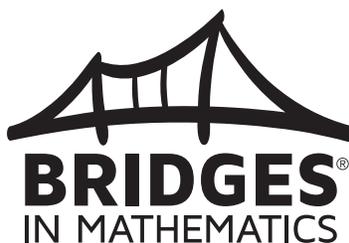




Teachers Guide

GRADE 2 – UNIT 3 – MODULE 2

Preview



Module 2

Adding & Subtracting on the Number Line

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Teacher Masters

Pages renumber with each module.

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| The Jimenez Family | T1 |
| Comparing Ages..... | T2 |
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| Work Place Guide 3C Hit the Zone | T5 |
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Student Book Pages

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| Open Number Line Record Sheet | 37 |
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Home Connections Pages

Page numbers correspond to those in the consumable books.

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| Adding, Counting & Solving Problems..... | 75 |

Module 2

Adding & Subtracting on the Number Line

Overview

In this module, students develop facility with the number line as a model for addition and subtraction within the range of 0 to 100. Additionally, students are asked to model, and subsequently solve, story problems that require either addition or subtraction with double-digit numbers. Students are encouraged to develop confidence with the “skip-jump” strategy by moving in both directions on the number line by increments of 1, 5, and 10.

Planner

| Session & Work Places | P&I | WP | A | HC |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|---|----|
| Session 1 How Much Older? Students use the number line to add and subtract within the range of 0 to 100. Specific focus is placed on subtraction as students compare the ages of family members in story problem contexts. | • | • | | |
| Session 2 Solving Problems on the Open Number Line In this session, students use the open number line to model and solve three double-digit story problems. Students move from counting by ones to making jumps of 10 on the open number line. The session ends with a visit to Work Places if time allows. Finally, the teacher introduces and assigns the Family Age Number Line Home Connection. | • | • | | • |
| Session 3 Height & Length Problems Students work as a group with the teacher to compare and contrast three different solutions to a story problem involving length using the open number line. Students then work in pairs or individually to solve two related story problems using the open number line. Students do Work Places as they finish and then come back together as a class to discuss solutions. | • | • | | |
| Session 4 Introducing Work Place 3C Hit the Zone The teacher introduces a new Work Place game featuring subtraction on the number line, by playing against the class and having students track all the moves and results for their team in their Student Books. Then the teacher sends students out to do Work Places, including the one just introduced. Finally, the teacher introduces and assigns the Adding, Counting & Solving Problems Home Connection. Introducing Work Place 3C Hit the Zone Each player begins by writing his initials at the top of the game board to claim one of four lines that run the length of the board. Next, players take turns rolling a die to determine which of six zones on the board they need to reach in order to win. Players then take turns spinning a numbered spinner that determines how far they can move along their line. After three spins each, using a different spinner each time, the player who comes closest to hitting his or her designated zone wins the round. | | • | | • |
| Session 5 Addition & Subtraction Checkpoint This session provides a checkpoint for much of the content covered in the first two modules of Unit 3. Students locate, mark, and identify numbers on a line, use the open number line to model and solve double-digit subtraction problems, use the fewest skip-jumps of 1, 5, and 10 to reach different points on the number line, and solve several double-digit addition problems. When finished with the assessment, students turn in their work and go out to Work Places. | | • | • | |

P&I – Problems & Investigations, **WP** – Work Place, **A** – Assessment, **HC** – Home Connection

Materials Preparation

Each session includes a complete list of the materials you'll need to conduct the session, as well as notes about any preparation you'll need to do in advance. If you would like to prepare materials ahead of time for the entire module, you can use this to-do list.

| Task | | Done |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Copies | Run copies of Teacher Masters T1–T12 according to the instructions at the top of each master. | |
| | Run a single copy of Student Book page 37. | |
| | If students do not have their own Student Books, run a class set of Student Book pages 36–38. | |
| | If students do not have their own Home Connections books, run a class set of Home Connections pages 73–76. | |
| Work Place Preparation | Prepare the materials for Work Place 3C using the list of materials on the Work Place Guide (Teacher Master T5). | |
| Paper Cutting | Cut an 18-inch length of adding machine tape for each student to use in completing the Home Connection for Session 2. | |
| Special Items | Prepare several baskets of craft sticks bundled into sets of 10, as well as individual sticks for students who want to use these tools during the assessment. | |



Additional Resources

Please see this module's Resources section of the Bridges Educator site for a collection of resources you can use with students to supplement your instruction.

Preview

Session 1

How Much Older?

Summary

Students use the number line to add and subtract within the range of 0 to 100. Specific focus is placed on subtraction as students compare the ages of family members in story problem contexts.

Skills & Concepts

- Solve one-step subtraction story problems with minuends to 100 involving situations of comparing, with unknowns in all positions (2.OA.1)
- Skip-count by 5s and 10s within 1000 (2.NBT.2)
- Represent whole numbers as lengths on a number line (2.MD.6)
- Represent whole number differences from minuends up to 100 on a number line (2.MD.6)
- Model with mathematics (2.MP.4)
- Use appropriate tools strategically (2.MP.5)

Materials

| Copies | Kit Materials | Classroom Materials |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Problems & Investigations How Much Older? | | |
| TM T1 The Jimenez Family | | <ul style="list-style-type: none"> • student whiteboards, markers, and erasers (class set) • a piece of copy paper to mask portions of the teacher master |
| TM T2 Comparing Ages | | |
| Work Places in Use | | |
| 2B The Subtraction Wheel (introduced in Unit 2, Module 1, Session 5) 2C Number Line Race (introduced in Unit 2, Module 2, Session 1) 2D Pick 2, Roll & Subtract (introduced in Unit 2, Module 2, Session 4) 2E Steps & Leaps (introduced in Unit 2, Module 3, Session 3) 3A Star Power (introduced in Unit 3, Module 1, Session 3) 3B Five in a Row (introduced Unit 3, Module 1, Session 5) | | |

HC – Home Connection, **SB** – Student Book, **TM** – Teacher Master
Copy instructions are located at the top of each teacher master.

Vocabulary

An asterisk [*] identifies those terms for which Word Resource Cards are available.

compare*
 difference*
 subtract*



Problems & Investigations

How Much Older?

- 1 Gather students to your discussion circle and let them know that they will do some subtraction on the number line today, using people's ages as a context.
- 2 Engage students in discussion about the ages of some of the people in their family. As students share, list 10–15 of the ages they mention on the board.

The following discussion prompts may be helpful.

- How many years old is the oldest person that you know?
- Who is the youngest person that you know?
- How old is your mom or your dad?

- 3 Draw an open number line on the board. Mark and label 0 at the left end. Work with input from the students to mark and label 8–10 of the numbers you just listed on the board, starting with the greatest to help establish the scale of the number line.

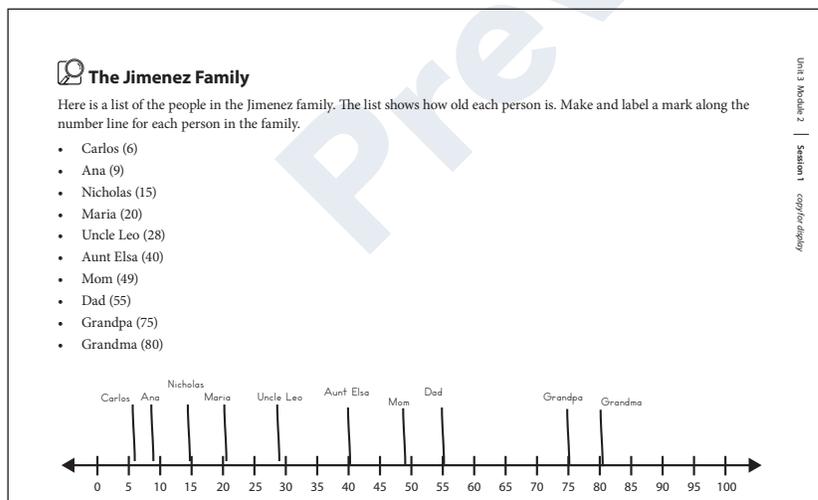
The following prompts may help guide discussion.

- Jenna, you said your great grandmother is 98 years old! Where should we put that number on our number line?
- Some of you disagree on where the number 98 should be placed. Is there one exact place where we have to put 98?
- If we want to also include some other numbers on our number line, how far away from 0 should we place 98?

Although the age of the oldest person on your list could go anywhere to the right of 0, talk with students about the wisdom of leaving ample space between 0 and that number to fit additional numbers on the number line. If students suggest a location that is too close to 0 to be able to easily place a wide range of numbers on the line, follow up by asking them to put their own age on the number line. If they struggle to do so, it will motivate the need for a larger scale on the number line.

- 4 Then display the Jimenez Family Teacher Master, give students a few moments to examine the information quietly, and then ask students to mark the age of each person in the family on the number line.

- Read the instructions at the top of the page with the class.
- As you choose each student, have him or her come up to the display and make a mark along the number line for one of the Jimenez family members, using the multiples of 5 as anchor points.
- Label each mark with the family member's name.



- 5 Next, discuss the display with the class, noting in particular the various ages of the family members.

Here are some questions you may want to pose:

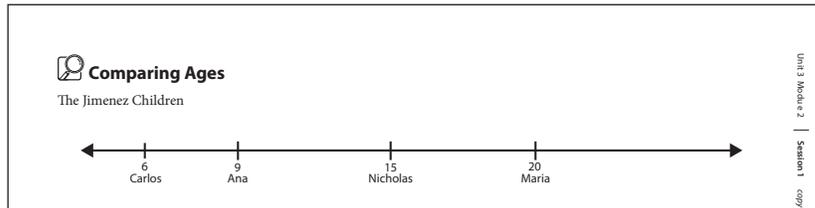
- How many people are in this family? (10 people)
- Who is the oldest member of the family? How old is Grandma Jimenez? (Grandma Jimenez, 80 years old)
- Who is the youngest member of the family? How old is Carlos? (Carlos, 6 years old)
- Who is older, Nick or Maria? (Maria)
- Who is older in the Jimenez family, Mom or Dad? (Dad)

About This Session

Here, students return to the idea of subtraction as a process of finding the difference between two quantities rather than taking one quantity away from another. Within this framework, it's likely that students will begin with the subtrahend (the smaller number) and actually "count up" to arrive at the minuend (larger number). Throughout the session, students will be invited to find the difference between two numbers going in both directions—building from the subtrahend to the minuend, as well as starting with the minuend and subtracting toward the subtrahend.

- 6 Now explain that you are going to pose some problems about the differences in ages between some of the members of the Jimenez family. Start by displaying just the first number line, labeled The Jimenez Children on the Comparing Ages Teacher Master. Keep the other two number lines on the teacher master covered for now.

