



GRADE 3 SUPPLEMENT

Set A7 Number & Operations: Multiplication Beyond the Basic Facts

Includes

Activity 1: Multiplying Single Digits by Multiples of Ten	A7.1
Independent Worksheet 1: Multiplying by Multiples of 10	A7.7
Independent Worksheet 2: Sixty Seconds in a Minute	A7.9
Independent Worksheet 3: Hours to Minutes	A7.11

Skills & Concepts

- ★ use basic number combinations to compute related multiplication problems that involve multiples of 10
- ★ recall equivalencies associated with time: 60 seconds in a minute

Bridges in Mathematics Grade 3 Supplement

Set A7 Numbers & Operations: Multiplication Beyond the Basic Facts

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Prepared for publication on Macintosh Desktop Publishing system.

Printed in the United States of America.

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Bridges in Mathematics is a standards-based K–5 curriculum that provides a unique blend of concept development and skills practice in the context of problem solving. It incorporates the Number Corner, a collection of daily skill-building activities for students.

The Math Learning Center is a nonprofit organization serving the education community. Our mission is to inspire and enable individuals to discover and develop their mathematical confidence and ability. We offer innovative and standards-based professional development, curriculum, materials, and resources to support learning and teaching. To find out more, visit us at www.mathlearningcenter.org.

Set A7 ★ Activity 1



ACTIVITY

Multiplying Single Digits by Multiples of Ten

Overview

Students make sketches to investigate and make generalizations about multiplying single digits by multiples of ten. Then they complete a related worksheet independently.

Skills & Concepts

- ★ use basic number combinations to compute related multiplication problems that involve multiples of 10

You'll need

- ★ Explore Six (page A7.4, run 1 copy on a transparency and a class set on paper)
- ★ Explore More (page A7.5, run a class set)
- ★ Set A7 Independent Worksheet 1 (page A7.6, run a class set)
- ★ overhead pens in red, blue, and black
- ★ red, blue, and regular pencils for students

Instructions for Multiplying Single Digits by Multiples of Ten

1. Give students each a copy of Explore Six, and display the transparency at the overhead. Review the instructions and discuss the example at the top of the sheet with the class. Do the first problem together. Use your red overhead pen to label the dimensions of the rectangle, and have students use their red pencils to do so on their own sheets. Use your blue pen to fill in the rectangle with ten strips and ask students to do the same on their sheets. Have students count the strips to determine the area of the rectangle and write a matching multiplication equation.

Set A7 Number & Operations: Multiplication Beyond the Basic Facts Blackline Run 1 copy on a transparency a class set on paper.

NAME _____ DATE _____

Explore Six

1 Label the dimensions and area of the rectangle on each grid. Write a multiplication equation to match.

<p>example</p>	$6 \times 10 = 60$
<p>a</p>	$6 \times 20 = 120$
<p>b</p>	
<p>c</p>	

2 Use the information above to help solve these equations.

$6 \times 50 = \underline{\quad}$ $6 \times 60 = \underline{\quad}$ $6 \times 70 = \underline{\quad}$
 $6 \times 80 = \underline{\quad}$ $6 \times 90 = \underline{\quad}$ $6 \times 100 = \underline{\quad}$

Activity 1 Multiplying Single Digits by Multiples of Ten (cont.)

2. When students understand what to do, have them work on the sheet independently. Give assistance as needed. Encourage them to share and compare their answers with neighbors as they finish.

3. When most students have finished the sheet, reconvene the class. Ask children to pair-share any mathematical observations they can make about the worksheet. Here are some questions you might pose to spark their thinking:

- Did you notice any patterns in your answers?
- Did the sheet seem easy or challenging?
- What was easy (or challenging) for you about these problems?

4. Call on volunteers to share their observations with the class. Chances are, some of your students will notice the relationship between the basic facts for 6 and multiplying 6 by multiples of 10. If this does not emerge during the discussion, write the combinations shown below on the board as students watch.

$6 \times 1 = 6$	$6 \times 10 = 60$
$6 \times 2 = 12$	$6 \times 20 = 120$
$6 \times 3 = 18$	$6 \times 30 = 180$
$6 \times 4 = 24$	$6 \times 40 = 240$

Then have them list the rest of the combinations in the series, through 6×10 and 6×100 , as you record at the board. Here are some additional questions to pose:

- What do you notice about these pairs of combinations?
- Why does this pattern work the way it does?
- What happens to the value of each of the digits in the basic fact products when 6 is multiplied by a multiple of 10? Why?
- Would this pattern work with a different single-digit number? Why or why not?

