   \[ \frac{\_}{\_} \]
Quick Facts Worksheet  Form C

<table>
<thead>
<tr>
<th>What’s your multiplier?</th>
<th>How many minutes?</th>
<th>Number correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Multiply each number in the grid by your multiplier. Write each product in the box.

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>12</td>
<td>11</td>
<td>6</td>
<td>9</td>
<td>4</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>3</td>
<td>10</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>12</td>
<td>8</td>
<td>2</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>11</td>
<td>5</td>
<td>9</td>
<td>10</td>
<td>4</td>
</tr>
</tbody>
</table>

2 Choose 10 different products from above (except 0) and record them in the boxes below. Then divide each by your multiplier.

— ÷ — — — — — — — — — —
Quick Facts Worksheet, 2–6

How many minutes? | Number correct
---|---

1 Solve these multiplication facts.

$$4 \times 4 \quad 3 \times 3 \quad 8 \times 4 \quad 11 \times 5 \quad 8 \times 3 \quad 8 \times 2 \quad 7 \times 2$$

$$5 \times 5 \quad 12 \times 4 \quad 4 \times 3 \quad 9 \times 3 \quad 9 \times 2 \quad 6 \times 2 \quad 7 \times 3$$

$$12 \times 3 \quad 12 \times 2 \quad 3 \times 2 \quad 9 \times 4 \quad 5 \times 2 \quad 6 \times 3 \quad 9 \times 6$$

$$6 \times 5 \quad 11 \times 6 \quad 12 \times 6 \quad 7 \times 5 \quad 6 \times 6 \quad 8 \times 5 \quad 7 \times 6$$

$$5 \times 4 \quad 6 \times 4 \quad 11 \times 4 \quad 7 \times 4 \quad 8 \times 6 \quad 9 \times 5 \quad 12 \times 5$$

$$11 \times 3 \quad 10 \times 3 \quad 11 \times 2 \quad 4 \times 2 \quad 5 \times 3$$

2 Use what you know about multiplication to solve these related division problems.

$$2 \div 14 \quad 4 \div 24 \quad 6 \div 36 \quad 4 \div 28 \quad 6 \div 54 \quad 4 \div 32 \quad 3 \div 27$$

$$6 \div 42 \quad 2 \div 16 \quad 3 \div 21 \quad 2 \div 18 \quad 6 \div 48 \quad 3 \div 24 \quad 4 \div 36$$
Quick Facts Worksheet, 4–9

<table>
<thead>
<tr>
<th>How many minutes?</th>
<th>Number correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Solve these multiplication facts.

\[
\begin{array}{cccccccc}
4 & 8 & 7 & 10 & 7 & 12 & 5 \\
\times 4 & \times 8 & \times 6 & \times 4 & \times 8 & \times 9 & \times 5 \\
\hline
6 & 5 & 12 & 11 & 11 & 6 & 6 \\
\times 6 & \times 4 & \times 7 & \times 6 & \times 9 & \times 5 & \times 8 \\
\hline
12 & 7 & 6 & 9 & 7 & 9 & 7 \\
\times 6 & \times 6 & \times 4 & \times 8 & \times 5 & \times 4 & \times 7 \\
\hline
11 & 10 & 8 & 7 & 9 & 8 & 11 \\
\times 8 & \times 5 & \times 6 & \times 4 & \times 9 & \times 7 & \times 4 \\
\hline
11 & 12 & 8 & 9 & 8 & 9 & 12 \\
\times 7 & \times 8 & \times 5 & \times 6 & \times 4 & \times 7 & \times 5 \\
\hline
12 & 10 & 11 & 9 & 10 \\
\times 4 & \times 6 & \times 5 & \times 5 & \times 8 \\
\end{array}
\]

2 Use what you know about multiplication to solve these related division problems.

\[
\begin{array}{cccccccc}
4 \div 32 & 7 \div 63 & 6 \div 48 & 7 \div 42 & 4 \div 28 & 5 \div 60 & 4 \div 36 \\
8 \div 64 & 9 \div 81 & 6 \div 72 & 5 \div 45 & 7 \div 84 & 6 \div 54 & 7 \div 49 \\
\end{array}
\]
Quick Facts Worksheet, 6–12

<table>
<thead>
<tr>
<th>How many minutes?</th>
<th>Number correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Solve these multiplication facts.

\[
\begin{array}{cccccccc}
6 & 5 & 5 & 12 & 6 & 12 & 8 \\
\times 6 & \times 6 & \times 9 & \times 11 & \times 8 & \times 10 & \times 6 \\
\hline
4 & 12 & 9 & 5 & 9 & 6 & 4 \\
\times 8 & \times 7 & \times 9 & \times 8 & \times 7 & \times 9 & \times 9 \\
\hline
7 & 11 & 8 & 5 & 11 & 9 & 9 \\
\times 12 & \times 10 & \times 8 & \times 7 & \times 12 & \times 6 & \times 8 \\
\hline
12 & 11 & 12 & 7 & 8 & 9 & 11 \\
\times 9 & \times 7 & \times 12 & \times 7 & \times 9 & \times 12 & \times 6 \\
\hline
8 & 7 & 11 & 8 & 6 & 7 & 11 \\
\times 12 & \times 9 & \times 8 & \times 7 & \times 7 & \times 8 & \times 9 \\
\hline
12 & 12 & 7 & 4 & 11 \\
\times 6 & \times 8 & \times 6 & \times 7 & \times 11 \\
\end{array}
\]

2 Use what you know about multiplication to solve these related division problems.

\[
\begin{array}{cccccccc}
7 \div 49 & 9 \div 63 & 9 \div 81 & 6 \div 48 & 9 \div 54 & 6 \div 72 & 8 \div 56 \\
8 \div 72 & 9 \div 108 & 8 \div 64 & 8 \div 96 & 7 \div 42 & 6 \div 54 & 7 \div 84 \\
\end{array}
\]
Assessment 4

Overview
This assessment can be used to test key math skills toward the end of the second reporting period.

Timing
Toward the end of your second reporting period (late January/early February)

Skills & Concepts
★ demonstrating fluency with multiplication facts through $10 \times 10$
★ carrying out simple unit conversions in the U.S. customary system
★ finding the area and perimeter of a rectangle
★ determining elapsed time in minutes
★ rounding to the nearest 100 and recognizing which place will be the most helpful in estimating an answer
★ adding and subtracting 2- and 3-digit numbers with regrouping
★ multiplying and dividing a 2-digit number by a 1-digit number
★ recognizing equivalent forms of common fractions and decimals to hundredths
★ demonstrating an understanding of multiplication and division

You’ll need
★ Assessment 4, pages 1–4 (pages 55–58)
★ Assessment 4 Class Checklist, pages 1 and 2 (pages 59 and 60, 2 or 3 copies as needed, optional)
★ half-class set of student clocks (optional)
★ one-third class set of base ten pieces (optional, Use page 16 to make your own if needed.)
★ paper bills (optional, Use page 20 to make your own if needed.)
★ one-third class set of money value pieces (optional, Use pages 17–19 to make your own if needed.)

Conducting Assessment 4
You can administer this 4-page skills assessment during a single math period or break it out over 2 or more days, depending on your schedule and the needs of your students.

The first page is a set of 40 multiplication facts. Conduct this page as a timed test, giving students 2 minutes to complete as many of the 40 facts as they can. Then give students as much time as they need to complete the second page.
If many students are still developing fluency with multiplication facts, stress that this is just a check-in designed to help them (and you) see what they still need to work on. If most of your students are already quite fluent with their multiplication facts by now, however, you might consider eliminating this page of the assessment.

Give students as much time as they need to complete the other 3 pages of the assessment. The second page revolves around time and measurement. The third and fourth pages are designed to provide you with windows into students’ current computation and estimation skills and strategies. You may find it interesting to compare students’ methods on these pages to their work on similar items in Assessment 2.

Using Information from Assessment 4

You will get a much more accurate picture of children’s true understandings if you require all of them to explain their thinking and their notation. If students use a traditional or invented algorithm, have them explain it using words, numbers, and sketches. In looking over their work, you may find that although some students can apply an algorithm to produce a correct answer, their responses do not demonstrate an understanding of the place values involved, as shown in the two samples below.
SUPPORT

Students’ work on the assessment may indicate that some need continued support with specific skills and concepts. You can have select students use specific support activities with a resource room teacher, instructional assistant, and/or parent to improve specific skills and strengthen conceptual understandings. You may find the activities listed below particularly helpful with skills featured on this assessment.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity 10</td>
<td>An Hour or Bust</td>
<td>telling time and calculating elapsed time</td>
</tr>
<tr>
<td>Activity 11</td>
<td>Get Me to the Bus on Time</td>
<td>telling time and calculating elapsed time</td>
</tr>
<tr>
<td>Activity 12</td>
<td>Spinning Around Multiplication</td>
<td>strategies for multiplication facts up to 6 x 6</td>
</tr>
<tr>
<td>Activity 13</td>
<td>Array Challenge</td>
<td>multiplication facts to 8 x 9 with the array model</td>
</tr>
<tr>
<td>Activity 14</td>
<td>Multiplication Challenge</td>
<td>multiplication facts to 8 x 8 with a variety of models</td>
</tr>
<tr>
<td>Activity 15</td>
<td>Spinning for Arrays</td>
<td>multiplication facts to 8 x 10 with the array model</td>
</tr>
<tr>
<td>Activity 16</td>
<td>Product Bingo</td>
<td>practice of multiplication facts to 9 x 9</td>
</tr>
<tr>
<td>Activity 17</td>
<td>What’s Missing? Bingo</td>
<td>practice of multiplication and division facts to 9 x 6</td>
</tr>
</tbody>
</table>
Assessment 4 Answer Key

Pages 55–58

1  18, 15, 42, 21, 20, 42, 16
   27, 18, 20, 28, 54, 24, 56
   63, 21, 16, 36, 25, 0, 7
   4, 72, 27, 64, 35, 70, 63
   30, 14, 12, 24, 30, 48, 49
   0, 36, 32, 45, 40

2  36 inches in 3 feet

3  15 feet in 5 yards

4  16 cups per gallon

5  5 quart containers to hold 20 cups of jam

6  a  22 feet
   b  28 square feet

7  First choice

8  1,100

9  300

10 a  $6.00
    Students' work will vary widely. Examples:
    example 1:
    $5.63 + 3.47 = $9.10
    example 2:
    $2.53 + $3.47 = $6.00
    Students' work will vary widely. Examples:
    example 1:
    317 + 1 = 318
    - 209 + 1 = 210
    example 2:
    317 + 1 = 318
    - 209 + 1 = 210

b  546
    Students' work will vary widely. Examples:
    example 1:
    400 + 10 + 60 + 70 = 130

11 12 × 4 = 48, 20 × 9 = 180, 25 × 7 = 175,
    36 × 5 = 180, 51 × 8 = 408
    Students' choice of problem and solution methods
    will vary.

12 21 ÷ 7 = 3, 24 ÷ 8 = 3, 75 ÷ 3 = 25, 63 ÷ 3 = 21,
    94 ÷ 6 = 15 R4
    Students' choice of problem and solution methods
    will vary.

13 a, b, and d are true (c and e are false)

14 a  5 × 3 = 15 ($5 per stack × 3 stacks = $15)
    Students may or may not label each element in
    their equations this way.
   b  15 ÷ 5 = 3 ($15 ÷ $5 per stack = 3 stacks)
    Students may or may not label each element in
    their equations this way.
Assessment 4  page 1 of 4

1 Solve these multiplication facts.

\[
\begin{array}{cccccccc}
2 & 5 & 7 & 3 & 4 & 6 & 8 & \times 9 & \times 3 & \times 6 & \times 7 & \times 5 & \times 7 & \times 2 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
3 & 6 & 5 & 4 & 9 & 8 & 7 & \times 9 & \times 3 & \times 4 & \times 7 & \times 6 & \times 3 & \times 8 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
9 & 7 & 4 & 6 & 5 & 0 & 1 & \times 7 & \times 3 & \times 4 & \times 6 & \times 5 & \times 6 & \times 7 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
4 & 9 & 3 & 8 & 5 & 10 & 7 & \times 1 & \times 8 & \times 9 & \times 8 & \times 7 & \times 7 & \times 9 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
10 & 2 & 4 & 4 & 5 & 6 & 7 & \times 3 & \times 7 & \times 3 & \times 6 & \times 6 & \times 8 & \times 7 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
0 & 4 & 4 & 5 & 5 & \times 9 & \times 9 & \times 8 & \times 9 & \times 8 \\
\end{array}
\]
Assessment 4  page 2 of 4

2 How many inches are in 3 feet?
   6  18  36  100
   ○  ○  ○  ○

3 How many feet are in 5 yards?
   10  15  30  50
   ○  ○  ○  ○

4 How many cups are in a gallon?
   4  8  12  16
   ○  ○  ○  ○

5 Adam and his dad made 20 cups of strawberry jam. How many quart containers will they need to hold the jam?
   2  4  5  10
   ○  ○  ○  ○

6 What is the perimeter of this rectangle?
   7 feet

   4 feet

   a What is the area of this rectangle?

   b What is the area of this rectangle?

7 It took Lupe 35 minutes to walk home from school. She got home at 3:00. Which clock shows the time she left school?

   ○  ○  ○  ○
Assessment 4  page 3 of 4

8  Circle the best estimate

<table>
<thead>
<tr>
<th>900</th>
<th>240</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>355</td>
</tr>
<tr>
<td>1,050</td>
<td>399</td>
</tr>
<tr>
<td>1,100</td>
<td>+ 102</td>
</tr>
</tbody>
</table>

9  The museum had 347 visitors on Saturday morning. What is this number rounded to the nearest 100?

<table>
<thead>
<tr>
<th>300</th>
<th>400</th>
<th>500</th>
<th>600</th>
</tr>
</thead>
<tbody>
<tr>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
</tbody>
</table>

10  Do all three of the problems below. Use numbers and/or sketches to show how you got your answers.

a  $2.53
   + $3.47

b  145
   226
   + 175

c  317
   – 209

11  Choose one of the multiplication problems below. Circle the one that seems best for you—not too hard and not too easy. Find the answer in two different ways and show your work for both ways.

<table>
<thead>
<tr>
<th>12</th>
<th>20</th>
<th>25</th>
<th>36</th>
<th>51</th>
</tr>
</thead>
<tbody>
<tr>
<td>× 4</td>
<td>× 9</td>
<td>× 7</td>
<td>× 5</td>
<td>× 8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method 1</th>
<th>Method 2</th>
</tr>
</thead>
</table>
Assessment 4  page 4 of 4

12 Choose one of the division problems below. Circle the one that seems best for you—not too hard and not too easy. Find the answer and be sure to show all your work using numbers, sketches, and words to show how you got your answer.

\[ \begin{array}{ccccc}
7 & 21 & 8 & 24 & 3 & 7 & 5 & 3 & 63 & 6 & 94 \\
\end{array} \]

13 This picture shows some things about 3 quarters. Circle the statements that are true.

a Together, 3 quarters make \( \frac{3}{4} \) of a dollar.

b Together, 3 quarters make \( \frac{75}{100} \) of a dollar.

c Together, 3 quarters make $7.50

d Together, 3 quarters make $0.75

e Together, 3 quarters make $75.00

14 There are five $1 bills in each of the stacks below.

a Write a multiplication sentence that tells about the total number of dollars.

b Now write a division sentence that tells about the number of stacks of dollars.
<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>completes 38 out of 40 multiplication facts in 2 minutes</td>
<td>2</td>
<td>identifies the number of inches in 3 feet</td>
<td>3</td>
<td>identifies the number of feet in 5 yards</td>
<td>4</td>
<td>identifies the number of cups in a gallon</td>
</tr>
<tr>
<td>Student Names</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<tr>
<td>10a</td>
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<td>10b</td>
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<td></td>
<td></td>
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<tr>
<td>10c</td>
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<td></td>
</tr>
<tr>
<td>11a</td>
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<td>11b</td>
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</tr>
</tbody>
</table>
Assessment 5

Overview
This assessment can be used to test key math skills towards the end of the third reporting period.

Timing
Toward the end of your third reporting period (late March/early April)

Skills & Concepts
- demonstrating fluency with multiplication and division facts
- adding and subtracting 2- and 3-digit numbers with regrouping
- multiplying and dividing a 2-digit number by a 1-digit number
- solving addition, subtraction, and multiplication story problems
- selecting an appropriate number to make an equation true
- finding the area and perimeter of a rectangle
- reading and interpreting a bar graph and a pictograph
- predicting the likelihood of an outcome numerically
- using a variety of physical and visual models to conceptualize fractions

You’ll need
- Assessment 5, pages 1–4 (pages 65–68)
- Assessment 5 Class Checklist, pages 1–3 (pages 69–71, 2 or 3 copies as needed, optional)
- base ten pieces and/or colored tile for students who want to use them (Use page 16 to create your own base ten pieces if needed, and cut 1”-by-1” squares of tag board or construction paper if you do not have colored tile in your classroom.)

Conducting Assessment 5
You can conduct this 4-page skills assessment during a single math period or break it out over 2 or more days, depending on your schedule and the needs of your students. Give them 2 minutes to complete as many of the 40 multiplication facts on the first page as they can. If many students are still developing fluency with multiplication facts, stress that this is just a check-in designed to help you and them see which facts they still need to work on. (It
may be interesting to compare the number of facts they completed correctly this time to the number they were able to complete correctly on Assessment 4.) On the other hand, if most of your students are already quite fluent with their multiplication facts, you might consider eliminating this page of the assessment.

After they have had 2 minutes to work on the first page, allow them to complete the remaining 3 pages at their own pace. Make base ten pieces and colored tile available those students who want or need to use them.

**SUPPORT**

Students' work on the assessment may indicate that some need continued support with specific skills and concepts. You can have selected students use specific Support Activities with a resource room teacher, instructional assistant, and/or parent to improve specific skills and strengthen conceptual understandings. You may find the activities listed below particularly helpful with skills featured on this assessment.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity 12</td>
<td>Spinning Around Multiplication</td>
<td>strategies for multiplication facts up to 6 × 6</td>
</tr>
<tr>
<td>Activity 13</td>
<td>Array Challenge</td>
<td>multiplication facts to 8 × 9 with the array model</td>
</tr>
<tr>
<td>Activity 14</td>
<td>Multiplication Challenge</td>
<td>multiplication facts to 8 × 8 with a variety of models</td>
</tr>
<tr>
<td>Activity 15</td>
<td>Spinning for Arrays</td>
<td>multiplication facts to 8 × 10 with the array model</td>
</tr>
<tr>
<td>Activity 16</td>
<td>Product Bingo</td>
<td>practice of multiplication facts to 9 × 9</td>
</tr>
<tr>
<td>Activity 17</td>
<td>What’s Missing? Bingo</td>
<td>practice of multiplication and division facts to 9 × 6</td>
</tr>
<tr>
<td>Activity 18</td>
<td>More or Less Addition Big Time</td>
<td>3-digit addition with regrouping</td>
</tr>
<tr>
<td>Activity 19</td>
<td>More or Less Subtraction Big Time</td>
<td>3-digit subtraction with regrouping</td>
</tr>
<tr>
<td>Activity 20</td>
<td>Larger Numbers on a Line</td>
<td>3-digit subtraction and addition with regrouping</td>
</tr>
<tr>
<td>Activity 21</td>
<td>Perimeter Showdown</td>
<td>perimeter and area of rectangles</td>
</tr>
<tr>
<td>Activity 22</td>
<td>Spin &amp; Multiply</td>
<td>2-digit by 1-digit multiplication</td>
</tr>
<tr>
<td>Activity 23</td>
<td>Remainders Win</td>
<td>division with remainders</td>
</tr>
<tr>
<td>Activity 24</td>
<td>Fraction Race</td>
<td>understanding, modeling, and comparing fractions</td>
</tr>
<tr>
<td>Activity 25</td>
<td>Fraction Bingo</td>
<td>understanding, modeling, and comparing fractions</td>
</tr>
</tbody>
</table>
Assessment 5 Answer Key

Pages 65–68

1. 18, 15, 42, 21, 20, 42, 16
   27, 18, 20, 28, 54, 24, 56
   63, 21, 16, 36, 25, 0, 7
   4, 72, 27, 64, 35, 70, 63
   30, 14, 24, 30, 48, 49
   0, 36, 32, 45, 40
2. 3, 5, 4, 4, 9, 12, 8
   6, 10, 9, 7, 4, 2, 6
3. a. 6441 slices
   b. 473 more slices
4. a. 144
   b. 120
   c. 168
   d. 96
5. 18 ÷ □ = 3
6. 7
7. a. 44 inches
   b. 120 sq. inches
8. $22.50
9. 6/9
10. a. Student responses will vary. Example:
    b. Student responses will vary. Examples:
       example 1:
       example 2:
       example 3:
11. a. 1/2
    b. Students’ explanations will vary. Examples:
       example 1: Because there’s 12 squares and 6 are shaded.
       example 2: Because it looks like a rectangle cut in half on the diagonal.
12. a. 1/2
    b. Students’ explanations will vary. Examples:
13. Cut each piece in half.
1 Solve these multiplication facts.

\[
\begin{array}{cccccccc}
2 & 5 & 7 & 3 & 4 & 6 & 8 \\
\times 9 & \times 3 & \times 6 & \times 7 & \times 5 & \times 7 & \times 2 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
3 & 6 & 5 & 4 & 9 & 8 & 7 \\
\times 9 & \times 3 & \times 4 & \times 7 & \times 6 & \times 3 & \times 8 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
9 & 7 & 4 & 6 & 5 & 0 & 1 \\
\times 7 & \times 3 & \times 4 & \times 6 & \times 5 & \times 6 & \times 7 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
4 & 9 & 3 & 8 & 5 & 10 & 7 \\
\times 1 & \times 8 & \times 9 & \times 8 & \times 7 & \times 7 & \times 9 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
10 & 2 & 4 & 4 & 5 & 6 & 7 \\
\times 3 & \times 7 & \times 3 & \times 6 & \times 6 & \times 8 & \times 7 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
0 & 4 & 4 & 5 & 5 \\
\times 9 & \times 9 & \times 8 & \times 9 & \times 8 \\
\end{array}
\]
Assessment 5  page 2 of 4

2 Solve these division facts.

\[
8 \div 24 \quad 3 \div 15 \quad 5 \div 20 \quad 4 \div 16 \quad 5 \div 45 \quad 1 \div 12 \quad 4 \div 32
\]

\[
6 \div 36 \quad 4 \div 40 \quad 3 \div 27 \quad 3 \div 21 \quad 8 \div 32 \quad 7 \div 14 \quad 3 \div 18
\]

3 The school cafeteria at Carus Elementary served 3,457 slices of pizza last year and 2,984 slices of pizza this year.

a How many total slices of pizza did the cafeteria serve in these 2 years?

b How many more slices of pizza did they serve last year than this year?

4 The fourth-graders at Shoreham Elementary decided to keep track of the number of pizza slices sold each month in the cafeteria. The graph below shows their findings for the first 4 months of the year. Fill in the box at the end of each row to show how many pieces the cafeteria sold each month.

<table>
<thead>
<tr>
<th>Slices of Pizza Sold Each Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>a January</td>
</tr>
<tr>
<td>b February</td>
</tr>
<tr>
<td>c March</td>
</tr>
<tr>
<td>d April</td>
</tr>
</tbody>
</table>

Key \[\text{_Obj} = 24\text{ slices}\]
Assessment 5  page 3 of 4

5 Which equation would be true if 6 were put in the box?
- 36 ÷ [ ] = 4
- 18 ÷ [ ] = 3
- 24 ÷ [ ] = 8
- 42 ÷ [ ] = 6

6 What number will make this equation true?
\[ 3 + 5 + [ ] = 6 + 9 \]
- 9
- 15
- 7
- 23

7a What is the perimeter of this rectangle?

```
```

```
```

b What is the area of this rectangle?

8 Alicia made the graph below to show the number of hours she worked for 4 weeks. If Alicia earned $7.50 an hour, how much money did she earn during Week 1? Show your work.

```
```

9 There are 3 blue tile and 6 red tile in a paper bag. If Brittany picks a tile from the bag without looking, what is the probability it will be a red tile?

\[ \frac{6}{12} \quad \frac{3}{6} \quad \frac{6}{9} \quad \frac{6}{6} \]
- [ ]
- [ ]
- [ ]
- [ ]
Assessment 5  page 4 of 4

10 Shade in $\frac{1}{4}$ on each model below.

12a What fraction of this array is shaded in?

b How do you know?

11 In which model is $\frac{2}{3}$ shaded?

13 James wants to serve all of this pizza to 12 people. What can he do so that each person can be served an equal amount?

- Use only half the pizza.
- Cut each piece in thirds.
- Cut each piece in half.
- Cut each piece in sixths.
<table>
<thead>
<tr>
<th>Student Names</th>
<th>1 completes ___ out of 40 multiplication facts in 2 minutes</th>
<th>2 completes ___ out of 21 division facts correctly</th>
<th>3a finds the sum of 3,457 + 2,984</th>
<th>3b finds the difference between 3,457 and 2,984</th>
<th>4 reads and interprets a pictograph</th>
<th>4a multiplies 6 × 24</th>
<th>4b multiplies 5 × 24</th>
<th>4c multiplies 7 × 24</th>
<th>4d multiplies 3 × 24</th>
<th>5 fills in a missing divisor correctly</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6. fills in a missing addend correctly

7. a calculates the perimeter of a 10 × 12 rectangle

7b calculates the area of a 10 × 12 rectangle

8. reads and interprets a bar graph; multiplies $3 \times 7.50$

9. identifies the probability of an event's occurrence

10a constructs and shades in \( \frac{1}{4} \) of a circle

10b constructs and shades in \( \frac{1}{4} \) of a square

10c constructs and shades in \( \frac{1}{4} \) of a rectangle

10d constructs and shades in \( \frac{1}{4} \) of a 4 × 3 tile array

10e constructs and shades in \( \frac{1}{4} \) of a 12-egg carton
### Assessment 5 Class Checklist

<table>
<thead>
<tr>
<th>Student Names</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>11 identifies a model that shows $\frac{2}{3}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>12a identifies the shaded fraction of an array</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>12b explains his or her answer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>13 solves a fraction story problem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Overview
This assessment can be used to test key math skills toward the end of the school year.

Timing
Toward the end of the school year (late May/early June)

Skills & Concepts
★ demonstrating fluency with multiplication and division facts
★ demonstrating an understanding of multiplication and division
★ adding and subtracting 2- and 3-digit numbers with regrouping
★ multiplying and dividing a 2-digit number by a 1-digit number
★ multiplying a 2-digit number by a 2-digit number
★ adding common fractions
★ finding factors and multiples
★ reading and ordering whole numbers to 60,000
★ reading and interpreting bar graphs, pictographs, and circle graphs
★ predicting the likelihood of an outcome numerically
★ recognizing equivalent forms of common fractions and decimals to hundredths
★ locating common fractions and decimals to hundredths on a number line

You’ll need
★ Assessment 6, pages 1–6 (pages 77–82)
★ Base Ten Grid Paper (page 83, class set)
★ Assessment 6 Class Checklist, pages 1–3 (pages 84–86, 2 or 3 copies as needed, optional)
★ base ten pieces for students who want to use them (Use page 16 to create your own base ten pieces if needed.)
Conducting Assessment 6

You can conduct this 6-page skills assessment during a single math period or break it out over 2 or more days, depending on your schedule and the needs of your students. Give them 2 minutes to complete as many of the 40 multiplication facts on the first page as they can. If some of your students are still gaining fluency with multiplication facts, let them know that this is just a check-in designed to help you and them see which facts they will need to work on over the summer. On the other hand, if most of your students are already quite fluent with their multiplication facts, you might consider eliminating this section of the assessment.

After they have had 2 minutes to work on the set of multiplication facts, give them time to complete the other 5 pages at their own pace. Make base ten pieces and Base Ten Grid paper available to students who wish to use them.

SUPPORT

After reviewing students' responses on this final assessment, you can assign Support Activities as needed for children to work on at home. You might also make Support Activities available to teachers who are working with students in summer school or other special summer programs. We recommend creating a packet that contains the instructional considerations, instructions, and materials for these Support Activities. That way, you can simply provide summer school personnel with the packet and ask them to conduct specific activities with students who need additional work on one or more of the targeted skills. You might also choose to send one or more of the activities home with a child in need of more practice. The game instructions and materials may be enough to provide most parents with what they need to help their children, but you may find it appropriate to send home the instructional considerations as well in some cases.

<table>
<thead>
<tr>
<th>SUPPORT ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity</strong></td>
</tr>
<tr>
<td>Activity 26</td>
</tr>
<tr>
<td>Activity 27</td>
</tr>
<tr>
<td>Activity 28</td>
</tr>
<tr>
<td>Activity 29</td>
</tr>
</tbody>
</table>
Assessment 6 Answer Key

Pages 77–82
1  72, 16, 42, 21, 20, 42, 16
   63, 21, 15, 36, 25, 0, 7
   27, 18, 20, 28, 54, 24, 56
   30, 14, 12, 24, 40, 48, 49
   4, 18, 27, 64, 35, 70, 63
   0, 36, 32, 45, 30
2 Students' sketches will vary. Examples:
   example 1:
   example 2:
   example 3:
3 Students' sketches will vary. Examples:
   example 1:
   example 2:
4  3, 5, 4, 9, 4, 3
   12, 8, 2, 6, 9, 7, 4
   4, 6, 2, 10, 4, 9, 7
5  637, Students' methods will vary. Example:
   500
   130
   + 7
   637
6  153, Students' methods will vary. Example:
   349 + 100 = 449
   449 + 60 = 509
   509 - 7 = 502
   160 - 7 = 153
7  224, Students' methods will vary. Example:
   210 + 14 = 224
8  27, Students' methods will vary. Example:
   108 ÷ 2 = 54
   54 ÷ 2 = 25 + 2 = 27
   so 108 ÷ 4 = 27
9  375, Students' methods will vary. Example:
   25 × 16 = 100 × 4 = 400
   400 - 25 = 375
10 3/4 or 1/2, Students' methods will vary. Example:
    1/6
    2/6
    3/6
    1/2
11 246, 552, 5120
12 12, 36
13 a  1, 24, 2, 12, 3, 8, 4, 6
    b Students' explanations will vary. Example:
    I started at 1 and kept going. I stopped when I got
to 6, because I already did 4 times 6, so I knew I
had to have them all.
14 508, 520, 5059, 5519, 5698, 50019
15 Mrs. Longchamp (20), Mrs. McCoy (34), and Ms.
MacIntosh (24) together have a total of 78 students
in their class.
ANSWER KEY

Pages 77–82 (cont.)