- Have helpers distribute whiteboards, pens, and erasers to all the students.
- Pose the following problem to the class regarding the information on the first number line: Ana is older than Carlos. How much older? (3 years older)



- » Ask students to use labeled sketches and numbers on their whiteboards to find the answer.
- » Give students a minute to solve it on their boards.
- » Have students share, first in pairs and then as a whole group, their solutions and strategies.
- » Record students' thinking on the board, making use of the open number line, as does the teacher in this dialog.

Teacher How much older is Ana than Carlos, everyone?

Students Three!

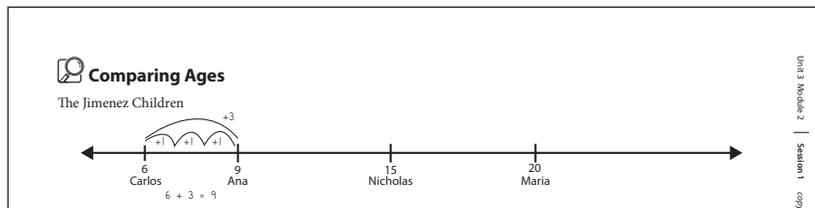
Three years older.

Teacher It sounds like everyone agrees that Ana is three years older than Carlos. Would someone be willing to show us how they figured it out?

Student A I just knew it was 3 because $6 + 3 = 9$.

Student B I counted up from 6. I went 7, 8, 9, so I knew it was 3.

Teacher I'm going to use the open number line to show your thinking. Maya said she added 3 to 6 to get 9. I'll show that by taking a hop of 3 from the 6 up to the 9. Then DJ said he counted up by 1s from 6. I'm going to show that by making 3 hops of 1, and labeling each of them.

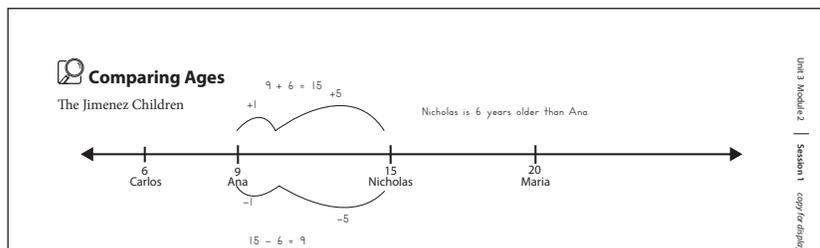


- 7 Next, pose the additional problems listed here regarding the Jimenez children. Continue to model students' responses on the board. Guide them toward using hops of 1, 5, or 10 on an open number line to model and solve the problems.

- Nicholas is older than Ana. How much older? (6 years older)

Once you have modeled a couple of the problems using hops on the open number line, look for students to do the same thing on their whiteboards. Model jumps in both directions so students understand that a subtraction problem, when thought of as the difference

between two numbers, can be solved by either adding up (from the subtrahend), or taking away (from the minuend).



- Nicholas and Carlos are brothers. Nicholas is older. How much older? (9 years older)
 - Maria is older than Carlos. How much older? (14 years older)
- 8 Then display the second line, labeled The Jimenez Grandparents on the Comparing Ages Teacher Master, keeping the third line covered. Pose the problems listed here regarding the Jimenez grandparents.
- How much older is Grandma than Grandpa? (5 years)
 - Grandma always said she wanted to live to be 100 years old. How many more years is that? (20 years)
 - How old will Grandpa be 10 years from now? (85 years old)
 - How old was Grandma 6 years ago? (74 years old)
 - » Give students a minute to solve each and pair-share their solutions and strategies.
 - » Ask students to share their answers as a whole class.
 - » Invite volunteers to share their strategies with the class. Choose students who have modeled and solved the problem on an open number line, using forward or backward hops of 1s, 5s, or 10s.
- 9 Finally, display the third line, labeled The Jimenez Adults on the Comparing Ages Teacher Master. Pose the problems listed here regarding the Jimenez adults.
- Grandpa is older than Dad. How much older? (20 years older)
 - Dad is older than Mom. How much older? (6 years older)
 - Aunt Elsa is older than Uncle Leo. How much older? (12 years older)
 - Dad is older than Uncle Leo. How much older? (27 years older)
 - How old was Uncle Leo 9 years ago? (19 years old)
 - How many years from now will Mom be 100 years old? (51 years)



Work Places

- 10 Invite students to spend any time that remains in the session at Work Places.
- 11 Close the session.
- Have students clean up and put away the Work Place bins.
 - Display the Jimenez Family Teacher Master again.
 - Ask for a volunteer to point to the place where he or she would be on the number line, and mark the location.

Session 2

Solving Problems on the Open Number Line

Summary

In this session, students use the open number line to model and solve three double-digit story problems. The teacher presents the first problem to the entire class and uses it to illustrate how counting by 1s on the open number line is an accurate, but inefficient strategy. Then the class works together to group the jumps of one into larger groups of 10 to find the solution and to find their own ways of getting from 38 to 75 on an open number line. After this group work, students work in pairs to solve two more problems presented to the whole class. The session ends with a visit to Work Places if time allows. Finally, the teacher introduces and assigns the Family Age Number Line Home Connection.

Skills & Concepts

- Solve one-step addition story problems with sums to 100 involving situations of adding to, with unknowns in all positions (2.OA.1)
- Solve one-step subtraction story problems with minuends to 100 involving situations of comparing, with unknowns in all positions (2.OA.1)
- Represent whole-number sums and differences within 100 on a number line (2.MD.6)
- Make sense of problems and persevere in solving them (2.MP.1)
- Construct viable arguments and critique the reasoning of others (2.MP.3)

Materials

| Copies | Kit Materials | Classroom Materials |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------|
| Problems & Investigations Solving Problems on the Open Number Line | | |
| TM T3 Open Number Line Problems | | • a piece of paper to mask portions of the display |
| SB 37 Open Number Line Record Sheet | | |
| Work Places in Use | | |
| 2B The Subtraction Wheel (introduced in Unit 2, Module 1, Session 5) 2C Number Line Race (introduced in Unit 2, Module 2, Session 1) 2D Pick 2, Roll & Subtract (introduced in Unit 2, Module 2, Session 4) 2E Steps & Leaps (introduced in Unit 2, Module 3, Session 3) 3A Star Power (introduced in Unit 3, Module 1, Session 3) 3B Five in a Row (introduced in Unit 3, Module 1, Session 5) | | |
| Home Connection | | |
| HC 73–74 Family Age Number Line | • adding machine tape (see Preparation) | • a paperclip for each student |

HC – Home Connection, **SB** – Student Book, **TM** – Teacher Master
Copy instructions are located at the top of each teacher master.

Preparation

Cut an 18-inch length of adding machine tape for each student to use in completing the Home Connection.

Vocabulary

An asterisk [*] identifies those terms for which Word Resource Cards are available.

open number line



Problems & Investigations

Solving Problems on the Open Number Line

- 1 Display the first problem on the Open Number Line Problems Teacher Master and read it with the class. Explain that today students will use open numbers lines to solve problems like this one.

Unit 3 Module 2 | Session 2 1 copy for display

Open Number Line Problems

1 Josh and his dad are driving to the city. It is 75 miles away. They have already gone 38 miles. How many more miles do they have to drive?

- 2 Ask students to share, first in pairs and then as a whole group, ideas about what the problem is asking, and how they would go about solving it.

Be sure that the ideas of counting on from, or adding to 38 to reach 75, and counting backward from 75 to find out how many miles remain are discussed. Summarize both approaches by writing equations.

Student A You have to figure out how much farther they have to drive. You could keep going, like count up from 38 to 75.

Teacher I wrote $38 + \text{box} = 75$ to show that idea. What does the box mean in this equation?

$$38 + \square = 75$$

Student B It means the part you have to figure out. It's where you write the answer.

Student C It's like the problem you have to solve. 38 plus how many more to get to 75?

Teacher Yep. So, does anyone have any other ideas about how we might solve this problem?

Student D You could go maybe go backward from 75 down to 38.

Teacher OK. Let's write an equation to represent your idea, Damien.

$$38 + \square = 75 \quad 75 - \square = 38$$

- 3 Draw an open number line on which to model the problem. Mark 38 at one end and 75 at the other. Then propose to solve the problem by making hops of 1 all the way from 38 to 75.

- Give students time to discuss the idea, and then model it.

While this process is almost painfully tedious, it serves several purposes. The first is to honor students who are still counting by 1s. The second is to set the stage for grouping the single hops by 10s, with all students fully cognizant of where they came from. The third is to encourage students to work efficiently rather than relying on a process that has worked in the past, but is becoming fast outmoded as the numbers get bigger.

Student A But you could go faster if you made bigger hops. Like, you could just take a hop of 2 and get to 40, and then you could go by 10s.

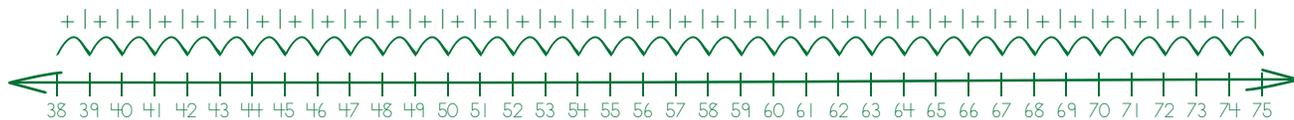
Teacher That's true, but let's try it this way and see what happens. I need you all to help me. I'm going to make a hop and label it with a +1 each time until we get all the way to 75. Ready?

Students Thirty-nine, 40, 41, 42, 43, 44 [...] 75!

Student A That took forever!

Teacher Let's go back and label the places we landed along the line. I need your help again with this job.

Students Thirty-nine, 40, 41, 42, 43, 44 [...] 75!



- 4 Now ask students how many hops it took to go from 38 to 75. After some discussion, go back and loop the single hops into groups of 10 to make them easier to count.

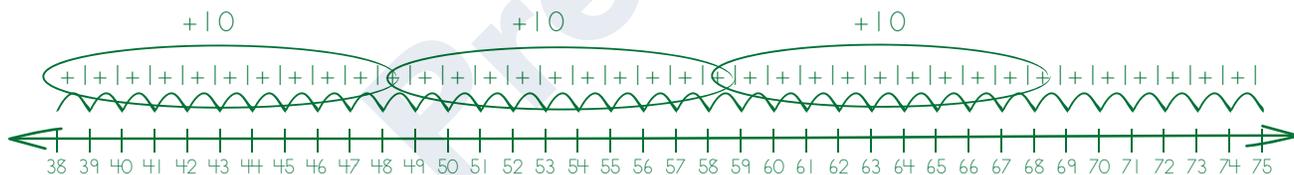
Teacher Whew! That was a lot of work. So, how many more miles do Josh and his dad have to drive to get to the city?

Student A We don't know. There's just a bunch of hops, but we don't even know the answer!

Student B Now we have to go back and count how many hops there are!

Student C It's 37. I already counted them.

Teacher I have an idea. Max says it's 37; Danielle says we have to go back and count them to be sure. What if we count the hops by 10s, instead of 1s, like this?



