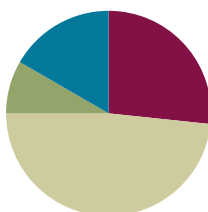


Lesson 3

Objective: Order three lengths using indirect comparison.

Suggested Lesson Structure

■ Fluency Practice	(16 minutes)
■ Application Problem	(5 minutes)
■ Concept Development	(29 minutes)
■ Student Debrief	(10 minutes)
Total Time	(60 minutes)



Fluency Practice (16 minutes)

- Beep Counting **1.NBT.1** (3 minutes)
- Rekenrek Addition and Subtraction **1.OA.6, 1.NBT.5** (3 minutes)
- Sprint: Adding and Subtracting Teen Numbers and Ones **1.OA.6** (10 minutes)

Beep Counting (3 minutes)

Note: This fluency activity strengthens students' ability to understand number relationships and to recognize counting patterns.

Say a series of three or more numbers, but replace one of the numbers with the word *beep* (e.g., 15, 16, beep). When signaled, students say the number that was replaced by the word *beep* in the sequence. Scaffold number sequences, beginning with easy sequences and moving to more complex ones. Be sure to include forward and backward number sequences and to change the sequential placement of the beep.

Continue with the following suggested sequences: 15, 16, beep; 25, 26, beep; 35, 36, beep; 12, 11, beep; 22, 21, beep; 32, 31, beep; 8, beep, 10; 18, beep, 20; 38, beep, 40; beep, 9, 8; beep, 19, 18; and beep, 29, 28. After practicing beep counting by ones, try beep counting by tens, twos, or fives.

Rekenrek Addition and Subtraction (3 minutes)

Materials: (T) 20-bead or 100-bead Rekenrek

Note: This fluency activity reviews the grade level standard of addition and subtraction within 20.

- T: (Show 14 on the Rekenrek.) Say the number.
 S: 14.
 T: Say it the Say Ten way.
 S: Ten 4.

T: What will my number be if I take out ten?

S: 4.

T: Let's check. (Take out 10.) Yes!

Follow the paradigm to review the following problem types: adding a ten to some ones (e.g., $4 + 10$), subtracting a ten from a teen number (e.g., $16 - 10$), adding some ones to a teen number (e.g., $13 + 3$), and subtracting some ones from a teen number (e.g., $17 - 4$).

Sprint: Adding and Subtracting Teen Numbers and Ones (10 minutes)

Materials: (S) Adding and Subtracting Teen Numbers and Ones Sprint

Note: This Sprint addresses the Grade 1 core fluency standard of adding and subtracting within 10 and builds the connection between addition and subtraction within 10 to addition and subtraction with teen numbers.



A NOTE ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

When using words unfamiliar to English language learners, be sure to illustrate their meanings by using real objects or by showing pictures while speaking.

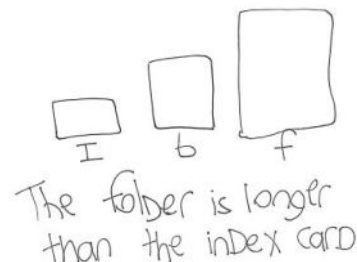
Application Problem (5 minutes)

Draw one picture to match both of these sentences:

The book is longer than the index card. The book is shorter than the folder.

Which is longer, the index card or the folder? Write a statement comparing the two objects. Use your drawings to help you answer the question.

Note: This problem applies students' understanding of indirect comparison from Lesson 2. In today's lesson, students continue to work with indirect comparisons, focusing on comparing distances.



Concept Development (29 minutes)

Materials: (T) Masking tape (two colors, if possible), piece of string or yarn approximately 6–10 feet long (depending on dimensions of the classroom—the string should reach from the door to the middle of the classroom), projector, city blocks grid (Template) (S) Personal white board with city blocks grid (Template)

Note: Prior to math class, choose a spot in the middle of the classroom that diagonally faces the door. From this point, create two paths to the door using different colored masking tape for each path on the floor. One path (the red path) should be shorter (and less circuitous) than the other (the blue path). If the classroom floor has tiles, use their lines to guide the paths. If not, use a string to measure the length of each later in the lesson, or mark the tape with length units in black marker to denote unit lengths without referring to them as such.