16

17

18 a $\frac{1}{2}$
b .36
c $\frac{3}{4}$
d $\frac{8}{10}$

19 a .50
b .8
c $\frac{36}{100}$
d .75

20

0 1/5 3/10 .5 75/100 1
Assessment 6  page 1 of 6

1. Complete the following facts.

\[
\begin{array}{cccccccc}
9 & 4 & 7 & 3 & 4 & 6 & 8 \\
\times 8 & \times 4 & \times 6 & \times 7 & \times 5 & \times 7 & \times 2 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
9 & 7 & 5 & 6 & 5 & 0 & 1 \\
\times 7 & \times 3 & \times 3 & \times 6 & \times 5 & \times 6 & \times 7 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
3 & 6 & 5 & 4 & 9 & 8 & 7 \\
\times 9 & \times 3 & \times 4 & \times 7 & \times 6 & \times 3 & \times 8 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
10 & 2 & 4 & 4 & 5 & 6 & 7 \\
\times 3 & \times 7 & \times 3 & \times 6 & \times 8 & \times 8 & \times 7 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
4 & 2 & 3 & 8 & 5 & 10 & 7 \\
\times 1 & \times 9 & \times 9 & \times 8 & \times 7 & \times 7 & \times 9 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
0 & 4 & 4 & 5 & 5 \\
\times 9 & \times 9 & \times 8 & \times 9 & \times 6 \\
\end{array}
\]
2 Make a sketch to show what this expression means.

\[ 4 \times 7 \]

3 Make a sketch to show what this expression means.

\[ 32 \div 8 \]

4 Complete the following facts.

\[
\begin{align*}
7 \overline{21} & \quad 8 \overline{24} & \quad 3 \overline{15} & \quad 5 \overline{20} & \quad 2 \overline{18} & \quad 4 \overline{16} & \quad 9 \overline{27} \\
1 \overline{12} & \quad 4 \overline{32} & \quad 7 \overline{14} & \quad 3 \overline{18} & \quad 5 \overline{45} & \quad 3 \overline{21} & \quad 8 \overline{32} \\
9 \overline{36} & \quad 6 \overline{36} & \quad 6 \overline{12} & \quad 4 \overline{40} & \quad 7 \overline{28} & \quad 3 \overline{27} & \quad 5 \overline{35}
\end{align*}
\]
Read and solve each problem below. Show your work for each one. If you use Base Ten Grid Paper, attach the sheet.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>263 + 374 =</td>
</tr>
<tr>
<td>6</td>
<td>502 − 349 =</td>
</tr>
<tr>
<td>7</td>
<td>7 × 32 =</td>
</tr>
<tr>
<td>8</td>
<td>108 ÷ 4 =</td>
</tr>
<tr>
<td>9</td>
<td>25 × 15 =</td>
</tr>
<tr>
<td>10</td>
<td>$\frac{1}{6} + \frac{2}{6} =$</td>
</tr>
</tbody>
</table>
11 Circle the numbers that are multiples of 2.
   246  447  552  4,441  5,120

12 Circle the numbers that are multiples of 2 and 3.
   12   16   21   32   36

13a List all the factors of 24.

  __________
  __________
  __________
  __________

b How do you know you have listed all of them?

14 Write these numbers in order on the lines below. Start with the smallest and keep going until you have used them all.
   520  5,059  508  5,519  5,698  50,019
   __________
   __________
   __________
   __________

15 Here is a graph of the number of students in 5 different 4th grade classrooms. Which 3 classes together have a total of 78 students?
**Assessment 6** page 5 of 6

16 Mrs. Fisher's class has been keeping track of the weather for many months with this tally chart. Choose the circle graph that best shows this information.

<table>
<thead>
<tr>
<th>Weather Condition</th>
<th>Number of Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunny</td>
<td>☀️ ☀️ ☀️ ☀️ ☀️ ☀️ ☀️ ☀️ ☀️ ☀️</td>
</tr>
<tr>
<td>Cloudy</td>
<td>☁️ ☁️ ☁️ ☁️ ☁️ ☁️ ☁️ ☁️ ☁️ ☁️</td>
</tr>
<tr>
<td>Rainy</td>
<td>☔️ ☔️ ☔️ ☔️ ☔️ ☔️ ☔️ ☔️ ☔️ ☔️</td>
</tr>
<tr>
<td>Snowy</td>
<td>🌨️ 🌨️ 🌨️ 🌨️ 🌨️ 🌨️ 🌨️ 🌨️ 🌨️ 🌨️</td>
</tr>
</tbody>
</table>

17 There are 9 red tile and 3 blue tile in a bag. The students take 120 samples by pulling out a tile without looking, and then putting it back in the bag and shaking it up before they take the next sample. Which of the three circle graphs below most likely shows the results of this experiment?
Assessment 6  page 6 of 6

18 Match each grid to the fraction or decimal that tells how much has been shaded in by writing the correct letter in the box.

\[ \begin{align*}
\text{a} &: \quad \boxed{\frac{1}{2}} \\
\text{b} &: \quad \boxed{\frac{8}{10}} \\
\text{c} &: \quad \boxed{.36} \\
\text{d} &: \quad \boxed{\frac{3}{4}}
\end{align*} \]

19 Match each number on the left to a number on the right that describes the same quantity by writing the correct letter in the box.

\[ \begin{align*}
\text{a} &: \quad \boxed{\frac{36}{100}} \\
\text{b} &: \quad \boxed{.75} \\
\text{c} &: \quad \boxed{.8} \\
\text{d} &: \quad \boxed{.50}
\end{align*} \]

20 Mark and write these 6 numbers where they belong on the number line.

\[ \begin{align*}
.36 & \quad .25 & \quad \frac{3}{10} & \quad .5 & \quad \frac{75}{100} & \quad \frac{1}{5}
\end{align*} \]
Base Ten Grid Paper
<table>
<thead>
<tr>
<th>Student Names</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5a</th>
<th>5b</th>
<th>6a</th>
<th>6b</th>
<th>7a</th>
<th>7b</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 completes ___ out of 40 multiplication facts in 2 minutes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 creates a sketch that demonstrates understanding of the process of multiplication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 creates a sketch that demonstrates understanding of the process of division</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 completes ___ out of 21 division facts correctly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5a adds 3-digit numbers with regrouping (263 + 374)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5b shows work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6a subtracts 3-digit numbers with regrouping (502 – 349)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6b shows work</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7a multiplies 2-digit number by 1-digit number (7 × 32)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7b shows work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Names</td>
<td>8a</td>
<td>9a</td>
<td>10a</td>
<td>11</td>
<td>12</td>
<td>13a</td>
<td>13b</td>
<td></td>
<td></td>
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<tr>
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<td></td>
</tr>
<tr>
<td></td>
<td>divides 3-digit number by 1-digit number (108 ÷ 4)</td>
<td>shows work</td>
<td>multiplies 2-digit number by 2-digit number (25 × 15)</td>
<td>shows work</td>
<td>identifies multiples of 2</td>
<td>identifies multiples of 2 and 3</td>
<td>lists all the factors of 24</td>
<td>explains thinking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Names</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td></td>
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<td>---------------</td>
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<td>----</td>
<td>----</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>orders numbers to 50,000</td>
<td>reads and interprets a bar graph</td>
<td>translates information from a tally chart to a circle graph</td>
<td>identifies the approximate outcome of a probability experiment</td>
<td>matches fractions and decimals with base ten models</td>
<td>matches decimals and common fractions</td>
<td>locates fractions and decimals along a number line</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Support Activities Grouped by Skill

There are 29 activities in this collection. Most are games designed to be played by partners or small groups, although some can be adapted for use with an entire class at once. The Support Activities are listed by skill in the table below, and are intended to supplement any intermediate math program. Most involve the use of visual models and strategies, and are meant to help students develop conceptual understandings as they gain increased fluency. As you look through the collection, you may find some games you want to use to help teach key computational skills to your whole class. Some teachers also run the game components on cardstock and laminate them to make a durable set of "learning stations" available for use by students during free time or to check out for home use.

### STRATEGIES FOR BASIC SUBTRACTION FACTS

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Support Blackline Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Activity 1</td>
<td>Spinning Around Subtraction</td>
<td>S 1.1–1.7</td>
</tr>
</tbody>
</table>

### BASIC MULTIPLICATION FACTS

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Support Blackline Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Activity 12</td>
<td>Spinning Around Multiplication</td>
<td>S 12.1–12.6</td>
</tr>
<tr>
<td>Support Activity 13</td>
<td>Array Challenge</td>
<td>S 13.1–13.5</td>
</tr>
<tr>
<td>Support Activity 14</td>
<td>Multiplication Challenge</td>
<td>S 14.1–14.5</td>
</tr>
<tr>
<td>Support Activity 15</td>
<td>Spinning for Arrays</td>
<td>S 15.1–15.7</td>
</tr>
<tr>
<td>Support Activity 16</td>
<td>Product Bingo</td>
<td>S 16.1–16.4</td>
</tr>
</tbody>
</table>

### BASIC MULTIPLICATION & DIVISION FACTS

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Support Blackline Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Activity 17</td>
<td>What’s Missing? Bingo</td>
<td>S 17.1–17.8</td>
</tr>
<tr>
<td>Support Activity 23</td>
<td>Remainders Win</td>
<td>S 23.1–23.6</td>
</tr>
</tbody>
</table>

### PLACE VALUE

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Support Blackline Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Activity 2</td>
<td>More or Less Place Value</td>
<td>S 2.1–2.7</td>
</tr>
</tbody>
</table>

### ADDING & SUBTRACTING MULTI-DIGIT NUMBERS

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Support Blackline Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Activity 3</td>
<td>Make 100</td>
<td>S 3.1–3.7</td>
</tr>
<tr>
<td>Support Activity 4</td>
<td>Race to 100 &amp; Back</td>
<td>S 4.1–4.5</td>
</tr>
<tr>
<td>Support Activity 5</td>
<td>Count Down 400</td>
<td>S 5.1–5.4</td>
</tr>
<tr>
<td>Support Activity 6</td>
<td>More or Less Addition (2-digit)</td>
<td>S 6.1–6.7</td>
</tr>
<tr>
<td>Support Activity 7</td>
<td>More or Less Subtraction (2-digit)</td>
<td>S 7.1–7.5</td>
</tr>
<tr>
<td>Support Activity 18</td>
<td>More or Less Addition Big Time (3-digit)</td>
<td>S 18.1–18.6</td>
</tr>
<tr>
<td>Support Activity 19</td>
<td>More or Less Subtraction Big Time (3-digit)</td>
<td>S 19.1–19.4</td>
</tr>
<tr>
<td>Support Activity 20</td>
<td>Larger Numbers on a Line (3-digit)</td>
<td>S 20.1–20.4</td>
</tr>
<tr>
<td>Support Activity 26</td>
<td>Round &amp; Add Tens</td>
<td>S 26.1–26.5</td>
</tr>
<tr>
<td>Support Activity 27</td>
<td>Round &amp; Add Hundreds</td>
<td>S 27.1–27.5</td>
</tr>
</tbody>
</table>
MULTIPLYING 1-DIGIT BY 2-DIGIT NUMBERS

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Support Blackline Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Activity 22</td>
<td>Spin &amp; Multiply</td>
<td>S 22.1–22.4</td>
</tr>
</tbody>
</table>

DIVIDING 2- & 3-DIGIT NUMBERS BY 1-DIGIT NUMBERS

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Support Blackline Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Activity 28</td>
<td>Divide ’Em Up</td>
<td>S 28.1–28.4</td>
</tr>
</tbody>
</table>

ADDING & SUBTRACTING WITH MONEY

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Support Blackline Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Activity 8</td>
<td>Three Turns to Win</td>
<td>S 8.1–8.5</td>
</tr>
<tr>
<td>Support Activity 9</td>
<td>Finish with $10</td>
<td>S 9.1–9.7</td>
</tr>
</tbody>
</table>

ELAPSED TIME

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Support Blackline Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Activity 10</td>
<td>An Hour or Bust to the Minute</td>
<td>S 10.1–10.3</td>
</tr>
<tr>
<td>Support Activity 11</td>
<td>Get Me to the Bus on Time</td>
<td>S 11.1–11.6</td>
</tr>
</tbody>
</table>

PERIMETER OF RECTANGLES

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Support Blackline Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Activity 21</td>
<td>Perimeter Showdown</td>
<td>S 21.1–21.5</td>
</tr>
</tbody>
</table>

FRACTIONS

<table>
<thead>
<tr>
<th>Activity</th>
<th>Name</th>
<th>Support Blackline Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Activity 24</td>
<td>Fraction Race</td>
<td>S 24.1–24.7</td>
</tr>
<tr>
<td>Support Activity 25</td>
<td>Fraction Bingo</td>
<td>S 25.1–25.6</td>
</tr>
<tr>
<td>Support Activity 29</td>
<td>Money, Fraction &amp; Decimal Showdown</td>
<td>S 29.1–29.7</td>
</tr>
</tbody>
</table>

If you plan to use the activities for remediation rather than instructional purposes, you’ll find that they’re most effective when used with targeted students by an educational assistant, parent volunteer, or title/resource teacher. Based on students’ performance on the Building Computational Fluency assessments, you’ll be able to determine which individuals would benefit from a particular Support Activity and can assign them to work with an adult on that activity. You can also send specific activities home with students for extra practice with their families. In order to prepare the Support Activities for use by other adults, we recommend creating a packet that contains the instructional considerations, game instructions, and materials. That way, you can provide an instructional assistant or volunteer with the packet and ask him or her to conduct specific activities with individuals or small groups in need of help in one or more areas.

While you can run game cards on cardstock, you’ll find that paper copies of the game components work nearly as well with intermediate students, who can cut out their own playing cards and use a paperclip and pencil arrangement for a spinner arrow. Because these games have been designed for use at
home as well as school, very few of them involve concrete manipulatives. Those that do include blacklines for making the manipulatives (e.g., base 10 pieces or money value pieces), and you may want to run these sheets on cardstock.
Support Activity 1 ★ Instructional Considerations

SUPPORT ACTIVITY

Spinning Around Subtraction

Overview
Players take turns spinning subtraction facts and naming the strategies that could be used to solve them. They pick one strategy for each fact and write an equation in the column labeled with that strategy name. The first player to record at least one fact in each column wins.

Skills & Concepts
★ using models to solve subtraction facts with minuends to 20
★ fluency with the half facts, run away ones, up to ten, and leftover subtraction facts

You’ll need
★ Instructions for Spinning Around Subtraction (Blacklines S 1.3 and S 1.4, 1 copy of each run back-to-back)
★ Ten-Strips (Blackline S 1.5, 1 copy per player)
★ Spinning Around Subtraction Record Sheet (Blackline S 1.6, 1 copy per player)
★ Spinning Around Subtraction Spinner (Blackline S 1.7, 1 copy for every 2 pairs of players, cut in half)
★ 20 game markers per player
★ a pencil and paperclip to use as a spinner (1 set per pair of players)

While they play, encourage students to show how they found the difference using game markers and the ten-strips, especially for up to ten and leftover facts. When students focus on the strategies they’re using to solve these subtraction facts and connect those strategies to the visual model, they become increasingly aware of the relationships between numbers. This focused practice builds computational fluency and flexibility.

<table>
<thead>
<tr>
<th>Round 3</th>
<th>Round 2</th>
<th>Round 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>12-6=6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Half Facts</td>
<td>Run Away Ones</td>
<td>Up to Ten</td>
</tr>
<tr>
<td>12-6=6</td>
<td>18-8=10</td>
<td>12-4=8</td>
</tr>
<tr>
<td>15-5=10</td>
<td></td>
<td>16-4=12</td>
</tr>
</tbody>
</table>

Summaries of the four groups of subtraction facts featured in Spinning Around Subtraction are provided on the next page. Many fourth graders will already be familiar with these strategies.

(Continued on back.)
Support Activity 1  Instructional Considerations (cont.)

Half Facts
A half fact is any fact in which the number being subtracted is half of the larger number. For example, 10 – 5 = 5 is a half fact, because 5 is half of 10. 12 – 6 = 6 is another half fact because 6 is half of 12. Students will begin to notice that with half facts, the difference and the number being taken away are equal.

Run Away Ones
These are facts in which the ones are subtracted from a teen number. The difference is always 10. Some examples of run away ones facts are 13 – 3 = 10 and 17 – 7 = 10.

Up to Ten
An up to ten fact is any fact in which 4, 5, 6, 7, 8 or 9 is subtracted from a number that is equal to or greater than 10. The up to ten strategy capitalizes on children’s natural inclination to count upward from the number being subtracted to find the difference. Counting up to ten and then on to the larger number is most useful when the number in the ones place of the minuend (the larger number) is less than the subtrahend (the smaller number). The following are both examples of up to ten facts:

\[
\begin{array}{c}
12 \\
- 7 \\
\hline
5 \\
\end{array}
\quad \quad \quad
\begin{array}{c}
15 \\
- 8 \\
\hline
7 \\
\end{array}
\]

If I go up from 7 to 10, that’s 3. Then 2 more gets me to 12. So I added 5 altogether. 12 minus 7 is 5.

If I go up from 8 to 10, that’s 2. Then 5 more gets me to 15. So I added 7 altogether. 15 minus 8 is 7.

Leftover Facts
The leftover facts are facts that don't fit into the categories above. Students will use their own strategies to solve them.
Support Activity 1

Spinning Around Subtraction

You’ll need

★ Instructions for Spinning Around Subtraction (Blacklines S 1.3 and S 1.4, 1 copy of each run back-to-back)

★ Ten-Strips (Blackline S 1.5, 1 copy per player)

★ Spinning Around Subtraction Record Sheet (Blackline S 1.6, 1 copy per player)

★ Spinning Around Subtraction Spinner (Blackline S 1.7, 1 copy for every 2 pairs of players, cut in half)

★ 20 game markers per player

★ a pencil and paperclip to use as a spinner (1 set per pair of players)

Instructions for Spinning Around Subtraction

1 Each player needs a copy of the ten-strips, game markers, and a record sheet with his or her name and today’s date.

2 The first player spins both spinners and figures out what kind of subtraction fact is shown. Players can help each other if they can’t remember what kind of fact it is.

Omar 12 minus 8. Hmm, I think that’s an up to ten fact. Those are hard to remember, though.

Leela I think you’re right. Because you could go from 8 up to ten and then go from 10 to 12.

(Continued on back.)
The player uses game markers to build the fact on his ten-strips and explains to his partner how he would find the difference.

**Omar** I put down 8 markers and then I added 2 more. 8 plus 2 makes 10, and then I need just 2 more to equal 12. See, the 8 is blue, and then the red markers show what the difference is. It's 4. So 12 minus 8 is 4.

**3** The player writes the equation for that fact in the appropriate column. Some facts might be more than one kind of fact. For example, 12 – 6 could be a half fact or an up to ten fact. Players can choose the column in which they want to write those facts.

**4** The player who completes a row across first wins. A player might have more than one fact in each box before she is able to write at least one fact in every box.

**5** Play 3 rounds.
Ten-Strips
<table>
<thead>
<tr>
<th>NAME</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Spinning Around Subtraction Record Sheet

<table>
<thead>
<tr>
<th>Round</th>
<th>Leftovers</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

- **Run 1 copy per player.**
- **Round 3**
- **Round 2**
- **Round 1**
- **Leftovers**
- **Up to Ten**
- **Run Away Ones**
- **Half Facts**

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Spinning Around Subtraction Spinner

Spinning Around Subtraction Spinner
Support Activity 2 ★ Instructional Considerations

More or Less Place Value

Overview
To begin, players spin a more or less spinner to see if they will play for the largest or smallest number. Then, players take turns spinning 3 random numbers each between 4 and 9. With each turn, they place a number in either the ones, tens, or hundreds place, trying to build either the smallest or largest number. At the end of the game, players compare their 3-digit numbers and write two number sentences to compare them.

Skills & Concepts
★ reading, writing, ordering, modeling, comparing, and identifying place value of digits in whole numbers to 1000

You’ll need
★ Instructions for More or Less Place Value (Blacklines S 2.3 and S 2.4, 1 copy of each run back-to-back)
★ More or Less Place Value Spinner (Blackline S 2.5, 1 copy for every 2 pairs of players, cut in half)
★ More or Less Place Value Record Sheet (Blackline S 2.6, 2 copies run back-to-back per player)
★ 9 mats, 9 strips, and 9 units from sets of base ten pieces for each player (Use Blackline S 2.7 to make a few sets of base ten pieces for each player if needed.)
★ a pencil and paperclip for use as a spinner

As you play More or Less Place Value with students, it is critical that they use the base ten pieces to add to their collections with each turn. Fourth graders who are still struggling with place value and relative number size often need to see the pieces to reinforce the value of each digit as it is assigned a place value. For instance, when they place the 6 in the tens column and lay out 6 strips, it is clear that a 6 in the tens column indicates 6 groups of 10.

You can also encourage students to use their base ten pieces to build each possibility before deciding where to place each number.

Mr. Wong John, you have 4 mats already and you spun an 8. Where will you place it and why? You can build the different possibilities with the base ten pieces if you want to.

(Continued on back.)
**John** Well, if I put the 8 in the 10's column, I would add 8 strips and my number would be a lot bigger and I don't want that. If I make it ones, then I just add 8 more units to my 4 mats.

**Mr. Wong** You’ll still have 1 more turn left after that, though. If you put the 8 in the ones place, you’ll have to put the next number in the tens place. Do you think that would work out best? Do you think you’ll probably get a number that’s higher or lower than 8 in your next turn?

**John** The 9 is the only bigger number on the spinner, so I think I’ll probably get one of the other numbers that’s lower. I’m going to put the 8 in the ones place.

While it may be easier for most students to see that a 9 should be taken in the ones column and a 4 in the hundreds if they are trying to get the lower total, for example, placing the numbers between 4 and 9 may be less clear-cut. Encourage them to strategize and speculate about how likely it is that they will spin smaller or larger numbers in subsequent turns.
Support Activity 2

More or Less Place Value

You’ll need

☆ Instructions for More or Less Place Value (Blacklines S 2.3 and S 2.4, 1 copy of each run back-to-back)

☆ More or Less Place Value Spinner (Blackline S 2.5, 1 copy for every 2 pairs of players, cut in half)

☆ More or Less Place Value Record Sheet (Blackline S 2.6, 2 copies run back-to-back per player)

☆ 9 mats, 9 strips, and 9 units from sets of base ten pieces for each player (Use Blackline S 2.7 to make a few sets of base ten pieces for each player if needed.)

☆ a pencil and paperclip for use as a spinner

Instructions for More or Less Place Value

1  Write your name and the date at the top of a record sheet.

2  Spin the more or less spinner to decide whether you will play for the largest or smallest number. Circle the appropriate word on your record sheet to show what you are playing for.

3  Take turns spinning the number spinner until you have each taken 3 turns. Each time, record your spin in either the ones, tens, or hundreds place on the record sheet. Once you have written a number on your record sheet, you can't change your mind about where you placed it. Each time you write a number on your record sheet, build it with the base ten pieces. Record the numbers for you and your partner, but only build your own number.

(Continued on back.)
After you and your partner have both taken 3 spins each, compare your numbers. Whose is more and whose is less? Circle the number that won the game, and write two number sentences to show which number was greater and which was smaller.

<table>
<thead>
<tr>
<th>Round 1</th>
<th>We played for (circle one) MORE</th>
<th>LESS</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>My Number</th>
<th>My Partner’s Number</th>
<th>Number Sentences to Compare Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 6 4</td>
<td>5 7 9</td>
<td>464 &lt; 579</td>
</tr>
<tr>
<td></td>
<td>579 &lt; 464</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

464 < 579
More or Less Place Value Spinner

More or Less Place Value Spinner
More or Less Place Value Record Sheet

Round 1

We played for (circle one) MORE    less

<table>
<thead>
<tr>
<th>My Number</th>
<th>My Partner’s Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>hundreds</td>
<td>tens</td>
</tr>
</tbody>
</table>

Number Sentences to Compare Numbers

Round 2

We played for (circle one) MORE    less

<table>
<thead>
<tr>
<th>My Number</th>
<th>My Partner’s Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>hundreds</td>
<td>tens</td>
</tr>
</tbody>
</table>

Number Sentences to Compare Numbers
Base Ten Pieces
Support Activity 3 ★ Instructional Considerations

Make 100

Overview
Players take turns drawing cards that show 2-digit numbers in base ten pieces. Each player can take up to 3 turns and keeps a running total of their numbers on a grid. At the end of the game, the player closest to 100 (either over or under) wins.

Skills & Concepts
★ using models, words, and numbers to demonstrate the meaning of addition and subtraction
★ adding and subtracting 2-digit numbers with and without regrouping using models and strategies

You'll need
★ Instructions for Make 100 (Blacklines S 3.2 and S 3.3, 1 copy of each run back-to-back)
★ Make 100 Record Sheet (Blackline S 3.4, 2 copies run back-to-back per player)
★ Make 100 Cards, pages 1–3 (Blacklines S 3.5–3.7, 1 copy run on cardstock and cut out for each pair of players)
★ crayons

In Make 100, students add 2-digit numbers and use a visual model to find the difference between 100 and other numbers. Students are also encouraged to use estimation skills when they choose whether or not to take a third card.

Although there are many different ways to color in the amounts, many students find it easier to fill in the 10's first and then the 1's. Remind students to fill in the Number Chart completely before they use the 10's and 1's on the side so they can see their total in relationship to 100.
Support Activity 3

Make 100

You'll need

- Instructions for Make 100 (Blacklines S 3.2 and S 3.3, 1 copy of each run back-to-back)
- Make 100 Record Sheet (Blackline S 3.4, 2 copies run back-to-back per player)
- Make 100 Cards, pages 1–3 (Blacklines S 3.5–3.7, 1 copy run on cardstock and cut out for each pair of players)
- crayons

Instructions for Make 100

1. Mix up the Make 100 Cards and place them in a pile, face down. Write your name and your partner’s name at the top of a record sheet. The goal of Make 100 is to be the player who gets closest to 100. You can stay under 100 or go over 100.

2. Take 2 cards and turn them face up. Both players record the two numbers in the boxes below the Number Chart and color in the amounts on the chart. Use a different color for each amount.

3. The other player takes 2 cards. Both players record the numbers in the boxes and color in the amounts on their Number Charts.

4. Both players decide whether or not to draw a third card. If you’re close to

(Continued on back.)
100, you may choose not to draw another card. If you're still far away from 100, you might take a chance and draw a third card. Each player may draw no more than 3 cards.

5 If you draw a third card, write the number below the Number Chart and then color in that amount in a new color on the Number Chart. Be sure to color in the entire grid before you use the 10's and 1's on the right. Those are there in case you go over 100.

6 Add up the totals and compare to see who came closest to 100. Circle the winner, turn the record sheet over, and play again.
Make 100 Record Sheet

Player 1

Player 2

I was under 100 / over 100 by (circle one)

I was under 100 / over 100 by (circle one)
Run 1 copy on cardstock for each pair of players. Cut cards apart and store in an envelope.

Make 100 Cards
Make 100 Cards  page 2 of 3
### Make 100 Cards

<table>
<thead>
<tr>
<th>Block 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td>Block 2</td>
</tr>
<tr>
<td>Block 3</td>
</tr>
<tr>
<td>Block 4</td>
</tr>
</tbody>
</table>

Run 1 copy on cardstock for each pair of players. Cut cards apart and store in an envelope.
Support Activity 4 ★ Instructional Considerations

Race to 100 & Back

Overview
Players take turns spinning two single-digit numbers, adding them, and then adding the sum to their running total. When a player reaches 100 or more, he or she begins subtracting each sum from the total until one player reaches 0. The first player to reach 0 wins.

Skills & Concepts
★ using models, words, and numbers to demonstrate the meaning of addition and subtraction
★ adding and subtracting 2-digit numbers with and without regrouping using models and strategies

You’ll need
★ Instructions for Race to 100 & Back (Blacklines S 4.3 and S 4.4, 1 copy of each run back-to-back)
★ Race to 100 & Back Spinner (Blackline S 4.5, 1 copy for every 2 pairs of players, cut in half)
★ 1 set of base ten pieces for each pair of players (Use Blackline S 2.7 to make base ten pieces if needed.)
★ pencil and paperclip for use as a spinner

Most fourth graders who are experiencing difficulty with multi-digit computation will find addition with regrouping easier than subtraction with regrouping, even when they are working with base ten pieces. By using the base ten pieces, however, they are far more likely to develop a real understanding of both operations than if they continue to struggle with the computations at an abstract level. When students are asked to remove 18 from a collection of 62, for instance, many will take 10 away but ponder how to get 8 more from the remaining 52. With some encouragement, a student might trade 1 ten for 10 ones and then remove 8 of them, leaving 4 tens and 4 ones altogether. Another student might simply remove a ten and then put 2 ones back into the collection, in effect making the trade and subtracting at the same time.

As you play this game with students, encourage them to explain their strategies and reasoning as they use the pieces to complete the computations. Do not press students to use symbolic recording or teach them the traditional algorithm for regrouping. Simply invite students to show and tell you what they are thinking, at which point you may show them the symbolic notation that goes along with their strategy as shown below.

Mr. Ruiz: So I notice that you took away 2 tens and then put 2 ones back in. Can you tell me what you were thinking?

(Continued on back.)
**Support Activity 4  Instructional Considerations (cont.)**

**Kathryn**  Well, I know 18 is like 10 plus 8. So first I took 1 ten away from 62.

**Mr. Ruiz**  Ah, I see. I’ll write what I’m hearing you say in numbers. Okay, you said 18 is like 10 and 8. So I’ll write 18 equals 10 plus 8. And then you took that 10 away from 62, so I’ll write 62 minus 10 equals 52.

\[
18 = 10 + 8 \quad 62 - 10 = 52
\]

Okay, then what did you do next and why? I’ll keep writing these equations to show what I hear you saying.

**Kathryn**  Well, then I needed to take away 8 more. I couldn’t do that, because all I had was 52. So I took away 10. That was 2 too many, so I put 2 ones back in.

\[
52 - 10 = 42 \quad 42 + 2 = 44
\]
Support Activity 4

Race to 100 & Back

You'll need

★ Instructions for Race to 100 & Back (Blacklines S 4.3 and S 4.4, 1 copy of each run back-to-back)

★ Race to 100 & Back Spinner (Blackline S 4.5, 1 copy for every 2 pairs of players, cut in half)

★ 1 set of base ten pieces for each pair of players (Use Blackline S 2.7 to make base ten pieces if needed.)

★ pencil and paperclip for use as a spinner

Instructions for Race to 100 & Back

1 You and your partner each need 1 hundred, 10 tens, and 20 ones from the set of base ten pieces. You’ll share a pair of spinners and will use a pencil and paperclip as a spinner.