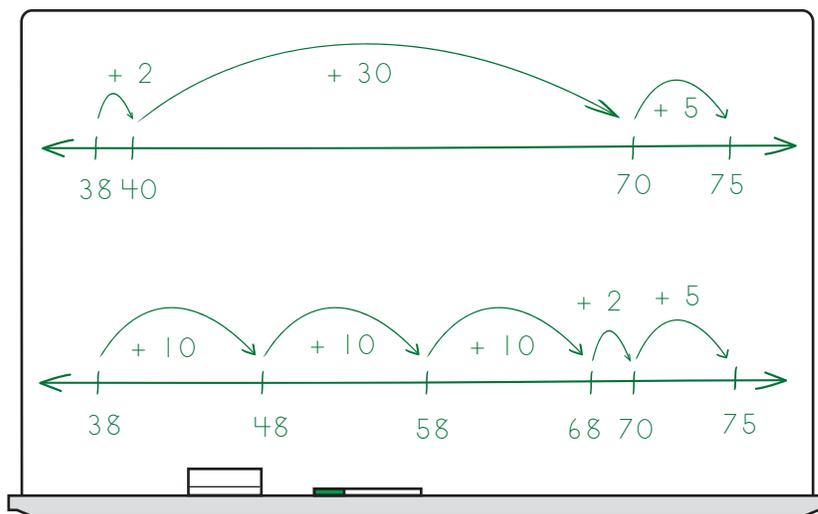
Teacher Now that we've got 10, 20, 30, do we need more?

Student A Yes, we didn't make it all the way to 75 yet.

Student B There are 7 jumps left. See, it did turn out to be 37.

Student C Can I circle them?

- 5 Then read the problem aloud again, have students pair-share answers, using the information on the board, and then state the answer aloud on your signal.
- 6 Next, draw a new number line on the board, labeled with 38 at one end and 75 at the other, and ask students how they might solve the problem if they could take hops greater than 1.
- 7 Have students share ideas, first in pairs, and then with the whole group. Invite a couple of volunteers to explain their ideas to the class as you work at the board to draw them.
- Draw and label a new line for each strategy shared.



CHALLENGE Some students may be ready to consider a strategy that has them taking one long jump past 75 to 78 and then jumping back 3. Draw an open number line showing one long jump of 40 from 38 to 78 and then a jump back to 75. Discuss how this number line models the situation and encourage students to write an equation to match.

8 Discuss the strategies students have shared, in terms of the original problem.

Here are some questions you might ask:

- How much farther did Josh and his dad have to drive to get to the city?
- How do you know? Can you show us on the open number line?
- Does this give us the answer to the problem?
- Did we add or subtract to find the answer?

Student A They had to go 37 more miles because if you add up all the hops, it's 10, 20, 30, then 32 plus 5, and that's 37.

Student B It's right because 38 and 37 really is 75, I checked it.

Student C I don't get it, Jamal. Why are we adding when it should be take away?

Student D You can add to find the answer to a subtraction problem, like $14 - 7$ is 7 because $7 + 7$ is 14.

Student E Also, the problem is kind of like adding. You have to find out how much more they need to go, right?

9 Ask students to find the Open Number Line Record Sheet page in their Student Books, and solve problem 1. Have them use one of the strategies (other than hopping by 1s) on the board, or generate yet another on their own.

Ask students to:

- Record the two equations from the board at the top of the first box.
- Show how they would make hops to get from 38 to 75 on the number line.
- Label their work.

10 Then display the second story problem on the Open Number Line Problems Teacher Master and read it with the class.

- Ask students to share, first in pairs and then as a whole group, ideas about what the problem is asking, and how they would go about solving it.
- Then work with students' input to record on the board two different equations to match the situation, as they do so in their Student Books.



Math Practices in Action 2.MP.3

By asking students to reflect upon the variety of strategies they have shared, you are helping them learn to construct viable arguments and critique the reasoning of others. In the process, they are developing greater fluency with multi-digit computation strategies.

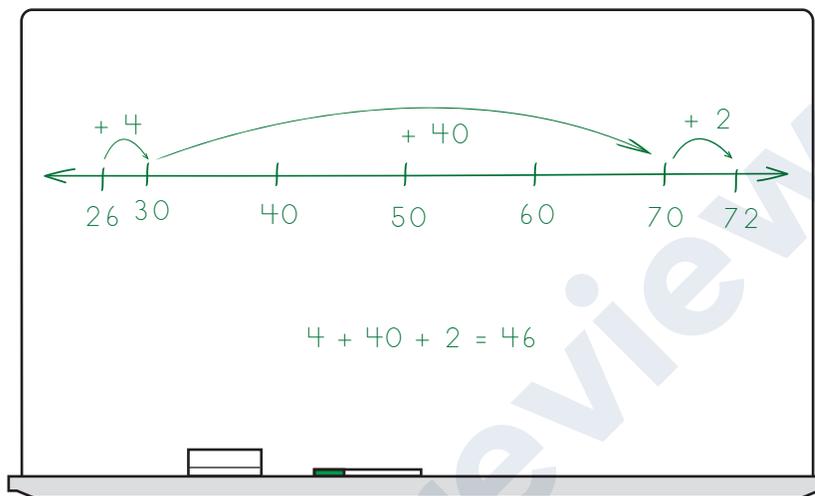
- 2 Maria Jose wants to buy a bike that costs 72 dollars. So far, she has saved 26 dollars. How much more money does she need to save?

- 11 Leave the problem on display and have students work in pairs to solve it in their Student Books. Remind them to label their work.

As you circulate and talk to students about their work, take note of the different strategies students are using. Look for pairs using efficient strategies to share their work in the next step.

SUPPORT If you find students continuing to count by 1s, let them mark 10 or even 20 small steps. Then stop them, and ask them to loop their hops of 1 into groups of 10. You may have to do this more than once, but it's important to start where students are, and help them work from their current strategies to methods that are more efficient.

- 12 Draw several open number lines on the board, and ask three different pairs of students to come up to the board to share and explain their work.



- 13 Repeat steps 10 through 12 with the last story problem on the teacher master. Give students time to share answers.



Work Places

- 14 Invite students to spend any time that remains in the session at Work Places.
- 15 Close the session.
- Have students clean up and put away the Work Place bins.
 - Draw an open number line with 33 and 81 marked. Ask students to think of equations to represent the display and offer possible ways to solve the equations.



Home Connection

- 16 Introduce and assign the Family Age Number Line Home Connection, which provides more practice with the following skills:
- Solve one-step addition story problems with sums to 100 involving situations of adding to, with unknowns in all positions (2.OA.1)
 - Solve one-step subtraction story problems with minuends to 100 involving situations of comparing, with unknowns in all positions (2.OA.1)
 - Represent whole numbers as lengths on a number line (2.MD.6)
 - Represent whole-number sums and differences within 100 on a number line (2.MD.6)
- 17 Review this assignment carefully before sending it home with students.
- Give them each an 18-inch length of adding machine tape to use for the first part of the assignment.
 - Have them fold the strip in half and then half again, and paperclip it to the assignment.

Preview

Session 3

Height & Length Problems

Summary

Students work as a group with the teacher to compare and contrast three different solutions to a story problem involving length. The discussion of the different solutions gives the class another opportunity to observe and discuss methods of using the open number line to solve problems. Students then work in pairs or individually to solve two related story problems using the open number line. Students go out to Work Places as they finish and then come back together as a class to discuss solutions.

Skills & Concepts

- Solve one-step subtraction story problems with minuends to 100 involving situations of comparing, with unknowns in all positions (2.OA.1)
- Measure the length of an object in inches using a measuring tape (2.MD.1)
- Estimate length in inches (2.MD.3)
- Determine exactly how much longer one object is than another (2.MD.4)
- Express the difference between two lengths in terms of a standard unit of length (2.MD.4)
- Solve subtraction story problems with minuends to 100 involving lengths given in the same units (2.MD.5)
- Represent whole-number differences from minuends up to 100 on a number line (2.MD.6)
- Make sense of problems and persevere in solving them (2.MP.1)
- Construct viable arguments and critique the reasoning of others (2.MP.3)

Materials

| Copies | Kit Materials | Classroom Materials |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Problems & Investigations Height & Length Problems | | |
| TM T4 David's Problem SB 38* Length Problems on the Open Number Line | <ul style="list-style-type: none"> • measuring tape marked in inches | <ul style="list-style-type: none"> • a piece of paper to mask portions of the overhead • student whiteboards, markers, and erasers (class set) |
| Work Places in Use | | |
| 2B The Subtraction Wheel (introduced in Unit 2, Module 1, Session 5) 2C Number Line Race (introduced in Unit 2, Module 2, Session 1) 2D Pick 2, Roll & Subtract (introduced in Unit 2, Module 2, Session 4) 2E Steps & Leaps (introduced in Unit 2, Module 3, Session 3) 3A Star Power (introduced in Unit 3, Module 1, Session 3) 3B Five in a Row (introduced in Unit 3, Module 1, Session 5) | | |

HC – Home Connection, **SB** – Student Book, **TM** – Teacher Master
Copy instructions are located at the top of each teacher master.

*Run 1 copy of this page for display.

Vocabulary

An asterisk [*] identifies those terms for which Word Resource Cards are available.

difference*
height*
length*



Problems & Investigations

Height & Length Problems

- 1 Explain that students will be thinking about problems of height and length today. Ask the what they know about the words *height* and *length*.

What do you know about those two words? Have you ever measured the length of something? If so, what units did you use? Have you ever measured the height of something? Has anyone ever measured your height? If so, in what units?

- 2 Display the problem at the top of David's Problem Teacher Master, keeping the rest of the sheet covered for now. Read the problem out loud and ask students to think about what it is asking.

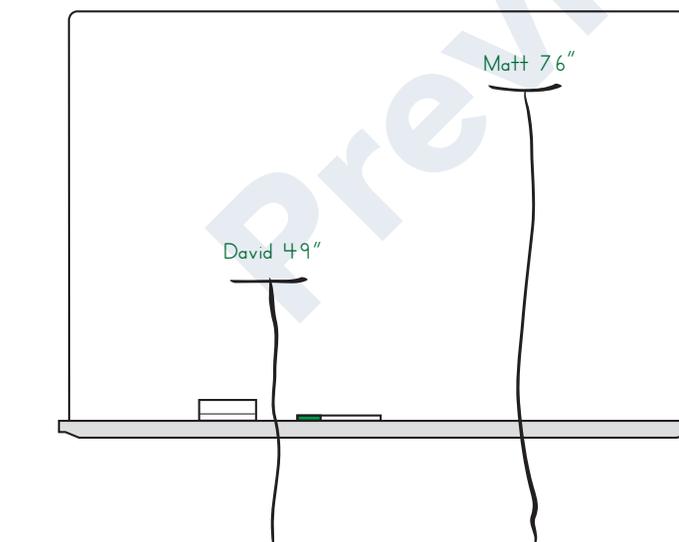
Also, have students think about the heights of the two boys mentioned in the problem. Which one of the two, David or Matt, is probably closer to them in height? Is Matt quite a bit taller than David, or just a little? How old do they think these two boys might be?