Invite students to gather in the meeting area.

T: (Project the city blocks grid.) Mary and Anne are trying to figure out whose path to the park is longer. Here is a map showing Mary's path and Anne's path from each of their houses to the park. How can we figure out which path is longer?

S: Look and see which one seems longer. → Count the boxes from one endpoint to the other.
→ Measure the paths with a string and compare.
→ Count each line on the path.

T: Yes! These lines are like city blocks. When you trace from one line to the other line, that's a city block. So, we can count how many city blocks they need to walk in order to get to the park. We don't want to count the squares because we need to trace the path, which is made up of *lines*, not squares.

T: I'm going to trace Mary's path with my marker so I don't lose track. Count the city blocks with me.

S/T: 1, 2, 3, (Count until the tracing reaches the park.)

T: How many city blocks long is Mary's path?

S: 11 city blocks long.

T: (Write the number and unit next to Mary's path.)

T: It's your turn to count the city blocks on Anne's path by tracing it with your marker.

S: (Trace each city block, and count as the teacher circulates.)

T: How many city blocks long is Anne's path?

S: 9 city blocks long.

T: Help me count as I trace Anne's path.

T: (Trace and write the number and unit.) Whose path is longer? Mary's or Anne's?

S: Mary's path.

T: If a new girl, Beth, moves into the neighborhood and walks a longer path to get to the park than Mary, whose path is longer, Beth's or Anne's? Turn and talk to your partner about how you know.

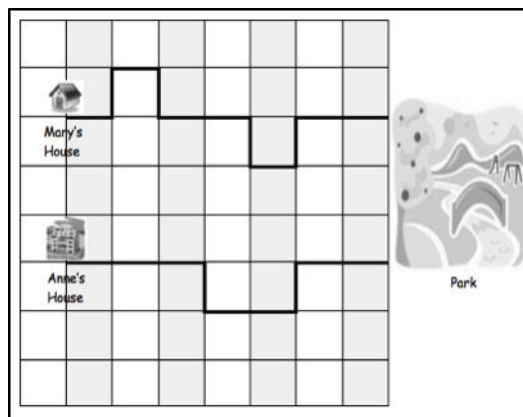
S: Beth's path will be longer than Anne's because you said Beth's path is longer than Mary's, and we figured out that Mary's path is longer than Anne's. So, Beth's path has to be longer than Anne's.

T: Order the paths from longest to shortest on your personal white board.

S: (Write Beth, Mary, Anne.)

T: Great job comparing the lengths of different paths from the map! Let's try the same thing in our classroom. I'm trying to figure out a path to the door to line up for recess. Should we find the longest path to the door or the shortest path to the door, and why? Talk to your partner.

S: The shortest path because it helps us get to recess sooner!



Mary's and Anne's paths on the city blocks grid



A NOTE ON MULTIPLE MEANS OF REPRESENTATION:

If students have trouble tracing and counting the distance of the paths, guide them to write numbers on the lines of the paths as they count.