2 Take turns spinning the spinners, adding the 2 numbers, and getting that collection of base ten pieces from your set. Each time you collect ten or more ones, trade them in for another ten, and set the ten on top of the hundred piece. Keep the ones off to the side.

I got 9 plus 7. That’s a fast nine. I know it’s 16. So that’s 1 ten and 6 ones. I’ll put this ten on the hundred, and then I’ll put these 6 over to the side, because when I get more ones, I can trade them in for another ten.

(Continued on back.)
Continue playing until you get to 9 or fewer units. At that time, use just one spinner to get to 0. The first player to get exactly to 0 wins the game.

Now that I’m over 100, I can subtract. So I’ll take away 12 by taking off a 1 and then 2 ones.
Race to 100 & Back Spinner

Race to 100 & Back Spinner
Support Activity 5 ★ Instructional Considerations

Count Down 400

Overview
Players take turns spinning two single-digit numbers, assigning a place value to each number, and then subtracting the resulting 2-digit number from their running total, which begins at 400 and decreases throughout the game. After 4 turns, the player closest to 0 wins.

Skills & Concepts
★ subtracting with and without regrouping using models and a variety of efficient paper/pencil and mental strategies
★ using estimation strategies to solve problems

You’ll need
★ Instructions for Count Down 400 (Blackline S 5.2)
★ Count Down 400 Record Sheet (Blackline S 5.3, 1 copy per player)
★ Count Down 400 Spinner (Blackline S 5.4, 1 copy for every 2 pairs of players, cut in half)
★ base ten pieces (optional) (Use Blackline S 2.7 to make your own base ten pieces if needed.)
★ pencil and paperclip to use as a spinner (1 set for each pair of players)
★ colored pencils or crayons in 4 colors

Before students actually compute the difference between 400 and the number they spun, remind them to estimate a reasonable answer and explain their thinking. They can use base ten pieces or any paper/pencil or mental math strategies they prefer to compute the difference. Then, ask them to check their thinking using the grids on the record sheets.
Support Activity 5

Count Down 400

You’ll need

★ Instructions for Count Down 400 (Blackline S 5.2)
★ Count Down 400 Record Sheet (Blackline S 5.3, 1 copy per player)
★ Count Down 400 Spinner (Blackline S 5.4, 1 copy for every 2 pairs of players, cut in half)
★ base ten pieces (optional) (Use Blackline S 2.7 to make your own base ten pieces if needed.)
★ pencil and paperclip to use as a spinner (1 set for each pair of players)
★ colored pencils or crayons in 4 colors

Instructions for Count Down 400

1. You and your partner will each get your own record sheets. You’ll share a spinner.

2. Spin both spinners and arrange the 2 numbers to make the largest 2-digit number you can. Estimate how much you’ll have left when you subtract that number from 400.

3. Subtract your number from 400. Sketch the amount you subtracted on the grids and record an equation to show what is left.

4. Now it’s your partner’s turn. Share your computation strategies and double-check each other’s work. Use the base ten pieces if you’d like. Record each turn in a different color crayon or pencil on the grids.

5. After 4 turns each, compare how much you both have left on your grids. Estimate and then compute the difference. Share your thinking. The player who is closest to 0 after 4 turns wins the game.
Count Down 400 Spinner

Count Down 400 Spinner
Support Activity 6 ★ Instructional Considerations

More or Less Addition

Overview
Players begin by spinning a more or less spinner to determine whether they will play for the largest or smallest sum. Then they take turns spinning single-digit numbers, which they arrange to create two double-digit numbers. When both players have a pair of double-digit numbers, they each find their own sums. If they were playing for more, the player with the largest sum wins. If they were playing for less, the player with the smaller sum wins.

Skills & Concepts
- reading, writing, ordering, modeling, comparing, and identifying place value of digits in whole numbers to 300
- adding and subtracting up to 4-digit numbers with and without regrouping using models and a variety of efficient paper/pencil and mental strategies

You’ll need
- Instructions for More or Less Addition (Blacklines S 6.3 and S 6.4, 1 copy of each run back-to-back)
- More or Less Addition Record Sheet (Blackline S 6.5, 1 copy per player)
- More or Less Addition/Subtraction Spinner 1 or 2 (Blackline S 6.6 or 6.7, 1 copy for every 2 pairs of players, cut in half, Spinner 1 contains numbers 1–6 and Spinner 2 contains numbers 4–9. Select the spinner based on students’ readiness level.)
- a few sets of base ten pieces for each pair of players (Use Blackline S 2.7 to make base ten pieces if needed.)
- a pencil and paperclip to use as a spinner

If students are struggling to place their numbers, encourage them to build or sketch the different possibilities with base ten pieces. If they are struggling to find the sum of their numbers, encourage them to use the base ten pieces also. The visual support will help many students complete computations involving regrouping.

Miss Ruttle  Lori, I see your numbers here, but I’m wondering how you found the total. Can you show me what you did with base ten pieces?

Lori  I started with the 5 and 7 and added them together. That’s 12. Here, I can make a strip for the 10. Then I added the 9 and 6, and that was … hey wait, now it’s 10 and 6 because I added that strip. Hmm. So it’s 16 tens. That’s 162.

(Continued on back.)
Miss Ruttle  That's different from what you wrote: 152. Why did you get a different answer this time?

Lori   I think I wrote the 2 for the 12 and forgot about the 10. So I got 152 instead of 162.

<table>
<thead>
<tr>
<th>Example</th>
<th>Round 1</th>
<th>Round 2</th>
<th>Round 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

More or Less Addition Record Sheet
Write the numbers you spin in the boxes and then add to find your score. Be sure to circle whether you played for more or less each time and circle the winner at the end.

If you find that students are really struggling, either with the strategizing involved in the game or with the place value concepts, go back and play Support Activity 2, More or Less Place Value, with them instead.
Support Activity 6

More or Less Addition

You’ll need

★ Instructions for More or Less Addition (Blacklines S 6.3 and S 6.4, 1 copy of each run back-to-back)

★ More or Less Addition Record Sheet (Blackline S 6.5, 1 copy per player)

★ More or Less Addition/Subtraction Spinner 1 or 2 (Blackline S 6.6 or 6.7, 1 copy for every 2 pairs of players, cut in half, Spinner 1 contains numbers 1–6 and Spinner 2 contains numbers 4–9. Select the spinner based on students’ readiness level.)

★ a few sets of base ten pieces for each pair of players (Use Blackline S 2.7 to make base ten pieces if needed.)

★ a pencil and paperclip to use as a spinner

More or Less Addition

1 Write your name and the date at the top of the record sheet. Spin the more or less spinner to see whether you are playing for the largest or smallest total. Circle more or less on your record sheet for this round to show what you are playing for.

2 Take turns with your partner spinning the numbered spinner. Each time, decide whether you will put the number in the ones place or the tens place of the top or bottom number. You can build your numbers with base ten pieces as you go.

I spun a 7. I think I could still get an 8 or a 9 next time, so I’m going to put the 7 in the ones place, because I can still go higher for the tens place.

(Continued on back.)
Support Activity 6 (cont.)

3 After you have both taken 4 turns each, add your numbers and see whose total is higher and whose is lower. You can use the base ten pieces to add your numbers if you want to. The player with the lower total wins if you were playing for less. If you were playing for more, the player with the higher total wins. Circle the winner on your record sheet.

<table>
<thead>
<tr>
<th>More or Less Addition Record Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write the numbers you spin in the boxes and then add to find your score. Be sure to circle whether you played for more or less each time and circle the winner at the end.</td>
</tr>
</tbody>
</table>

Well, I didn’t get a higher number for the tens place, but my total is still higher, so I win this round.

4 Play 4 more rounds. Circle whether you were playing for more or less in each round, and circle the winning total each time.
More or Less Addition Record Sheet

Write the numbers you spin in the boxes and then add to find your score. Be sure to circle whether you played for more or less each time and circle the winner at the end.

<table>
<thead>
<tr>
<th>Example</th>
<th>Round 1</th>
<th>Round 2</th>
<th>Round 3</th>
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<th>Round 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>We played for (circle one) more / less.</td>
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<td>We played for (circle one) more / less.</td>
</tr>
<tr>
<td>My score</td>
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<td>My score</td>
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</tr>
<tr>
<td>5</td>
<td>9</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>6</td>
<td>5</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>+</td>
<td>1 2 7</td>
<td>+</td>
<td>1 1 4</td>
<td>+</td>
<td>1 1 4</td>
</tr>
<tr>
<td>1</td>
<td>2 7</td>
<td>1</td>
<td>1 4</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

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More or Less Addition/Subtraction Spinner 1

MORE

5

1

2

6

MORE

4

3

5

1

2

6

less

4

3

5

1

2

6

less
More or Less Addition/Subtraction Spinner 2

More or Less Addition/Subtraction Spinner 2
Support Activity 7 ★ Instructional Considerations

More or Less Subtraction

Overview
Players begin by spinning a more or less spinner to determine whether they will play for the largest or smallest difference. Then they take turns spinning single-digit numbers, which they arrange to create two double-digit numbers. When both players have a pair of double-digit numbers, they each find their own differences. If they were playing for more, the player with the largest difference wins. If they were playing for less, the player with the smaller difference wins.

Skills & Concepts
★ reading, writing, ordering, modeling, comparing, and identifying place value of digits in whole numbers to 100
★ subtracting 2-digit numbers with and without regrouping using models and a variety of efficient paper/pencil and mental strategies

You’ll need
★ Instructions for More or Less Subtraction (Blacklines NC S 7.3 and S 7.4, 1 copy of each run back-to-back)
★ More or Less Subtraction Record Sheet (Blackline S 7.5, 1 copy per player)
★ More or Less Addition/Subtraction Spinner 1 or 2 (Blackline S 6.6 or 6.7, 1 copy for each every 2 pairs of players, cut in half, Spinner 1 contains numbers 1–6 and Spinner 2 contains numbers 4–9. Select the spinner based on students’ readiness level.)
★ a few sets of base ten pieces for each pair of players (Use Blackline S 2.7 to make base ten pieces if needed.)
★ a pencil and paperclip to use as a spinner

The strategies involved in More or Less Subtraction are quite a bit more complex than in More or Less Addition. In More or Less Addition, students simply tried to get the largest numbers in the tens place if playing for more, and the smallest numbers in the tens place if playing for less. In More or Less Subtraction, however, it is the difference between the numbers, and not the numbers themselves, that students must consider. For example, it is quite possible to have relatively large numbers and still get the smallest difference, as shown below.

Colin   Wow! I had bigger numbers than you did, but I still won. My difference was 9 and yours was 11!

(Continued on back.)
Mrs. Fisher  Connor, how can that be? You had bigger numbers, but you still got a smaller difference than I did.

Colin  Well, it's the difference that matters, not the numbers.

Mrs. Fisher  Hmm, can you think of some other big numbers that have a small difference?

Colin  Well, 100 and 101. They're big, but the difference between them is small: 1!

If students are having difficulty finding the difference between their numbers, ask them to use the base ten pieces for support. The visual model helps students make sense of the process of decomposing tens into ones before subtracting and helps preserve their sense of number as they compute. Do not press students to use the traditional algorithm. In fact, students who are struggling with place value concepts and computation need an opportunity to use the visual models and develop their own methods for solving these problems.

If you find that students are really struggling, either with the strategizing involved in the game or with the place value concepts, go back and play Support Activity 2, More or Less Place Value, with them instead.

Note  If the spins result in a negative difference—if, for instance, a student has set up a problem such as the one shown below and spins a 9 on his final spin—allow him to take another roll or rearrange his digits so that the difference that results isn't negative. We don't want to communicate to students that it's impossible to get a negative outcome, but dealing with negative numbers is outside the scope of this game as a Support Activity for fourth graders.
Support Activity 7

More or Less Subtraction

You'll need

- Instructions for More or Less Subtraction (Blacklines S 7.3 and S 7.4, 1 copy of each run back-to-back)
- More or Less Subtraction Record Sheet (Blackline S 7.5, 1 copy per player)
- More or Less Addition/Subtraction Spinner 1 or 2 (Blackline S 6.6 or 6.7, 1 copy for every 2 pairs of players, cut in half, Spinner 1 contains numbers 1–6 and Spinner 2 contains numbers 4–9. Select the spinner based on students’ readiness level.)
- a few sets of base ten pieces for each pair of players (Use Blackline S 2.7 to make base ten pieces if needed.)
- a pencil and paperclip to use as a spinner

More or Less Subtraction

1 Write your name and the date at the top of the record sheet. Spin the more or less spinner to see whether you are playing for the largest or smallest difference. Circle more or less on your record sheet for this round to show what you are playing for.

2 Take turns with your partner spinning the numbered spinner. Each time, decide whether you will put the number in the ones place or the tens place of the top or bottom number. You can build your numbers with base ten pieces as you go.

Example Round 1

We played for (circle one) more / less.

<table>
<thead>
<tr>
<th>My score</th>
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<tbody>
<tr>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
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</tr>
</tbody>
</table>

Connor Sept. 17

I thought I kind of messed up when I put the 7 in the tens place, but now I have spun a 6. If I put that in the tens place below the 7, that’s just 10 away. So the difference is going to be around 10 or so. I think that’s going to be pretty good!

(Continued on back.)
After you have both taken 4 turns each, find the difference between your 2 numbers and see whose difference is higher and whose is lower. You can use the base ten pieces to find the difference if you want to. The player with the lower difference wins if you were playing for less. If you were playing for more, the player with the higher difference wins. Circle the winner on your record sheet.

More or Less Subtraction Record Sheet

Write the numbers you spin in the boxes and then add to find your score. Be sure to circle whether you played for more or less each time and circle the winner at the end.

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</tr>
<tr>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>-5</td>
<td>-8</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
</tr>
</tbody>
</table>

Connor: Wow! I had bigger numbers than you did, but I still won. My difference was 9 and yours was 11!

Mr. Porter: Connor, how can that be? You had bigger numbers, but you still got a smaller difference than I did.

Connor: Well, it's the difference that matters, not the numbers.

Mr. Porter: Hmm, can you think of some other big numbers that have a small difference?

Connor: Well, 100 and 101. They're big, but the difference between them is small: 1!
More or Less Subtraction Record Sheet

Write the numbers you spin in the boxes and then add to find your score. Be sure to circle whether you played for more or less each time and circle the winner at the end.

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</tr>
<tr>
<td>9 7</td>
<td>8 6</td>
<td>5 6</td>
<td>6 7</td>
<td>4 1</td>
<td>1 9</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>6</td>
<td>7</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td><strong>We played for (circle one) more / less.</strong></td>
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<td>8 6</td>
<td>5 6</td>
<td>7 1</td>
<td>9</td>
<td>4 1</td>
<td>1 9</td>
</tr>
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<td>9 7</td>
<td>8 6</td>
<td>5 6</td>
<td>6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 1</td>
<td>1 9</td>
<td>5 6</td>
<td>7 1</td>
<td>4 1</td>
<td>1 9</td>
</tr>
</tbody>
</table>
Support Activity 8 ★ Instructional Considerations

Three Turns to Win

Overview
Players take turns spinning to collect different amounts of coins. After three turns each, players determine how much money they both have and determine who has more and by how much. The player with more money wins the game.

Skills & Concepts
★ counting, adding, subtracting, and estimating money amounts up to $5
★ counting by 1’s, 5’s, 10’s, and 25’s
★ adding and subtracting 2- and 3-digit numbers

You’ll need
★ Instructions for Three Turns to Win (Blackline S 8.2)
★ Three Turns to Win Game Board (Blackline S 8.3, run 1 copy for each pair of players)
★ Three Turns to Win Record Sheet (Blackline S 8.4, run 1 copy per player)
★ Small Number Charts (Blackline S 8.5, 1 or 2 copies for each player, optional)
★ 12 to 15 each pennies, nickels, dimes, and quarters (real or plastic coins)
★ pencil and paperclip to use as a spinner (one set for each pair of players)

As you play this game with the student, invite her to tell you how much money she has so far. You can also ask her to compare her collection to yours every so often. First, ask her to estimate who has more money and about how much more that player has. Then, ask her to find the exact difference between the two collections.

Some students may not be ready to compare the collections throughout the game. If a student is having trouble, invite him to use a Number Chart to keep track of how much money you and he collect. Each Number Chart contains 100 squares and is used to represent a single dollar. It is broken into quadrants, which many students see as quarters. Students who are struggling to make sense of the value of each coin often find it easier to understand the value of money when it is represented on this visual model.

![Number Charts](image)

Player 1 3 dimes plus 5 nickels or 1 quarter

Player 2 2 quarters plus 3 dimes or 6 nickels

Give assistance as needed at the end of the game when students write equations first to show how much money they each got and then to compare the values of the two collections.
Support Activity 8

Three Turns to Win

You'll need

- Instructions for Three Turns to Win (Blackline S 8.2)
- Three Turns to Win Game Board (Blackline S 8.3, run 1 copy for each pair of players)
- Three Turns to Win Record Sheet (Blackline S 8.4, run 1 copy per player)
- Small Number Charts (Blackline S 8.5, 1 or 2 copies for each player, optional)
- 12 to 15 each pennies, nickels, dimes, and quarters (real or plastic coins)
- pencil and paperclip to use as a spinner (one set for each pair of players)

Instructions for Three Turns to Win

1 Gather the coins you'll need and get a game board to share. You'll also each need a record sheet.

2 Take turns spinning both spinners. They will tell you how many and what kind of coin to collect and place on your side of the game board.

3 After both players have taken 3 turns, get out your record sheets. Each one of you needs to use your own sheet to show how much money was collected with each spin. Then add the amounts on the sheet to show the total value of each player's coin collection. Who collected more money? How much more money does he or she have than the other player? Write a subtraction equation on your record sheet to compare the two collections.
Three Turns to Win Game Board

Player 1

First Spin

Second Spin

Third Spin

Player 2

First Spin

Second Spin

Third Spin

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# Three Turns to Win Record Sheet

## Round 1

<table>
<thead>
<tr>
<th></th>
<th>Player 1</th>
<th>Player 2</th>
<th>Write an equation to show how much more one total is than the other.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Spin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Spin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Spin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Round 2

<table>
<thead>
<tr>
<th></th>
<th>Player 1</th>
<th>Player 2</th>
<th>Write an equation to show how much more one total is than the other.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Spin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Spin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Spin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Small Number Charts

Run as needed for each player who wants to use them.
Support Activity 9 ★ Instructional Considerations

Finish with $10

Overview

In this game, players spend a day at home and in their neighborhood. They start out with $5.00 and throughout the day, they travel around a game board doing chores, going shopping, and visiting friends and relatives. As they go, they earn money, find money, lose money, and buy things. The goal is to make it around the game board with at least $10.

Skills & Concepts

★ counting, adding, subtracting, and estimating money amounts up to $5
★ identifying and applying the operation needed to solve a problem
★ using models, pictures, and/or numbers to demonstrate the meaning of addition and subtraction
★ translating problem-solving situations into expressions and equations

In this game, players begin with $5.00 each. The goal is to make it around the game board and finish with at least $10.00. Encourage students to keep track of their money using real or plastic and paper coins and bills. Some students might also prefer to use the money value pieces to keep track of their money.

This game is not meant to be a test of students' reading skills. Encourage them to read the words on their own, but don't hesitate to read out loud for them if needed. Each time you or the student lands on a new space, invite the student to explain what's happening. Will she add money to her collection or subtract money from her collection? How could the problem be written as an equation? We want students to develop the ability to translate situations into appropriate and meaningful mathematical problems.

Students will also practice reading money amounts expressed as decimal numbers ($0.85), as well as whole numbers of cents (85¢). They'll also need to determine the total value of mixed collections of coins.

Occasionally, you might ask students to estimate how much more money they need to get to $10.00. Are they close to $10.00? About how close? How can they tell? Encourage them to estimate rather than labor over exact computations.

You'll need

★ Instructions for Finish with $10 (Blackline S 9.2)
★ Finish with $10 Game Board (Blacklines S 9.3 and 9.4, 1 copy of each sheet taped together to form a game board for each pair of players)
★ plastic coins and paper bills or money value pieces (Use Blacklines S 9.5–9.7 to make your own money value pieces if needed.)
★ 1 game marker for each player
★ pencil and paperclip to use as a spinner (1 set for each pair of players)
★ scratch paper for writing number sentences and computing
Support Activity 9

Finish with $10

You’ll need

★ Instructions for Finish with $10 (Blackline S 9.2)
★ Finish with $10 Game Board (Blacklines S 9.3 and 9.4, 1 copy of each sheet taped together to form a game board for each pair of players)
★ plastic coins and paper bills or money value pieces (Use Blacklines S 9.5–9.7 to make your own money value pieces if needed.)
★ 1 game marker for each player
★ pencil and paperclip to use as a spinner (1 set for each pair of players)
★ scratch paper for writing number sentences and computing

Instructions for Finish with $10

1. Begin by placing your game markers on the start space. Each player begins with $5.00.

2. Take turns spinning the spinner using a pencil and paperclip. The player with the higher spin goes first.

3. Take turns spinning the spinner and moving ahead. Whenever a player lands on a space, he reads the words and decides whether he should add money to his collection or take money away from his collection. He decides what the problem is and shows it with an equation.

4. Players keep track of their money using coins and bills, numbers, or money value pieces if they have them.

5. The first player to get to the last space with at least $10.00 wins.
Finish with $10 Game Board

START

Begin with $5.00.

Do you have $10.00 or more?
If so, you win!
If not, keep going until you do.

You find a quarter on the ground and pick it up.

Your sister pays back the 85¢ she borrowed from you.

FINISH WITH $10

You unload the laundry and find 2 quarters, 4 dimes, and 2 nickels.

Your mom gives you $2.75 for your allowance.

Your friend buys one of your baseball cards you don’t want for 75¢.

You earn $2 for washing the dishes.

© The Math Learning Center
You drop 50¢ on the ground.

You buy a bunch of grapes for 50¢.

Your neighbor pays you $2.00 for feeding his dog.

Your grandma gives you $3.65 as a gift.

You buy a candy bar for $0.55.

You find 3 quarters and a nickel on the sidewalk.

You buy a pack of baseball cards for $1.50.

You find 3 quarters and 2 nickels in the sofa.

You buy a bottle of juice for 85¢.
Money Value Pieces  page 1 of 3
Money Value Pieces  page 2 of 3
Money Value Pieces page 3 of 3
Support Activity 10 ★ Instructional Considerations

An Hour or Bust to the Minute

Overview
Players work their way around an analog clock face by spinning a spinner that shows how many minutes to color in for each turn. After no more than 5 spins each, the player who gets closest to an hour without going over wins. As players get closer to completing one whole hour around the clock, they must decide whether to stop spinning or whether to continue spinning and risk going over an hour.

Skills & Concepts
★ telling time to the minute
★ counting by 5's and 1's
★ adding 1- and 2-digit numbers

After each spin, ask the student how many minutes he has colored in so far. If he is counting the minutes on the clock face one-by-one, review the fact that the minutes on a clock can be counted by 5's and 1's. Also ask him to estimate how many more minutes he needs to get to an hour. As the student gets closer to an hour, encourage him to consider whether it is a good idea to spin again. How close is he to an hour? What are the possible spins on the spinner?
Support Activity 10

SUPPORT ACTIVITY

An Hour or Bust to the Minute

You'll need

★ Instructions for An Hour or Bust to the Minute (Blackline S 10.2)
★ An Hour or Bust to the Minute Record Sheet (Blackline S 10.3, 1 copy run double-sided per player)
★ pencil and paperclip to use as a spinner (one set for each pair of players)
★ crayons or colored pencils in 5 different colors

Instructions for An Hour or Bust to the Minute

1. Decide who gets to spin first. Take your first spin, and color in the number of minutes you spun, beginning at the 12 on your clock face. Write that number in the first box below your clock.

2. Take turns spinning and coloring. Be sure to record each new spin with a different color crayon on the clock face and also remember to write it in one of the boxes below your clock face. You can quit spinning any time after 2 spins, whenever you feel like you are close enough to 60 minutes. You can also risk it and spin again to get closer to an hour. You can take up to 5 spins, but don't go over 60 minutes!

3. The player closest to coloring in an hour without going beyond an hour wins.

4. Play another round on the back of your record sheet.
An Hour or Bust to the Minute Record Sheet

Minutes

Player 1: __________________________

Player 2: __________________________

[Blank clocks and addition problems]
Support Activity 11 ★ Instructional Considerations

Get Me to the Bus on Time

Overview
In this game, players have an hour to get ready for school and catch the bus. With each turn, they move ahead on the game board. Each space on the game board has the player spending a specific number of minutes doing a particular activity. The goal is to be ready to go in an hour or less. If both players succeed, they win the game together.

Skills & Concepts
★ calculating elapsed time

You’ll need
★ Instructions for Get Me to the Bus on Time (Blackline S 11.3)
★ Get Me to the Bus on Time Game Board (Blacklines S 11.4 and 11.5, 1 copy of each sheet taped together for each pair of players)
★ Get Me to the Bus on Time Record Sheet (Blackline S 11.6, 1 copy per player)
★ markers or colored pencils
★ student clocks (optional)

As you play this game with the student, ask her to tell how much time she has spent after each turn. Encourage her to count by 5’s when appropriate, rather than one by one, and to use landmark positions on the clock, such as the 3, 6, 9, and 12.

Amber Nov. 3
NAME DATE

Get Me to the Bus on Time Record Sheet

Keep track of the time you spend in each turn on this clock. Use a different color marker or colored pencil to color in each turn.

Amber I’m not sure how much time I used up so far.

Miss Chen Have you gotten close to a time on the clock that you do know?

Amber Well, the 6 is 30 minutes, because it’s half way.

Miss Chen How can you use that to help you figure out how much time you’ve spent so far?

(Continued on back.)
Support Activity 11  Instructional Considerations (cont.)

Amber  Oh, I can just count 1, 2, 3, 4 little marks from the 6. 34 minutes.

Miss Chen  Is there another way you could see that quickly, maybe using the 7 as a landmark instead?

Amber  The 7 shows where 35 is, so it’s just one back from there. 34, like I said.

If you find that a student is ready for more challenge, you could set a time for both players to wake up, for example 7:30. In that case, they would need to be ready to leave no later than 8:30. Players can use the small student clocks to keep track of how much time has passed. In this version of the game, prompt students to identify not only how much time they have spent after each turn, but also the current time.
Support Activity 11

Get Me to the Bus on Time

You’ll need

★ Instructions for Get Me to the Bus on Time (Blackline S 11.3)
★ Get Me to the Bus on Time Game Board (Blacklines S 11.4 and 11.5, 1 copy of each sheet taped together for each pair of players)
★ Get Me to the Bus on Time Record Sheet (Blackline S 11.6, 1 copy per player)
★ 2 game markers, each in a different color
★ student clocks (optional)
★ markers or colored pencils

Instructions for Get Me to the Bus on Time

1. Begin by placing your game markers on the start space.
2. Take turns spinning the spinner using a pencil and paperclip. The player with the higher spin goes first.
3. Take turns spinning the spinner and moving ahead. Whenever a player lands on a space, he reads the words and adds that number of minutes to the clock on his record sheet.
4. Any player who makes it around the game board in less than an hour wins! Both players can win.
Get Me to the Bus on Time Game Board

START

Good morning! You have 1 hour to make it to the bus on time. Good luck!

Spend 15 minutes taking a bath.

Spend 11 minutes eating a good breakfast.

STOP

Did you get ready in 1 hour or less? If so, you win! If not, you missed the bus.

Spend 4 minutes putting your things in your backpack.

You can’t find your shoes! Spend 9 minutes looking for them.

Spend 4 minutes looking for exact change for your lunch money.

You want to wear your hat. Spend 7 minutes trying to find it.

Spend 4 minutes finding the homework you did last night.

Good morning!
You have 1 hour to make it to the bus on time.
Good luck!
Brush your teeth for 3 minutes.

Spend 10 minutes styling your hair.

Spend 8 minutes putting on sunscreen.

You lost your favorite sweatshirt! Spend 12 minutes trying to find it.

Spend 9 minutes packing some snacks to take to school.

Take your puppy for a 15-minute walk.

You remember the class is going on a field trip. Spend 8 minutes finding your camera to take.

Your grandma calls to say “Hi.” Spend 7 minutes talking to her on the phone.

Your puppy ran away while you were walking her! Spend 12 minutes getting her to come back.
Get Me to the Bus on Time Record Sheet

Keep track of the time you spend in each turn on this clock. Use a different color marker or colored pencil to color in each turn.
Support Activity 12 ★ Instructional Considerations

Spinning Around Multiplication

Overview
Players take turns spinning multiplication facts and naming the strategies that could be used to solve them. They pick one strategy for each fact and write an equation in the column labeled with that strategy name. The first player to record at least one fact in each column (e.g., one fact for each strategy) wins.

Skills & Concepts
★ demonstrating computational fluency with multiplication facts up to 6 × 6
★ using models, words, and/or numbers to demonstrate an understanding of multiplication as repeated addition, equal groups of objects, arrays, or skip counting

When students focus on the strategies they’re using to solve these multiplication facts, they become increasingly aware of important patterns and relationships. This focused practice builds computational fluency. When categorizing their facts to arrange them in columns on the record sheet, students will employ the commutative property of multiplication (4 × 3 = 3 × 4).

You’ll need
★ Instructions for Spinning Around Multiplication (Blackline S 12.3)
★ Spinning Around Multiplication Record Sheet (Blackline S 12.5, 1 copy per player)
★ Spinning Around Multiplication Spinner (Blackline S 12.4, 1 copy for every 2 pairs of players, cut in half)
★ Grid Paper (Blackline S 12.6, a few copies per player)
★ pencil and paperclip to use as a spinner

(Continued on back.)
Make grid paper available for students who would like to draw the arrays for these multiplication facts.