Unit 3 Module 2 | Session 3 1 copy for display

David's Problem

David is 49 inches tall. His big brother, Matt, is 76 inches tall. How many inches will David have to grow to be as tall as his big brother?

- 3 Then have students help you measure and mark both heights, 49 and 76 inches, on the board using the measuring tape.



- 4 Ask students to work in pairs to estimate how many inches David will have to grow to catch up with his brother. Have a few volunteers share their estimates with the class.

Student A If David grew 10 inches, he would be up to 59.

Student B It's more than 20 because $49 + 20$ is only 69.

Student C I agree with you, Sergio. I think it's close to 25. 49 is close to 50 and 50 plus 25 is 75.

About This Session

Even though second graders haven't yet had formal instruction in measuring with standard units, many, if not most, have encountered the idea outside of school. Some might keep an ongoing record of their height at home or know the length of a new baby in the family. This session poses problems in the context of such familiar situations and may be regarded as an informal lead-in to Unit 4, when students will learn more about measuring in U.S. customary units (inches, feet, and yards).

- 5 Work with students' input to write two different equations on the teacher master to represent the situation.

Equations:

$$49 + \square = 76$$

$$76 - \square = 49$$

Teacher I think we all agree that this problem is asking us to figure out how many inches David has to grow to catch up with Matt. What equations can we write that will show what we have to do?

Student A We have to go up from 49 to 76, so we could do one like 49 plus box equals 76.

Student B What does the box mean again, Tasha?

Student A It is the number we don't know. The equation says we need to take 49 and add a number to it to get 76.

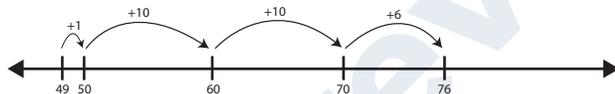
Teacher Any other ideas? Would it work if we went the other way? What about 76 minus box equals 49?

Student C I think it would be the same. It's like you are on 76 and you jump down some to get to 49.

Student D It's still the same number of inches between David and Matt, whether you go up or down.

- 6 Explain that you are going to show some solutions to David's problem from other second graders. Reveal the first solution, give students a few moments to study it quietly, and then discuss the work.

Solution 1



Student A That kid hopped 1 to get to 50. Then he went 10 more and 10 more to get up to 70. Then he took a big hop of 6 to get to 76.

Student B So how do we use that to find the answer? It's just a bunch of hops?

Student C You can add the hops together to figure it out. One plus 10 plus 10 plus 6 equals 27.

Student D David needs to grow 27 inches to be as tall as his brother.

- 7 Next, ask students to record solution 1 on their whiteboards and add the results.

- Give students each a whiteboard, pen, and an eraser.
- Record the length of each of the hops from Solution 1 on the board as students do so on their whiteboards.
- Then give the class a few moments to add the numbers and report the results.
- Press them to explain how this equation relates to David's problem.

Teacher Please tell the person next to you what you got when you added $1 + 10 + 10 + 6$. OK, now you can all tell me when I clap once.

Students 27!

Teacher What does 27 have to do with David's problem?

Student A That's how many inches David has to grow to catch up with his brother.

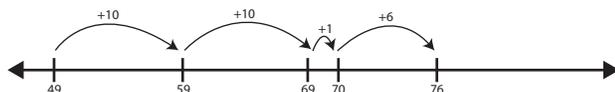
Student B That's a lot of inches, I think. Matt is pretty tall. He's probably in high school or something.

Teacher Where did those numbers even come from?

Student C Those are the numbers from the hops that kid made. They show how far it is from 49 to 76.

- 8 Reveal each of the other two solutions, one at a time. In each case, ask students to write an equation on their boards that shows the hops.

Solution 2



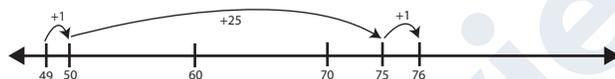
Student A This kid tried to jump by 10s first. She jumped as many 10s as she could and then switched.

Student B I wonder why she jumped 1 and then 6.

Student C I think she did it to make getting to 76 easier. It's easier to figure out how far you need to jump from 70 than from 69.

Student D The equation for this one is $10 + 10 + 1 + 6$ equals 27. Hey, the answer is the same even though the picture is different!

Solution 3



Student E Whoa! That kid took a big leap from 50 to 75. How did they know how to do that?

Student F I bet they were thinking of money... like quarters.

Student G When you take a big jump like that, the work is faster. The equation is 1 plus 25 plus 1 equals 27 .

- 9 Then ask students to compare and contrast the equations on their boards. Guide them to the observation that the order in which two numbers are added [commutative property] and how the numbers are grouped in addition [associative property] will not change the sum.

$$10 + 10 + 1 + 6 = 27$$

$$1 + 10 + 10 + 6 = 27$$

$$1 + 25 + 1 = 27$$

Student A They all make 27. David has to grow 27 more inches.

Student B The one at the top and the next one have the same numbers, but they're mixed up.

Teacher Is that OK?

Student C It still turns out the same every time. You can switch numbers, like $2 + 3$ is the same as $3 + 2$.

Student D Sometimes it's easier to switch the numbers around. Like on the first one, you have to go $1 + 10$ is 11. Then $11 + 10$ is 21, and then plus 6 is 27. The other one is just $10 + 10$ is 20, plus 7 is 27.

Teacher What about the last equation?

Student E Well, it's weird, but it works. It's kind of like if you chop a 5 out of the 6 in the first equation. You give that 5 to the 2 tens, you have 25, and then 2 more. No matter how you add up the numbers, you still get the same answer.

- 10 Next, collect the boards, pens, and erasers and have students find the Length Problems on the Open Number Line page in their Student Books.
- 11 Display your copy of the Student Book page and read both problems with the students. When they understand what to do, let students go to work individually or in pairs.
- As students work, circulate to observe their strategies.
 - » Check to see if they're using hops of 5, 10, and possibly other numbers, rather than hops of 1. See Support suggestions for students who are hopping only by 1s to solve the problems.
 - » Take note of students who are using interesting or efficient strategies. Ask these students to share their work when the class comes back together to review.
 - Put David's Problem back on display and encourage students to review the three different solutions to get ideas for solving these new problems.

SUPPORT If you have students counting by 1s, model their work for them on a number line, showing them every single jump in their work. Then, as they are ready, use the number line to help them group numbers by circling sets of 10.

Allow students who are struggling with the open number line model to use base ten area pieces instead. Encourage students to build the smaller number in the problem, add enough 1s to get to the nearest multiple of 10, and then add as many 10s as they can before adding any more pieces.

CHALLENGE Ask early finishers to turn the sheet over to write their own open number line problem for a partner to solve.



Work Places

- 12 Have students share and compare their answers when they finish the Student Book page, and then invite them to go to Work Places.
- Remember to save 10 minutes at the end of the session to have students share their solutions and strategies.
- 13 When most students have completed the page, reconvene the class to share and compare answers and strategies.
- Ask students to share their answers to the first problem. List all responses on the board.
 - Invite a few students to explain and justify their answers.
 - Repeat this with the second problem.

Don't shy away from asking a student who has given the wrong answer to share his strategy. Students often discover their own mistakes as they share with the group. Handled with respect, mistakes often turn out to be fruitful, illuminating common misconceptions, and

reassuring students that it's OK to take a risk and make a mistake, especially if we can learn something from it.

While there are many unique ways to approach these problems, some strategies are worth highlighting if you observe students using them. Look for the following:

| Common Strategies for Problem 1 | $47 + x = 82$ | $82 - x = 47$ | $82 - 47 = x$ |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------|---------------|
| Description | Visual | | |
| 1. Add to get to a multiple of 10, then keep adding 10s until you can't add any more. Then count on for the rest of the 1s. | <p>$3 + 10 + 10 + 10 + 2 = 35$, so $47 + 35 = 82$</p> | | |
| 2. Add to get to a landmark number and take a larger jump to get to the next landmark number. Then jump to the next multiple of 10 and count on for the rest of the 1s. | <p>$3 + 25 + 5 + 2 = 35$, so $47 + 35 = 82$</p> | | |
| 3. Take a large jump beyond the target using a multiple of 10. Then subtract to get to the desired number. (This is an advanced approach for most second graders.) | <p>$40 - 5 = 35$, so $47 + 35 = 82$</p> | | |

| Common Strategies for Problem 2 | $84 + x = 120$ | $120 - x = 84$ | $120 - 84 = x$ |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------|----------------|
| Description | Visual | | |
| 1. Add to get to a multiple of 10, then keep adding 10s until you reach a landmark number. Then add the needed 10s and 1s in one jump to finish. | <p>$6 + 10 + 20 = 36$, so $84 + 36 = 120$</p> | | |
| 2. Add 10s until you can't add any more without going past your target. Then count on for the rest of the 1s. | <p>$10 + 10 + 10 + 6 = 36$, so $84 + 36 = 120$</p> | | |

Session 4

Introducing Work Place 3C Hit the Zone

Summary

The teacher introduces Work Place 3C Hit the Zone, which features subtraction on the number line. The teacher plays several rounds with the class and asks students to track all the moves and results for their team in their Student Books. After playing the game with the class, the teacher sends students out to Work Places, including the one just introduced. Finally, the teacher introduces and assigns the Adding, Counting & Solving Problems Home Connection.

Skills & Concepts

- Fluently add and subtract with sums and minuends to 20 using mental strategies (2.OA.2)
- Represent whole-number sums as lengths on a number line (2.MD.6)
- Represent whole-number sums up to 100 on a number line (2.MD.6)
- Represent whole-number differences from minuends up to 100 on a number line (2.MD.6)
- Reason abstractly and quantitatively (2.MP.2)
- Model with mathematics (2.MP.4)

Materials

| Copies | Kit Materials | Classroom Materials |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Work Places Introducing Work Place 3C Hit the Zone | | |
| TM T5 Work Place Guide 3C Hit the Zone TM T6 Work Place Instructions 3C Hit the Zone TM T7 3C Hit the Zone Record Sheet SB 39 3C Hit the Zone Record Sheet | <ul style="list-style-type: none"> • Hit the Zone Game Board • Hit the Zone Spinner • 1 die numbered 1–6 | <ul style="list-style-type: none"> • 2 fine-tip erasable markers, each a different color • paper towel or eraser for erasable marker |
| Work Places in Use | | |
| 2C Number Line Race (introduced in Unit 2, Module 2, Session 1) 2D Pick 2, Roll & Subtract (introduced in Unit 2, Module 2, Session 4) 2E Steps & Leaps (introduced in Unit 2, Module 3, Session 3) 3A Star Power (introduced in Unit 3, Module 1, Session 3) 3B Five in a Row (introduced in Unit 3, Module 1, Session 5) 3C Hit the Zone (introduced in this session) | | |
| Home Connection | | |
| HC 75–76 Adding, Counting & Solving Problems | | |

HC – Home Connection, **SB** – Student Book, **TM** – Teacher Master
 Copy instructions are located at the top of each teacher master.