MP.7

- T: Good thinking. So, let's do some comparing with the paths I've created in the classroom. What do you notice about these two paths?
- S: The blue one seems longer. It looks like it's making a lot of turns. → The red one seems shorter because I see a lot more of the blue color on the floor.
- T: How can we check which is shorter or longer precisely?
- S: (Replies vary depending on how the room is set up for this component.) Count the lines just like we counted the city blocks. → We can use a string, just like we did to measure yesterday. → Our floor has squares. We can count those lines.
- T: Let's check by counting the tile lines just like we counted the city blocks. (Choose two student volunteers to either step on each line or trace each line as the class counts to figure out the length of each path. Adjust this as necessary according to how the room is set up for the activity.)
- T: Which is longer?
- S: The blue path.
- T: Good job! Do you think there's a shorter way to get to the door than these two paths? Turn and talk to your partner.
- S: Yes. Don't make any turns. Just go straight to the door!
- T: You are right! (Walk over to and stand where the two paths start. Place a string on the starting point and hold it. Choose a student to take the other end of the string and to walk straight to the door.) Here's the straight line for the shortest path you have suggested. (Cut the string that measures this straight path.)
- T: How can we make sure this is the shortest path compared to the other paths?
- S: Put the string on the other paths and check.
- T: (Have students help hold down the string at every corner as you measure the red path. Stop when the string runs out.)
- T: Which path is longer, the straight path or this red path? How can you tell?
- S: The red path. It keeps going, but the string ran out. → The shortest path is the straight line!
- MP.7** T: So, if the red path is longer than the string that measures the straight path, which is longer, the straight path or the blue path? Turn and talk to your partner.
- S: The blue path is longer because the blue path is longer than the red path, and the red path is longer than the straight path.
- T: Excellent job figuring out the shortest path to the door.

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students should solve these problems using the RDW approach used for Application Problems.

Student Debrief (10 minutes)

Lesson Objective: Order three lengths using indirect comparison.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

In addition, this is a great place to show the strategy of marking the line segments as they are counted. This strategy could help students with tracking issues.

Any combination of the questions below may be used to lead the discussion.

- Look at the city blocks grid. Think back to the shortest path we made to the door from the middle of the classroom. Draw the shortest path from Anne's house to the park. What does the path look like? Explain why this path is the shortest path.
- What other tools can help measure the shortest distance between the middle of the classroom and the door? How does using a string help measure different paths?
- Can you think of an example where the shortest path that you could take to the door would not be a straight line? (One or more desks might be in the way, etc.)

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 3 Problem Set 1•3

Name Maria Date _____

1. In a playroom, Lu Lu cut a piece of string that measured the distance from the doll house to the park. She took the same string and tried to measure the distance between the park and the store, but she ran out of string!

Which is the longer path? Circle your answer.

the doll house to the park
the park to the store

Use the picture to answer the questions about the rectangles.

2. Which is the shortest rectangle? B

3. If Rectangle A is longer than Rectangle C, the longest rectangle is A

4. Order the rectangles from shortest to longest:
B C A

COMMON CORE Lesson 3: Order three lengths using indirect comparison. 7/17/14 engage^{ny} 3.A.3B

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 3 Problem Set 1•3

Use the picture to answer the questions about the students' paths to school.

5. How long is Caitlyn's path to school? 10 blocks

6. How long is Toby's path to school? 12 blocks

7. Joe's path is shorter than Caitlyn's. Draw Joe's path.

Circle the correct word to make the statement true.

8. Toby's path is longer shorter than Joe's path.

9. Who took the shortest path to school? Joe

10. Order the paths from shortest to longest.
Joe's Caitlyn's Toby's

COMMON CORE Lesson 3: Order three lengths using indirect comparison. 7/17/14 engage^{ny} 3.A.4D

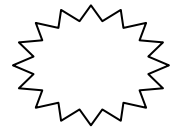
- Explain to your partner how to solve Problem 4.
- Explain to your partner how to solve Problem 6.
- How was solving Problem 3 similar to solving Problem 5?
- Look at today's Application Problem. Order the items from longest to shortest.

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help with assessing students' understanding of the concepts that were presented in today's lesson and planning more effectively for future lessons. The questions may be read aloud to the students.

A

Number Correct:



Name _____

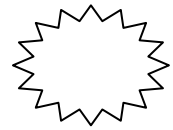
Date _____

*Write the missing number. Pay attention to the + and - signs.