5. Give students each a copy of Explore More. This sheet asks them to further explore the relationship between basic facts and multiplying by multiples of 10 by choosing a single-digit number between 4 and 9 (other than 6) to investigate. Review the instructions on the sheet with the class. Clarify and model as needed. Advise students to draw the missing dimension for each rectangle in red, and the rectangle on each grid in with regular pencil. Have them continue to use their blue pencils to fill in the rectangles with ten strips, but don't insist on it. Some students may develop more efficient strategies, such as skip counting (i.e., $5 \times 40 = 200$ because it's 40, 80, 120, 160, 200).

6. When students understand what to do, let them go to work. Give assistance as needed, and encourage children to share their discoveries with one another as they work. As they finish, have students start working Set A7 Independent Worksheet 1, Multiplying by Multiples of 10. Unfinished work can be sent home to be completed or assigned as seatwork at another time.

Activity 1 Multiplying Single Digits by Multiples of Ten (cont.)

Set A7 Number & Operations: Multiplication Beyond the Basic Facts Blackline Run a class set.
 NAME _____ DATE _____

Explore More

1 Choose a number between 4 and 9 (not 6) to multiply by 10 and multiples of 10. Draw the missing dimensions and the area of each rectangle. Write a multiplication equation to match.

a

b

c

d

2 Use the information above to help complete these equations.

_____ × 50 = _____ _____ × 60 = _____ _____ × 70 = _____

_____ × 80 = _____ _____ × 90 = _____ _____ × 100 = _____

Set A7 Number & Operations: Multiplication Beyond the Basic Facts Blackline Run a class set.
 NAME _____ DATE _____

Set 7A ★ Independent Worksheet 1

INDEPENDENT WORKSHEET

Multiplying by Multiples of 10

1 Solve these problems in your head. Write the answers.

$\begin{array}{r} 10 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 30 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 40 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ \times 3 \\ \hline \end{array}$
$\begin{array}{r} 80 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 90 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 100 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 1,000 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 10,000 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 100,000 \\ \times 3 \\ \hline \end{array}$	

2 Explain how you figured out the answers to the problems above.

3 Solve these problems in your head. Write the answers.

$\begin{array}{r} 10 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 30 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 40 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ \times 5 \\ \hline \end{array}$
$\begin{array}{r} 80 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 90 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 30 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 80 \\ \times 5 \\ \hline \end{array}$
$\begin{array}{r} 40 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 30 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ \times 5 \\ \hline \end{array}$

CHALLENGE

$\begin{array}{r} 900 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 400 \\ \times 12 \\ \hline \end{array}$	$\begin{array}{r} 800 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 600 \\ \times 12 \\ \hline \end{array}$	$\begin{array}{r} 700 \\ \times 11 \\ \hline \end{array}$	$\begin{array}{r} 800 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 800 \\ \times 12 \\ \hline \end{array}$
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INDEPENDENT WORKSHEET

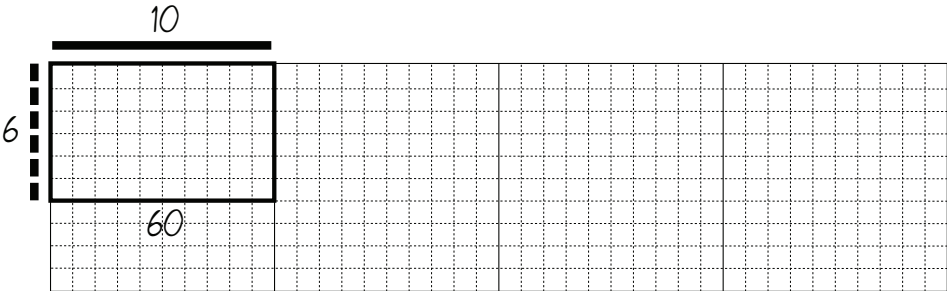
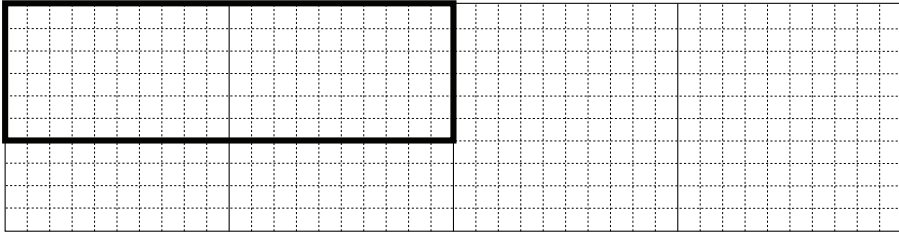