Preparation

In today's session, you'll introduce Work Place 3C Hit the Zone. Before this session, you should review the Work Place Guide and Work Place Instructions and assemble the bin for Work Place 3C (which replaces 2B, The Subtraction Wheel), using the materials listed on the guide. The Work Place Guide also includes suggestions for differentiating the game to meet students' needs.

Vocabulary

An asterisk [*] identifies those terms for which Word Resource Cards are available.

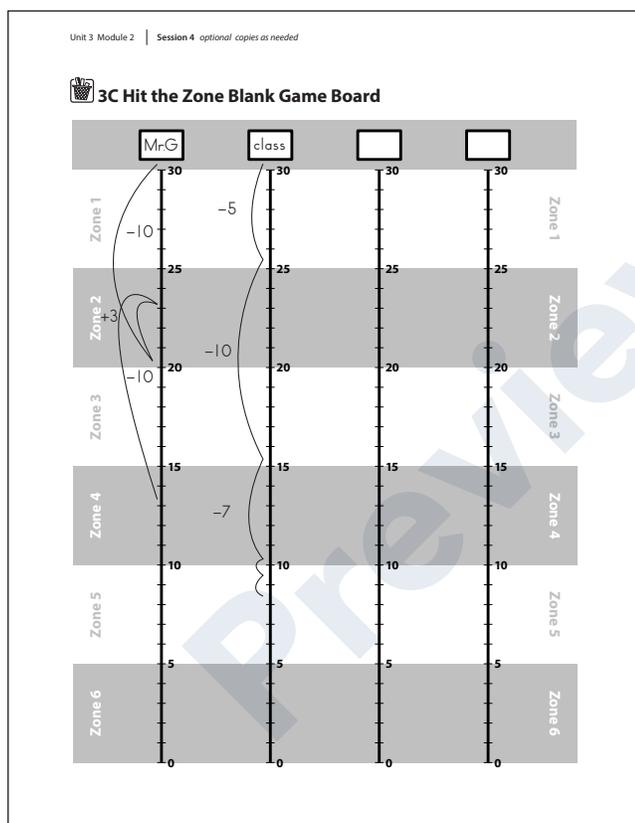
addition
 subtraction
 sum or total*



Work Places

Introducing Work Place 3C Hit the Zone

- Gather students to your discussion circle and let them know that you will introduce a new Work place game today and then they will go to Work Places for the remainder of the session.
 - Display the Hit the Zone Game Board where everyone can see it clearly.
 - Give students a minute to examine the board quietly and then share, first in pairs and then as a whole group, their mathematical observations.
 - » What do they notice about the game board? Do they have any predictions about how this game might be played?



- Draw students' attention to the 4 lines that run the length of the game board, and explain that Hit the Zone is a game for 2, 3, or 4 players.
- To teach them how to play the game, you're going to have students play as a team against you, so you will just use the first two lines on the game board.

- Then summarize the game.

Each player begins by writing his initials at the top of the game board to claim one of four lines that runs the length of the board. Next, players take turns rolling a die to determine which of six zones on the board they need to reach in order to win. Players then take turns spinning a numbered spinner that determines how far they can move along their line. After three spins each, using a different spinner each time, the player who comes closest to hitting his or her designated zone wins the round. Players total their wins, losses, and ties after four rounds to determine the overall winner.

- Play the first round of the game with the class, using the Work Place Instructions 3C Hit the Zone Teacher Master as needed.

About This Session

The Hit the Zone game provides students with practice modeling and solving subtraction problems on a number line in the range 0–30. There's also a limited opportunity for students to add numbers, depending on the spinner result. This twist adds intrigue to the game and also gives students a greater variety of starting points from which to subtract.

- Have students each find the 3C Hit the Zone Record Sheet page in their Student Books and invite them to record the game moves in their books while you do so on one of the display record sheets.
- Take the first turn to spin, mark the game board with an erasable marker, and record the move on your record sheet. Invite a volunteer to make the first spin for the class and mark the game board. Use your second copy of the record sheet to show students how to record the results of the first spin on their sheets.
- At the conclusion of the first round, demonstrate how to write a subtraction equation to show the difference between their target zone and their landing zone. The team with the lower difference wins the round.

Unit 3 Module 2 | Session 4 optional copies as needed

3C Hit the Zone Blank Game Board

Bridges in Mathematics Grade 2 Teacher Masters

Unit 3 Module 2 | Session 4 2 copies for display and a class set plus more as needed stored in the Work Place bin

NAME Mr. G

3C Hit the Zone Record Sheet

Zone 1 26–30 Zone 3 16–20
Zone 2 21–25 Zone 4 11–15

| Round 1 | |
|-----------------|----------------|
| My Target Zone | 2 |
| Spin 1 | $30 - 10 = 20$ |
| Spin 2 | $20 + 3 = 23$ |
| Spin 3 | $23 - 10 = 13$ |
| Landing Zone | 4 |
| Zone Difference | $4 - 2 = 2$ |
| Win? | |
| Yes | No |

| Round 3 | |
|-----------------|----|
| My Target Zone | |
| Spin 1 | |
| Spin 2 | |
| Spin 3 | |
| Landing Zone | |
| Zone Difference | |
| Win? | |
| Yes | No |

Score _____ Wins _____

Bridges in Mathematics Grade 2 Teacher Masters

Unit 3 Module 2 | Session 4 2 copies for display and a class set plus more as needed stored in the Work Place bin

NAME Erik

3C Hit the Zone Record Sheet

Zone 1 26–30 Zone 3 16–20 Zone 5 6–10
Zone 2 21–25 Zone 4 11–15 Zone 6 0–5

| Round 1 | |
|-----------------|----------------|
| My Target Zone | 4 |
| Spin 1 | $30 - 5 = 25$ |
| Spin 2 | $25 - 10 = 15$ |
| Spin 3 | $15 - 7 = 8$ |
| Landing Zone | 5 |
| Zone Difference | $5 - 4 = 1$ |
| Win? | |
| Yes | No |

| Round 2 | |
|-----------------|----|
| My Target Zone | |
| Spin 1 | |
| Spin 2 | |
| Spin 3 | |
| Landing Zone | |
| Zone Difference | |
| Win? | |
| Yes | No |

| Round 3 | |
|-----------------|----|
| My Target Zone | |
| Spin 1 | |
| Spin 2 | |
| Spin 3 | |
| Landing Zone | |
| Zone Difference | |
| Win? | |
| Yes | No |

| Round 4 | |
|-----------------|----|
| My Target Zone | |
| Spin 1 | |
| Spin 2 | |
| Spin 3 | |
| Landing Zone | |
| Zone Difference | |
| Win? | |
| Yes | No |

Score _____ Wins _____ Losses _____ Ties _____

Bridges in Mathematics Grade 2 Teacher Masters

- 4 Then play three more rounds of Hit the Zone with the class.
- Pose questions like the following to promote discussion of subtraction concepts and notation while you play:
- What numbers are included in your target zone?
 - How far are you from the closest number of your target zone right now?
 - What number would you most like to come up on the spinner for this turn? Why?
 - Every spinner has a subtract 10 as one of the numbers you can spin. Is it always good to spin a subtract 10? When is it not lucky to get a subtract 10 in this game?
 - What sign do we need to use to show the difference between our target zone and our landing zone?
 - Do you think it's possible for a team to land exactly in their target zone? Why or why not?

While playing the game:

- Encourage students to mark and label each move on the game board as clearly and neatly as possible.

- Be sure students understand that the game board can only be marked with a special erasable marker.
 - Reinforce the importance of recording the results of each spin on the record sheet.
 - Be aware that the recording process will seem complex to some students. Take time to fill in your own record sheet carefully, and ensure that students fill in their record sheets carefully and completely for each spin and each round of the game.
- 5 Then work with students to determine the winning team and show them the contents of the Work Place bin.
 - 6 Give students their folders and allow them to spend the rest of the period at Work Places.
 - 7 Close the session.
 - Have students clean up and put away the Work Place bins.
 - Remind students that Hit the Zone will be available during Work Places for several weeks to come.



Home Connection

- 8 Introduce and assign the Adding, Counting & Solving Problems Home Connection, which provides more practice with the following skills:
 - Solve one-step addition and subtraction story problems with sums and minuends to 100 involving situations of putting together and comparing, with unknowns in all positions (2.OA.1)
 - Fluently add with sums to 20 using mental strategies (2.OA.2)
 - Skip-count by 5s within 1000 (2.NBT.2)
 - Solve money story problems involving quarters and dimes (2.MD.8)

Session 5

Addition & Subtraction Checkpoint

Summary

This session provides a checkpoint for much of the content covered in the first two modules of Unit 3. The ten problems in this checkpoint ask students to locate, mark, and identify numbers on a line, use the open number line to model and solve double-digit subtraction problems, use the fewest skip-jumps of 1, 5, and 10 to reach different points on the number line, and solve several double-digit addition problems using pictures of craft sticks in bundles and singles. When finished with the assessment, students turn in their work and go out to Work Places.

Skills & Concepts

- Solve one-step addition and subtraction story problems with sums and minuends to 100 involving situations of adding to and taking from with unknowns in all positions (2.OA.1)
- Skip-count by 5s and 10s within 1000 (2.NBT.2)
- Use strategies based on place value, properties of operations, or the relationship between addition and subtraction to add and subtract fluently with sums and minuends to 100 (2.NBT.5)
- Represent whole numbers as lengths on a number line (2.MD.6)
- Represent whole-number differences from minuends up to 100 on a number line (2.MD.6)

Materials

| Copies | Kit Materials | Classroom Materials |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------|
| Assessment Addition & Subtraction Checkpoint | | |
| TM T10–T12 Addition & Subtraction Checkpoint | • craft sticks (see Preparation) | |
| Work Places in Use | | |
| 2C Number Line Race (introduced in Unit 2, Module 2, Session 1) 2D Pick 2, Roll & Subtract (introduced in Unit 2, Module 2, Session 4) 2E Steps & Leaps (introduced in Unit 2, Module 3, Session 3) 3A Star Power (introduced in Unit 3, Module 1, Session 3) 3B Five in a Row (introduced in Unit 3, Module 1, Session 5) 3C Hit the Zone (introduced in Unit 3, Module 2, Session 4) | | |

HC – Home Connection, **SB** – Student Book, **TM** – Teacher Master

Copy instructions are located at the top of each teacher master.

Preparation

Prepare several baskets of craft sticks bundled into sets of 10, as well as individual sticks for students who want to use these tools during the assessment.