1.	$5 + 2 = \square$		16.	$13 + 6 = \square$	
2.	$15 + 2 = \square$		17.	$3 + 16 = \square$	
3.	$2 + 5 = \square$		18.	$19 - 2 = \square$	
4.	$12 + 5 = \square$		19.	$19 - 7 = \square$	
5.	$7 - 2 = \square$		20.	$4 + 15 = \square$	
6.	$17 - 2 = \square$		21.	$14 + 5 = \square$	
7.	$7 - 5 = \square$		22.	$18 - 6 = \square$	
8.	$17 - 5 = \square$		23.	$18 - 2 = \square$	
9.	$4 + 3 = \square$		24.	$13 + \square = 19$	
10.	$14 + 3 = \square$		25.	$\square - 6 = 13$	
11.	$3 + 4 = \square$		26.	$14 + \square = 19$	
12.	$13 + 4 = \square$		27.	$\square - 4 = 15$	
13.	$7 - 4 = \square$		28.	$\square - 5 = 14$	
14.	$17 - 4 = \square$		29.	$13 + 4 = 19 - \square$	
15.	$17 - 3 = \square$		30.	$18 - 6 = \square + 3$	

B

Number Correct:



Name _____

Date _____

*Write the missing number. Pay attention to the + and - signs.

1.	$5 + 1 = \square$		16.	$12 + 7 = \square$	
2.	$15 + 1 = \square$		17.	$2 + 17 = \square$	
3.	$1 + 5 = \square$		18.	$18 - 2 = \square$	
4.	$11 + 5 = \square$		19.	$18 - 6 = \square$	
5.	$6 - 1 = \square$		20.	$3 + 16 = \square$	
6.	$16 - 1 = \square$		21.	$13 + 6 = \square$	
7.	$6 - 5 = \square$		22.	$17 - 4 = \square$	
8.	$16 - 5 = \square$		23.	$17 - 3 = \square$	
9.	$4 + 5 = \square$		24.	$12 + \square = 18$	
10.	$14 + 5 = \square$		25.	$\square - 6 = 12$	
11.	$5 + 4 = \square$		26.	$13 + \square = 19$	
12.	$15 + 4 = \square$		27.	$\square - 3 = 16$	
13.	$9 - 4 = \square$		28.	$\square - 3 = 17$	
14.	$19 - 4 = \square$		29.	$11 + 6 = 19 - \square$	
15.	$19 - 5 = \square$		30.	$19 - 5 = \square + 3$	

Name _____

Date _____

1. In a playroom, Lu Lu cut a piece of string that measured the distance from the doll house to the park. She took the same string and tried to measure the distance between the park and the store, but she ran out of string!

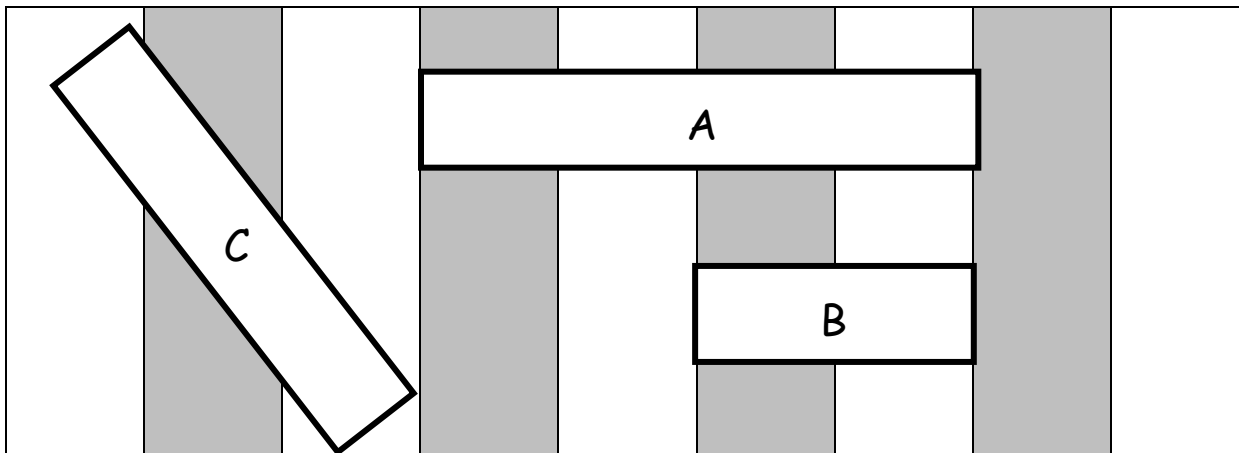
Which is the longer path? Circle your answer.