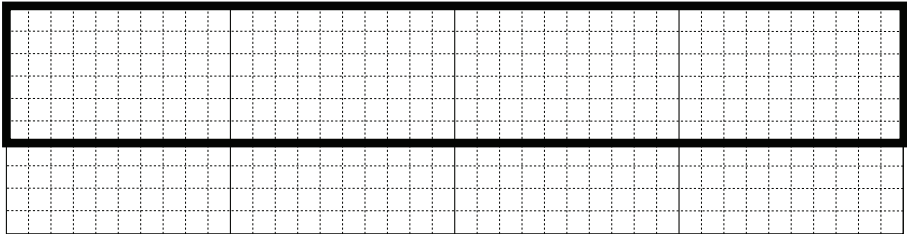
Use Set A7 Independent Worksheets 2 and 3 to provide students with more practice multiplying single digit numbers by multiples of 10.

NAME _____

DATE _____

Explore Six

1 Label the dimensions and area of the rectangle on each grid. Write a multiplication equation to match.

<p>example</p> 	$6 \times 10 = 60$
<p>a</p> 	
<p>b</p> 	
<p>c</p> 	

2 Use the information above to help solve these equations.

$6 \times 50 = \underline{\quad\quad\quad}$ $6 \times 60 = \underline{\quad\quad\quad}$ $6 \times 70 = \underline{\quad\quad\quad}$

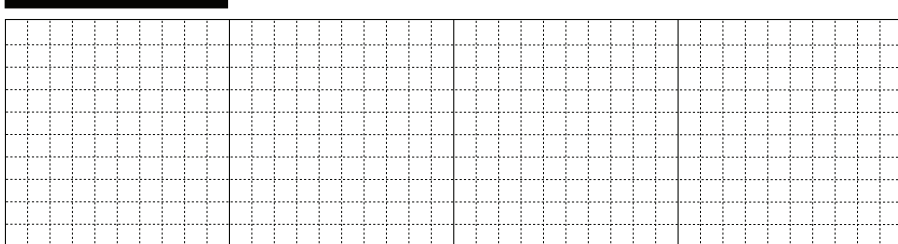
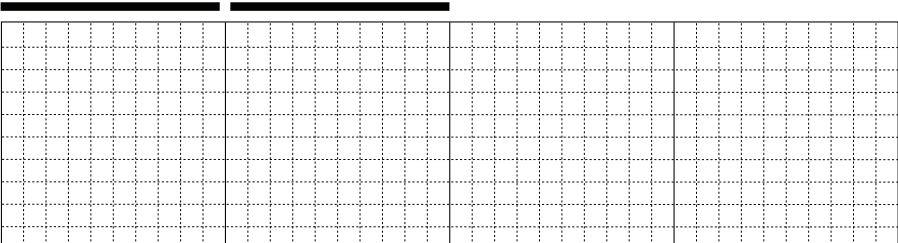
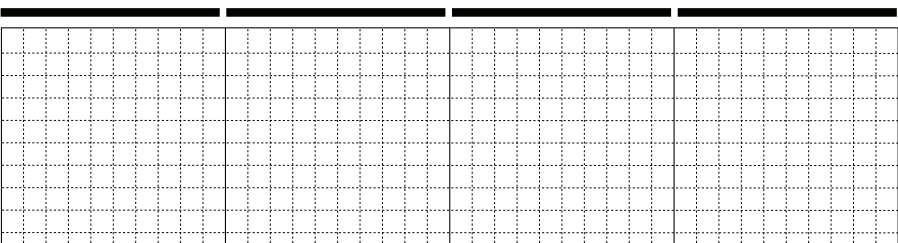
$6 \times 80 = \underline{\quad\quad\quad}$ $6 \times 90 = \underline{\quad\quad\quad}$ $6 \times 100 = \underline{\quad\quad\quad}$

NAME _____

DATE _____

Explore More

1 Choose a number between 4 and 9 (not 6) to multiply by 10 and multiples of 10. Draw the missing dimensions and the area of each rectangle. Write a multiplication equation to match.