Assessment

Addition & Subtraction Checkpoint

- 1 Introduce the Addition & Subtraction Checkpoint.
 - Give each student a copy of the checkpoint.
 - Display 1 copy and use it to review and clarify the tasks.
 - When you review problem 2, be sure students understand that they will need to make and label new marks for some of the numbers, while for others, they'll simply need to label marks that have already been made on the line.
 - When you are review problems 5–8 with the class, let students know that they can use actual bundles and sticks to help model and solve the problems if they need them. Explain how, where and when students can access these materials.
 - When you review problems 9 and 10, be sure students understand the task in both cases is to move from 0 to the destination point using the fewest jumps, but that they can only use jumps of 1, 5, and 10. Remind them that it's fair to jump backward as well as forward along the line if that will result in fewer jumps. Remind them, too, that they cannot simply jump by 1s along the line.
 - Let students know that they can turn in their papers when they finish and go to Work Places.
- 2 Give students time to work on the checkpoint.

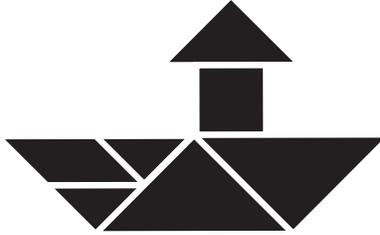
Note

See the Grade 2 Assessment Guide for scoring and intervention suggestions.



Work Places

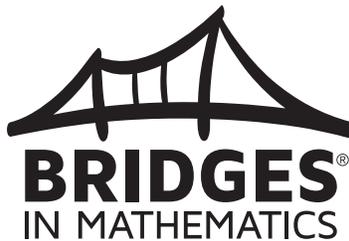
- 3 As students finish their assessments, have them turn in their papers, get their Work Place folders and find one of the Work Place games or activities to do quietly until everyone has finished.
- 4 Close the session.
 - Have students clean up and put away the Work Place bins.
 - Ask students to pair-share how they felt about the assessment, and have a couple of volunteers share their thoughts and feelings with the class.



Teacher Masters

GRADE 2 – UNIT 3 – MODULE 2

Preview

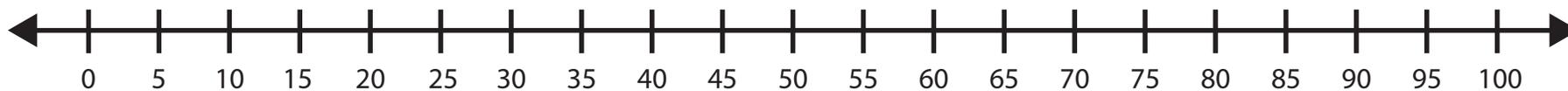




The Jimenez Family

Here is a list of the people in the Jimenez family. The list shows how old each person is. Make and label a mark along the number line for each person in the family.

- Carlos (6)
- Ana (9)
- Nicholas (15)
- Maria (20)
- Uncle Leo (28)
- Aunt Elsa (40)
- Mom (49)
- Dad (55)
- Grandpa (75)
- Grandma (80)





Comparing Ages

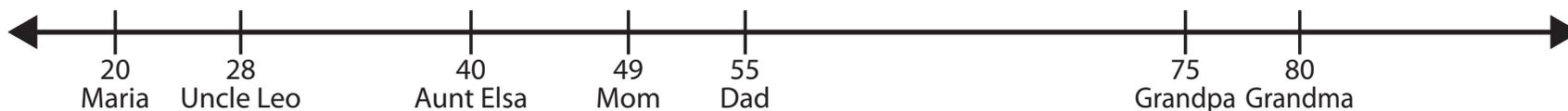
The Jimenez Children



The Jimenez Grandparents



The Jimenez Adults (people over 18)



Preview



Open Number Line Problems

- 1** Josh and his dad are driving to the city. It is 75 miles away. They have already gone 38 miles. How many more miles do they have to drive?



- 2** Maria Jose wants to buy a bike that costs 72 dollars. So far, she has saved 26 dollars. How much more money does she need to save?



- 3** Pablo had 39 baseball cards. He got some more baseball cards for his birthday. Now Pablo has 63 baseball cards. How many baseball cards did Pablo get for his birthday?



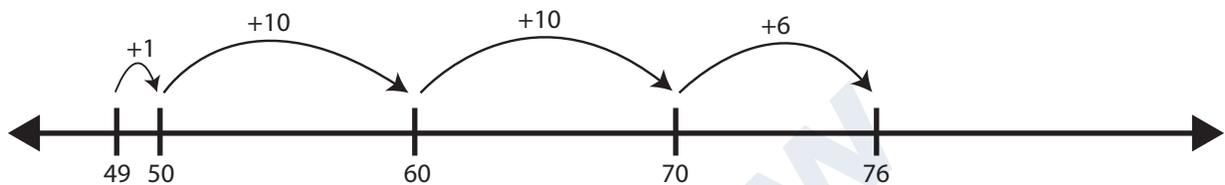


David's Problem

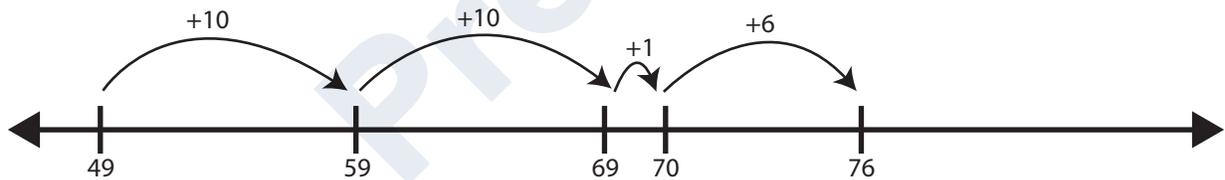
David is 49 inches tall. His big brother, Matt, is 76 inches tall. How many inches will David have to grow to be as tall as his big brother?

Equations:

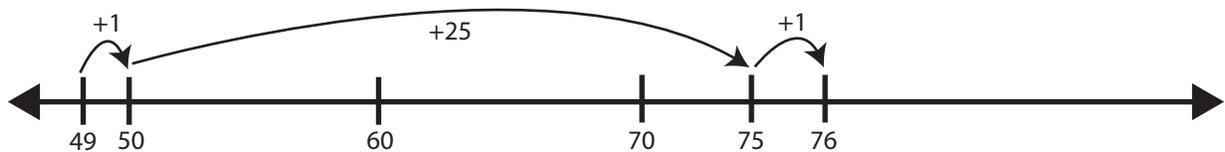
Solution 1



Solution 2



Solution 3





Work Place Guide 3C Hit the Zone

Summary

Hit the Zone is a game for 2–4 players. Each player begins by writing his initials at the top of the game board to claim one of four lines that runs the length of the board. Next, players take turns rolling a die to determine which of six zones on the board they need to reach in order to win. Players then take turns spinning a numbered spinner that determines how far they can move along their line. After three spins each, using a different spinner each time, the player who comes closest to hitting his designated zone wins the round. Players total their wins, losses, and ties after four rounds to determine the overall winner.

Skills & Concepts

- Fluently add and subtract with sums and minuends to 20 using mental strategies (2.OA.2)
- Represent whole-numbers as lengths on a number line (2.MD.6)
- Represent whole-number sums up to 100 on a number line (2.MD.6)
- Represent whole-number differences from minuends up to 100 on a number line (2.MD.6)

Materials

| Copies | Kit Materials | Classroom Materials |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| TM T5 Work Place Guide 3C Hit the Zone TM T6 Work Place Instructions 3C Hit the Zone TM T7 3C Hit the Zone Record Sheet TM T8 Hit the Zone Blank Game Board (optional, as needed) TM T9 Hit the Zone Blank Triple Spinners | <ul style="list-style-type: none"> • 2 Hit the Zone Spinners • 2 Hit the Zone Game Boards • 2 dice numbered 1–6 • clear spinner overlay (optional, needed for Challenge suggestion) | <ul style="list-style-type: none"> • 6 erasable markers • 6 erasers or pieces of paper towel |

Assessment & Differentiation

| If you see that... | Differentiate | Example |
|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Students are having difficulty remembering the steps. | SUPPORT Have students who are struggling play the game with students who are playing confidently. You might pair high and low here, or place a struggling student with a group of three others who are more confident with the steps and the recording process. | |
| A few students are struggling to fill in the record sheet. | SUPPORT While Hit the Zone is a fairly simple game, the record sheet may be difficult for some students. You might consider letting these students play multiple rounds of the game without the record sheet, just to get the benefit of modeling addition and subtraction on a number line. | |
| Many, if not most of the students are struggling to fill in the record sheet. | SUPPORT If problems with the record sheet are wide-spread, demonstrate how to play the game and track the action on the record sheet by playing again, or perhaps several times, with the whole class. Have all the students fill in a record sheet for the class, while you fill in record sheets for yourself and the class. | |
| Students are playing the game with confidence and ease, and might benefit from a challenge. | CHALLENGE Since there are four lines of play on the game board, some students might enjoy playing two lines at once, and keeping two record sheets as they go. This definitely takes the game to new levels of complexity. | |
| A few students seem to take particular interest in the game. | CHALLENGE You might encourage such students to make their own versions of the game board and spinners. Use the Hit the Zone Blank Game Board and Blank Spinners Teacher Masters for this purpose. | Students might number the four lines in multiples of 10 or 20 instead of 5. In either case, the value of each of the small hash marks increases as well, to 2 and 4 respectively, instead of 1. These students might change the numbers and even the operations on the spinners, increasing the magnitude of the numbers, and including fewer that are multiples of 5 and 10. |



Work Place Instructions 3C Hit the Zone

- Two, three, or four players can play this game. Each player needs a record sheet, wipe-off pen, and eraser. Players will share a spinner, a game board, and a die.
- Players start by writing their initials at the top of the game board to claim one of the four lines that runs the length of the board.
- Each player rolls the die to determine which zone she needs to land in or get closest to, in order to win Round 1. That is her target zone, and she records it at the top of the Round 1 box on her record sheet.
- Players each begin at 30, and work their way toward their designated zone by spinning the spinner three times. Each player takes a turn to spin the first spinner on the Hit the Zone Triple Spinner and mark the game board with a wipe-off pen to show the result. Then she records the move on her record sheet.
- Players take turns spinning twice more, using the second and then the third spinner. If a player makes a spin that will force her to move off the game board, she takes another spin using the designated spinner until she is able to move.
- After the third spin, players record their landing zone, along with a subtraction equation to show how close they got to their target zone. The player who got closest to her target zone wins the first round, and each player circles yes or no at the bottom of the Round 1 box to show whether or not she won. Players erase the game board and get ready to play the next round.