The table of multiplication strategies below is provided for your reference.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Category</th>
<th>Example</th>
<th>How the strategy works</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \times 1 )</td>
<td>ones facts</td>
<td>1 ( \times ) 4 = 4, 8 ( \times ) 1 = 8</td>
<td>The product of any number and 1 is that number.</td>
</tr>
<tr>
<td>( \times 2 )</td>
<td>doubles</td>
<td>2 ( \times ) 6 = 12, 9 ( \times ) 2 = 18</td>
<td>To multiply any number by 2, double that number.</td>
</tr>
<tr>
<td>( \times 3 )</td>
<td>doubles plus 1 set facts</td>
<td>3 ( \times ) 6 = 18, 9 ( \times ) 3 = 27</td>
<td>To multiply any number by 3, double the number and then add that number. For example, ( 3 \times 6 = (2 \times 6) + 6 = 12 + 6 = 18 ).</td>
</tr>
<tr>
<td>( \times 4 )</td>
<td>double-doubles</td>
<td>4 ( \times ) 6 = 24, 9 ( \times ) 4 = 36</td>
<td>To multiply any number by 4, double that number and then double the result. For example, ( 4 \times 6 = 2(2 \times 6) = 2 \times 12 = 24 ).</td>
</tr>
<tr>
<td>( \times 5 )</td>
<td>multiply by 10 and divide in half facts</td>
<td>5 ( \times ) 7 = 35, 8 ( \times ) 5 = 40</td>
<td>To multiply any number by 5, multiply that number by 10 and then divide in half. For example, ( 8 \times 5 = (10 \times 8) \div 2 = 80 \div 2 = 40 ).</td>
</tr>
<tr>
<td>( \times 6 )</td>
<td>triple then double facts</td>
<td>6 ( \times ) 7 = 42, 8 ( \times ) 6 = 48</td>
<td>To multiply any number by 6, first triple that number and then double the result. For example, ( 6 \times 7 = (7 \times 3) \times 2 = 21 \times 2 = 42 ).</td>
</tr>
</tbody>
</table>
Support Activity 12

Spinning Around Multiplication

You’ll need

★ Instructions for Spinning Around Multiplication (Blackline S 12.3)
★ Spinning Around Multiplication Record Sheet (Blackline S 12.5, 1 copy per player)
★ Spinning Around Multiplication Spinner (Blackline S 12.4, 1 copy for every 2 pairs of players, cut in half)
★ Grid Paper (Blackline S 12.6, a few copies per player)
★ pencil and paperclip to use as a spinner

Instructions for Spinning Around Multiplication

1 Each player will need a record sheet and a sheet or two of grid paper. You’ll share a spinner and a pencil and paperclip to use as a spinner.

2 Spin both spinners and multiply these two numbers. Explain to your partner how you think about this multiplication fact. Do you use repeated addition, skip counting, or other multiplication facts to find the product? You can use the grid paper to make an array for the fact if you want to.

3 Write an equation in the appropriate column on your record sheet. Don’t forget to include the product. You’ll decide how you want to think about the fact you roll. For example, 2 × 5 is a doubles fact and a multiply by 10 and divide in half fact. You can choose the column you want to write the fact in.

4 The first person to complete a row across wins that round. You might have more than one fact in each box before you are able to write at least one fact in every box.

5 Play 3 rounds.
Building Computational Fluency Blackline S 12.4 Run 1 copy for every 2 pairs of players. Cut in half and give each pair one spinner.

Spinning Around Multiplication Spinner

![Hexagons with numbers for multiplication spinner]

Spinning Around Multiplication Spinner

![Hexagons with numbers for multiplication spinner]
<table>
<thead>
<tr>
<th>Round</th>
<th>Ones Facts</th>
<th>Doubles</th>
<th>Double-Doubles</th>
<th>Multiply by 10 and Divide in Half Facts</th>
<th>Triple then Double Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>×1</td>
<td>×2</td>
<td>×3</td>
<td>×4</td>
<td>×5</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Spinning Around Multiplication Record Sheet**

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
</table>

Run 1 copy for each player.
Grid Paper
Support Activity 13 ★ Instructional Considerations

Array Challenge

Overview
Players draw cards that each show a rectangular array for a basic multiplication fact. They both find the area of their arrays, and the player with the higher product takes both cards. The player with the most cards after all the cards have been drawn wins.

Skills & Concepts
★ using models, words, and numbers to demonstrate an understanding of multiplication
★ seeing multiplication as repeated addition, equal groups of objects, and arrays
★ exploring the commutative and distributive properties of multiplication
★ exploring the special properties of 0 and 1 in multiplication

You’ll need
★ Instructions for Array Challenge (Blackline S 13.2)
★ Array Challenge Cards, pages 1–3 (Blacklines S 13.3–13.5, 1 copy for each pair of players, cut apart and stored in a resealable plastic bag or envelope)

The emphasis of Array Challenge is on using efficient grouping methods (chunks of 2, 5, and 10) instead of one-by-one counting to determine the area for each array. Toward this end, encourage students to talk to each other about different ways they could find the total area of each array. Some will use smaller arrays to find the total area, as shown below left. Some of the arrays may lend themselves to other approaches. For example, students might mentally move parts of the array to create chunks that are easier to work with, as in the example below right.

25 + 10 + 5 + 2 = 42
so 7 × 6 = 42

I thought about moving these 10 squares up here. So then it’s easy to see it’s 50 plus 6 more. So 8 times 7 is 56.
Support Activity 13

Array Challenge

You’ll need

★ Instructions for Array Challenge (Blackline S 13.2)

★ Array Challenge Cards, pages 1–3 (Blacklines S 13.3–13.5, 1 copy for each pair of players, cut apart and stored in a resealable plastic bag or envelope)

Instructions for Array Challenge

1 Choose a partner and get a deck of cards to share.

2 Put the cards in a stack in front of you, face down. Decide who will go first.

3 The first player turns over the top card. He or she says what the array shows.

I got 5 × 4. I already know the answer is 20, because I can see columns of 5 on the array. It goes 5, 10, 15, 20!

4 The second player turns over a card and does the same. The player with the greatest product wins both cards. Both players must name their factors and products.

Mine is 7 × 6. That’s 7 tripled and then doubled. So 7 × 3 = 21 and then 21 × 2 = 42. I get to take both cards!

5 If both players have the same product, they each draw a second card. They name their array and its product, and the player with the greatest product wins all 4 cards.

6 As you play, talk to each other about how you found the total area of each array. Can you think of more than one way to find the area? Do you and your partner see different ways to do it?

7 When there are no cards left, both players count their cards. The player with the most cards wins.
Array Challenge Cards  page 1 of 3

Run 1 copy for each pair of players. Cut apart and store in an envelope or resealable plastic bag.
Array Challenge Cards

Run 1 copy for each pair of players. Cut apart and store in an envelope or resealable plastic bag.
Array Challenge Cards  page 3 of 3

Run 1 copy for each pair of players. Cut apart and store in an envelope or resealable plastic bag.
Support Activity 14 ★ Instructional Considerations

Multiplication Challenge

Overview
Each player draws a card that shows a multiplication fact depicted as an array, equal groups of something, or an element in a count-by sequence. Players find their products and state the complete multiplication fact. The player with the higher product wins both cards. When all cards have been played, the player with the most cards wins the game.

Skills & Concepts
★ using models, words, and numbers to demonstrate an understanding of multiplication
★ seeing multiplication as repeated addition, equal groups of objects, arrays, and skip counting
★ determining the relationship between two quantities
★ extending number patterns by adding and multiplying single-digit numbers

You’ll need
★ Instructions for Multiplication Challenge (Blackline S 14.2)
★ Multiplication Challenge Cards (Blacklines S 14.3–14.5, 1 copy for each pair of players, cut apart and stored in a resealable plastic bag or envelope)

This game provides practice with skip counting, arrays, thinking algebraically about relationships between two quantities, and the grouping model for multiplication. Encourage students to name the factors and describe the strategies they are using to find the products each time they draw a new pair of cards.
Support Activity 14

Multiplication Challenge

You’ll need

★ Instructions for Multiplication Challenge (Blackline S 14.2)
★ Multiplication Challenge Cards (Blacklines S 14.3–14.5, 1 copy for each pair of players, cut apart and stored in a resealable plastic bag or envelope)

Instructions for Multiplication Challenge

1 Choose a partner and get a deck of cards to share.

2 Put the cards in a stack in front of you, face down. Decide who will go first.

3 The first player turns over the top card. He or she says what multiplication fact it shows.

Hmm, it’s counting by 6, so it’ll be 6 times 4. That’s 24. I know because 5 times 4 is 20 and another 4 is 24. Also, 18 plus 6 is 24, so I’m sure it’s 24.

4 The second player turns over a card and does the same. The player with the greatest product wins both cards. Both players must name their factors and products.

Mine is 8 times 8. That’s easy for me to remember it’s 64. But I could also say 8 times 4 is 32, and then double that gives you 64. I get both cards!

5 If both players have the same product, they each draw a second card. They name their fact and its product, and the player with the greatest product wins all 4 cards.

6 As you play, talk to each other about how you found the product for each fact. Can you think of more than one way to find the product? Do you and your partner see different ways to do it?

7 When there are no cards left, both players count their cards. The player with the most cards wins.
Run 1 copy for each pair of players. Cut apart and store in an envelope or resealable plastic bag.

**Multiplication Challenge Cards page 1 of 3**

- **Problem 1:**
  - Numbers: 9, 18, 27, __
  - What is the total area?

- **Problem 2:**
  - Numbers: 6, 12, 18, __
  - What is the total area?

- **Problem 3:**
  - Numbers: 4, 8, 12, 16, __
  - __

- **Problem 4:**
  - Numbers: 3, 6, 9, __
  - __

- **Problem 5:**
  - Numbers: 7, 14, 21, __
  - __

- **Problem 6:**
  - Numbers: 8, 16, 24, __
  - __
Building Computational Fluency Blackline S 14.4 Run 1 copy for each pair of players. Cut apart and store in an envelope or resealable plastic bag.

**Multiplication Challenge Cards** page 2 of 3

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<thead>
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<th>What is the total area?</th>
<th>How many sides?</th>
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<td><img src="image1" alt="Grid" /></td>
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<td>How many wheels?</td>
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<td>2</td>
</tr>
<tr>
<td>How many legs?</td>
<td>How many triangles?</td>
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<tr>
<td><img src="image23.png" alt="Angles" /></td>
<td><img src="image24.png" alt="Stars" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
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<th>How many stars?</th>
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</thead>
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<tr>
<td><img src="image31.png" alt="Legs" /></td>
<td><img src="image32.png" alt="Stars" /></td>
</tr>
</tbody>
</table>
Support Activity 15 ★ Instructional Considerations

Support Activity

Spinning for Arrays

Overview
Players take turns spinning two number spinners and finding the product of the two numbers. Then, they select an array card with an area that matches that product. They can also add two array cards together if the sum of their products is equal to the product of the two numbers they spun. At the end of the game, the player with the most cards wins.

Skills & Concepts
- practicing multiplication facts through $8 \times 10$
- finding factors of whole numbers to 100 using an understanding of number relationships and models such as arrays
- applying the commutative, associative, and distributive properties to calculations with whole numbers
- relating the area of a rectangle and its dimensions to area models for multiplication and division

You’ll need
- Instructions for Spinning for Arrays (Blackline S 15.2)
- Spinning for Arrays Spinner (Blackline S 15.3, 1 copy for every 2 pairs of players, cut in half)
- Array Cards, pages 1–4 (Blacklines S 15.4–15.7, 1 copy for each pair of players, cut apart and stored in an envelope or resealable plastic bag)
- pencil and paperclip to use as a spinner

Encourage students to think carefully about how they organize the cards at the beginning of the game. After playing a few rounds, they may have a better sense of how to organize the cards in the most helpful way. Some may want to organize them by common factor, but players will likely find it most helpful to organize the cards by product.

When they begin playing this game, many students will search for arrays that have dimensions equal to the two numbers they spun. As they get used to the game, encourage them to search for arrays with different dimensions whose areas are equal to the target product. As they become more fluent with their facts, challenge them to add the areas of two or more arrays to reach their target product. You might first have them practice finding pairs of products whose sum is equal to a target product.
Support Activity 15

SUPPORT ACTIVITY

Spinning for Arrays

You'll need

★ Instructions for Spinning for Arrays (Blackline S 15.2)
★ Spinning for Arrays Spinner (Blackline S 15.3, 1 copy for every 2 pairs of players, cut in half)
★ Array Cards, pages 1–4 (Blacklines S 15.4–15.7, 1 copy for each pair of players, cut apart and stored in an envelope or resealable plastic bag)
★ pencil and paperclip to use as a spinner

Instructions for Spinning for Arrays

1 Work with your partner to set out the Array Cards so that it will be easy for you to find a specific card when you need it. Then decide who will go first using any method you like.

2 Spin both spinners and multiply the two numbers.

3 Then find a card that shows an array whose total area is the same as the product you just computed. You could also add together the products of more than one card to make the total and then take those cards.

6 times 8 is 48. I could take the 6 times 8 card. Or I could add these two cards together. 8 times 3 is 24 and so is 4 times 6. So add 24 and 24 and that’s 48.

4 If you can’t find any card or combination of cards to match the product, you lose that turn.

5 Continue to take turns until all the cards have been taken. Then count up your cards. The player with the most cards at the end wins.
Run 1 copy for every 2 pairs of players. Cut in half and give each pair a spinner.
Array Cards page 1 of 4

<table>
<thead>
<tr>
<th>3 × 8</th>
<th>4 × 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>7 × 3</td>
<td>5 × 4</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>6 × 3</td>
<td>3 × 10</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>3 × 5</td>
<td>3 × 9</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Array Cards page 2 of 4

- $10 \times 4$
- $8 \times 5$
- $4 \times 9$
- $5 \times 7$
- $10 \times 4$
- $8 \times 5$
- $4 \times 9$
- $5 \times 7$
- $8 \times 4$
- $5 \times 6$
- $4 \times 7$
- $5 \times 5$
Array Cards  page 4 of 4

- $7 \times 10$
- $9 \times 7$
- $7 \times 8$
- $7 \times 7$
- $8 \times 8$
- $3 \times 5$
- $10 \times 8$
- $8 \times 9$
- $8 \times 7$
Support Activity 16 ★ Instructional Considerations

Product Bingo

Overview
Students spin two spinners, each of which features numbers from 4 to 9. They multiply the two numbers and then locate the product on their bingo boards. The first player to get 4 numbers in a row wins.

Skills & Concepts
★ practicing multiplication facts through 9 × 9

You’ll need
★ Instructions for Product Bingo (Blackline S 16.2)
★ Product Bingo Boards (Blackline S 16.3, 1 copy for each player)
★ Product Bingo Spinner (Blackline S 16.4, 1 copy for every 2 pairs of players, cut in half)
★ pencils, crayons, or markers

This game is meant to promote fluency with multiplication facts to 9 × 9. Ask students to play this game when they are relatively close to being able to recall products from memory. If they need the aid of visual models, have them play one of the other multiplication support games that feature visual models, such as Array Challenge, Spinning for Arrays, or Multiplication Challenge.

You may need to remind players to select just one board on the sheet for each game and to make sure that they are using different boards from each other. Students can use a single sheet to play 4 separate games.
Support Activity 16

Product Bingo

You’ll need

- Instructions for Product Bingo (Blackline S 16.2)
- Product Bingo Boards (Blackline S 16.3, 1 copy for each player)
- Product Bingo Spinner (Blackline S 16.4, 1 copy for every 2 pairs of players, cut in half)
- pencils, crayons, or markers

Instructions for Product Bingo

1. Pick a bingo board that is different from your partner’s. Select just one bingo board each per game.

2. Take turns spinning both spinners. Multiply the two numbers on the spinners. Talk to your partner about how you know the product. Do you just know it, or do you have a strategy for figuring it out?

3. Draw an X over the product if you have it on your board. Each board is missing some products.

4. Keep playing until one person has 4 X's in a row, either horizontally, vertically, or diagonally.
Product Bingo Boards

Be sure that you and your partner are using different boards.

<table>
<thead>
<tr>
<th>Board 1</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>72</td>
<td>30</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>56</td>
<td>24</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>42</td>
<td>49</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>35</td>
<td>63</td>
<td>28</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Board 2</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>28</td>
<td>24</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>45</td>
<td>54</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>63</td>
<td>40</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>30</td>
<td>42</td>
<td>48</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Board 3</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>40</td>
<td>56</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>32</td>
<td>30</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>81</td>
<td>49</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>72</td>
<td>25</td>
<td>28</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Board 4</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>72</td>
<td>63</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>32</td>
<td>35</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>54</td>
<td>81</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>30</td>
<td>49</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>
Product Bingo Spinner

Product Bingo Spinner

Run 1 copy for every 2 pairs of players. Cut in half and give each pair a spinner.
What’s Missing? Bingo

Overview
Students take turns drawing cards, each of which features an equation that is missing a single number. Students determine what the missing number is and draw an X over that number on their bingo boards. The first player to get 4 numbers in a row wins.

Skills & Concepts
★ using models, pictures, and numbers to demonstrate an understanding of multiplication/division as repeated addition/subtraction, equal groups of objects, arrays, or skip counting
★ demonstrating computational fluency with multiplication facts up to $5 \times 10$
★ developing and using strategies for multiplication facts up to $10 \times 10$
★ solving for an unknown number in an equation

You’ll need
★ Instructions for What’s Missing? Bingo (Blackline S 17.2)
★ What’s Missing? Bingo Boards (Blackline S 17.3, 1 copy per player)
★ What’s Missing? Bingo Cards, pages 1–4 (Blacklines S 17.4–17.7, 1 copy for each pair of players, cut apart and stored in an envelope or resealable plastic bag)
★ Grid Paper (Blackline S 17.8, 1 copy for each player)

This bingo game helps students develop an explicit understanding of the inverse relationship between multiplication and division, which is key to their ability to solve missing factor problems and to their fluency with division facts. It also provides an opportunity for students to practice applying the commutative property of multiplication. If you find students are still struggling with multiplication facts, have them go back and use one of the multiplication support games to shore up their skills with multiplication before playing this game, which involves quite a bit of division practice.

You may need to remind players to select just one board on the sheet for each game and to make sure that they are using different boards from each other. Students can use a single sheet to play 4 separate games.
Support Activity 17

What’s Missing? Bingo

You’ll need

★ Instructions for What’s Missing? Bingo (Blackline S 17.2)
★ What’s Missing? Bingo Boards (Blackline S 17.3, 1 copy per player)
★ What’s Missing? Bingo Cards, pages 1–4 (Blacklines S 17.4–17.7, 1 copy for each pair of players, cut apart and stored in an envelope or resealable plastic bag)
★ Grid Paper (Blackline S 17.8, 1 copy for each player)

Instructions for What’s Missing? Bingo

1 Pick a bingo board that is different from your partner’s. Select just one bingo board each per game.

2 Decide who will go first and put the cards between you in a stack, face down.

3 Draw a card and determine what the missing number is. Talk to your partner and make sure you agree. You can draw on the grid paper if you like.

Hmm. This means that something times 7 is 35. What times 7 is 35? … Oh! I remember. The 7 in the clock is 35 minutes, so it has to be 5, because the numbers on the clock count by 5’s.

4 Draw an X over the missing number if it appears on your bingo board. Some numbers may appear more than once, so think carefully about where you draw the X.

I have two 5’s on here, but if I put my X here, I can win!

5 Take turns drawing cards until one player gets 4 numbers in a row to win.
What’s Missing? Bingo Boards

<table>
<thead>
<tr>
<th>Board 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>2  6  7  3</td>
</tr>
<tr>
<td>5  4  9  2</td>
</tr>
<tr>
<td>4  7  5  8</td>
</tr>
<tr>
<td>3  8  6  10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Board 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>10  3  5  4</td>
</tr>
<tr>
<td>6  4  9  7</td>
</tr>
<tr>
<td>9  5  6  3</td>
</tr>
<tr>
<td>8  3  7  2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Board 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>7  4  8  6</td>
</tr>
<tr>
<td>3  9  10  3</td>
</tr>
<tr>
<td>5  2  7  9</td>
</tr>
<tr>
<td>8  5  6  4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Board 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>3  5  6  10</td>
</tr>
<tr>
<td>7  2  9  8</td>
</tr>
<tr>
<td>5  4  6  3</td>
</tr>
<tr>
<td>8  9  7  4</td>
</tr>
<tr>
<td>9 × ☐ = 18</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>5 × ☐ = 30</td>
</tr>
<tr>
<td>7 × ☐ = 14</td>
</tr>
<tr>
<td>3 × ☐ = 18</td>
</tr>
</tbody>
</table>
What’s Missing? Bingo Cards

- \[ \times 8 = 32 \]
- \[ \times 5 = 25 \]
- \[ \times 3 = 24 \]
- \[ 6 \times \_ = 54 \]
- \[ \times 6 = 24 \]
- \[ 7 \times \_ = 35 \]
- \[ \times 4 = 32 \]
- \[ 8 \times \_ = 80 \]
<table>
<thead>
<tr>
<th>Dividend</th>
<th>Quotient</th>
</tr>
</thead>
<tbody>
<tr>
<td>$16 \div \square = 8$</td>
<td>$21 \div \square = 7$</td>
</tr>
<tr>
<td>$\square \div 3 = 2$</td>
<td>$14 \div \square = 2$</td>
</tr>
<tr>
<td>$\square \div 5 = 2$</td>
<td>$18 \div \square = 6$</td>
</tr>
<tr>
<td>$\square \div 2 = 3$</td>
<td>$49 \div \square = 7$</td>
</tr>
<tr>
<td>Expression</td>
<td>Card</td>
</tr>
<tr>
<td>------------</td>
<td>------</td>
</tr>
<tr>
<td>12 ÷ □ = 3</td>
<td></td>
</tr>
<tr>
<td>32 ÷ □ = 4</td>
<td></td>
</tr>
<tr>
<td>8 ÷ □ = 2</td>
<td></td>
</tr>
<tr>
<td>□ ÷ 4 = 2</td>
<td></td>
</tr>
</tbody>
</table>
Support Activity 18 ★ Instructional Considerations

**SUPPORT ACTIVITY**

**More or Less Addition Big Time**

**Overview**

Players begin by spinning a more or less spinner to determine whether they will play for the largest or smallest sum. Then they take turns spinning single-digit numbers, which they arrange to create two three-digit numbers. When both players have a pair of three-digit numbers, they each find their own sums. If they were playing for more, the player with the largest sum wins. If they were playing for less, the player with the smaller sum wins.

**Skills & Concepts**

- reading, writing, ordering, modeling, comparing, and identifying place value of digits in whole numbers to 1000
- adding and subtracting up to 4-digit numbers with and without regrouping using models and a variety of efficient paper/pencil and mental strategies

Encourage students to use whatever computational methods make the most sense to them, but do press them to move toward more efficient methods. For example, can they work with the ones, tens, and hundreds places separately and then combine the sums? Can they use landmark numbers to help? Some students may find it helpful to work with an open number line as shown below.

```
245
+ 163
```

Using an open number line, students can begin with either addend and then add the other addend, chunk by chunk, to arrive at the sum. If students are not already familiar with this method, they will probably need you to model it for them a few times.
Support Activity 18

More or Less Addition Big Time

You’ll need

★ Instructions for More or Less Addition Big Time (Blacklines S 18.2 and S 18.3, 1 copy of each run back-to-back)

★ More or Less Addition Big Time Record Sheet (Blackline S 18.4, 1 copy per player)

★ More or Less Addition/Subtraction Big Time Spinner 1 or 2 (Blacklines S 18.5 or 18.6, 1 copy for every 2 pairs of players, cut in half. Spinner 1 contains numbers 1–6 and Spinner 2 contains numbers 4–9. Select the spinner based on students’ readiness level.)

★ a pencil and paperclip to use as a spinner

★ scratch paper

Instructions for More or Less Addition Big Time

1 Write your name and date on the record sheet. Spin the more or less spinner to see if you are playing for the largest or smallest sum. Circle more or less to show what you are playing for.

2 Take turns spinning the numbered spinner. Each time, decide whether you will put the number in the ones, tens, or hundreds place of the top or bottom number.

I spun a 4. I’ll put it in the tens place, because it’s kind of a middle number. I think I can get lower numbers for my hundreds places.

3 After you have both taken 6 turns each, add your numbers and see whose total is higher and whose is lower. The player with the lower total (Continued on back.)
Support Activity 18 (cont.)

wins if you were playing for less. If you were playing for more, the player with the higher total wins. Circle the winner on your record sheet.

4 Play 4 more rounds. Circle whether you were playing for more or less in each round, and circle the winning total each time.
More or Less Addition Big Time Record Sheet

Write the numbers you spin in the boxes and then add to find your score. Be sure to circle whether you played for more or less each time and circle the winner at the end.

<table>
<thead>
<tr>
<th>Example</th>
<th>Round 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>We played for (circle one) more / less.</strong></td>
<td><strong>We played for (circle one) more / less.</strong></td>
</tr>
<tr>
<td>My score</td>
<td>My partner’s score</td>
</tr>
<tr>
<td>3 5 4</td>
<td>2 6 3</td>
</tr>
<tr>
<td>4 2 6</td>
<td>3 1 4</td>
</tr>
<tr>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Round 2</th>
<th>Round 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>We played for (circle one) more / less.</strong></td>
<td><strong>We played for (circle one) more / less.</strong></td>
</tr>
<tr>
<td>My score</td>
<td>My partner’s score</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Round 4</th>
<th>Round 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>We played for (circle one) more / less.</strong></td>
<td><strong>We played for (circle one) more / less.</strong></td>
</tr>
<tr>
<td>My score</td>
<td>My partner’s score</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>
More or Less Addition/Subtraction Big Time Spinner 1

MORE 1 2
less 5 4

More or Less Addition/Subtraction Big Time Spinner 1

MORE 1 2
less 5 4
Building Computational Fluency Blackline S 18.6 Run 1 copy for every 2 pairs of players. Cut in half and give each pair a spinner.

More or Less Addition/Subtraction Big Time Spinner 2

MORE
less

More or Less Addition/Subtraction Big Time Spinner 2

MORE
less

MORE
less
Support Activity 19 ★ Instructional Considerations

More or Less Subtraction Big Time

Overview
Players begin by spinning a more or less spinner to determine whether they will play for the largest or smallest difference. Then they take turns spinning single-digit numbers, which they arrange to create two triple-digit numbers. When both players have a pair of triple-digit numbers, they each find their own differences. If they were playing for more, the player with the largest difference wins. If they were playing for less, the player with the smaller difference wins.

Skills & Concepts
★ reading, writing, ordering, modeling, comparing, and identifying place value of digits in whole numbers to 1000
★ subtracting 3-digit numbers with and without regrouping using models and a variety of efficient paper/pencil and mental strategies

The strategies involved in More or Less Subtraction are quite a bit more complex than in More or Less Addition. In More or Less Addition, students simply tried to get the largest numbers in the hundreds place if playing for more, and the smallest numbers in the hundreds place if playing for less. In More or Less Subtraction, however, it is the difference between the numbers, and not the numbers themselves, that students must consider. For example, it is quite possible to have relatively large numbers and still get the smallest difference, as shown below, and students may also become strategic about arranging numbers that require them to borrow in order to subtract.

You’ll need
★ Instructions for More or Less Subtraction Big Time (Blackline S 19.3)
★ More or Less Subtraction Big Time Record Sheet (Blackline S 19.4, 1 copy per player)
★ More or Less Subtraction/Inversion Big Time Spinner 1 or 2 (Blacklines S 18.5 or 18.6, 1 copy for every 2 pairs of players, cut in half. Spinner 1 contains numbers 1–6 and Spinner 2 contains numbers 4–9. Select the spinner based on students’ readiness level.)
★ a pencil and paperclip to use as a spinner
★ scratch paper

More or Less Subtraction Big Time Record Sheet

Write the numbers you spin in the boxes and then add to find your score. Be sure to circle whether you played for more or less each time and circle the winner at the end.

<table>
<thead>
<tr>
<th>Example</th>
<th>Round 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>My score</td>
<td>My partner’s score</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

(Continued on back.)
Keith  Wow! I had bigger numbers than you did, but I still won. My difference was 72 and yours was 131!

Mrs. Gray  Keith, how can that be? You had bigger numbers, but you still got a smaller difference than I did.

Keith  Well, it’s the difference that matters, not the numbers.

Mrs. Gray  Hmm, can you think of some other big numbers that have a small difference?

Keith  Well, 1000 and 1001. They’re big, but the difference between them is small: 1!

If students are having difficulty finding the difference between their numbers, you can invite them to use the open number line for support. Do not press students to use the traditional algorithm. In fact, students who are struggling with place value concepts and computation may need to take a fresh look at multi-digit subtraction, using a model different from those they have experienced in the past. The open number line has proven to be particularly effective for students experiencing difficulties with multi-digit addition and subtraction.

\[
\begin{align*}
967 - 895 &= 72 \\
895 + 5 &= 900 \\
900 + 67 &= 967
\end{align*}
\]

Using the open number line, students begin with the smaller number and add up to the larger number using landmark numbers in chunks as shown above. The difference is the total amount the student added to get from the smaller number to the larger number. Students who are unfamiliar with this method will need you to model it for them a few times, and you may want to have them practice using it before they begin playing the game.

Note  If the spins result in a negative difference—if, for instance, a student has set up a problem such as the one shown below and spins a 9 on his final spin—allow him to take another spin or rearrange his digits so that the difference that results isn’t negative. We don’t want to communicate to students that it’s impossible to get a negative outcome, but dealing with negative numbers is outside the scope of this game as a support activity for fourth graders.
Support Activity 19

More or Less Subtraction Big Time

You’ll need

★ Instructions for More or Less Subtraction Big Time (Blackline S 19.3)

★ More or Less Subtraction Big Time Record Sheet (Blackline S 19.4, 1 copy per player)

★ More or Less Addition/Subtraction Big Time Spinner 1 or 2 (Blacklines S 18.5 and 18.6, 1 copy for every 2 pairs of players, cut in half. Spinner 1 contains numbers 1–6 and Spinner 2 contains numbers 4–9. Select the spinner based on students’ readiness level.)

★ a pencil and paperclip to use as a spinner

★ scratch paper

Instructions for More or Less Subtraction Big Time

1 Write your name and the date at the top of the record sheet. Spin the more or less spinner to see whether you are playing for the largest or smallest difference. Circle more or less on your record sheet for this round to show what you are playing for.

2 Take turns with your partner spinning the numbered spinner. Each time, decide whether you will put the number in the ones place, tens place, or hundreds place of the top or bottom number.

3 After you have both taken 6 turns each, find the difference between your 2 numbers and see whose difference is higher and whose is lower. The player with the lower difference wins if you were playing for less. If you were playing for more, the player with the higher difference wins. Circle the winner on your record sheet.

4 Play 4 more rounds. Circle whether you were playing for more or less in each round, and circle the winning difference each time.
**More or Less Subtraction Big Time Record Sheet**

Write the numbers you spin in the boxes and then add to find your score. Be sure to circle whether you played for more or less each time and circle the winner at the end.