<p>a</p> 	
<p>b</p> 	
<p>c</p> 	
<p>d</p> 	

2 Use the information above to help complete these equations.

$$\underline{\quad} \times 50 = \underline{\quad} \quad \underline{\quad} \times 60 = \underline{\quad} \quad \underline{\quad} \times 70 = \underline{\quad}$$

$$\underline{\quad} \times 80 = \underline{\quad} \quad \underline{\quad} \times 90 = \underline{\quad} \quad \underline{\quad} \times 100 = \underline{\quad}$$

NAME _____

DATE _____

Set 7A ★ Independent Worksheet 1



INDEPENDENT WORKSHEET

Multiplying by Multiples of 10

1 Solve these problems in your head. Write the answers.

$\begin{array}{r} 10 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 30 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 40 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ \times 3 \\ \hline \end{array}$
$\begin{array}{r} 80 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 90 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 100 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 1,000 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 10,000 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 100,000 \\ \times 3 \\ \hline \end{array}$	

2 Jon says the problems above are easy. Do you agree with him? Why or why not?.

3 Solve these problems in your head. Write the answers.

$\begin{array}{r} 10 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 30 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 40 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ \times 5 \\ \hline \end{array}$
$\begin{array}{r} 80 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 90 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 30 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 80 \\ \times 5 \\ \hline \end{array}$
$\begin{array}{r} 40 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 30 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ \times 5 \\ \hline \end{array}$



CHALLENGE

$\begin{array}{r} 900 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 400 \\ \times 12 \\ \hline \end{array}$	$\begin{array}{r} 800 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 600 \\ \times 12 \\ \hline \end{array}$	$\begin{array}{r} 700 \\ \times 11 \\ \hline \end{array}$	$\begin{array}{r} 800 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 800 \\ \times 12 \\ \hline \end{array}$
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NAME _____

DATE _____

Set A7 ★ Independent Worksheet 2



INDEPENDENT WORKSHEET

Sixty Seconds in a Minute

1 Fill in the tables below. Some of the answers have been filled in for you.

×	20	50	70	30	10	40	80	60	100	90
6	120					240				

×	2	5	7	3	1	4	8	6	10	9
60		300					480			

2 What do you notice about your answers?

3 There are 60 seconds in one minute.

a How many seconds are there in 3 minutes? _____

b How many seconds are there in 5 minutes? _____

c How many seconds are there in 10 minutes? _____

d How many seconds are there in 4 minutes? _____

e How many seconds are there in $1\frac{1}{2}$ minutes? Show your work.

There are _____ seconds in $1\frac{1}{2}$ minutes.



CHALLENGE

4 How many seconds are there in 1 hour? Show your work.

There are _____ seconds in 1 hour.

NAME _____

DATE _____

Set A7 ★ Independent Worksheet 3



INDEPENDENT WORKSHEET

Hours to Minutes

1 There are 60 minutes in a hour. Use that information to help solve the word problems below. For each problem

- Write an equation to match each problem and solve it.
- Write the answer on the line.

a James stayed at the After-School club for 2 hours on Tuesday. How many minutes was James at the After-School Club?

James was at the After-School Club on Tuesday for _____ minutes.

b Kara babysat her little cousin from 4:00 p.m. to 7:00 p.m. on Saturday. How many minutes did she babysit her little cousin?

Kara babysat her little cousin for _____ minutes.

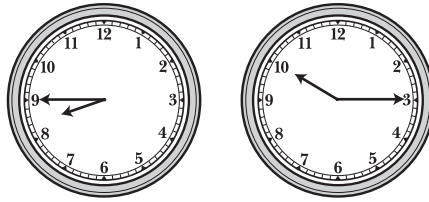
c Carlos started his chores at 9:30 a.m. He finished at 11:30 a.m.. How many minutes did he spend doing his chores?

Carlos spent _____ minutes doing chores.

(Continued on back.)

Independent Worksheet 3 Hours to Minutes (cont.)

2 Mrs. Ramos went out shopping at the time shown on the first clock. She came back at the time shown on the second clock.



a How many hours was Mrs. Ramos out shopping? How did you figure it out?

b How many minutes was Mrs. Ramos out shopping? Use numbers, labeled sketches, and/or words to solve the problem. Show your work.

3 Fill in the lines with the missing numbers.

$3 \times 40 = \underline{\quad}$

$6 \times 60 = \underline{\quad}$

$3 \times 20 = \underline{\quad}$

$5 \times 50 = \underline{\quad}$

$60 \times \underline{\quad} = 300$

$4 \times \underline{\quad} = 120$

$20 \times \underline{\quad} = 80$

$30 \times \underline{\quad} = 210$

$50 \times \underline{\quad} = 120$

**CHALLENGE**

4 Are the expressions below equal? If they are, put an = sign in the space . If they aren't put \neq in the space. (\neq means not equal).

$30 \times 60 \underline{\quad} 2 \times 90$

$40 \times 3 \underline{\quad} 20 \times 4$

$60 \times 4 \underline{\quad} 80 \times 3$