Unit 3 Module 2 | Session 4 *opt anal copies as needed*

3C Hit the Zone Blank Game

Unit 3 Module 2 | Session 4 *2 copies for display*

NAME Alana

3C Hit the Zone Record Sheet

Zone 1 26-30 Zone 3 16-20
Zone 2 21-25 Zone 4 11-15

| Round 1 | |
|--------------------------------------|--------------------------|
| My Target Zone | 6 |
| Spin 1 | 30-5=25 |
| Spin 2 | 25-10=15 |
| Spin 3 | 15-7=8 |
| Landing Zone | 5 |
| Zone Difference | 6-5=1 |
| Win? | |
| <input checked="" type="radio"/> Yes | <input type="radio"/> No |

| Round 3 | |
|-----------------|--|
| My Target Zone | |
| Spin 1 | |
| Spin 2 | |
| Spin 3 | |
| Landing Zone | |
| Zone Difference | |

Unit 3 Module 2 | Session 4 *2 copies for display and a class set plus more as needed stored in the Work Place bin*

NAME Sara | DATE _____

3C Hit the Zone Record Sheet

Zone 1 26-30 Zone 3 16-20 Zone 5 6-10
Zone 2 21-25 Zone 4 11-15 Zone 6 0-5

| Round 1 | | Round 2 | |
|---------------------------|-------------------------------------|---------------------------|--------------------------|
| My Target Zone | 4 | My Target Zone | |
| Spin 1 | 30-5=25 | Spin 1 | |
| Spin 2 | 25-5=20 | Spin 2 | |
| Spin 3 | 20+2=22 | Spin 3 | |
| Landing Zone | 2 | Landing Zone | |
| Zone Difference | 4-2=2 | Zone Difference | |
| Win? | | Win? | |
| <input type="radio"/> Yes | <input checked="" type="radio"/> No | <input type="radio"/> Yes | <input type="radio"/> No |

| Round 3 | | Round 4 | |
|-----------------|--|-----------------|--|
| My Target Zone | | My Target Zone | |
| Spin 1 | | Spin 1 | |
| Spin 2 | | Spin 2 | |
| Spin 3 | | Spin 3 | |
| Landing Zone | | Landing Zone | |
| Zone Difference | | Zone Difference | |

- Players complete three more rounds and record their win, loss, and tie totals at the bottom of the record sheet to determine the overall winner.

NAME _____

DATE _____



3C Hit the Zone Record Sheet

Zone 1 26–30**Zone 3** 16–20**Zone 5** 6–10**Zone 2** 21–25**Zone 4** 11–15**Zone 6** 0–5

| Round 1 | |
|-----------------|----|
| My Target Zone | |
| Spin 1 | |
| Spin 2 | |
| Spin 3 | |
| Landing Zone | |
| Zone Difference | |
| Win? | |
| Yes | No |

| Round 2 | |
|-----------------|----|
| My Target Zone | |
| Spin 1 | |
| Spin 2 | |
| Spin 3 | |
| Landing Zone | |
| Zone Difference | |
| Win? | |
| Yes | No |

| Round 3 | |
|-----------------|----|
| My Target Zone | |
| Spin 1 | |
| Spin 2 | |
| Spin 3 | |
| Landing Zone | |
| Zone Difference | |
| Win? | |
| Yes | No |

| Round 4 | |
|-----------------|----|
| My Target Zone | |
| Spin 1 | |
| Spin 2 | |
| Spin 3 | |
| Landing Zone | |
| Zone Difference | |
| Win? | |
| Yes | No |

Score _____

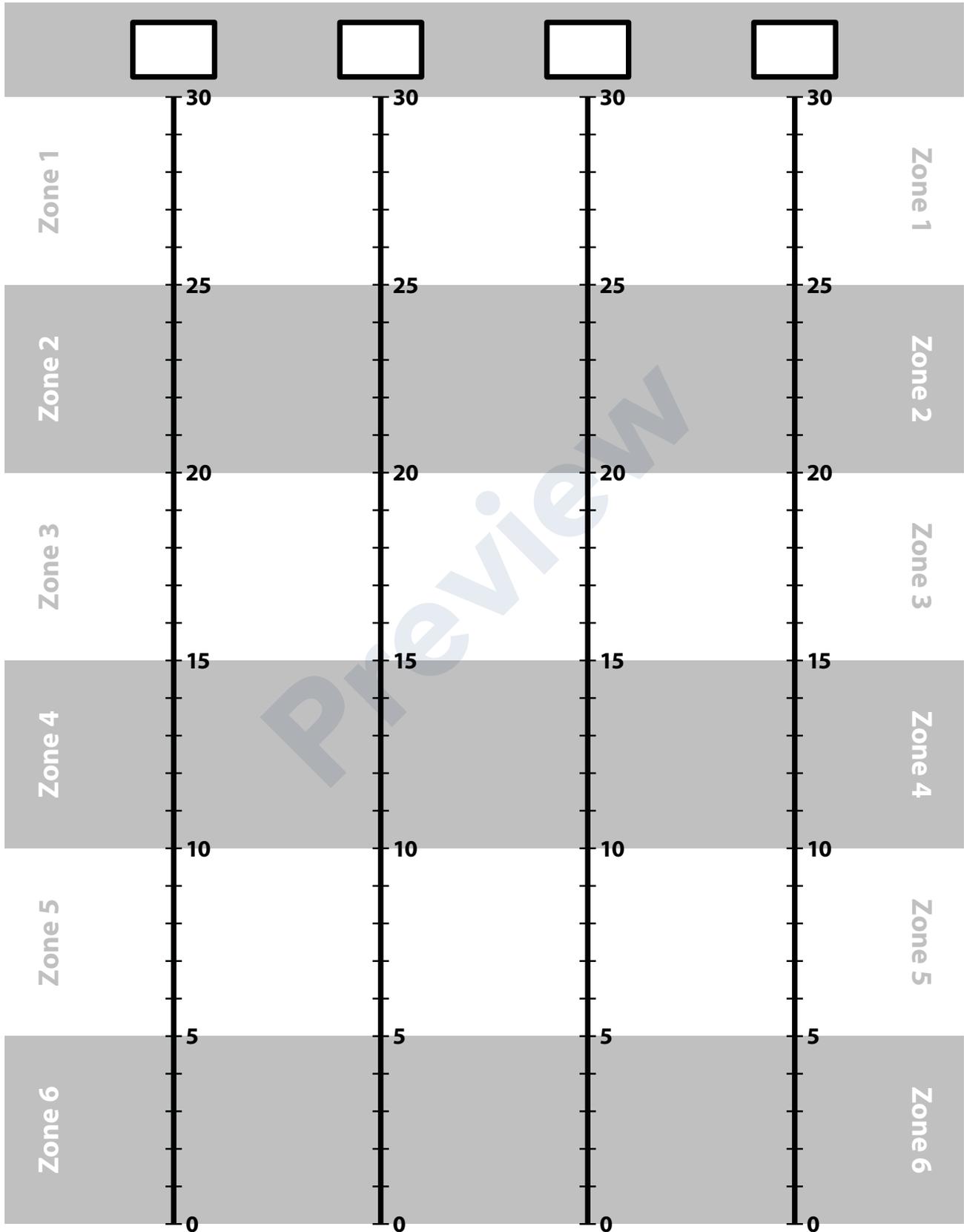
Wins _____

Losses _____

Ties _____

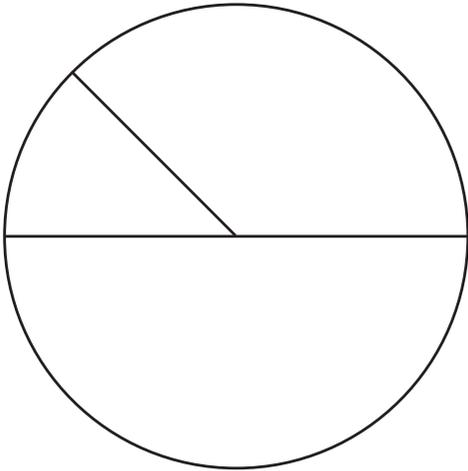


3C Hit the Zone Blank Game Board

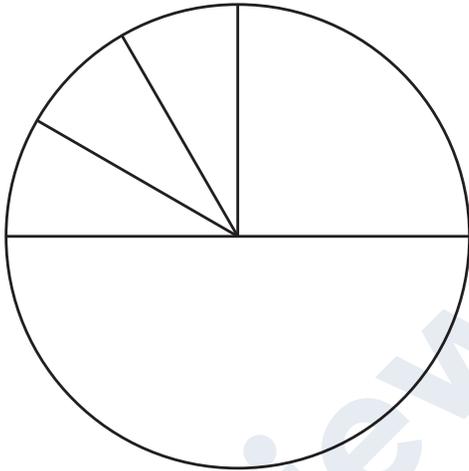




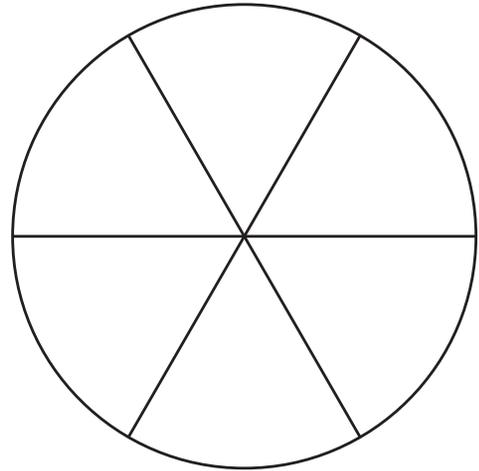
3C Hit the Zone Blank Triple Spinners



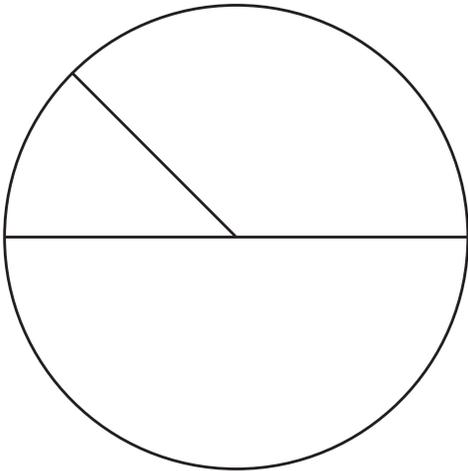
Spin 1



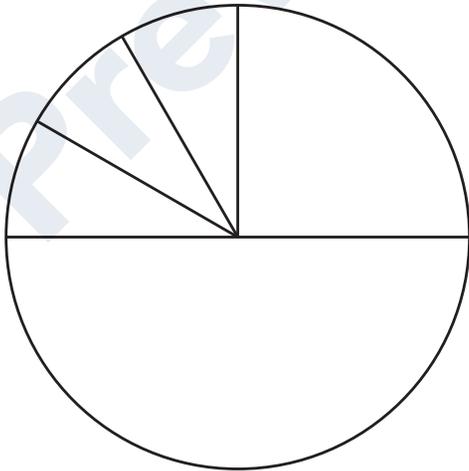
Spin 2



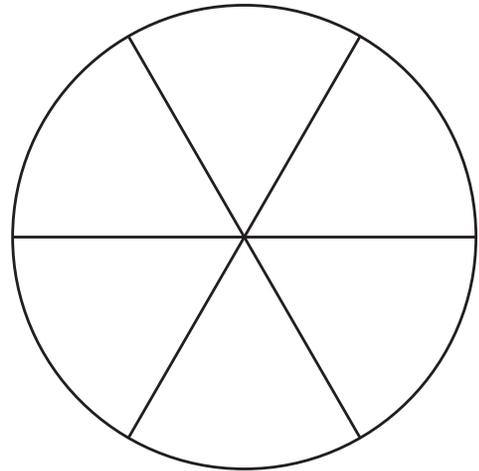
Spin 3



Spin 1



Spin 2



Spin 3

NAME _____

DATE _____



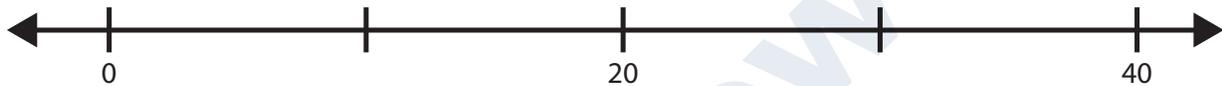
Addition & Subtraction Checkpoint page 1 of 3

- 1 Fill in the missing numbers on the number line.