### Example

<table>
<thead>
<tr>
<th>Round 1</th>
<th>Round 2</th>
<th>Round 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>We played for (circle one) more / less.</strong></td>
<td><strong>We played for (circle one) more / less.</strong></td>
<td><strong>We played for (circle one) more / less.</strong></td>
</tr>
<tr>
<td>My score</td>
<td>My partner’s score</td>
<td>My score</td>
</tr>
<tr>
<td>8 9 4</td>
<td>7 9 6</td>
<td></td>
</tr>
<tr>
<td>4 5 6</td>
<td>5 7 4</td>
<td></td>
</tr>
<tr>
<td>4 3 8</td>
<td>2 2 2</td>
<td></td>
</tr>
</tbody>
</table>

### Round 1

<table>
<thead>
<tr>
<th>Round 4</th>
<th>Round 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>We played for (circle one) more / less.</strong></td>
<td><strong>We played for (circle one) more / less.</strong></td>
</tr>
<tr>
<td>My score</td>
<td>My partner’s score</td>
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<td></td>
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</tbody>
</table>
Support Activity 20 ★ Instructional Considerations

SUPPORT ACTIVITY

Larger Numbers on a Line

Overview
Students take turns using the open number line to solve triple-digit subtraction problems. After they have both gone twice, they add their differences together. The player with the larger sum wins.

Skills & Concepts
★ locating and placing numbers on a number line
★ using models, pictures, and/or numbers to find the difference
★ identifying the operations needed for solving a problem
★ subtracting 3-digit numbers with and without regrouping using models and a variety of strategies

Students who are not yet comfortable with the formal algorithms for addition and subtraction of larger numbers often find it helpful to use a number line when asked to perform these kinds of calculations. They can quickly sketch their line and count in chunks, confident that they have reached the correct answer. As they work, encourage them to look out for different landmark numbers and to use larger, more efficient chunks to add up from the smaller number to the larger number.

Teacher  Now that you have this all written out, can you see another way to get from 387 to 672 with fewer, bigger jumps?

Jorge  Well, I could have done one jump from 400 to 600. That would be 200. And now I guess I could see it’s 13 from 387 to 400. I didn’t think about that before.
Support Activity 20

Larger Numbers on a Line

You’ll need

★ Instructions for Larger Numbers on a Line (Blackline S 20.2)

★ Larger Numbers on a Line Problem Cards (Blackline S 20.3, 1 copy cut apart and stored in an envelope or resealable plastic bag for each pair of players)

★ Larger Numbers on a Line Record Sheet (Blackline S 20.4, 1 copy run double-sided for each player)

Instructions for Larger Numbers on a Line

1 Write your name and the date at the top of a Larger Numbers on a Line Record Sheet.

2 Pick one problem card. Write the number of the problem on your record sheet.

3 If you need help reading the problem, ask another student to help you. Think carefully about what the problem is asking.

4 Use the open number line to show how you solved the problem.

5 Record your solution with a number sentence.

6 Take turns until you have both solved two problems. Then add your two differences together. The player with the higher sum wins.

7 Play as many rounds as you have time for.
## Larger Numbers on a Line Problem Cards

1. The milk truck delivered 457 milk cartons to the school this morning. Three hundred eighty-nine of them were plain milk, and the rest were chocolate milk. How many cartons of chocolate milk were delivered to the school?

2. Mrs. Olson was in charge of the book fair. She ordered 769 books and sold 583. How many books were not sold?

3. Kim had been collecting stickers for a long time. She counted 329 stickers in her box. She gave her new friend Maria 182 of those stickers to get her collection started. How many stickers does Kim have now?

4. There are 964 students at the middle school. Four hundred eighty-seven of them ride the bus to school each day, and the rest get to school some other way. How many students at the middle school do not ride the bus to school?

5. Kyle was going on a trip from Oregon to San Francisco, California, with his family. His dad said they would travel 672 miles in one day! By lunchtime they had driven 387 miles. How many more miles did they need to travel that day?

6. Five hundred twenty-eight students from our city marched in the parades this weekend. Three hundred seventy-one students marched on Saturday and the rest marched on Sunday. How many students marched on Sunday?

7. The local zoo is keeping track of how much their baby elephant, Panang, is growing. When Panang was 2 months old, he weighed 476 pounds. When he was 5 months old, he weighed 839 pounds. How much weight did Panang gain during those 3 months?

8. A mother horse weighs 922 pounds. Her foal is about a year old and weighs 657 pounds. How much more does the mother horse weigh than her foal? (A foal is a baby horse.)
### Larger Numbers on a Line Record Sheet

<table>
<thead>
<tr>
<th>Problem Number</th>
<th>Equation Showing the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sum of your differences above:
Support Activity 21 ★ Instructional Considerations

Perimeter Showdown

Overview
Players take turns drawing cards that show rectangles. Each player determines the perimeter of his or her rectangle, and then they find the difference between their perimeters. Depending on the perimeter, one player will take both cards. When all the cards have been played, the player with the most cards wins.

Skills & Concepts
★ adding, subtracting, and multiplying numbers using mental strategies
★ understanding the difference between perimeter and area
★ developing strategies for finding the perimeter of rectangles

You’ll need
★ Instructions for Perimeter Showdown (Blackline S 21.2)
★ Perimeter Cards (Blackline S 21.3, 1 copy cut apart and stored in an envelope or resealable plastic bag for each pair of players)
★ Perimeter Showdown Record Sheet (Blackline S 21.4, 1 copy per player)
★ Grid Paper (Blackline S 21.5, 1 copy run double-sided per player, optional)
★ 1 die marked 1–6 (optional)
★ paperclip and pencil to use as a spinner

As students play, make sure they are calculating the perimeter, not the area, of each rectangle. If needed, clarify that the perimeter is the total distance around the rectangle. Ask students to share their strategies for calculating the perimeter.

Brittany  I know it’s 20 because I add 4 and 6, and that’s 10. Then double and you get 20.

David  I know there’s 2 pairs of sides that are the same. So 4 and 4 is 8 and 6 and 6 is 12. So 8 plus 12 is 20. That’s what you got too!

If students are really struggling, you might offer them a piece of grid paper so they can sketch and label an array to make it easier to compute the perimeter.
Support Activity 21

Perimeter Showdown

You’ll need

- Instructions for Perimeter Showdown (Blackline S 21.2)
- Perimeter Cards (Blackline S 21.3, 1 copy cut apart and stored in an envelope or resealable plastic bag for each pair of players)
- Perimeter Showdown Record Sheet (Blackline S 21.4, 1 copy per player)
- Grid Paper (Blackline S 21.5, 1 copy run double-sided per player, optional)
- 1 die marked 1–6 (optional)
- paperclip and pencil to use as spinner

Instructions for Perimeter Showdown

1. Take turns rolling the die. The player with the higher number is Player 1 and the other player is Player 2. (If you don’t have a die, play Rock, Paper, Scissors or a similar contest to see who goes first.)

2. Write both your names in the correct places on the record sheet. Mix up the deck of Perimeter Cards and place them in a stack between you face down.

3. Take turns drawing a card and determining the perimeter of the rectangle on the card. Record both perimeters on the record sheet.

4. Work together to find the difference between your perimeters. If the difference is 1 or 2, Player 1 gets both cards. If the difference is 3 or more, Player 2 gets both cards. If the perimeters are the same, both players keep their own cards.

5. Continue to play until you have used up all 8 cards. The player who has the most cards at the end wins. Play up to 3 games per record sheet.
# Perimeter Cards

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
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<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
# Perimeter Showdown Record Sheet

**Game 1**

<table>
<thead>
<tr>
<th>Round</th>
<th>Player 1 Perimeter</th>
<th>Player 2 Perimeter</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Game 2**

<table>
<thead>
<tr>
<th>Round</th>
<th>Player 1 Perimeter</th>
<th>Player 2 Perimeter</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3</td>
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<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Game 3**

<table>
<thead>
<tr>
<th>Round</th>
<th>Player 1 Perimeter</th>
<th>Player 2 Perimeter</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Support Activity 22 ★ Instructional Considerations

Spin & Multiply

Overview
Players take turns spinning 1-by-2-digit multiplication combinations. After they have each taken 3 turns, they find the sum of their 3 products. The player with the larger sum wins.

Skills & Concepts
★ multiplying 1-digit numbers by 2-digit numbers
★ adding 2- and 3-digit numbers

You’ll need
★ Instructions for Spin & Multiply (Blackline S 22.2)
★ Spin & Multiply Spinner (Blackline S 22.3, 1 copy for every 2 pairs of players, cut in half)
★ Spin & Multiply Record Sheet (Blackline S 22.4, 1 copy per player)
★ paperclip and pencil for use as a spinner

It may be helpful if, before students play a full game of Spin & Multiply, you model how to sketch the frame and then the array for a 1-by-2-digit combination. As they compute their products, encourage players to think in chunks and use friendly numbers.

Alec: I can do 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 120, 130, 140. And then add 7 times 4.

Mr. Britt: Alec, is there any way you could have gotten the 140 part without counting each ten?

Alec: Umm, well, I could count down by 20’s. Oh! Or I could see it’s 70 plus 70. That’s a fast way to get 140.

Students who are working more fluently might be encouraged, if they don’t come up with it on their own, to think about $7 \times 25$ to solve $7 \times 24$. Working with landmark numbers and then adjusting their answers can be a quick way to work mentally. (e.g., $7 \times 25 = 175$ and $175 - 7 = 168$. So $7 \times 24$ is 168.)
Support Activity 22

Spin & Multiply

You'll need

★ Instructions for Spin & Multiply (Blackline S 22.2)
★ Spin & Multiply Spinner (Blackline S 22.3, 1 copy for every 2 pairs of players, cut in half)
★ Spin & Multiply Record Sheet (Blackline S 22.4, 1 copy per player)
★ paperclip and pencil for use as a spinner

Instructions for Spin & Multiply

1. Record both players' names on a Spin & Multiply Record Sheet.

2. Spin each spinner to get two numbers to multiply.

3. Sketch the frame of linear pieces onto the grid on the record sheet first, and then fill in the array. Explain how you computed the product of those two factors to your partner.

4. You and your partner will each take 3 turns spinning, sketching, and finding the product.

5. When you have both taken 3 turns, find the sums of your products. Double-check each other's work.

6. The player with the larger sum wins the game.

I drew the array to show the tens and ones. First I saw the 70 plus 70. I forgot 7 times 4 is 28, but I saw it was 14 plus 14. 140 plus 28 is 168. That means 7 times 24 is 168.
Spin & Multiply Spinner

Spin & Multiply Spinner

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<table>
<thead>
<tr>
<th>Spin &amp; Multiply Record Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Player 1</td>
</tr>
<tr>
<td>Player 2</td>
</tr>
</tbody>
</table>

NAME  DATE
Support Activity 23 ★ Instructional Considerations

Remainders Win

Overview
Players take turns completing multiplication and division calculations that often result in remainders. Players keep track of their remainders and then add them up after they have each taken 10 turns. The player with the highest sum wins.

Skills & Concepts
★ practicing multiplication facts through $9 \times 9$
★ completing division facts with divisors to 10, including those resulting in remainders

You’ll need
★ Instructions for Remainders Win (Blacklines S 23.2 and 23.3, 1 copy of each run back-to-back)
★ Divisor Spinner (Blackline S 23.4, 1 copy for every 2 pairs of players, cut in half)
★ Remainders Win Record Sheet (Blackline S 23.5, 1 copy for each player)
★ Array Challenge Cards, pages 1–3 (Blacklines S 13.3–13.5, 1 copy cut apart for each pair of players)
★ Number Charts (Blackline S 23.6, 1 copy for each player, optional)
★ paper clip and pencil to use as a spinner

If students have difficulty solving the division problems, encourage them to make use of the multiplication facts they already know, as well as count-by’s or repeated subtraction. In a few cases, they may want to copy one of the arrays onto a Number Chart and then circle equal groups to divide by the number on the spinner. These different strategies are shown below for the example $35 \div 6 = 5, \text{R}5$

<table>
<thead>
<tr>
<th>STRATEGIES</th>
<th>Example</th>
</tr>
</thead>
</table>
| Count by the divisor | $6, 12, 18, 24, 30, 36$
| | $6 \times 6 = 36$, and that’s too much, so it must be 5, remainder 5. |
| Repeatedly subtract the divisor from the dividend | $35 - 6 = 29$
| | $29 - 6 = 23$
| | $23 - 6 = 17$
| | $17 - 6 = 11$
| | $11 - 6 = 5$
| | I can’t take away 6 anymore. So I took away 6 five times, and I have 5 left. So it must be 5, remainder 5. |
| Draw an array on the Number Chart |  
| | ![Array on Number Chart](image)
| | So, $35 \div 6 = 5, \text{R}5$
| | ![Array](image) 6 × 5 = 30 5 left
Support Activity 23

Remainders Win

You’ll need

★ Instructions for Remainders Win (Blacklines S 23.2 and 23.3, 1 copy of each run back-to-back)

★ Divisor Spinner (Blackline S 23.4, 1 copy for each pair of players, cut in half)

★ Remainders Win Record Sheet (Blackline S 23.5, 1 copy for each player)

★ Array Challenge Cards, pages 1–3 (Blacklines S 13.3–13.5, 1 copy cut apart for each pair of players)

★ Number Charts (Blackline S 23.6, 1 copy for each player, optional)

★ paper clip and pencil to use as a spinner

Instructions for Remainders Win

1. Take turns spinning the spinner. The player with the higher number is Player 1 and the other player is Player 2. Write your names in the correct places on the record sheet.

2. Mix up the Array Cards and place them in a stack face down between you.

3. Player 1 draws the first card and finds the product for the array shown on the card.

4. Then, Player 1 spins the spinner and divides the product by the number on the spinner.

5. Player 1 writes the division equation in the first box on the record sheet and circles the remainder if there was one.
Support Activity 23 (cont.)

6  Now Player 2 follows steps 3–5 to take a turn.

7  Take turns until each player has gone 10 times.

8  At the end of the game, both players add up all their remainders. The player with the highest total wins.
Run 1 copy for every 2 pairs of players. Cut in half and give each pair a spinner.

Divisor Spinner

Divisor Spinner
Remainders Win Record Sheet

<table>
<thead>
<tr>
<th>Player 1</th>
<th>Player 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
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</table>

Remainder Total | Remainder Total

<table>
<thead>
<tr>
<th>Player 1</th>
<th>Player 2</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

Remainder Total | Remainder Total
Support Activity 24 ★ Instructional Considerations

Fraction Race

Overview
Players take turns adding different fractions to their collections until one player gets a total of exactly 1. At that point, players begin subtracting fractions from their collections until one player reaches exactly 0 to win. This game can be played using halves, fourths, and eighths or thirds, sixths, and twelfths.

Skills & Concepts
- using physical models to model, compare, add, and subtract fractions
- exploring equivalent fractions and using equivalence to compare fractions

You’ll need
- Instructions for Fraction Race (Blacklines S 24.2 and 24.3, 1 copy of each run back-to-back)
- Eighths Strips (Blackline S 24.4, 1 copy per player)
- Eighths Spinner (Blackline S 24.5, 1 copy for every 2 pairs of players, cut in half)
- Twelfths Strips (Blackline S 24.6, 1 copy per player, optional)
- Twelfths Spinner (Blackline S 24.7, 1 copy for every 2 pairs of players, cut in half, optional)
- a pencil and paperclip to use as a spinner

As they play, encourage players to look for trades they can make, for example, exchanging two eighths for a fourth. When they begin subtracting fractions from their collections, students will probably need to make trades in order to remove a particular fraction. For example, if a player has $\frac{1}{4}$ left and he spins $\frac{1}{8}$, he will need to trade in his fourth for two-eighths in order to subtract an eighth.

Encourage students to verbalize the equivalencies on which these trades are based, for example, “I can trade in this fourth for two eighths because one-fourth is equal to two-eighths.”

Once students seem comfortable playing with eighths, fourths, and halves, you can give them the Twelfths Strips and Spinner so they can play using thirds, sixths, and twelfths.
Support Activity 24

Fraction Race

You’ll need

- Instructions for Fraction Race (Blacklines S 24.2 and 24.3, 1 copy of each run back-to-back)
- Eighths Strips (Blackline S 24.4, 1 copy per player)
- Eighths Spinner (Blackline S 24.5, 1 copy for every 2 pairs of players, cut in half)
- Twelfths Strips (Blackline S 24.6, 1 copy per player, optional)
- Twelfths Spinner (Blackline S 24.7, 1 copy for every 2 pairs of players, cut in half, optional)
- a pencil and paperclip to use as a spinner (optional)

Instructions for Fractions Race

1. Cut the strips on your sheet of paper apart so that you have 1 one strip, 2 half strips, 4 fourth strips, and 8 eighth strips.

2. Take turns spinning the Eighths Spinner. The player who spins the larger fraction goes first.

3. The first player spins the spinner and puts that fraction on his or her 1 strip.

4. Players take turns spinning the spinner and adding the fractions shown to their strips, racing to be the first to fill the strip exactly. To fill your strip, you must spin exactly the fraction you need to make a whole or a smaller fraction. If you spin a fraction that is bigger than what you need, you lose that turn.

5. When 1 player gets to 1 exactly, both players begin subtracting fractions from their strips with each spin, starting right from where they are. (For instance, if one player fills his...)

(Continued on back.)
strip exactly, but the other player has only filled \( \frac{3}{4} \) of her strip, they both get to go backwards. This means that the player who was behind is now ahead.)

6 The first player to remove all of his or her fractions exactly wins. For example, if you have \( \frac{1}{4} \) left, and you spin \( \frac{1}{2} \), you cannot remove the \( \frac{1}{4} \) piece. Instead, you lose the turn and must wait for your next turn to try again.
Eighths Strips

Cut out these fraction strips and then cut each strip into the appropriate number of parts. For example, cut the strip with the parts marked \( \frac{1}{2} \) into two pieces along the line.
Eighths Spinner

Eighths Spinner
Cut out these fraction strips and then cut each strip into the appropriate number of parts. For example, cut the strip with the parts marked $\frac{1}{3}$ into three pieces along the lines.
Twelfths Spinner

Twelfths Spinner
Support Activity 25 ★ Instructional Considerations

**Fraction Bingo**

**Overview**
This game can be played in pairs or groups of 3 or 4. Each player gets a different bingo board. They take turns drawing cards that show a fraction on either a clock, ruler, pizza, tile array, or egg carton. If players have that fraction or an equivalent fraction on their boards, they cover it with a game marker. The first player to get 3 markers in a row wins.

**Skills & Concepts**
- understanding and modeling fractions
- reading and writing common fractions
- comparing fractions
- exploring fractions as parts of a whole and parts of a set

As they play this game, some students may start to see equivalencies between fractions, for example, $\frac{2}{4}$ and $\frac{6}{12}$ are equal to $\frac{1}{2}$. If so, they can cover any equivalent fraction on their board. For example, if they draw a card showing $\frac{4}{12}$, they could cover any fraction that is equivalent to $\frac{4}{12}$ (e.g., $\frac{1}{3}$ or $\frac{2}{6}$).

**You’ll need**
- Instructions for Fraction Bingo (Blackline S 25.2)
- Fraction Bingo Boards (Blackline S 25.3, 1 copy for each player)
- Fraction Bingo Cards, pages 1–3 (Blacklines S 25.4–25.6, 1 copy cut apart and stored in an envelope or resealable plastic bag for each pair or small group of players)
- game markers (Use coins or small objects if you do not have game markers.)

$\frac{4}{12}$ is not on the board but is equal to $\frac{1}{3}$ and $\frac{2}{6}$. The player can cover $\frac{1}{3}$ or $\frac{2}{6}$, but not both.
Support Activity 25

Fraction Bingo

You’ll need

★ Instructions for Fraction Bingo (Blackline S 25.2)

★ Fraction Bingo Boards (Blackline S 25.3, 1 copy for each player)

★ Fraction Bingo Cards, pages 1–3 (Blacklines S 25.4–25.6, 1 copy cut apart and stored in an envelope or resealable plastic bag for each pair or small group of players)

★ game markers (Use coins or small objects if you do not have game markers.)

Instructions for Fraction Bingo

1. Each player chooses a different Fraction Bingo Board and gets 9 game markers.

2. Mix up the Fraction Bingo Cards and place them face down in a pile.

3. Let one player draw a card. Talk to each other about what fraction is shown on the card. How would it be shown in numerical form on your bingo boards?

4. Look for that fraction on your board and cover it with a game marker if you have it on your board. Each board is missing some fractions, but if you find a fraction on your board that is equal to the fraction on the card, you can put a game marker on it. You can only cover one fraction for each card, though.

5. Take turns drawing cards until one of you has 3 game markers in a row horizontally, vertically, or diagonally. Decide if you want to keep playing until everyone wins or if you want to start a new game.
### Fraction Bingo Boards

<table>
<thead>
<tr>
<th>Board A</th>
<th>Board B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3/8</strong></td>
<td><strong>2/4</strong></td>
</tr>
<tr>
<td><strong>1/2</strong></td>
<td><strong>1/4</strong></td>
</tr>
<tr>
<td><strong>2/6</strong></td>
<td><strong>3/6</strong></td>
</tr>
<tr>
<td><strong>3/4</strong></td>
<td><strong>2/6</strong></td>
</tr>
<tr>
<td><strong>1/3</strong></td>
<td><strong>1/8</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Board C</th>
<th>Board D</th>
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<tr>
<td><strong>1/4</strong></td>
<td><strong>1/3</strong></td>
</tr>
<tr>
<td><strong>4/6</strong></td>
<td><strong>1/4</strong></td>
</tr>
<tr>
<td><strong>3/8</strong></td>
<td><strong>3/4</strong></td>
</tr>
<tr>
<td><strong>1/3</strong></td>
<td><strong>2/4</strong></td>
</tr>
<tr>
<td><strong>3/8</strong></td>
<td><strong>6/4</strong></td>
</tr>
<tr>
<td><strong>1/8</strong></td>
<td><strong>3/8</strong></td>
</tr>
<tr>
<td><strong>1/6</strong></td>
<td><strong>1/6</strong></td>
</tr>
</tbody>
</table>

Run 1 copy for each player.
Fraction Bingo Cards

Building Computational Fluency Blackline S 25.4 Run 1 copy, cut apart along lines, and store in an envelope for each pair or group of players.
### Fraction Bingo Cards

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Description</th>
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<tbody>
<tr>
<td>3 inches</td>
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</tr>
<tr>
<td>6 inches</td>
<td><img src="image2.png" alt="" /></td>
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<tr>
<td></td>
<td><img src="image3.png" alt="" /></td>
</tr>
<tr>
<td></td>
<td><img src="image4.png" alt="" /></td>
</tr>
<tr>
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</tr>
<tr>
<td></td>
<td><img src="image9.png" alt="" /></td>
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</tbody>
</table>

Run 1 copy, cut apart along lines, and store in an envelope for each pair or group of players.
Building Computational Fluency Blackline S 25.6  Run 1 copy, cut apart along lines, and store in an envelope for each pair or group of players.

## Fraction Bingo Cards  page 3 of 3

<table>
<thead>
<tr>
<th>9 inches</th>
<th></th>
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<tbody>
<tr>
<td><img src="image1.png" alt="Ruler" /></td>
<td><img src="image2.png" alt="Bingo Card" /></td>
<td><img src="image3.png" alt="Bingo Card" /></td>
</tr>
<tr>
<td>4 inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image4.png" alt="Ruler" /></td>
<td><img src="image5.png" alt="Bingo Card" /></td>
<td><img src="image6.png" alt="Bingo Card" /></td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
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<td></td>
</tr>
</tbody>
</table>

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Support Activity 26 ★ Instructional Considerations

Round & Add Tens

Overview
Players take turns spinning two digits. They arrange those digits to form a 2-digit number and then round the number to the nearest ten. After all multiples of 10 from 0 to 100 have been claimed, players estimate who has the highest total and then add their two-digit numbers to find the exact sum for each player. The player with the higher sum wins the game.

Skills & Concepts
★ reading, ordering, and comparing the place value of digits in whole numbers
★ rounding whole numbers to the nearest ten
★ using estimation strategies to solve problems
★ adding columns of multi-digit numbers

If players have trouble rounding a number, encourage them to locate the number on the number line and then identify whether it is closer to the next smaller multiple of 10 or the next higher multiple of 10.

When finding the sum of their numbers, encourage players to look for pairs of addends that are easy to add, rather than try to add the numbers in order or all at once using the traditional algorithm.

You can also invite players to compare the totals of the rounded numbers with the actual totals. This will give them some sense of how accurately the rounded numbers allow them to estimate the actual totals.

You'll need
★ Instructions for Round & Add Tens (Blacklines S 26.2 and S 26.3, 1 copy of each run back-to-back)
★ Round & Add Tens Spinner (Blackline S 26.4, 1 copy for every 2 pairs of players, cut in half)
★ Round & Add Tens Record Sheet (Blackline S 26.5, 1 copy for each player)
★ pencil and paperclip to use as a spinner
★ 1 red and 1 blue colored pencil or marker for each player
Support Activity 26

Round & Add Tens

You'll need

★ Instructions for Round & Add Tens (Blacklines S 26.2 and S 26.3, 1 copy of each run back-to-back)
★ Round & Add Tens Spinner (Blackline S 26.4, 1 copy for every 2 pairs of players, cut in half)
★ Round & Add Tens Record Sheet (Blackline S 26.5, 1 copy for each player)
★ pencil and paperclip to use as a spinner
★ 1 red and 1 blue colored pencil or marker for each player

Instructions for Round & Add Tens

1. Decide who will be the red player and who will be the blue player. Then write your names in the right places on the record sheet.

2. Take turns spinning one of the spinners. The player with the higher number gets to go first.

3. Spin both spinners. Decide which number to put in the tens place and which number to put in the ones place. You are trying to get the highest total score.

4. Round your number to the nearest ten and record it under the rounded number on the record sheet. Be sure to use your own colored pencil or marker. If the number in the ones place is less than 5, round down. If the number in the ones place is 5 or greater, round up.

Mayumi

I could have made 46 or 64, but I did 64, because it is higher. 64 rounds down to 60, so I wrote it in the box under 60.

(Continued on back.)
5  Take turns spinning both spinners, rounding, and recording. If a player can’t round two numbers to fill an empty box, he or she loses that turn.

Mrs. M  I could make 36, which rounds to 40. Or I could make 63, which rounds to 60. 40 and 60 are both filled already. That’s too bad. I lose that turn.

6  Keep playing until all the boxes are filled. Any player can decide at any time to spin just one spinner to try to get the 0 or 10.

7  After all the boxes are filled, estimate which player will have the highest score and circle the player on your record sheet.

8  Now add up your actual scores in the boxes below your names to find out who really got the highest score.
Round & Add Tens Spinner

1 2 3 4 5 6

Run 1 copy for every 2 pairs of players. Cut in half and give each pair a set of spinners.

Round & Add Tens Spinner

1 2 3 4 5 6

9 8 7 6 5 4
Round & Add Tens Record Sheet

After filling all the boxes, which player do you estimate will have the higher score?
(circle one) red player    blue player

Red Player's Name ___________________________  Blue Player's Name _______________________

Red Player's Actual Total                   Blue Player's Actual Total
Support Activity 27 ★ Instructional Considerations

Round & Add Hundreds

Overview
Players take turns spinning three digits. They arrange those digits to form a 3-digit number and then round the number to the nearest hundred. After all multiples of 100 from 0 to 1000 have been claimed, players estimate who has the highest total and then add their three-digit numbers to find the exact sum for each player. The player with the higher sum wins the game.

Skills & Concepts
★ reading, ordering, and comparing the place value of digits in whole numbers
★ rounding whole numbers to the nearest hundred
★ using estimation strategies to solve problems
★ adding columns of multi-digit numbers

If players have trouble rounding a number, encourage them to locate the number on the number line and then identify whether it is closer to the next smaller multiple of 100 or the next higher multiple of 100.

I’ll make 861. That would be between 850 and 900, so it’s closer to 900 than 800.

When finding the sum of their numbers, encourage players to look for pairs of addends that are easy to add, rather than try to add the numbers in order or all once using the traditional algorithm. You might also invite them to use a calculator if adding a series of 3-digit numbers mentally or with paper and pencil methods is beyond the scope of what incoming fifth graders are expected to do in your district.

You can also invite players to compare the totals of the rounded numbers with the actual totals. This will give them some sense of how accurately the rounded numbers allow them to estimate the actual totals.
Support Activity 27

Round & Add Hundreds

You’ll need

- Instructions for Round & Add Hundreds (Blacklines S 27.2 and S 27.3, 1 copy of each run back-to-back)
- Round & Add Hundreds Spinner (Blackline S 27.4, 1 copy for every 2 pairs of players, cut in half)
- Round & Add Hundreds Record Sheet (Blackline S 27.5, 1 copy for each player)
- calculator (optional)
- pencil and paperclip to use as a spinner
- 1 red and 1 blue colored pencil or marker for each player

Instructions for Round & Add Hundreds

1. Decide who will be the red player and who will be the blue player. Then write your names in the right places on the record sheet.

2. Take turns spinning one of the spinners. The player with the higher number gets to go first.

3. Spin all three spinners. Decide which number to put in the hundreds place, tens place, and ones place. You are trying to get the highest total score.

4. Round your number to the nearest hundred and record it under the rounded number on the record sheet. Be sure to use your own color pencil or marker. If the number in the tens place is less than 5, round down. If the number in the tens place is 5 or greater, round up.

(Continued on back.)
Support Activity 27 (cont.)

8 Now add up your actual scores in the boxes below your names to find out who really got the highest score.

I got 1, 6, and 8. I’ll put the 8 in the hundreds place, because I want the biggest number. So I could have 861 or 816. 816 rounds down to 800, but 861 rounds up to 900. I’ll write 861 under the 900.

5 Take turns spinning both spinners, rounding, and recording. If a player can’t round three numbers to fill an empty box, he or she loses that turn.

6 Keep playing until all the boxes are filled. Any player can decide at any time to spin just one or two spinners to try to get the 0 or 100.

7 After all the boxes are filled, estimate which player will have the highest score and circle the player on your record sheet.
Run 1 copy for every 2 pairs of players. Cut in half and give each pair a set of spinners.

Round & Add Hundreds Spinner

Round & Add Hundreds Spinner
Round & Add Hundreds Record Sheet

1. After filling all the boxes, which player do you estimate will have the higher score? (circle one) red player   blue player

Red Player’s Name ____________________________  Blue Player’s Name ____________________________

Red Player’s Actual Total

Blue Player’s Actual Total
Support Activity 28 ★ Instructional Considerations

Divide ‘Em Up

Overview
Together, players spin a number from 4 to 9 and then they each select one 2- or 3-digit number from a set of six numbers to divide by the number spun. The goal is to have the lowest total remainders after 3 turns, so players try to select a number that will divide by the number on the spinner with as little left over as possible. After 3 turns, players find the sum of their remainders and the player with the lowest sum wins.