the doll house to the park

the park to the store

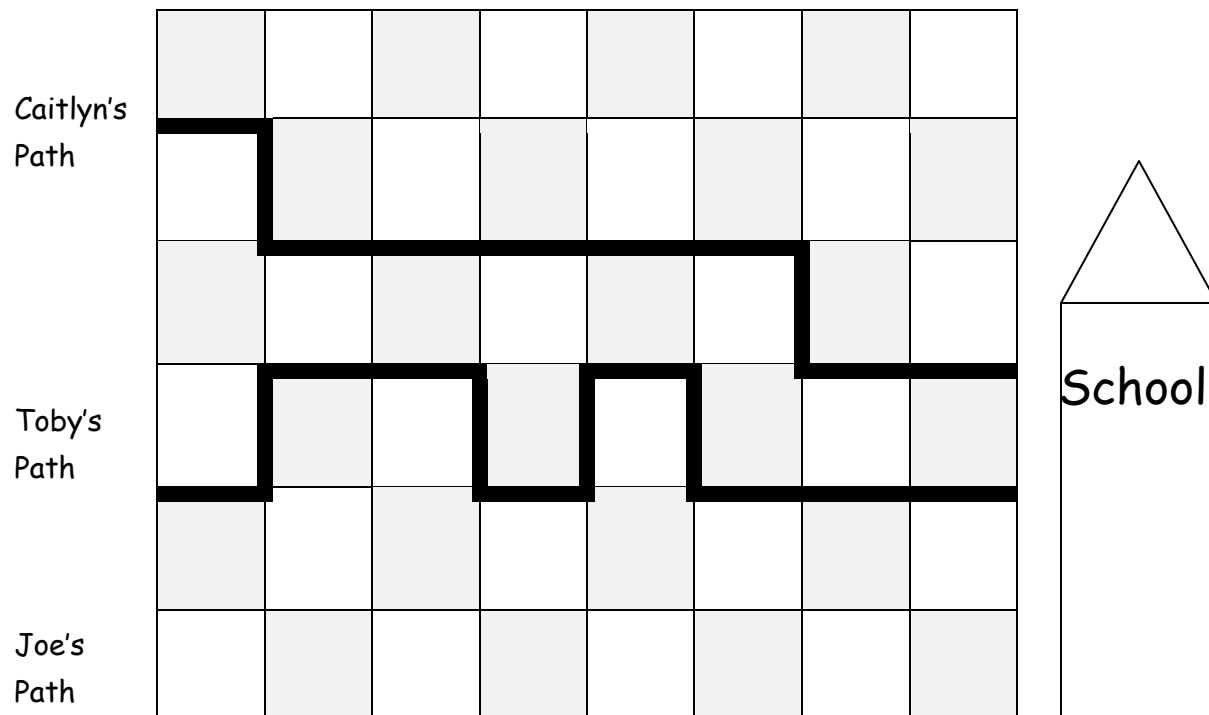


Use the picture to answer the questions about the rectangles.



2. Which is the shortest rectangle? _____
3. If Rectangle A is longer than Rectangle C, the longest rectangle is _____.
4. Order the rectangles from shortest to longest:

Use the picture to answer the questions about the students' paths to school.



5. How long is Caitlyn's path to school? _____ blocks

6. How long is Toby's path to school? _____ blocks

7. Joe's path is shorter than Caitlyn's. Draw Joe's path.

Circle the correct word to make the statement true.