- 2 Write each number where it belongs on the number line. You will need to make new marks for some of the numbers.

5, 10, 15, 22, 30, 35



- 3 Use the number line to solve the problem. Show all your work. Then write your answer in the box.

$$34 - 12 = \square$$



- 4 Use the number line to solve the problem. Show all your work. Then write your answer in the box.

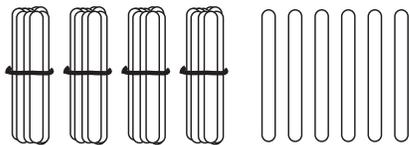
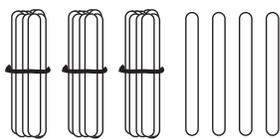
$$45 - 21 = \square$$

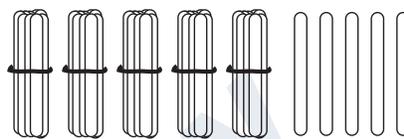


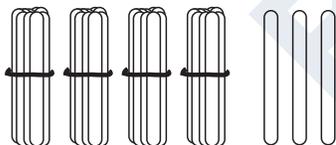
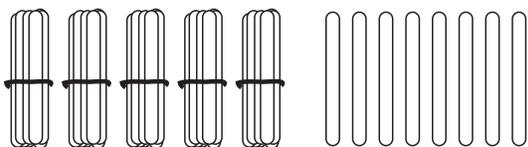
(continued on next page)

NAME _____

DATE _____

Addition & Subtraction Checkpoint page 2 of 3**5** How many sticks in all? _____**6** Look at the two collections of sticks.**a** How many sticks are in each collection? Write your answers on the lines.



b If you put the collections together, how many sticks are there in all? _____**7** Julia has 4 bundles and 3 sticks. If her friend gave her 2 more bundles and 9 more sticks, how many sticks would she have in all? Show your work.**8** Richard has 5 bundles and 8 sticks. If he gave his friend 3 bundles and 2 sticks, how many sticks would Richard have left? Show your work.*(continued on next page)*

NAME _____

DATE _____

Addition & Subtraction Checkpoint page 3 of 3

- 9** Use jumps of 10, 5, or 1 to go from 0 to 36. Take as few jumps as you can. Label your jumps. You can try again on the second number line if you see a way to do it in fewer jumps.



- 10** Use jumps of 10, 5, or 1 to go from 0 to 44. Take as few jumps as you can. Label your jumps. You can try again on the second number line if you see a way to do it in fewer jumps.

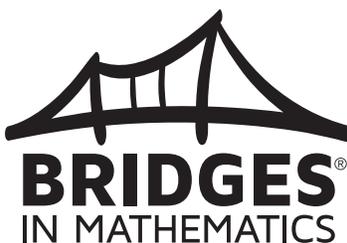




Student Book

GRADE 2 – UNIT 3 – MODULE 2

Preview



NAME _____

DATE _____



Open Number Line Record Sheet

Show how you solve the story problems below.

Problem 1

| |
|--|
| |
| |

Problem 2

| |
|--|
| |
| |

Problem 3

| |
|--|
| |
| |

NAME _____

DATE _____



Length Problems on the Open Number Line

Use the open number line to solve each of these problems. Be sure to label your work and show the answer.

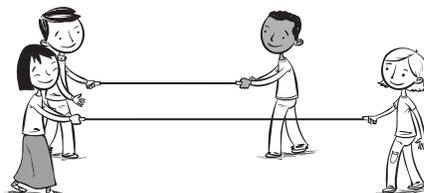
- 1** Little Inch Worm is going to visit her grandma. Her grandma lives 82 inches away. Little Inch Worm has already crawled 47 inches. How many more inches does she have to crawl?



Little Inchworm has to crawl _____ more inches.



- 2** We have 2 jump ropes. The red one is 120 inches long. The blue one is only 84 inches long. How many inches longer is the red rope than the blue rope?



The red jump rope is _____ inches longer than the blue jump rope.

NAME _____

DATE _____

**3C Hit the Zone Record Sheet****Zone 1** 26–30**Zone 3** 16–20**Zone 5** 6–10**Zone 2** 21–25**Zone 4** 11–15**Zone 6** 0–5

| Round 1 | |
|-----------------|----|
| My Target Zone | |
| Spin 1 | |
| Spin 2 | |
| Spin 3 | |
| Landing Zone | |
| Zone Difference | |
| Win? | |
| Yes | No |

| Round 2 | |
|-----------------|----|
| My Target Zone | |
| Spin 1 | |
| Spin 2 | |
| Spin 3 | |
| Landing Zone | |
| Zone Difference | |
| Win? | |
| Yes | No |

| Round 3 | |
|-----------------|----|
| My Target Zone | |
| Spin 1 | |
| Spin 2 | |
| Spin 3 | |
| Landing Zone | |
| Zone Difference | |
| Win? | |
| Yes | No |

| Round 4 | |
|-----------------|----|
| My Target Zone | |
| Spin 1 | |
| Spin 2 | |
| Spin 3 | |
| Landing Zone | |
| Zone Difference | |
| Win? | |
| Yes | No |

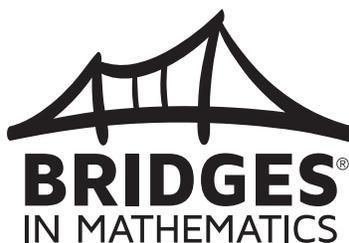
Score _____ **Wins** _____ **Losses** _____ **Ties** _____



Home Connections

GRADE 2 – UNIT 3 – MODULE 2

Preview



NAME _____

DATE _____



Family Age Number Line page 1 of 2

Note to Families

Students have been learning how to use the number line to solve subtraction problems. In this assignment, your child will use a length of adding machine tape to make a number line that shows the ages of some of the people in your family, and then use the number line to solve some problems.

Materials

- Family Age Number Line, pages 1–2
- length of adding machine tape (brought home from school)
- pencil and crayons or colored markers

Making the Number Line

- 1** In the table below, write the names and ages of 5 to 7 family members. This can include children, adults, grandparents, cousins, aunts, uncles, or even pets.

| Name | Age |
|------|-----|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

- 2** Now write the ages you listed above in order, from youngest to oldest, on the lines below. (There are 7 lines, but you only have to use as many as you need.)

_____ , _____ , _____ , _____ , _____ , _____ , _____
 least greatest

- 3** Get the length of adding machine tape you brought home. Write a 0 at the far left side and the age of the oldest person you listed on the right side. Here is an example.

0 67

- 4** Now write the rest of the ages you listed where they belong on the adding machine tape.

(continued on next page)

NAME _____

DATE _____

Family Age Number Line page 2 of 2**Solving Problems on the Number Line**

- 5** Use your adding machine tape number line to help figure out the difference between the oldest and youngest person on your list. Show the strategy you used on the open number line below. Then write your answer.



The oldest person on my family list is _____ years older than the youngest person on my family list.

- 6** Choose an adult in your family and use the adding machine tape number line to help figure out the difference between your age and the adult family member's age. Show the strategy you used on the open number line below. Then write your answer.



My family member is _____ years older than I am.

- 7** Timmy is 8. His dad is 32. Use hops on the open number line below to find out how much older Timmy's dad is than Timmy. Then fill in the missing numbers in the equations below.



$$8 + \boxed{} = 32$$

$$32 - \boxed{} = 8$$

- 8 CHALLENGE** Why does the same number work in both of the equations above?

NAME _____

DATE _____

**Adding, Counting & Solving Problems** page 1 of 2**1** Fill in the missing numbers to complete the addition facts.

$5 + 5 = \underline{\quad}$

$4 + 4 = \underline{\quad}$

$2 + 2 = \underline{\quad}$

$8 + \underline{\quad} = 16$

$9 + \underline{\quad} = 18$

$\underline{\quad} + 6 = 12$

$\underline{\quad} + 3 = 6$

$10 + 2 = \underline{\quad}$

$6 + 10 = \underline{\quad}$

$3 + \underline{\quad} = 13$

$10 + \underline{\quad} = 18$

$8 + \underline{\quad} = 16$

2 Fill in the missing numbers to complete the pattern.**a** Skip-count forward by 5s5, 10, 15, , 25, , **b** Skip-count forward by 5s40, , 50, , , 65**c** Skip-count forward by 5s13, 18, 23, , 33, , **d** Skip-count forward by 5s19, 24, , 34, 39, , 49**e** Skip-count backward by 5s.30, 25, , 15, , **f** Skip-count backward by 5s.27, 22, , 12, , **3 CHALLENGE** Skip-count by 5s. Circle the word to show whether you went forward or backward each time.**a** 143, 138, 133, , 123, , 113, , , 98 forward backward**b** 332, 337, 342, , 352, 357, , , 372, forward backward**c** 488, 493, 498, , , 513, , , , 533 forward backward**d** 267, 262, 257, , , , 237, , 227, forward backward*(continued on next page)*

NAME _____

DATE _____

Adding, Counting & Solving Problems page 2 of 2

4 Mrs. Brown is the gym teacher. She has 15 soccer balls and 8 footballs.

a How many more soccer balls than footballs does Mrs. Brown have? Show your work.

Mrs. Brown has _____ more soccer balls than footballs.

b How many soccer balls and footballs does Mrs. Brown have in all? Show your work.

Mrs. Brown has _____ soccer balls and footballs in all.



5 CHALLENGE Jason had 2 quarters and 1 dime. He went to the school store to spend all his money. What 3 things could he buy? Find at least 2 different answers. Show your work.

| School Store Price List | |
|-------------------------|-------------|
| Markers | \$0.25 each |
| Tablets | \$0.30 each |
| Erasers | \$0.10 each |
| Pencils | \$0.20 each |
| Folders | \$0.15 each |