Skills & Concepts
★ developing fluency with division facts
★ dividing 2-digit and 3-digit numbers by 1-digit numbers

At the end of the game, the goal is to have the lowest total of remainders. Therefore, players will want to pick numbers from a given set of choices that divide as evenly as possible by the number on the spinner. At first, students may pick the numbers more or less randomly, but as their number sense gets better, they may be able to make more strategic choices.

Give students the freedom to use whatever methods make the most sense to them to complete the calculations. Some will want to move base ten pieces around to form equal groups, while others may feel more comfortable working with numbers.

You’ll need
★ Instructions for Divide ‘Em Up (Blackline S 28.2)
★ Divide ‘Em Up Spinner (Blackline S 28.3, 1 copy for every 2 pairs of players, cut in half)
★ Divide ‘Em Up Record Sheet (Blackline S 28.4, 1 copy for each player)
★ base ten pieces (Use Blackline S 2.7 to make your own if needed.)
★ pencil and paperclip to use as a spinner

![Diagram of base ten pieces and division example]

Student 1
112 ÷ 9 = 12 r4

Student 2
112 ÷ 9 = 12 r4
112 - 108 = 4
112 ÷ 9 = 12 r4
Support Activity 28

Divide 'Em Up

You'll need

★ Instructions for Divide 'Em Up (Blackline S 28.2)
★ Divide 'Em Up Spinner (Blackline S 28.3, 1 copy for every 2 pairs of players, cut in half)
★ Divide 'Em Up Record Sheet (Blackline S 28.4, 1 copy for each player)
★ base ten pieces (Use Blackline S 2.7 to make your own if needed.)
★ pencil and paperclip to use as a spinner

Instructions for Divide 'Em Up

1. Get your own record sheet and write your name on it.
2. Spin the spinner.
3. You and your partner each pick one of the six numbers for this game. You'll divide this number by the number on the spinner. The goal is to get no remainder or the smallest remainder possible, so pick a number that you think will divide evenly or almost evenly by the number on the spinner. Once you pick a number, you cannot use it again during the game. You and your partner may pick the same number or different numbers each time.
4. Now divide the number you chose by the number on the spinner. You can do it in your head, use numbers or base ten pieces, or make sketches.
5. Do this three times. After three turns, add up your remainders. The player with the smallest sum wins.

Write an equation on the record sheet to show the division and record the remainder if there is one.
Run 1 copy for every 2 pairs of players. Cut in half and give each pair a spinner.
## Divide 'Em Up Record Sheet

### Game 1

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>75</td>
<td>84</td>
</tr>
<tr>
<td>91</td>
<td>112</td>
<td>117</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Equation</th>
<th>Remainder (if any)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

Sum of Remainders

### Game 2

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>72</td>
<td>83</td>
<td>96</td>
</tr>
<tr>
<td>127</td>
<td>135</td>
<td>143</td>
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</table>

<table>
<thead>
<tr>
<th>Equation</th>
<th>Remainder (if any)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Sum of Remainders

### Game 3

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>52</td>
<td>68</td>
<td>78</td>
</tr>
<tr>
<td>92</td>
<td>112</td>
<td>119</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Equation</th>
<th>Remainder (if any)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sum of Remainders
Support Activity 29 ★ Instructional Considerations

Money, Fraction & Decimal Showdown

Overview
Players take turns drawing cards, each of which shows a fraction, decimal number, or money amount. Players compare their amounts, and the player with the greater amount takes both cards. The player with the most cards at the end wins.

Skills & Concepts
★ recognizing, ordering, and comparing common fractions and decimals
★ recognizing equivalent forms of common fractions and decimals
★ using equivalence to compare fractions

You’ll need
★ Instructions for Money, Fraction & Decimal Showdown (Blackline S 29.2)
★ Money, Fraction & Decimal Showdown Cards, pages 1–5 (Blacklines S 29.3–29.7, 1 copy for each pair of players cut apart and stored in an envelope or plastic bag)

The models used in this game help students strengthen their understanding of the connections between money, fractions, and decimals. If students are having trouble comparing the amounts, encourage them to focus on the visual models. You may need to help students see that the whole for all three models is the same size, which is what allows us to compare the amounts using all three models.

I can put them next to each other and see \( \frac{4}{8} \) is bigger than $0.40.
Support Activity 29

Money, Fraction & Decimal Showdown

You'll need

- Instructions for Money, Fraction & Decimal Showdown (Blackline S 29.2)
- Money, Fraction & Decimal Showdown Cards, pages 1–5 (Blacklines S 29.3–29.7, 1 copy for each pair of players cut apart and stored in an envelope or plastic bag)

Instructions for Money, Fraction & Decimal Showdown

1. Place the cards in a stack face down.
2. Take turns drawing a card and reporting the money amount, fraction, or decimal you see. Work with your partner to compare the amounts on the two cards: which is worth more and how do you know? The person whose card is worth more gets to take both cards. If the two cards are worth the same amount, both players should each draw another card. The player whose card is worth more this time gets to take all 4 cards.
3. Continue until there are no cards left. The player with the most cards wins.
4. Shuffle the cards and play again.
5. After you have played the game at least twice, shuffle the cards well and then pick 14 of them. Put them in order from smallest to greatest. If some are equal in value, like $0.50 and $0.50, put them next to each other.
### Money, Fraction & Decimal Showdown Cards

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Decimal</th>
<th>Money</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\frac{2}{5}$</td>
<td>0.28</td>
<td>$1.37$</td>
</tr>
<tr>
<td>1.05</td>
<td>0.05</td>
<td>0.3</td>
</tr>
<tr>
<td>$0.25$</td>
<td>$0.50$</td>
<td>$1.05$</td>
</tr>
</tbody>
</table>
Money, Fraction & Decimal Showdown Cards  page 2 of 5

- $0.10
- $0.40
- \(\frac{3}{4}\)
- \(\frac{4}{4}\)
- $0.55
- $1.25
- $0.06
- 1.25
Money, Fraction & Decimal Showdown Cards

- $0.70
- $0.14
- 0.28
- $0.75
- 0.08
- $0.70
- 0.55
- 0.63
### Money, Fraction & Decimal Showdown Cards

<p>| | | | | | | | | | | | | | | | |</p>
<table>
<thead>
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</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>10</td>
<td>3</td>
<td>5</td>
<td></td>
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</tr>
<tr>
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<td>2</td>
<td>5</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>$1.37</td>
<td></td>
<td>0.02</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.05</td>
<td></td>
<td>0.75</td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

Run 1 copy for each pair of players. Cut apart and store in an envelope or resealable plastic bag.
Money, Fraction & Decimal Showdown Cards

- $0.75
- $0.40
- $0.76
- $0.40
- $0.75
fact fluency
Fact Fluency  Multiplication & Division

The Fact Fluency section provides the kind of practice students need to become fluent with multiplication and related division facts, and is designed to complement any intermediate grade math program. You can assess students' fluency on a regular basis using Assessment 3: Quick Facts (pages 35–39), or you can use the Fact Fluency section as a stand-alone resource if you prefer. The material is based on accessible and effective strategies for learning and remembering multiplication and related division facts. The table below summarizes each for your reference.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Category</th>
<th>Example</th>
<th>How the strategy works</th>
</tr>
</thead>
<tbody>
<tr>
<td>×2</td>
<td>doubles</td>
<td>2 × 6 = 12</td>
<td>To multiply any number by 2, double that number.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9 × 2 = 18</td>
<td></td>
</tr>
<tr>
<td>×3</td>
<td>doubles plus 1 set facts</td>
<td>3 × 6 = 18</td>
<td>To multiply any number by 3, double the number and then add that number.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9 × 3 = 27</td>
<td>For example, 3 × 6 = (2 × 6) + 6, which equals 18.</td>
</tr>
<tr>
<td>×4</td>
<td>double-doubles</td>
<td>4 × 6 = 24</td>
<td>To multiply any number by 4, double that number and then double the result.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9 × 4 = 36</td>
<td>For example, 4 × 6 = 2(2 × 6). This is equivalent to 2 × 12 = 24.</td>
</tr>
<tr>
<td>×5</td>
<td>half-decade facts</td>
<td>5 × 7 = 35</td>
<td>To multiply any number by 5, multiply by 10 first and then divide the result by 2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 × 5 = 40</td>
<td>For example, 5 × 7 = (10 × 7) ÷ 2. 10 × 7 = 70, and 70 ÷ 2 = 35.</td>
</tr>
<tr>
<td>×6</td>
<td>triple then double facts</td>
<td>6 × 7 = 42</td>
<td>To multiply any number by 6, triple the number first and then double the result.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 × 6 = 48</td>
<td>For example, 6 × 7 = 2(3 × 7). 3 × 7 = 21, and 21 ÷ 2 = 42.</td>
</tr>
<tr>
<td>×8</td>
<td>double-double-doubles</td>
<td>4 × 8 = 32</td>
<td>To multiply any number by 8, double the number 3 times.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 × 12 = 96</td>
<td>For example, 8 × 12 = (2(2 × 8)). 2 × 8 = 16, 2 × 16 = 32, and 2 × 32 = 64.</td>
</tr>
<tr>
<td>×9</td>
<td>decade minus 1 set facts</td>
<td>9 × 7 = 63</td>
<td>To multiply any number by 9, think of the related decade fact and then subtract 1 set</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9 × 9 = 81</td>
<td>of the number itself. For example, 9 × 7 = (10 × 7) – 7. (10 × 7) – 7 = 70 – 7, which is 63.</td>
</tr>
<tr>
<td>×10</td>
<td>decade facts</td>
<td>10 × 7 = 70</td>
<td>Multiplying by 10 comes naturally for students who have a solid grasp of skip counting and place value concepts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9 × 10 = 90</td>
<td></td>
</tr>
<tr>
<td>×11</td>
<td>decade plus 1 set facts</td>
<td>11 × 3 = 33</td>
<td>To multiply any number by 11, think of the related 10’s fact and then add 1 set of the number itself. For example, 11 × 9 = (10 × 9) + 9. (10 × 9) + 9 = 90 + 9, which is 99.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 × 11 = 88</td>
<td></td>
</tr>
<tr>
<td>×12</td>
<td>decade plus 2 sets facts</td>
<td>12 × 5 = 60</td>
<td>To multiply any number by 12, think of the related 10’s fact and then add 2 sets of the number itself. For example, 12 × 7 = (10 × 7) + (2 × 7). (10 × 7) + (2 × 7) = 70 + 14, which is 84.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 × 12 = 84</td>
<td></td>
</tr>
</tbody>
</table>

You’ll notice that there is no explicit strategy for multiplying by 7. That’s because all of the 7’s facts, with the exception of 7 × 7, can be solved using the other strategies. Students will generate their own strategies for 7 × 7, for example, recalling that 7 × 5 is 35 and then adding 7 × 2 for a total of 49. Others may remember that 7 × 6 is 42 and add another 7 to get 49.

You’ll notice too, that there are no explicit division strategies listed above. This is because students generally learn their division facts by remembering the related multiplication facts. The expression 56 ÷ 7, for instance, can be interpreted to mean, “How many 7’s are there in 56?” This question is easily answered if one knows that 8 × 7 = 56. For this reason, every worksheet in this supplement pairs multiplication and division. In order to provide that extra boost many students need with division, however, this operation is featured on the game sheets throughout the supplement.

The Fact Fluency section contains 6-pages for each multiplier from 2 through 12. For each multiplier, you’ll find 2 worksheets, 2 games, and a set of flashcards suitable for use at home or school. These mate-
materials are formatted in the same way for every multiplier, and each set refers to a strategy for multiplying by that number.

Depending on the needs of your class, you might run a copy of the entire set of materials for each student to use throughout the year. Alternatively, you might run multiple copies of the sheets for each multiplier and each range of facts and keep them in labeled folders that are easily accessible to students. You can have students work on the packets at school during a designated time and/or take them home for practicing with a family member.
Fact Fluency with 2’s  Multiplying & Dividing by 2

### MULTIPLICATION FACT FLUENCY

<table>
<thead>
<tr>
<th>Strategy</th>
<th>How It Works</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doubles</td>
<td>To multiply any number by 2, double it.</td>
<td>What is $2 \times 8$? It’s 8 doubled. $2 \times 8 = 8 + 8 = 16$</td>
</tr>
</tbody>
</table>

1. Multiply each number in the grid by 2. Write each product in the box. The first one is done for you.

```
<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>7</th>
<th>3</th>
<th>9</th>
<th>11</th>
<th>8</th>
<th>12</th>
<th>6</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

2. Use the doubles strategy to help solve these combinations.

- $2 \times 23 = ____$
- $2 \times 34 = ____$
- $2 \times 43 = ____$
- $2 \times 52 = ____$

```
28
\times 2
\underline{56}
```

3. Use what you know about multiplying by 2 to solve these division problems.

- $12 \div 2 = ____$
- $20 \div 2 = ____$
- $22 \div 2 = ____$
- $26 \div 2 = ____$