8. Toby's path is **longer/shorter** than Joe's path.

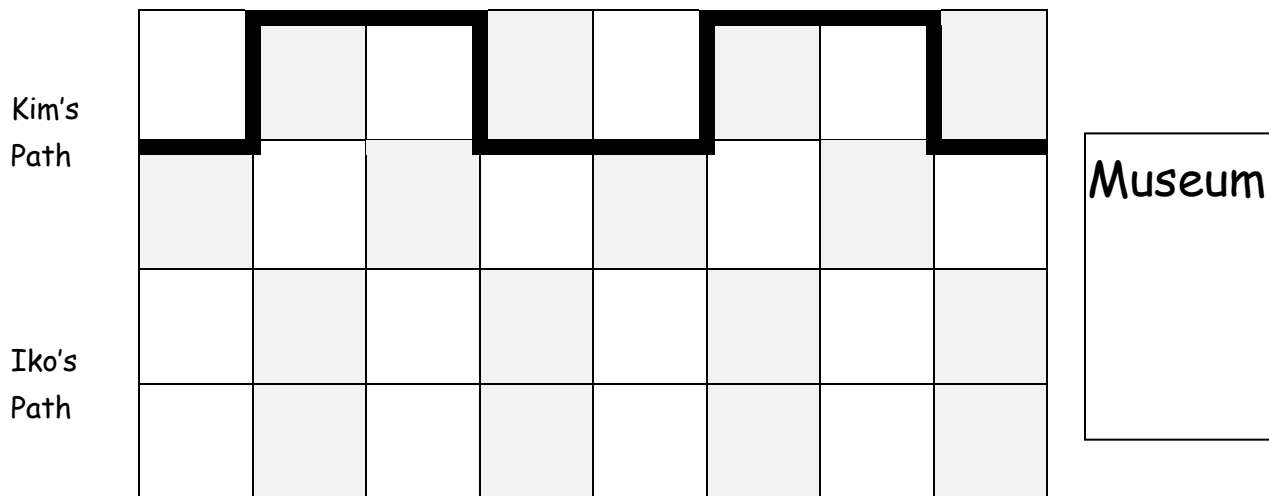
9. Who took the shortest path to school? _____

10. Order the paths from shortest to longest.

Name _____

Date _____

Use the picture to answer the questions about the students' paths to the museum.



1. How long is Kim's path to the museum? _____ blocks

2. Iko's path is shorter than Kim's path. Draw Iko's path.

Circle the correct word to make the statement true.

3. Kim's path is **longer/shorter** than Iko's path.

4. How long is Iko's path to the museum? _____ blocks

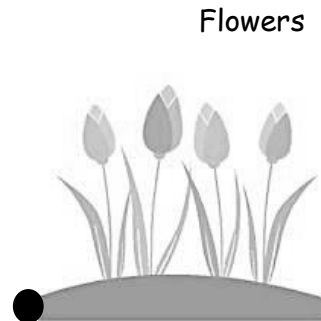
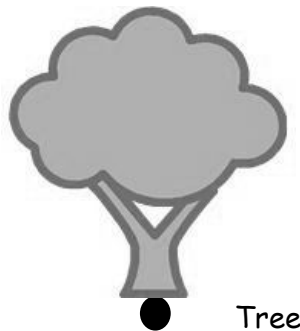
Name _____

Date _____

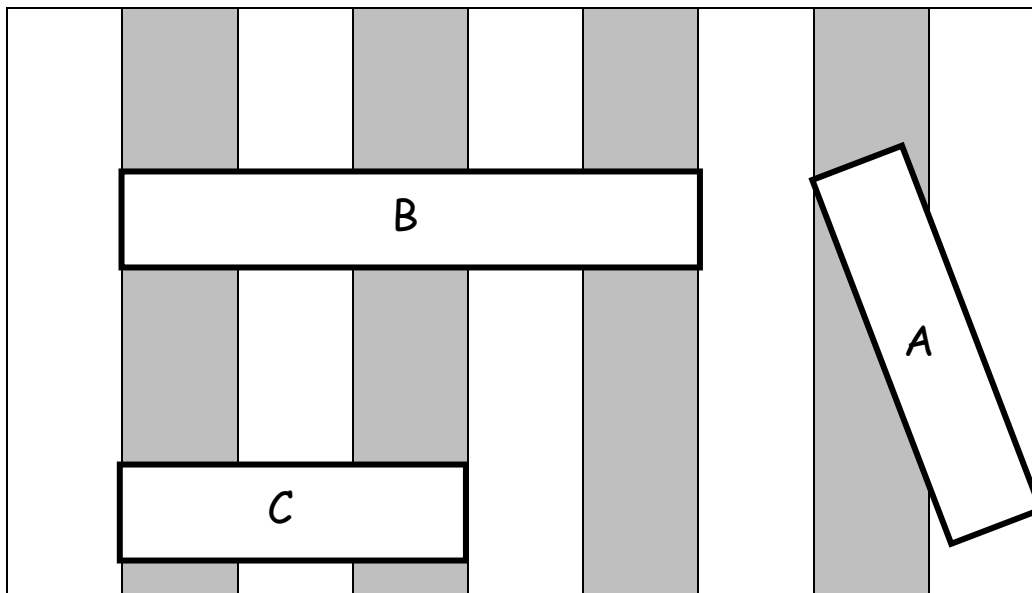
1. The string that measures the path from the garden to the tree is longer than the path between the tree and the flowers. Circle the shorter path.

the garden to the tree

the tree to the flowers



Use the picture to answer the questions about the rectangles.



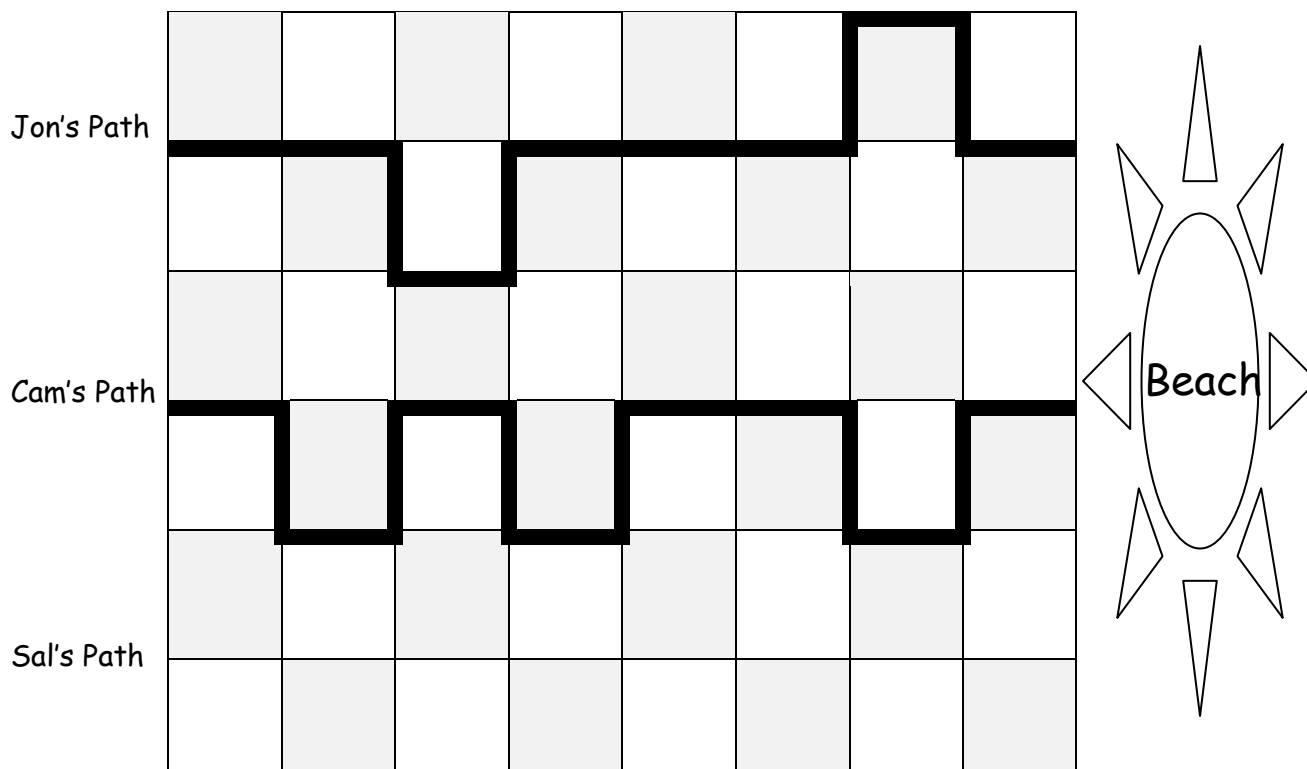
2. Which is the longest rectangle? _____