```
2 \overline{18} 
2 \overline{14} 
2 \overline{16} 
2 \overline{24}
```
Fact Fluency with 2’s  Practice Multiplying by 2 & 10

1 Circle all the doubles (×2) in blue. Then go back and fill in the answers with regular pencil.

2 Circle all the decade facts (×10) in red. Then go back and fill in the answers with regular pencil.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>12</th>
<th>10</th>
<th>1</th>
<th>4</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>×2</td>
<td>×10</td>
<td>×2</td>
<td>×2</td>
<td>×10</td>
<td>×2</td>
<td>×2</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>12</td>
<td>10</td>
<td>1</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>×2</td>
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<tr>
<td>3</td>
<td>6</td>
<td>11</td>
<td>13</td>
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<td>8</td>
<td>34</td>
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<tr>
<td>×2</td>
<td>×10</td>
<td>×2</td>
<td>×2</td>
<td>×10</td>
<td>×2</td>
<td>×2</td>
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<tr>
<td>9</td>
<td>7</td>
<td>5</td>
<td>25</td>
<td>9</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>×2</td>
<td>×2</td>
<td>×10</td>
<td>×2</td>
<td>×10</td>
<td>×2</td>
<td>×2</td>
</tr>
</tbody>
</table>

3 Write two multiplication and two division facts for each set of numbers.

example

\[
\begin{array}{c}
2 \\
7 \\
14
\end{array}
\]

\[
\begin{array}{c}
2 \\
7 \\
2
\end{array}
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\begin{array}{c}
14 \\
7 \\
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\end{array}
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14
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\end{array}
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\begin{array}{c}
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7 \\
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\end{array}
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Fact Fluency with 2’s Division Capture 2’s & 10’s

MULTIPLICATION FACT FLUENCY

You’ll need
★ a partner
★ 2 pencils or markers in different colors
★ paperclip and pencil to use as a spinner

Instructions for Division Capture 2’s & 10’s

1. Take turns spinning the spinner. The player who gets the higher number goes first.

2. Take turns spinning the spinner. Use the number you spin to fill in the answer to one of the division problems below. Be sure to use your own color pencil.

3. If the box you need is already filled, you lose your turn.

4. Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.

5. Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

<table>
<thead>
<tr>
<th>100 ÷ 10</th>
<th>60 ÷ 10</th>
<th>80 ÷ 10</th>
<th>12 ÷ 2</th>
<th>50 ÷ 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 ÷ 2</td>
<td>120 ÷ 10</td>
<td>6 ÷ 2</td>
<td>70 ÷ 10</td>
<td>18 ÷ 2</td>
</tr>
<tr>
<td>24 ÷ 2</td>
<td>110 ÷ 10</td>
<td>20 ÷ 2</td>
<td>40 ÷ 10</td>
<td>8 ÷ 2</td>
</tr>
<tr>
<td>14 ÷ 2</td>
<td>30 ÷ 10</td>
<td>90 ÷ 10</td>
<td>10 ÷ 2</td>
<td>22 ÷ 2</td>
</tr>
</tbody>
</table>

Scoring
3 in a Row—1 point
4 in a Row—2 points

Player 1 Points
Player 2 Points
Fact Fluency with 2’s  Flashcard Bingo 2’s

You’ll need

★ a partner
★ one set of 2’s flashcards and your flashcard pocket
★ marker or crayon for each player

Instructions for Flashcard Bingo 2’s

1 Mix up one set of flashcards and arrange them so that the multiplication side is facing up on all of them. Put them in the flashcard pocket.

2 Take turns pulling 1 card. Each time, both players color the product on their board or mark it with an x.

3 The first player to get two rows of 4 going horizontally, vertically, or diagonally, wins.

4 Play the game a second time using the division side of your cards.
Fact Fluency with 2’s Flashcards, page 1 of 2

- Cut out this set of 12 flashcards.
- Fold a 3-by-5 index card in half.
- Tape or staple both sides but leave the top open.
- Label this storage pocket with your name and the set number.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>x 2</td>
<td>x 2</td>
<td>x 2</td>
<td>x 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>x 2</td>
<td>x 2</td>
<td>x 2</td>
<td>x 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>x 2</td>
<td>x 2</td>
<td>x 2</td>
<td>x 2</td>
</tr>
</tbody>
</table>

Blackline F 5 Blackline F 5 Blackline F 5 Blackline F 5
Blackline F 5 Blackline F 5 Blackline F 5 Blackline F 5
Blackline F 5 Blackline F 5 Blackline F 5 Blackline F 5
Blackline F 5 Blackline F 5 Blackline F 5 Blackline F 5

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Fact Fluency with 2’s  Flashcards, page 2 of 2

Blackline F 6
8 ÷ 2
6 ÷ 2
4 ÷ 2
2 ÷ 2

Blackline F 6
16 ÷ 2
14 ÷ 2
12 ÷ 2
10 ÷ 2

Blackline F 6
24 ÷ 2
22 ÷ 2
20 ÷ 2
18 ÷ 2

Building Computational Fluency Blackline F 6  Run back-to-back with Blackline F 5.
### Fact Fluency with 3’s  Multiplying & Dividing by 3

**MULTIPLICATION FACT FLUENCY**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>How It Works</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doubles Plus One Set</td>
<td>To multiply any number by 3, double it and add one more set of that number.</td>
<td>What is $3 \times 9$? &lt;br&gt;It’s 9 doubled plus 9. &lt;br&gt;$3 \times 9 = (9 + 9) + 9$ &lt;br&gt;$= 18 + 9 = 27$</td>
</tr>
</tbody>
</table>

1. Multiply each number in the grid by 3. Write each product in the box. The first one is done for you.

   | 5 | 7 | 3 | 9 | 11 | 8 | 12 | 6 | 2 |
---|---|---|---|---|----|---|----|---|---|
15 |   |   |   |   |    |   |    |   |   |

   | 10 | 8 | 11 | 1 | 9 | 5 | 0 | 12 | 4 |
---|----|---|----|---|---|---|---|----|---|

2. Use the doubles plus one set strategy to help solve these combinations.

   $3 \times 13 = \underline{\hspace{2cm}}$  $3 \times 24 = \underline{\hspace{2cm}}$  $3 \times 25 = \underline{\hspace{2cm}}$  $3 \times 33 = \underline{\hspace{2cm}}$

   | 52 | 103 | 310 |
---|----|-----|-----|
$\times 3$ | $\times 3$ | $\times 3$ |

3. Use what you know about multiplying by 3 to solve these division problems.

   $36 \div 3 = \underline{\hspace{2cm}}$  $33 \div 3 = \underline{\hspace{2cm}}$  $27 \div 3 = \underline{\hspace{2cm}}$  $15 \div 3 = \underline{\hspace{2cm}}$

   $3)30$  $3)21$  $3)24$  $3)18$
Fact Fluency with 3’s  Practice Multiplying by 3 & 2

1. Circle all the doubles plus one set facts (×3) in blue. Then go back and fill in the answers with regular pencil.

2. Circle all the doubles (×2) in red. Then go back and fill in the answers with regular pencil.

3. Write two multiplication and two division facts for each set of numbers.

a  b  c  d

[Diagram with triangles and numbers]
Fact Fluency with 3’s  Division Capture 3’s & 2’s

You’ll need

★ a partner
★ 2 pencils or markers in different colors
★ paperclip and pencil to use as a spinner

Instructions for Division Capture 3’s & 2’s

1. Take turns spinning the spinner. The player who gets the higher number goes first.

2. Take turns spinning the spinner. Use the number you spin to fill in the answer to one of the division problems below. Be sure to use your own color pencil.

3. If the box you need is already filled, you lose your turn.

4. Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.

5. Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

---

<table>
<thead>
<tr>
<th>21 ÷ 3</th>
<th>8 ÷ 2</th>
<th>33 ÷ 3</th>
<th>18 ÷ 2</th>
<th>12 ÷ 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 ÷ 2</td>
<td>24 ÷ 3</td>
<td>6 ÷ 2</td>
<td>9 ÷ 3</td>
<td>20 ÷ 2</td>
</tr>
<tr>
<td>18 ÷ 3</td>
<td>24 ÷ 2</td>
<td>36 ÷ 3</td>
<td>10 ÷ 2</td>
<td>30 ÷ 3</td>
</tr>
<tr>
<td>14 ÷ 2</td>
<td>15 ÷ 3</td>
<td>22 ÷ 2</td>
<td>27 ÷ 3</td>
<td>12 ÷ 2</td>
</tr>
</tbody>
</table>

Scoring

3 in a Row—1 point
4 in a Row—2 points

Player 1 Points | Player 2 Points

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**Fact Fluency with 3’s** Flashcard Bingo 3’s

### MULTIPLICATION FACT FLUENCY

#### You’ll need

- a partner
- one set of 3’s flashcards and your flashcard pocket
- marker or crayon for each player

#### Instructions for Flashcard Bingo 3’s

1. Mix up one set of flashcards and arrange them so that the multiplication side is facing up on all of them. Put them in the flashcard pocket.

2. Take turns pulling 1 card. Each time, both players color the product on their board or mark it with an x.

3. The first player to get two rows of 4 going horizontally, vertically, or diagonally, wins.

4. Play the game a second time using the division side of your cards.

<table>
<thead>
<tr>
<th>Player 1</th>
<th>Player 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 × 3</td>
<td>3 × 15</td>
</tr>
<tr>
<td>21 × 12</td>
<td>6 × 18</td>
</tr>
<tr>
<td>36 × 21</td>
<td>9 × 30</td>
</tr>
<tr>
<td>24 × 33</td>
<td>6 × 18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Game 1 ÷</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 ÷ 4</td>
</tr>
<tr>
<td>12 ÷ 6</td>
</tr>
<tr>
<td>10 ÷ 7</td>
</tr>
<tr>
<td>5 ÷ 2</td>
</tr>
</tbody>
</table>
Fact Fluency with 3’s  Flashcards, page 1 of 2

- Cut out this set of 12 flashcards.
- Fold a 3-by-5 index card in half.
- Tape or staple both sides but leave the top open.
- Label this storage pocket with your name and the set number.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>× 3</td>
<td>× 3</td>
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<td>× 3</td>
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<td>5</td>
<td>6</td>
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<tr>
<td>9</td>
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<tr>
<td>× 3</td>
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<td>× 3</td>
<td>× 3</td>
</tr>
</tbody>
</table>
Fact Fluency with 3’s Flashcards, page 2 of 2
Fact Fluency with 4’s   Multiplying & Dividing by 4

### MULTIPLICATION FACT FLUENCY

<table>
<thead>
<tr>
<th>Strategy</th>
<th>How It Works</th>
<th>Example</th>
</tr>
</thead>
</table>
| Double-Doubles| To multiply any number by 4, double it and then double the result. | What is 4 × 7?  
It’s 7 doubled twice.  
Double once: 7 + 7 = 14  
Double twice: 14 + 14 = 28 |

1. Multiply each number in the grid by 4. Write each product in the box. The first one is done for you.

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<td>7</td>
<td>3</td>
<td>9</td>
<td>11</td>
<td>8</td>
<td>12</td>
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<td>20</td>
</tr>
<tr>
<td>10</td>
<td>12</td>
<td>11</td>
<td>1</td>
<td>9</td>
<td>5</td>
<td>0</td>
<td>12</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

2. Use the double-doubles strategy to help solve these combinations.

4 × 14 = ______  4 × 24 = ______  4 × 45 = ______  4 × 50 = ______

25  
× 4

125  
× 4

220  
× 4

3. Use what you know about multiplying by 4 to solve these division problems.

24 ÷ 4 = ______  40 ÷ 4 = ______  36 ÷ 4 = ______  28 ÷ 4 = ______

4 | 44
4 | 20
4 | 32
4 | 48
Fact Fluency with 4’s  Practice Multiplying by 4 & 2

MULTIPLICATION FACT FLUENCY

1 Circle all the double-doubles (×4) in blue. Then go back and fill in the answers with regular pencil.

2 Circle all the doubles (×2) in red. Then go back and fill in the answers with regular pencil.

<table>
<thead>
<tr>
<th></th>
<th>× 4</th>
<th></th>
<th>× 2</th>
<th></th>
<th>× 4</th>
<th></th>
<th>× 2</th>
<th></th>
<th>× 4</th>
<th></th>
<th>× 4</th>
</tr>
</thead>
<tbody>
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<td>5</td>
<td>13</td>
<td>12</td>
<td>12</td>
<td>9</td>
<td>4</td>
<td>15</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>× 4</td>
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<td>× 4</td>
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</table>

3 Write two multiplication and two division facts for each set of numbers.

a

<table>
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<td>9</td>
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___ × ___ = ___

___ × ___ = ___

___ × ___ = ___

___ × ___ = ___

___ ÷ ___ = ___

___ ÷ ___ = ___

___ ÷ ___ = ___

___ ÷ ___ = ___

b

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</tbody>
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___ × ___ = ___

___ × ___ = ___

___ × ___ = ___

___ × ___ = ___

___ ÷ ___ = ___

___ ÷ ___ = ___

___ ÷ ___ = ___

___ ÷ ___ = ___

c

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___ × ___ = ___

___ × ___ = ___

___ × ___ = ___

___ × ___ = ___

___ ÷ ___ = ___

___ ÷ ___ = ___

___ ÷ ___ = ___

___ ÷ ___ = ___

d

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___ × ___ = ___

___ × ___ = ___

___ × ___ = ___

___ × ___ = ___

___ ÷ ___ = ___

___ ÷ ___ = ___

___ ÷ ___ = ___

___ ÷ ___ = ___
Fact Fluency with 4’s Division Capture 4’s & 2’s

You’ll need

★ a partner
★ 2 pencils or markers in different colors
★ paperclip and pencil to use as a spinner

Instructions for Division Capture 4’s & 2’s

1. Take turns spinning the spinner. The player who gets the higher number goes first.

2. Take turns spinning the spinner. Use the number you spin to fill in the answer to one of the division problems below. Be sure to use your own color pencil.

3. If the box you need is already filled, you lose your turn.

4. Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.

5. Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.
Fact Fluency with 4’s  Flashcard Bingo 4’s

You’ll need

★ a partner
★ one set of 4’s flashcards and your flashcard pocket
★ marker or crayon for each player

Instructions for Flashcard Bingo 4’s

1 Mix up one set of flashcards and arrange them so that the multiplication side is facing up on all of them. Put them in the flashcard pocket.

2 Take turns pulling 1 card. Each time, both players color the product on their board or mark it with an x.

3 The first player to get two rows of 4 going horizontally, vertically, or diagonally, wins.

4 Play the game a second time using the division side of your cards.

Game 1 ×

<table>
<thead>
<tr>
<th>Player 1</th>
<th>Player 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 20 16 8</td>
<td>24 4 28 40</td>
</tr>
<tr>
<td>48 8 24 44</td>
<td>28 16 12 32</td>
</tr>
<tr>
<td>40 4 12 36</td>
<td>36 24 48 20</td>
</tr>
<tr>
<td>24 28 16 32</td>
<td>32 44 8 36</td>
</tr>
</tbody>
</table>

Game 2 ÷

<table>
<thead>
<tr>
<th>Player 1</th>
<th>Player 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 6 10 1</td>
<td>3 6 7 4</td>
</tr>
<tr>
<td>5 10 2 9</td>
<td>8 11 12 6</td>
</tr>
<tr>
<td>12 4 12 8</td>
<td>5 9 10 7</td>
</tr>
<tr>
<td>9 11 7 3</td>
<td>1 8 5 2</td>
</tr>
</tbody>
</table>
Fact Fluency with 4’s  Flashcards, page 1 of 2

- Cut out this set of 12 flashcards.
- Fold a 3-by-5 index card in half.
- Tape or staple both sides but leave the top open.
- Label this storage pocket with your name and the set number.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>x 4</td>
<td>x 4</td>
<td>x 4</td>
<td>x 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>x 4</td>
<td>x 4</td>
<td>x 4</td>
<td>x 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>x 4</td>
<td>x 4</td>
<td>x 4</td>
<td>x 4</td>
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</tbody>
</table>
Fact Fluency with 4’s  Flashcards, page 2 of 2

16 ÷ 4  Blackline F 18
12 ÷ 4  Blackline F 18
8 ÷ 4  Blackline F 18
4 ÷ 4  Blackline F 18

32 ÷ 4  Blackline F 18
28 ÷ 4  Blackline F 18
24 ÷ 4  Blackline F 18
20 ÷ 4  Blackline F 18

48 ÷ 4  Blackline F 18
44 ÷ 4  Blackline F 18
40 ÷ 4  Blackline F 18
36 ÷ 4  Blackline F 18
Fact Fluency with 5’s  Multiplying & Dividing by 5

**MULTIPLICATION FACT FLUENCY**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>How It Works</th>
<th>Example</th>
</tr>
</thead>
</table>
| Half-Decade | To multiply any number by 5, multiply it by 10 first and then divide the answer in half. | What is $5 \times 8$?  
It’s $10 \times 8$ divided in half.  
$5 \times 8 = (10 \times 8) \div 2$  
$= 80 \div 2 = 40$ |

1. Multiply each number in the grid by 5. Write each product in the box. The first one is done for you.

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>7</th>
<th>3</th>
<th>9</th>
<th>11</th>
<th>8</th>
<th>12</th>
<th>6</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>10</th>
<th>8</th>
<th>11</th>
<th>1</th>
<th>9</th>
<th>5</th>
<th>0</th>
<th>12</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

2. Use the half-decade strategy to help solve these combinations.

$5 \times 15 = \underline{\hspace{1cm}}$  
$5 \times 20 = \underline{\hspace{1cm}}$  
$5 \times 25 = \underline{\hspace{1cm}}$  
$5 \times 45 = \underline{\hspace{1cm}}$

$30 \times 5 \underline{\hspace{1cm}}$  
$80 \times 5 \underline{\hspace{1cm}}$  
$30 \times 5 \underline{\hspace{1cm}}$

3. Use what you know about multiplying by 5 to solve these division problems.

$30 \div 5 = \underline{\hspace{1cm}}$  
$45 \div 5 = \underline{\hspace{1cm}}$  
$55 \div 5 = \underline{\hspace{1cm}}$  
$35 \div 5 = \underline{\hspace{1cm}}$

$5 \underline{\hspace{1cm}}$  
$5 \underline{\hspace{1cm}}$  
$5 \underline{\hspace{1cm}}$  
$5 \underline{\hspace{1cm}}$
**Fact Fluency with 5’s**  Practice Multiplying by 5 & 10

1. Circle all the half-decade facts (×5) in blue. Then go back and fill in the answers with regular pencil.

2. Circle all the decade facts (×10) in red. Then go back and fill in the answers with regular pencil.

   1 5 12 10 9 4 15
   × 5 × 5 × 10 × 5 × 10 × 10 × 10

   9 2 6 14 11 6 20
   × 5 × 5 × 5 × 5 × 5 × 10 × 5

   4 7 23 25 12 7 12
   × 5 × 5 × 5 × 10 × 10 × 5

3. Write two multiplication and two division facts for each set of numbers.

   a
   \[
   \begin{align*}
   5 & \times 8 = 40 \\
   5 & \times 12 = 60 \\
   40 & \div 5 = 8 \\
   60 & \div 5 = 12
   \end{align*}
   \]

   b
   \[
   \begin{align*}
   5 & \times 12 = 60 \\
   5 & \times 25 = 125 \\
   60 & \div 5 = 12 \\
   125 & \div 5 = 25
   \end{align*}
   \]

   c
   \[
   \begin{align*}
   9 & \times 5 = 45 \\
   9 & \times 12 = 108 \\
   45 & \div 9 = 5 \\
   108 & \div 9 = 12
   \end{align*}
   \]

   d
   \[
   \begin{align*}
   7 & \times 5 = 35 \\
   7 & \times 12 = 84 \\
   35 & \div 7 = 5 \\
   84 & \div 7 = 12
   \end{align*}
   \]
Fact Fluency with 5’s Division Capture 5’s & 10’s

MULTIPLICATION FACT FLUENCY

You’ll need

★ a partner

★ 2 pencils or markers in different colors

★ paperclip and pencil to use as a spinner

Instructions for Division Capture 5’s & 10’s

1 Take turns spinning the spinner. The player who gets the higher number goes first.

2 Take turns spinning the spinner. Use the number you spin to fill in the answer to one of the division problems below. Be sure to use your own color pencil.

3 If the box you need is already filled, you lose your turn.

4 Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.

5 Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

Scoring

3 in a Row—1 point
4 in a Row—2 points

<table>
<thead>
<tr>
<th>15 ÷ 5</th>
<th>50 ÷ 5</th>
<th>60 ÷ 5</th>
<th>60 ÷ 10</th>
<th>35 ÷ 5</th>
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<tbody>
<tr>
<td></td>
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<td></td>
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</tr>
<tr>
<td>80 ÷ 10</td>
<td>20 ÷ 5</td>
<td>30 ÷ 10</td>
<td>55 ÷ 5</td>
<td>90 ÷ 10</td>
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</tr>
<tr>
<td>120 ÷ 10</td>
<td>40 ÷ 5</td>
<td>100 ÷ 10</td>
<td>30 ÷ 5</td>
<td>40 ÷ 10</td>
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</tr>
<tr>
<td>70 ÷ 10</td>
<td>25 ÷ 5</td>
<td>45 ÷ 5</td>
<td>50 ÷ 5</td>
<td>110 ÷ 10</td>
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</table>
Fact Fluency with 5’s  Flashcard Bingo 5’s

You’ll need

★ a partner

★ one set of 5’s flashcards and your flashcard pocket

★ marker or crayon for each player

Instructions for Flashcard Bingo 5’s

1 Mix up one set of flashcards and arrange them so that the multiplication side is facing up on all of them. Put them in the flashcard pocket.

2 Take turns pulling 1 card. Each time, both players color the product on their board or mark it with an x.

3 The first player to get two rows of 4 going horizontally, vertically, or diagonally, wins.

4 Play the game a second time using the division side of your cards.
Fact Fluency with 5’s Flashcards, page 1 of 2

- Cut out this set of 12 flashcards.
- Fold a 3-by-5 index card in half.
- Tape or staple both sides but leave the top open.
- Label this storage pocket with your name and the set number.

<p>| | | | |</p>
<table>
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<tr>
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<tbody>
<tr>
<td>1</td>
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</table>

Blackline F 23
**Fact Fluency with 6’s  Multiplying & Dividing by 6**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>How It Works</th>
<th>Example</th>
</tr>
</thead>
</table>
| Triple Then Double | To multiply any number by 6, triple the number and then double the answer. | What is $6 \times 8$?  
It’s 8 tripled, then doubled.  
Triple first: $8 + 8 + 8 = 24$  
Then double: $24 + 24 = 48$ |

1. Multiply each number in the grid by 6. Write each product in the box. The first one is done for you.

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<td>6</td>
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<tbody>
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<td>9</td>
<td>5</td>
<td>0</td>
<td>12</td>
<td>4</td>
</tr>
</tbody>
</table>

2. Use the triple then double strategy to help solve these combinations.

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<table>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$6 \times 15$ =</td>
<td>$6 \times 20$ =</td>
<td>$6 \times 33$ =</td>
<td>$6 \times 50$ =</td>
<td></td>
<td></td>
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<p>| | | | | | | | | |</p>
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<tbody>
<tr>
<td>$\times 6$</td>
<td>$\times 6$</td>
<td>$\times 6$</td>
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</tbody>
</table>

3. Use what you know about multiplying by 6 to solve these division problems.

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>$42 \div 6$ =</td>
<td>$54 \div 6$ =</td>
<td>$36 \div 6$ =</td>
<td>$60 \div 6$ =</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | | | | |</p>
<table>
<thead>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$6\sqrt{72}$</td>
<td>$6\sqrt{48}$</td>
<td>$6\sqrt{66}$</td>
<td>$6\sqrt{30}$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Fact Fluency with 6’s  Practice Multiplying by 6 & 5

1. Circle all the triple then double facts (×6) in blue. Then go back and fill in the answers with regular pencil.

2. Circle all the half-decade facts (×5) in red. Then go back and fill in the answers with regular pencil.

3. Write two multiplication and two division facts for each set of numbers.
Fact Fluency with 6’s  Division Capture 6’s & 5’s

**MULTIPLICATION FACT FLUENCY**

**You’ll need**
- a partner
- 2 pencils or markers in different colors
- paperclip and pencil to use as a spinner

**Instructions for Division Capture 6’s & 5’s**

1. Take turns spinning the spinner. The player who gets the higher number goes first.

2. Take turns spinning the spinner. Use the number you spin to fill in the answer to one of the division problems below. Be sure to use your own color pencil.

3. If the box you need is already filled, you lose your turn.

4. Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.

5. Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

<table>
<thead>
<tr>
<th>15 ÷ 5</th>
<th>50 ÷ 5</th>
<th>60 ÷ 5</th>
<th>36 ÷ 6</th>
<th>35 ÷ 5</th>
</tr>
</thead>
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<table>
<thead>
<tr>
<th>48 ÷ 6</th>
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<th>18 ÷ 6</th>
<th>55 ÷ 5</th>
<th>54 ÷ 6</th>
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</table>

<table>
<thead>
<tr>
<th>72 ÷ 6</th>
<th>40 ÷ 5</th>
<th>60 ÷ 6</th>
<th>30 ÷ 5</th>
<th>24 ÷ 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>42 ÷ 6</th>
<th>25 ÷ 5</th>
<th>45 ÷ 5</th>
<th>30 ÷ 6</th>
<th>66 ÷ 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Scoring**
3 in a Row—1 point
4 in a Row—2 points

<table>
<thead>
<tr>
<th>Player 1 Points</th>
<th>Player 2 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Fact Fluency with 6’s  Flashcard Bingo 6’s

You’ll need

⭐ a partner
⭐ one set of 6’s flashcards and your flashcard pocket
⭐ marker or crayon for each player

Instructions for Flashcard Bingo 6’s

1 Mix up one set of flashcards and arrange them so that the multiplication side is facing up on all of them. Put them in the flashcard pocket.

2 Take turns pulling 1 card. Each time, both players color the product on their board or mark it with an x.

3 The first player to get two rows of 4 going horizontally, vertically, or diagonally, wins.

4 Play the game a second time using the division side of your cards.
Fact Fluency with 6’s  Flashcards, page 1 of 2

- Cut out this set of 12 flashcards.
- Fold a 3-by-5 index card in half.
- Tape or staple both sides but leave the top open.
- Label this storage pocket with your name and the set number.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>× 6</td>
<td>× 6</td>
<td>× 6</td>
<td>× 6</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>× 6</td>
<td>× 6</td>
<td>× 6</td>
<td>× 6</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>× 6</td>
<td>× 6</td>
<td>× 6</td>
<td>× 6</td>
</tr>
</tbody>
</table>
Fact Fluency with 6’s  Flashcards, page 2 of 2

24 ÷ 6  18 ÷ 6  12 ÷ 6  6 ÷ 6
24 ÷ 6  18 ÷ 6  12 ÷ 6  6 ÷ 6
48 ÷ 6  42 ÷ 6  36 ÷ 6  30 ÷ 6
48 ÷ 6  42 ÷ 6  36 ÷ 6  30 ÷ 6
72 ÷ 6  66 ÷ 6  60 ÷ 6  54 ÷ 6
72 ÷ 6  66 ÷ 6  60 ÷ 6  54 ÷ 6
Fact Fluency with 7’s  Multiplying & Dividing by 7

**MULTIPLICATION FACT FLUENCY**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>How It Works</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn-Around and Learn One More Fact</td>
<td>To multiply any number by 7, remember the other facts you know and turn them around.</td>
<td>What is $7 \times 8$? It’s exactly the same as $8 \times 7$. You can remember the answer or use the double-double-doubles strategy to find it.</td>
</tr>
<tr>
<td></td>
<td>Remember that $7 \times 4 = 4 \times 7$</td>
<td>$7 \times 8 = 8 \times 7$</td>
</tr>
<tr>
<td></td>
<td>$7 \times 9 = 9 \times 7$ and so on.</td>
<td>$8 \times 7$ is 7 doubled 3 times.</td>
</tr>
<tr>
<td></td>
<td>Then learn one more: $7 \times 7 = 49$</td>
<td>Double once: $7 + 7 = 14$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double twice: $14 + 14 = 28$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double three times: $28 + 28 = 56$</td>
</tr>
</tbody>
</table>

1. Multiply each number in the grid by 7. Write each product in the box. The first one is done for you.

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>7</th>
<th>3</th>
<th>9</th>
<th>11</th>
<th>8</th>
<th>12</th>
<th>6</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Use what you know about multiplying by 7 to solve these division problems.

$35 \div 7 = _____$  $28 \div 7 = _____$  $77 \div 7 = _____$  $63 \div 7 = _____$

$21 \div 7 = _____$  $70 \div 7 = _____$  $7 \div 7 = 7$  $7 \div 7 = 7$

$7 \div 49$  $7 \div 84$  $7 \div 42$  $7 \div 14$
Fact Fluency with 7’s Practice Multiplying by 7 & 8

1. Circle all the turn around and learn one more facts (×7) in blue. Then go back and fill in the answers with regular pencil.

2. Circle all the double-double-doubles (×8) in red. Then go back and fill in the answers with regular pencil.

3. Write two multiplication and two division facts for each set of numbers.

<table>
<thead>
<tr>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="a.png" alt="Triangle" /></td>
<td><img src="b.png" alt="Triangle" /></td>
<td><img src="c.png" alt="Triangle" /></td>
<td><img src="d.png" alt="Triangle" /></td>
</tr>
</tbody>
</table>

---

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Fact Fluency with 7’s  Missing Number Capture 7’s & 8’s

MULTIPLICATION FACT FLUENCY

You’ll need
- a partner
- 2 pencils or markers in different colors
- paperclip and pencil to use as a spinner

Instructions for Missing Number Capture 7’s & 8’s

1. Take turns spinning the spinner. The player who gets the higher number goes first.

2. Take turns spinning the spinner. Use the number you spin to complete one of the problems below. Be sure to use your own color pencil.

3. If the box you need is already filled, you lose your turn.

4. Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.

5. Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Score</th>
</tr>
</thead>
</table>
|   |   | \(7 \times 8\) | \(7 \times 8\) | \(8 \times 7\) | 3 in a Row—1 point
|   |   | \(7 \times 8\) | \(7 \times 8\) | \(8 \times 7\) | 4 in a Row—2 points
|   |   | \(8 \times 8\) | \(8 \times 8\) | \(8 \times 8\) | Player 1 Points
|   |   | \(8 \times 8\) | \(8 \times 8\) | \(8 \times 8\) | Player 2 Points
|   |   | \(8 \times 8\) | \(8 \times 8\) | \(8 \times 8\) | 5 in a Row—3 points

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### Fact Fluency with 7’s  Flashcard Bingo 7’s

**MULTIPLICATION FACT FLUENCY**

#### You’ll need
- a partner
- one set of 7’s flashcards and your flashcard pocket
- marker or crayon for each player

#### Instructions for Flashcard Bingo 7’s

1. Mix up one set of flashcards and arrange them so that the multiplication side is facing up on all of them. Put them in the flashcard pocket.

2. Take turns pulling 1 card. Each time, both players color the product on their board or mark it with an x.

3. The first player to get two rows of 4 going horizontally, vertically, or diagonally, wins.

4. Play the game a second time using the division side of your cards.

---

### Game 1 ×

<table>
<thead>
<tr>
<th>Player 1</th>
<th>Player 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>84</td>
<td>21</td>
</tr>
<tr>
<td>35</td>
<td>14</td>
</tr>
<tr>
<td>63</td>
<td>7</td>
</tr>
<tr>
<td>42</td>
<td>35</td>
</tr>
<tr>
<td>56</td>
<td>77</td>
</tr>
<tr>
<td>14</td>
<td>63</td>
</tr>
<tr>
<td>63</td>
<td>35</td>
</tr>
<tr>
<td>7</td>
<td>77</td>
</tr>
<tr>
<td>42</td>
<td>14</td>
</tr>
<tr>
<td>70</td>
<td>63</td>
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<tr>
<td>28</td>
<td>49</td>
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<tr>
<td>84</td>
<td>70</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>49</td>
<td>28</td>
</tr>
<tr>
<td>21</td>
<td>56</td>
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<tr>
<td>14</td>
<td>42</td>
</tr>
<tr>
<td>7</td>
<td>28</td>
</tr>
</tbody>
</table>

### Game 2 ÷

<table>
<thead>
<tr>
<th>Player 1</th>
<th>Player 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
</tr>
</tbody>
</table>
Fact Fluency with 7’s  Flashcards, page 1 of 2

- Cut out this set of 12 flashcards.
- Fold a 3-by-5 index card in half.
- Tape or staple both sides but leave the top open.
- Label this storage pocket with your name and the set number.

<table>
<thead>
<tr>
<th>1 × 7</th>
<th>2 × 7</th>
<th>3 × 7</th>
<th>4 × 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackline F 35</td>
<td>Blackline F 35</td>
<td>Blackline F 35</td>
<td>Blackline F 35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5 × 7</th>
<th>6 × 7</th>
<th>7 × 7</th>
<th>8 × 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackline F 35</td>
<td>Blackline F 35</td>
<td>Blackline F 35</td>
<td>Blackline F 35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9 × 7</th>
<th>10 × 7</th>
<th>11 × 7</th>
<th>12 × 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackline F 35</td>
<td>Blackline F 35</td>
<td>Blackline F 35</td>
<td>Blackline F 35</td>
</tr>
</tbody>
</table>
Fact Fluency with 7’s  Flashcards, page 2 of 2

28 ÷ 7  21 ÷ 7  14 ÷ 7  7 ÷ 7
28 ÷ 7  21 ÷ 7  14 ÷ 7  7 ÷ 7

56 ÷ 7  49 ÷ 7  42 ÷ 7  35 ÷ 7
56 ÷ 7  49 ÷ 7  42 ÷ 7  35 ÷ 7

84 ÷ 7  77 ÷ 7  70 ÷ 7  63 ÷ 7
84 ÷ 7  77 ÷ 7  70 ÷ 7  63 ÷ 7
# Fact Fluency with 8’s

## Multiplying & Dividing by 8

### MULTIPLICATION FACT FLUENCY

<table>
<thead>
<tr>
<th>Strategy</th>
<th>How It Works</th>
<th>Example</th>
</tr>
</thead>
</table>
| Double-Double-Doubles | To multiply any number by 8, double the number 3 times.                      | What is $8 \times 7$?  
  It’s 7 doubled 3 times.  
  Double once: $7 + 7 = 14$  
  Double twice: $14 + 14 = 28$  
  Double three times: $28 + 28 = 56$ |

1. Multiply each number in the grid by 8. Write each product in the box. The first one is done for you.

<table>
<thead>
<tr>
<th>40</th>
<th>5</th>
<th>7</th>
<th>3</th>
<th>9</th>
<th>11</th>
<th>8</th>
<th>12</th>
<th>6</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>8</td>
<td>11</td>
<td>1</td>
<td>9</td>
<td>5</td>
<td>0</td>
<td>12</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

2. Use the double-double-doubles strategy to help solve these combinations.

   $8 \times 15 = _____$  
   $8 \times 25 = _____$  
   $8 \times 35 = _____$  
   $8 \times 50 = _____$

   $14 \hspace{1cm} 150 \hspace{1cm} 30$
   $\times 8 \hspace{1cm} \times 8 \hspace{1cm} \times 8$

3. Use what you know about multiplying by 8 to solve these division problems.

   $40 \div 8 = _____$  
   $88 \div 8 = _____$  
   $72 \div 8 = _____$  
   $64 \div 8 = _____$

   $8 \overline{)80} \hspace{1cm} 8 \overline{)48} \hspace{1cm} 8 \overline{)56} \hspace{1cm} 8 \overline{)96}$
Fact Fluency with 8’s  Practice Multiplying by 8 & 4

**MULTIPLICATION FACT FLUENCY**

1. Circle all the double-double-doubles (×8) in blue. Then go back and fill in the answers with regular pencil.

2. Circle all the double-doubles (×4) in red. Then go back and fill in the answers with regular pencil.

3. Write two multiplication and two division facts for each set of numbers.

   **a**
   
   
   ___ × ___ = ___
   
   ___ × ___ = ___
   
   ___ × ___ = ___
   
   ___ × ___ = ___
   
   ___ ÷ ___ = ___
   
   ___ ÷ ___ = ___
   
   ___ ÷ ___ = ___
   
   ___ ÷ ___ = ___

   **b**
   
   
   ___ × ___ = ___
   
   ___ × ___ = ___
   
   ___ × ___ = ___
   
   ___ × ___ = ___
   
   ___ ÷ ___ = ___
   
   ___ ÷ ___ = ___
   
   ___ ÷ ___ = ___
   
   ___ ÷ ___ = ___

   **c**
   
   
   ___ × ___ = ___
   
   ___ × ___ = ___
   
   ___ × ___ = ___
   
   ___ × ___ = ___
   
   ___ ÷ ___ = ___
   
   ___ ÷ ___ = ___
   
   ___ ÷ ___ = ___
   
   ___ ÷ ___ = ___

   **d**
   
   
   ___ × ___ = ___
   
   ___ × ___ = ___
   
   ___ × ___ = ___
   
   ___ × ___ = ___
   
   ___ ÷ ___ = ___
   
   ___ ÷ ___ = ___
   
   ___ ÷ ___ = ___
   
   ___ ÷ ___ = ___
Fact Fluency with 8’s  Missing Number Capture 8’s & 4’s

**You’ll need**

- a partner
- 2 pencils or markers in different colors
- paperclip and pencil to use as a spinner

**Instructions for Missing Number Capture 8’s & 4’s**

1. Take turns spinning the spinner. The player who gets the higher number goes first.

2. Take turns spinning the spinner. Use the number you spin to complete one of the problems below. Be sure to use your own color pencil.

3. If the box you need is already filled, you lose your turn.

4. Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.

5. Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

<table>
<thead>
<tr>
<th>8</th>
<th>4</th>
<th>4</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>12</td>
<td>16</td>
<td>48</td>
</tr>
<tr>
<td>4</td>
<td>40</td>
<td>24</td>
<td>64</td>
</tr>
<tr>
<td>8</td>
<td>48</td>
<td>44</td>
<td>28</td>
</tr>
<tr>
<td>4</td>
<td>72</td>
<td>80</td>
<td>32</td>
</tr>
<tr>
<td>56</td>
<td>20</td>
<td>36</td>
<td>88</td>
</tr>
</tbody>
</table>

**Scoring**

- 3 in a Row—1 point
- 4 in a Row—2 points

<table>
<thead>
<tr>
<th>Scoring</th>
<th>Player 1 Points</th>
<th>Player 2 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 in a Row—1 point</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 in a Row—2 points</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Fact Fluency with 8’s  Flashcard Bingo 8’s

You’ll need
★ a partner
★ one set of 8’s flashcards and your flashcard pocket
★ marker or crayon for each player

Instructions for Flashcard Bingo 8’s
1 Mix up one set of flashcards and arrange them so that the multiplication side is facing up on all of them. Put them in the flashcard pocket.
2 Take turns pulling 1 card. Each time, both players color the product on their board or mark it with an x.
3 The first player to get two rows of 4 going horizontally, vertically, or diagonally, wins.
4 Play the game a second time using the division side of your cards.
Fact Fluency with 8’s Flashcards, page 1 of 2

- Cut out this set of 12 flashcards.
- Fold a 3-by-5 index card in half.
- Tape or staple both sides but leave the top open.
- Label this storage pocket with your name and the set number.
Fact Fluency with 8’s  Flashcards, page 2 of 2

32 ÷ 8  24 ÷ 8  16 ÷ 8  8 ÷ 8

64 ÷ 8  56 ÷ 8  48 ÷ 8  40 ÷ 8

96 ÷ 8  88 ÷ 8  80 ÷ 8  72 ÷ 8
**Fact Fluency with 9’s**  Multiplying & Dividing by 9

### MULTIPLICATION FACT FLUENCY

<table>
<thead>
<tr>
<th>Strategy</th>
<th>How It Works</th>
<th>Example</th>
</tr>
</thead>
</table>
| Decade Minus One Set    | To multiply any number by 9, think of the related 10’s fact and then subtract one set of the number. | What is $9 \times 7$?  
It’s ten 7’s minus 7.  
$9 \times 7 = (10 \times 7) - 7$  
$= 70 - 7 = 63$ |

1. Multiply each number in the grid by 9. Write each product in the box. The first one is done for you.

<table>
<thead>
<tr>
<th>45</th>
<th>5</th>
<th>7</th>
<th>3</th>
<th>9</th>
<th>11</th>
<th>8</th>
<th>12</th>
<th>6</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>8</td>
<td>11</td>
<td>1</td>
<td>9</td>
<td>5</td>
<td>0</td>
<td>12</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

2. Use the decade minus one set strategy to help solve these combinations.

$9 \times 15 = \underline{14}$  
$9 \times 25 = \underline{21}$  
$9 \times 30 = \underline{40}$  
$9 \times 50 = \underline{40}$

3. Use what you know about multiplying by 9 to solve these division problems.

$99 \div 9 = \underline{9}$  
$45 \div 9 = \underline{5}$  
$81 \div 9 = \underline{9}$  
$108 \div 9 = \underline{12}$  
$\underline{9\sqrt{54}}$  
$\underline{9\sqrt{63}}$  
$\underline{9\sqrt{72}}$  
$\underline{9\sqrt{90}}$
Fact Fluency with 9’s  Practice Multiplying by 9 & 3

1 Circle all the decade minus one set facts (×9) in blue. Then go back and fill in the answers with regular pencil.

2 Circle all the doubles plus one set facts (×3) in red. Then go back and fill in the answers with regular pencil.

3 Write two multiplication and two division facts for each set of numbers.

<table>
<thead>
<tr>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 9</td>
<td>9 6</td>
<td>63 9</td>
<td>12 9</td>
</tr>
<tr>
<td>72</td>
<td>54</td>
<td>7</td>
<td>108</td>
</tr>
</tbody>
</table>

___×___ = ___
___×___ = ___
___×___ = ___
___×___ = ___
___×___ = ___
___×___ = ___
___×___ = ___
___×___ = ___
___÷___ = ___
___÷___ = ___
___÷___ = ___
___÷___ = ___
___÷___ = ___
___÷___ = ___
___÷___ = ___
___÷___ = ___
**Fact Fluency with 9’s**  Missing Number Capture 9’s & 3’s

### You’ll need

- a partner
- 2 pencils or markers in different colors
- paperclip and pencil to use as a spinner

### Instructions for Missing Number Capture 9’s & 3’s

1. Take turns spinning the spinner. The player who gets the higher number goes first.

2. Take turns spinning the spinner. Use the number you spin to complete one of the problems below. Be sure to use your own color pencil.

3. If the box you need is already filled, you lose your turn.

4. Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.

5. Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

### Scoring

- 3 in a Row—1 point
- 4 in a Row—2 points

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>3</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>12</td>
<td>27</td>
<td>33</td>
</tr>
<tr>
<td>3 9</td>
<td>3 30</td>
<td>3 36</td>
<td>9 72</td>
</tr>
<tr>
<td>63</td>
<td>15</td>
<td>27</td>
<td>45</td>
</tr>
<tr>
<td>9 99</td>
<td>9 90</td>
<td>3 18</td>
<td>36</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 in a Row—1 point</td>
</tr>
<tr>
<td>4 in a Row—2 points</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Player 1 Points</th>
<th>Player 2 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Fact Fluency with 9’s  Flashcard Bingo 9’s

You’ll need

★ a partner
★ one set of 9’s flashcards and your flashcard pocket
★ marker or crayon for each player

Instructions for Flashcard Bingo 9’s

1 Mix up one set of flashcards and arrange them so that the multiplication side is facing up on all of them. Put them in the flashcard pocket.

2 Take turns pulling 1 card. Each time, both players color the product on their board or mark it with an x.

3 The first player to get two rows of 4 going horizontally, vertically, or diagonally, wins.

4 Play the game a second time using the division side of your cards.
Fact Fluency with 9’s  Flashcards, page 1 of 2

- Cut out this set of 12 flashcards.
- Fold a 3-by-5 index card in half.
- Tape or staple both sides but leave the top open.
- Label this storage pocket with your name and the set number.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>$\times 9$</td>
<td>$\times 9$</td>
<td>$\times 9$</td>
<td>$\times 9$</td>
</tr>
</tbody>
</table>

| 5 | 6 | 7 | 8 |
| $\times 9$ | $\times 9$ | $\times 9$ | $\times 9$ |

| 9 | 10 | 11 | 12 |
| $\times 9$ | $\times 9$ | $\times 9$ | $\times 9$ |
Fact Fluency with 9’s Flashcards, page 2 of 2

36 ÷ 9  27 ÷ 9  18 ÷ 9  9 ÷ 9

72 ÷ 9  63 ÷ 9  54 ÷ 9  45 ÷ 9

108 ÷ 9  99 ÷ 9  90 ÷ 9  81 ÷ 9
Fact Fluency with 10’s  Multiplying & Dividing by 10

### MULTIPLICATION FACT FLUENCY

<table>
<thead>
<tr>
<th>Strategy</th>
<th>How It Works</th>
<th>Example</th>
</tr>
</thead>
</table>
| Decades   | To multiply any number by 10, count by 10’s (or add a zero to the end of the number you’re multiplying). | What is 10 × 9?  
It’s 10, 20, 30, 40, 50, 60, 70, 80, 90 or 9 with a zero on the end  
10 × 9 = 90 |

1. Multiply each number in the grid by 10. Write each product in the box. The first one is done for you.

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>7</th>
<th>3</th>
<th>9</th>
<th>11</th>
<th>8</th>
<th>12</th>
<th>6</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>8</td>
<td>11</td>
<td>1</td>
<td>9</td>
<td>5</td>
<td>0</td>
<td>12</td>
<td>4</td>
</tr>
</tbody>
</table>

2. Use the decades strategy to help solve these combinations.

10 × 15 = _____  10 × 25 = _____  10 × 31 = _____  10 × 59 = _____

14 × 10 20 × 10 46 × 10

3. Use what you know about multiplying by 10 to solve these division problems.

60 ÷ 10 = _____  110 ÷ 10 = _____  50 ÷ 10 = _____  100 ÷ 10 = _____

10)120  10)70  10)90  10)80
Fact Fluency with 10’s  Practice Multiplying by 10 & 5

1. Circle all the decade facts (×10) in blue. Then go back and fill in the answers with regular pencil.

2. Circle all the half-decade facts (×5) in red. Then go back and fill in the answers with regular pencil.

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5</td>
<td>8</td>
<td>10</td>
<td>15</td>
<td>3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>× 10</td>
<td>× 10</td>
<td>× 10</td>
<td>× 10</td>
<td>× 10</td>
<td>× 10</td>
<td>× 10</td>
<td>× 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>11</td>
<td>7</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>× 10</td>
<td>× 5</td>
<td>× 10</td>
<td>× 5</td>
<td>× 10</td>
<td>× 5</td>
<td>× 10</td>
<td>× 5</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>12</td>
<td>25</td>
<td>20</td>
<td>4</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>× 5</td>
<td>× 10</td>
<td>× 5</td>
<td>× 10</td>
<td>× 5</td>
<td>× 10</td>
<td>× 5</td>
<td>× 5</td>
</tr>
</tbody>
</table>

3. Write two multiplication and two division facts for each set of numbers.

a

\[
\begin{align*}
8 & \times 10 = 80 \\
10 & \times 80 = 800 \\
80 & \div 10 = 8 \\
80 & \div 80 = 1
\end{align*}
\]

b

\[
\begin{align*}
12 & \times 10 = 120 \\
10 & \times 120 = 1200 \\
120 & \div 12 = 10 \\
120 & \div 10 = 12
\end{align*}
\]

c

\[
\begin{align*}
9 & \times 10 = 90 \\
10 & \times 90 = 900 \\
90 & \div 10 = 9 \\
90 & \div 9 = 10
\end{align*}
\]

d

\[
\begin{align*}
11 & \times 10 = 110 \\
10 & \times 110 = 1100 \\
110 & \div 11 = 10 \\
110 & \div 10 = 11
\end{align*}
\]
Fact Fluency with 10’s  Missing Number Capture 10’s & 5’s

**MULTIPLICATION FACT FLUENCY**

You’ll need

★ a partner

★ 2 pencils or markers in different colors

★ paperclip and pencil to use as a spinner

Instructions for Missing Number Capture 10’s & 5’s

1. Take turns spinning the spinner. The player who gets the higher number goes first.

2. Take turns spinning the spinner. Use the number you spin to complete one of the problems below. Be sure to use your own color pencil.

3. If the box you need is already filled, you lose your turn.

4. Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.

5. Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

### Scoring

3 in a Row—1 point

4 in a Row—2 points

<table>
<thead>
<tr>
<th>10</th>
<th>5</th>
<th>10</th>
<th>5</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>20</td>
<td>55</td>
<td>50</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30</td>
<td>60</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>110</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10</th>
<th>5</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>25</td>
<td>45</td>
</tr>
<tr>
<td>120</td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Player 1 Points</th>
<th>Player 2 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Fact Fluency with 10’s  Flashcard Bingo 10’s

**You’ll need**
★ a partner
★ one set of 10’s flashcards and your flashcard pocket
★ marker or crayon for each player

**Instructions for Flashcard Bingo 10’s**
1 Mix up one set of flashcards and arrange them so that the multiplication side is facing up on all of them. Put them in the flashcard pocket.

2 Take turns pulling 1 card. Each time, both players color the product on their board or mark it with an x.

3 The first player to get two rows of 4 going horizontally, vertically, or diagonally, wins.

4 Play the game a second time using the division side of your cards.

<table>
<thead>
<tr>
<th>Player 1</th>
<th>Player 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 20 10 50</td>
<td>120 50 90 60</td>
</tr>
<tr>
<td>50 110 90 20</td>
<td>80 110 20 90</td>
</tr>
<tr>
<td>40 120 100 10</td>
<td>60 10 70 100</td>
</tr>
<tr>
<td>70 80 60 40</td>
<td>70 40 30 80</td>
</tr>
<tr>
<td>Player 1</td>
<td>Player 2</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>7 4 3 6</td>
<td>12 4 8 12</td>
</tr>
<tr>
<td>12 6 8 11</td>
<td>9 11 3 7</td>
</tr>
<tr>
<td>10 7 5 9</td>
<td>1 6 11 10</td>
</tr>
<tr>
<td>5 2 1 8</td>
<td>5 10 90 2</td>
</tr>
</tbody>
</table>
Fact Fluency with 10’s  Flashcards, page 1 of 2

- Cut out this set of 12 flashcards.
- Fold a 3-by-5 index card in half.
- Tape or staple both sides but leave the top open.
- Label this storage pocket with your name and the set number.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>× 10</td>
<td>× 10</td>
<td>× 10</td>
<td>× 10</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>× 10</td>
<td>× 10</td>
<td>× 10</td>
<td>× 10</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>× 10</td>
<td>× 10</td>
<td>× 10</td>
<td>× 10</td>
</tr>
</tbody>
</table>
Fact Fluency with 10’s Flashcards, page 2 of 2

40 ÷ 10
30 ÷ 10
20 ÷ 10
10 ÷ 10
80 ÷ 10
70 ÷ 10
60 ÷ 10
50 ÷ 10
120 ÷ 10
110 ÷ 10
100 ÷ 10
90 ÷ 10
Fact Fluency with 11’s  Multiplying & Dividing by 11

### MULTIPLICATION FACT FLUENCY

<table>
<thead>
<tr>
<th>Strategy</th>
<th>How It Works</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decade Plus One Set</td>
<td>To multiply any number by 11, multiply by 10 and then add one set of the number.</td>
<td>What is 11 × 9?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>It’s 10 × 9 plus another set of 9.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 × 9 = 90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>90 + 9 = 99</td>
</tr>
</tbody>
</table>

1. Multiply each number in the grid by 11. Write each product in the box. The first one is done for you.

   | 5 | 7 | 3 | 9 | 11 | 8 | 12 | 6 | 2 |
---|---|---|---|---|----|---|----|---|---|
| 55|   |   |   | 11| 8  |   | 12 |   | 2 |
| 10| 8 | 11| 1 | 9 | 5  | 0 | 12 | 4 |   |

2. Use the decade plus one set strategy to help solve these combinations.

   11 × 13 = _____  11 × 20 = _____  11 × 25 = _____  11 × 50 = _____

   \[ \begin{array}{c}
   14 \\
   \times 11 \\
   \hline
   23 \\
   \times 11 \\
   \hline
   40 \\
   \times 11 \\
   \hline
   \end{array} \]

3. Use what you know about multiplying by 11 to solve these division problems.

   132 ÷ 11 = _____  77 ÷ 11 = _____  99 ÷ 11 = _____  88 ÷ 11 = _____

   \[ \begin{array}{c}
   \underline{11)66} \\
   \underline{11)121} \\
   \underline{11)55} \\
   \underline{11)110} \\
   \end{array} \]
Fact Fluency with 11’s  Practice Multiplying by 11 & 10

1 Circle all the decade plus one set facts (×11) in blue. Then go back and fill in the answers with regular pencil.

2 Circle all the decade facts (×10) in red. Then go back and fill in the answers with regular pencil.

\[
\begin{array}{cccccccc}
2 & 16 & 6 & 5 & 11 & 6 & 9 \\
\times 11 & \times 10 & \times 11 & \times 10 & \times 11 & \times 10 & \times 11 \\
12 & 30 & 8 & 7 & 40 & 3 & 5 \\
\times 10 & \times 10 & \times 11 & \times 10 & \times 10 & \times 11 & \times 11 \\
50 & 11 & 4 & 10 & 7 & 8 & 12 \\
\times 10 & \times 10 & \times 11 & \times 11 & \times 10 & \times 11 & \\
\end{array}
\]

3 Write two multiplication and two division facts for each set of numbers.

\[
\begin{array}{cccccccc}
a & b & c & d \\
\begin{array}{cccccccc}
& 11 & & & & \quad & \quad & \quad \\
10 & 110 \\
\end{array} & \begin{array}{cccccccc}
& 12 & & & & \quad & \quad & \quad \\
11 & 132 \\
\end{array} & \begin{array}{cccccccc}
& 9 & & & & \quad & \quad & \quad \\
99 & 11 \\
\end{array} & \begin{array}{cccccccc}
& 11 & & & & \quad & \quad & \quad \\
11 & 121 \\
\end{array} \\
\end{array}
\]
\[
\begin{array}{cccccccc}
\_\_ \times \_\_ = \_\_ \_ \\
\_\_ \times \_\_ = \_\_ \_ \\
\_\_ \times \_\_ = \_\_ \_ \\
\_\_ \times \_\_ = \_\_ \_ \\
\_\_ \div \_\_ = \_\_ \_ \\
\_\_ \div \_\_ = \_\_ \_ \\
\_\_ \div \_\_ = \_\_ \_ \\
\_\_ \div \_\_ = \_\_ \_ \\
\end{array}
\]

\[
\begin{array}{cccccccc}
\_\_ \times \_\_ = \_\_ \_ \\
\_\_ \times \_\_ = \_\_ \_ \\
\_\_ \times \_\_ = \_\_ \_ \\
\_\_ \times \_\_ = \_\_ \_ \\
\_\_ \div \_\_ = \_\_ \_ \\
\_\_ \div \_\_ = \_\_ \_ \\
\_\_ \div \_\_ = \_\_ \_ \\
\_\_ \div \_\_ = \_\_ \_ \\
\end{array}
\]

\[
\begin{array}{cccccccc}
\_\_ \times \_\_ = \_\_ \_ \\
\_\_ \times \_\_ = \_\_ \_ \\
\_\_ \times \_\_ = \_\_ \_ \\
\_\_ \times \_\_ = \_\_ \_ \\
\_\_ \div \_\_ = \_\_ \_ \\
\_\_ \div \_\_ = \_\_ \_ \\
\_\_ \div \_\_ = \_\_ \_ \\
\_\_ \div \_\_ = \_\_ \_ \\
\end{array}
\]
Fact Fluency with 11’s  Missing Number Capture 11’s & 10’s

MULTIPLICATION FACT FLUENCY

You’ll need

★ a partner

★ 2 pencils or markers in different colors

★ paperclip and pencil to use as a spinner

Instructions for Missing Number Capture 11’s & 10’s

1. Take turns spinning the spinner. The player who gets the higher number goes first.

2. Take turns spinning the spinner. Use the number you spin to complete one of the problems below. Be sure to use your own color pencil.

3. If the box you need is already filled, you lose your turn.

4. Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.

5. Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>100</td>
<td>×</td>
<td>11</td>
<td>66</td>
<td>10</td>
</tr>
<tr>
<td>×</td>
<td>10</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>×</td>
<td>5</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td>77</td>
<td></td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Scoring

3 in a Row—1 point
4 in a Row—2 points

Player 1 Points

Player 2 Points
Fact Fluency with 11’s  Flashcard Bingo 11’s

You’ll need

★ a partner
★ one set of 11’s flashcards and your flashcard pocket
★ marker or crayon for each player

Instructions for Flashcard Bingo 11’s

1 Mix up one set of flashcards and arrange them so that the multiplication side is facing up on all of them. Put them in the flashcard pocket.

2 Take turns pulling 1 card. Each time, both players color the product on their board or mark it with an x.

3 The first player to get two rows of 4 going horizontally, vertically, or diagonally, wins.

4 Play the game a second time using the division side of your cards.
Fact Fluency with 11’s Flashcards, page 1 of 2

- Cut out this set of 12 flashcards.
- Fold a 3-by-5 index card in half.
- Tape or staple both sides but leave the top open.
- Label this storage pocket with your name and the set number.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>×11</td>
<td>×11</td>
<td>×11</td>
<td>×11</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>×11</td>
<td>×11</td>
<td>×11</td>
<td>×11</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>×11</td>
<td>×11</td>
<td>×11</td>
<td>×11</td>
</tr>
</tbody>
</table>
Fact Fluency with 11’s  Flashcards, page 2 of 2

44 ÷ 11
33 ÷ 11
22 ÷ 11
11 ÷ 11

88 ÷ 11
77 ÷ 11
66 ÷ 11
55 ÷ 11

132 ÷ 11
121 ÷ 11
110 ÷ 11
99 ÷ 11

Blackline F 60 Blackline F 60 Blackline F 60 Blackline F 60
Fact Fluency with 12’s  

**MULTIPLICATION FACT FLUENCY**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>How It Works</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decade Plus Two Sets</td>
<td>To multiply any number by 12, multiply by 10 and then add two more sets of the number.</td>
<td>What is 12 × 7?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>It’s 10 × 7 plus 2 × 7.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 × 7 = 14</td>
</tr>
</tbody>
</table>

1. Multiply each number in the grid by 12. Write each product in the box. The first one is done for you.

<p>| | | | | | | | | | |</p>
<table>
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<td>5</td>
<td>0</td>
<td>12</td>
<td>4</td>
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2. Use the decade plus two sets strategy to help solve these combinations.

12 × 15 = ______  
12 × 25 = ______  
12 × 30 = ______  
12 × 20 = ______

   14   24   40
   × 12  × 12  × 12

3. Use what you know about multiplying by 12 to solve these division problems.

48 ÷ 12 = ______  
60 ÷ 12 = ______  
72 ÷ 12 = ______  
144 ÷ 12 = ______

12)84  12)108  12)96  12)120
Fact Fluency with 12’s  Practice Multiplying by 12 & 10

1 Circle all the decade plus two sets facts (×12) in blue. Then go back and fill in the answers with regular pencil.

2 Circle all the decade facts (×10) in red. Then go back and fill in the answers with regular pencil.

3 Write two multiplication and two division facts for each set of numbers.

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<td>2</td>
<td>25</td>
<td>6</td>
<td>20</td>
<td>11</td>
<td>80</td>
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<td>90</td>
<td>10</td>
<td>8</td>
<td>35</td>
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<td>3</td>
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<td>50</td>
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Fact Fluency with 12’s Missing Number Capture 12’s & 10’s

You’ll need
★ a partner
★ 2 pencils or markers in different colors
★ paperclip and pencil to use as a spinner

Instructions for Missing Number Capture 12’s & 10’s

1. Take turns spinning the spinner. The player who gets the higher number goes first.

2. Take turns spinning the spinner. Use the number you spin to complete one of the problems below. Be sure to use your own color pencil.

3. If the box you need is already filled, you lose your turn.

4. Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.

5. Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

<table>
<thead>
<tr>
<th>12</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<tbody>
<tr>
<td>84</td>
<td>12</td>
<td>144</td>
<td>50</td>
<td>10</td>
<td>30</td>
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<td>110</td>
<td>70</td>
<td>60</td>
<td>60</td>
<td>12</td>
<td>48</td>
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<td>5</td>
<td>60</td>
<td>100</td>
<td>72</td>
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<td>108</td>
<td>120</td>
<td>96</td>
<td>132</td>
<td>90</td>
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</tbody>
</table>

Scoring
3 in a Row—1 point
4 in a Row—2 points

Player 1 Points
Player 2 Points
Fact Fluency with 12’s  Flashcard Bingo 12’s

You’ll need

★ a partner

★ one set of 12’s flashcards and your flashcard pocket

★ marker or crayon for each player

Instructions for Flashcard Bingo 12’s

1. Mix up one set of flashcards and arrange them so that the multiplication side is facing up on all of them. Put them in the flashcard pocket.

2. Take turns pulling 1 card. Each time, both players color the product on their board or mark it with an x.

3. The first player to get two rows of 4 going horizontally, vertically, or diagonally, wins.

4. Play the game a second time using the division side of your cards.
Fact Fluency with 12’s Flashcards, page 1 of 2

- Cut out this set of 12 flashcards.
- Fold a 3-by-5 index card in half.
- Tape or staple both sides but leave the top open.
- Label this storage pocket with your name and the set number.

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<thead>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
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<td>×12</td>
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<tr>
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<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>×12</td>
<td>×12</td>
<td>×12</td>
<td>×12</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>×12</td>
<td>×12</td>
<td>×12</td>
<td>×12</td>
</tr>
</tbody>
</table>
48 ÷ 12

36 ÷ 12

24 ÷ 12

12 ÷ 12

96 ÷ 12

84 ÷ 12

72 ÷ 12

60 ÷ 12

144 ÷ 12

132 ÷ 12

120 ÷ 12

108 ÷ 12
Fact Fluency with 2’s–6’s  Mixed Facts

**MULTIPLICATION FACT FLUENCY**

1. Solve the multiplication facts below.

   \[
   \begin{array}{cccccccc}
   & 2 & 3 & 4 & 11 & 8 & 8 & 7 \\
   \times & 2 & 3 & 4 & 5 & 3 & 2 & 2 \\
   \hline
   & 5 & 12 & 4 & 9 & 9 & 6 & 7 \\
   \times & 5 & 4 & 3 & 3 & 2 & 2 & 3 \\
   \hline
   & 12 & 12 & 3 & 9 & 5 & 6 & 9 \\
   \times & 3 & 2 & 2 & 4 & 2 & 3 & 6 \\
   \hline
   & 6 & 10 & 12 & 7 & 6 & 8 & 10 \\
   \times & 5 & 6 & 6 & 5 & 6 & 5 & 5 \\
   \hline
   & 5 & 6 & 11 & 7 & 8 & 9 & 12 \\
   \times & 4 & 4 & 4 & 4 & 6 & 5 & 5 \\
   \hline
   & 11 & 10 & 11 & 4 & 5 & 8 & 7 \\
   \times & 3 & 3 & 2 & 2 & 3 & 4 & 6 \\
   \hline
   \end{array}
   \]

2. Solve the division facts below.

   \[
   \begin{array}{cccccccc}
   2 \div 14 & 4 \div 24 & 6 \div 36 & 4 \div 28 & 5 \div 30 & 4 \div 32 & 3 \div 18 \\
   6 \div 42 & 2 \div 16 & 3 \div 21 & 2 \div 18 & 5 \div 35 & 3 \div 24 & 4 \div 36 \\
   5 \div 40 & 6 \div 24 & 6 \div 48 & 5 \div 45 & 3 \div 27 & 5 \div 60 & 6 \div 54 \\
   \end{array}
   \]
Fact Fluency with 2’s–6’s  Secret Path Problems, Set 1

**MULTIPLICATION FACT FLUENCY**

- Find a path through all of the numbers in each set by multiplying or dividing to get from one number to the next.
- You have to use each number just one time.
- You can move only 1 space at a time. You can move over, up, down, or diagonally.
- Every path has a start point and an end point. Circle them both.
- You can also go backwards. Try to start at the end point and go back to the start point.

**example**

Then

18 ÷ 6 takes you to 3, and you’re done!

Then

9 × 2 takes you to 18.

The start and end points have been marked on these problems also.

Only the start point has been marked on these problems.
Fact Fluency with 2’s–6’s Secret Path Problems, Set 2

MULTIPLICATION FACT FLUENCY

- Find a path through all of the numbers in each set by multiplying or dividing to get from one number to the next.
- You have to use each number just one time.
- You can move only 1 space at a time. You can move over, up, down, or diagonally.
- Every path has a start point and an end point. Circle them both.
- You can also go backwards. Try to start at the end point and go back to the start point.

**example**

Start: 6 × 3 takes you to 18.

End: 9 × 3 takes you to 27.

18 ÷ 2 takes you to 9.

Try this one. The start and end points have been marked for you.

Only the start point has been marked on these problems.

1

2

3

4

5

6

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Fact Fluency with 2’s–6’s  Division Capture

You’ll need
★ a partner
★ 2 pencils or markers in different colors
★ paperclip and pencil to use as a spinner

Instructions for Division Capture 2’s–6’s
1 Take turns spinning the spinner. The player who gets the higher number goes first.
2 Take turns spinning the spinner. Use the number you spin to complete one of the division problems below. Be sure to use your own color pencil.
3 If the box you need is already filled, you lose your turn.
4 Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.
5 Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

<table>
<thead>
<tr>
<th>24 ÷ □ □ = 12</th>
<th>24 ÷ □ □ = 6</th>
<th>36 ÷ □ □ = 9</th>
<th>21 ÷ □ □ = 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 ÷ □ □ = 12</td>
<td>18 ÷ □ □ = 9</td>
<td>24 ÷ □ □ = 8</td>
<td>36 ÷ □ □ = 6</td>
</tr>
<tr>
<td>45 ÷ □ □ = 9</td>
<td>27 ÷ □ □ = 9</td>
<td>16 ÷ □ □ = 8</td>
<td>54 ÷ □ □ = 9</td>
</tr>
<tr>
<td>36 ÷ □ □ = 12</td>
<td>48 ÷ □ □ = 8</td>
<td>35 ÷ □ □ = 7</td>
<td>14 ÷ □ □ = 7</td>
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<td>42 ÷ □ □ = 7</td>
<td>32 ÷ □ □ = 8</td>
<td>28 ÷ □ □ = 7</td>
<td>40 ÷ □ □ = 8</td>
</tr>
</tbody>
</table>

Scoring
3 in a Row—1 point
4 in a Row—2 points

<table>
<thead>
<tr>
<th>Player 1 Points</th>
<th>Player 2 Points</th>
</tr>
</thead>
</table>
Fact Fluency with 4’s–9’s  Mixed Facts

1 Solve the multiplication facts below.

\[
\begin{array}{ccccccc}
4 & 8 & 7 & 10 & 7 & 12 & 5 \\
\times 4 & \times 8 & \times 6 & \times 4 & \times 8 & \times 9 & \times 5 \\
\hline
6 & 5 & 12 & 11 & 11 & 6 & 6 \\
\times 6 & \times 4 & \times 7 & \times 6 & \times 9 & \times 5 & \times 8 \\
\hline
12 & 7 & 6 & 9 & 7 & 10 & 7 \\
\times 6 & \times 6 & \times 4 & \times 8 & \times 5 & \times 9 & \times 7 \\
\hline
11 & 10 & 8 & 7 & 9 & 8 & 11 \\
\times 8 & \times 5 & \times 6 & \times 4 & \times 9 & \times 7 & \times 4 \\
\hline
11 & 12 & 8 & 9 & 8 & 9 & 12 \\
\times 7 & \times 8 & \times 5 & \times 6 & \times 4 & \times 7 & \times 5 \\
\hline
12 & 10 & 11 & 9 & 10 & 9 & 10 \\
\times 4 & \times 6 & \times 5 & \times 5 & \times 8 & \times 4 & \times 7 \\
\end{array}
\]

2 Solve the division facts below.

\[
\begin{array}{cccccccc}
4 \sqrt{32} & 5 \sqrt{35} & 6 \sqrt{48} & 7 \sqrt{42} & 6 \sqrt{42} & 5 \sqrt{60} & 4 \sqrt{36} \\
8 \sqrt{64} & 9 \sqrt{81} & 9 \sqrt{72} & 4 \sqrt{24} & 5 \sqrt{30} & 6 \sqrt{54} & 7 \sqrt{49} \\
4 \sqrt{28} & 5 \sqrt{40} & 7 \sqrt{84} & 6 \sqrt{36} & 7 \sqrt{63} & 5 \sqrt{45} & 4 \sqrt{48} \\
\end{array}
\]
Fact Fluency with 4’s–9’s  Secret Path Problems, Set 1

**MULTIPLICATION FACT FLUENCY**
- Find a path through all of the numbers in each set by multiplying or dividing to get from one number to the next.
- You have to use each number just one time.
- You can move only 1 space at a time. You can move over, up, down, or diagonally.
- Every path has a start point and an end point. Circle them both.
- You can also go backwards. Try to start at the end point and go back to the start point.

**Example**

```
3 × 6 takes you to 18.
6 × 4 takes you to 24.
24 ÷ 8 takes you to 3.
```

Only the start point has been marked on these problems. You do the rest!

1.  
```
\[ \times \div \]
\[
\begin{array}{ccc}
56 & 8 & 12 \\
7 & 6 & 48 \\
\end{array}
\]
```

2.  
```
\[ \times \div \]
\[
\begin{array}{ccc}
7 & 4 & 12 \\
21 & 9 & 36 \\
\end{array}
\]
```

3.  
```
\[ \times \div \]
\[
\begin{array}{ccc}
36 & 12 & 6 \\
4 & 9 & 8 \\
\end{array}
\]
```

4.  
```
\[ \times \div \]
\[
\begin{array}{ccc}
7 & 42 & 7 \\
6 & 4 & 24 \\
\end{array}
\]
```

5.  
```
\[ \times \div \]
\[
\begin{array}{ccc}
7 & 49 & 3 \\
3 & 21 & 7 \\
\end{array}
\]
```

6.  
```
\[ \times \div \]
\[
\begin{array}{ccc}
3 & 25 & 5 \\
30 & 6 & 5 \\
\end{array}
\]
```

© The Math Learning Center
Fact Fluency with 4’s–9’s  Secret Path Problems, Set 2

MULTIPLICATION FACT FLUENCY

• Find a path through all of the numbers in each set by multiplying or dividing to get from one number to the next.
• You have to use each number just one time.
• You can move only 1 space at a time. You can move over, up, down, or diagonally.
• Every path has a start point and an end point. Circle them both.
• You can also go backwards. Try to start at the end point and go back to the start point.

example

12 ÷ 6 takes you to 2.
24 ÷ 2 takes you to 12.

18 ÷ 6 takes you to 3.
3 × 8 takes you to 24.

Try this one. Just the starting point has been marked for you.

Only the start point has been marked on these problems.

1
2
3
4
5
6
Fact Fluency with 4’s–9’s  Division Capture

**MULTIPLICATION FACT FLUENCY**

**You’ll need**

★ a partner

★ 2 pencils or markers in different colors

★ paperclip and pencil to use as a spinner

**Instructions for Division Capture 4’s–9’s**

1. Take turns spinning the spinner. The player who gets the higher number goes first.

2. Take turns spinning the spinner. Use the number you spin to complete one of the division problems below. Be sure to use your own color pencil.

3. If the box you need is already filled, you lose your turn.

4. Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.

5. Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

| 56 ÷ □ = 8 | 42 ÷ □ = 6 | 48 ÷ □ = 8 | 35 ÷ □ = 5 |
| 36 ÷ □ = 4 | 36 ÷ □ = 9 | 56 ÷ □ = 7 | 21 ÷ □ = 3 |
| 72 ÷ □ = 12 | 27 ÷ □ = 3 | 32 ÷ □ = 8 | 54 ÷ □ = 9 |
| 63 ÷ □ = 7 | 28 ÷ □ = 7 | 96 ÷ □ = 12 | 64 ÷ □ = 8 |
| 60 ÷ □ = 12 | 81 ÷ □ = 9 | 72 ÷ □ = 9 | 45 ÷ □ = 9 |

**Scoring**

3 in a Row—1 point

4 in a Row—2 points
Fact Fluency with 6’s–12’s  Mixed Facts

1 Solve the multiplication facts below.

\[
\begin{array}{cccccccc}
6 & 5 & 5 & 12 & 6 & 12 & 8 \\
\times 6 & \times 6 & \times 9 & \times 11 & \times 8 & \times 10 & \times 6 \\
\hline
4 & 12 & 9 & 5 & 9 & 6 & 4 \\
\times 8 & \times 7 & \times 9 & \times 8 & \times 7 & \times 9 & \times 9 \\
\hline
12 & 11 & 8 & 4 & 11 & 3 & 9 \\
\times 9 & \times 10 & \times 8 & \times 6 & \times 12 & \times 6 & \times 8 \\
\hline
9 & 11 & 12 & 7 & 8 & 9 & 11 \\
\times 6 & \times 7 & \times 12 & \times 7 & \times 9 & \times 12 & \times 6 \\
\hline
8 & 7 & 11 & 8 & 6 & 7 & 11 \\
\times 12 & \times 9 & \times 8 & \times 7 & \times 7 & \times 8 & \times 9 \\
\hline
12 & 12 & 10 & 4 & 11 & 5 & 7 \\
\times 6 & \times 8 & \times 10 & \times 7 & \times 11 & \times 7 & \times 6 \\
\end{array}
\]

2 Solve the division facts below.

\[
\begin{array}{cccccccc}
7 \div 49 & 9 \div 63 & 9 \div 81 & 6 \div 48 & 9 \div 54 & 9 \div 45 & 7 \div 56 \\
\hline
9 \div 108 & 8 \div 64 & 6 \div 36 & 7 \div 42 & 6 \div 54 & 8 \div 72 & 8 \div 48 \\
\hline
7 \div 84 & 6 \div 42 & 9 \div 72 & 8 \div 96 & 8 \div 56 & 6 \div 72 & 7 \div 63 \\
\end{array}
\]
Fact Fluency with 6’s–12’s  Secret Path Problems, Set 1

**MULTIPLICATION FACT FLUENCY**

- Find a path through all of the numbers in each set by multiplying or dividing to get from one number to the next.
- You have to use each number just one time.
- You can move only 1 space at a time. You can move over, up, down, or diagonally.
- Every path has a start point and an end point. Circle them both.
- You can also go backwards. Try to start at the end point and go back to the start point.

**example**

9 × 4 takes you to 36.

6 × 5 takes you to 30.

36 ÷ 6 takes you to 6.

Try this one. The start and end points have been marked for you.

Find your own start and end points, as well as a path through the numbers.

1

2

3

4

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6
Fact Fluency with 6’s–12’s  Secret Path Problems, Set 2

MULTIPLICATION FACT FLUENCY

- Find a path through all of the numbers in each set by multiplying or dividing to get from one number to the next.
- You have to use each number just one time.
- You can move only 1 space at a time. You can move over, up, down, or diagonally.
- Every path has a start point and an end point. Circle them both.
- You can also go backwards. Try to start at the end point and go back to the start point.

Example

12 × 7 takes you to 84.

48 ÷ 4 takes you to 12.

Try this one. Just the start point has been marked for you.

36 ÷ 6 takes you to 6.

6 × 8 takes you to 48.

The start point has been marked on the first 3 problems.

1

2

3

4

5

6

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Fact Fluency with 6’s–12’s  Division Capture

MULTIPLICATION FACT FLUENCY

You’ll need

★ a partner
★ 2 pencils or markers in different colors
★ paperclip and pencil to use as a spinner

Instructions for Division Capture 6’s–12’s

1 Take turns spinning the spinner. The player who gets the higher number goes first.

2 Take turns spinning the spinner. Use the number you spin to complete one of the division problems below. Be sure to use your own color pencil.

3 If the box you need is already filled, you lose your turn.

4 Try to capture 3 or 4 boxes in a row: across, up and down, or diagonally. Keep playing until the gameboard is filled or neither player can use the number he or she spins 3 times in a row.

5 Then circle the places on the grid where you got 3 or 4 in a row and add up your scores.

| 42 ÷ [ ] = 7 | 81 ÷ [ ] = 9 | 96 ÷ [ ] = 12 | 121 ÷ [ ] = 11 |
| 63 ÷ [ ] = 7 | 54 ÷ [ ] = 9 | 49 ÷ [ ] = 7 | 72 ÷ [ ] = 8 |
| 54 ÷ [ ] = 6 | 56 ÷ [ ] = 8 | 72 ÷ [ ] = 6 | 72 ÷ [ ] = 12 |
| 63 ÷ [ ] = 9 | 108 ÷ [ ] = 9 | 64 ÷ [ ] = 8 | 132 ÷ [ ] = 12 |
| 144 ÷ [ ] = 12 | 84 ÷ [ ] = 12 | 88 ÷ [ ] = 8 | 56 ÷ [ ] = 7 |

Scoring

3 in a Row—1 point
4 in a Row—2 points

| Player 1 Points | Player 2 Points |
Fact Fluency Secret Path Answer Keys

Building Computational Fluency Blackline F 68, Fact Fluency with 2’s–6’s  
Secret Path Problems, Set 1
Try this one*  

```
1
  × ÷ 27
   24 9 3
```

```
2
  × ÷ 3
   9 12 36
```

```
4
  × ÷ 6
   3 3 18
```

```
6
  × ÷ 16
   2 4 2
```


Building Computational Fluency Blackline F 69, Fact Fluency with 2’s–6’s  
Secret Path Problems, Set 2
Try this one*  

```
1a
  × ÷ 2
    12 6 5
```

```
2
  × ÷ 4
    4 18 2
```

```
5
  × ÷ 6
    6 18 2
```

```
6
  × ÷ 21
    21 3 14
```

* Paths may be reversed so what is shown as the end point could also be the start point, with the path going in reverse order using the inverse operation each time.
Try this one

1

2

3

4a

4b

5

6

* Paths may be reversed so what is shown as the end point could also be the start point, with the path going in reverse order using the inverse operation each time.
**Answer Key**

Building Computational Fluency Blackline F 76, Fact Fluency with 6's–12's  Secret Path Problems, Set 1

Try this one*

1*

2*

3*

4*

5*

6*

* Paths may be reversed so what is shown as the end point could also be the start point, with the path going in reverse order using the inverse operation each time.

Building Computational Fluency Blackline F 77, Fact Fluency with 6's–12's  Secret Path Problems, Set 2

Try this one

1

2

3

4a*

4b*

5*

6*

* Paths may be reversed so what is shown as the end point could also be the start point, with the path going in reverse order using the inverse operation each time.