3. If Rectangle A is longer than Rectangle C, the shortest rectangle is

_____.

4. Order the rectangles from shortest to longest.

Use the picture to answer the questions about the children's paths to the beach.



5. How long is Jon's path to the beach? _____ blocks

6. How long is Cam's path to the beach? _____ blocks

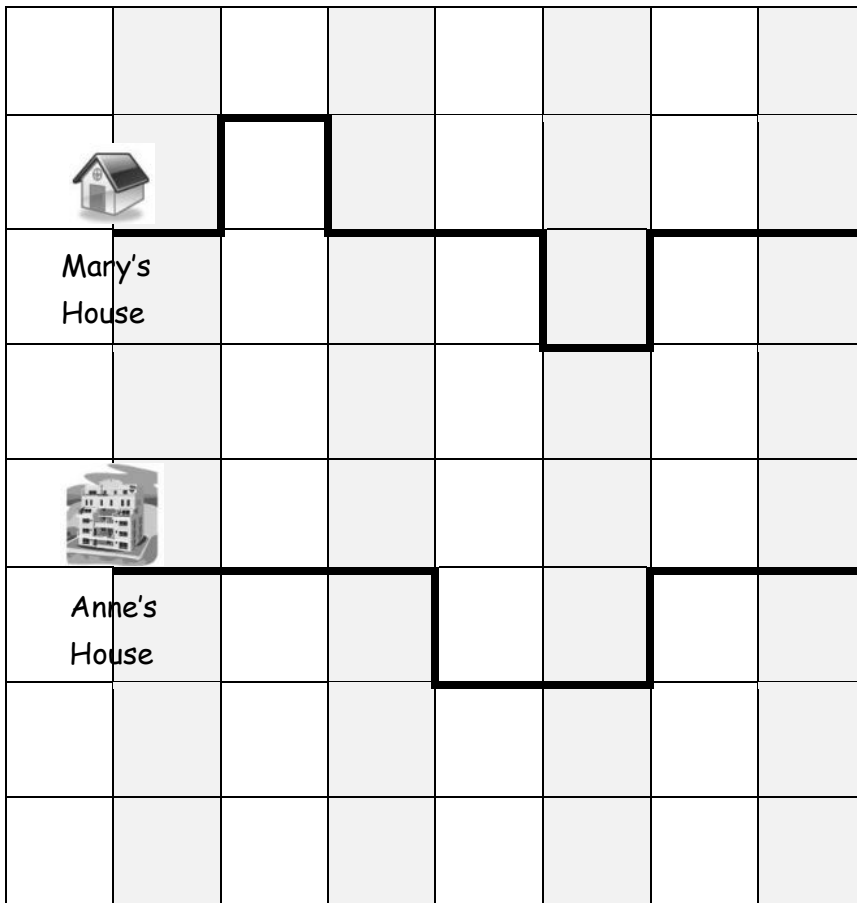
7. Jon's path is longer than Sal's path. Draw Sal's path.

Circle the correct word to make the statement true.

8. Cam's path is **longer**/**shorter** than Sal's path.

9. Who took the shortest path to the beach? _____

10. Order the paths from shortest to longest.



Park

city blocks grid