

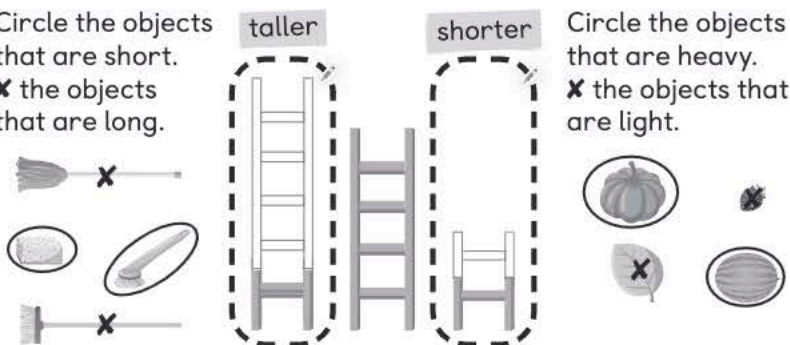
Chapter 8 MEASUREMENT

Chapter Overview

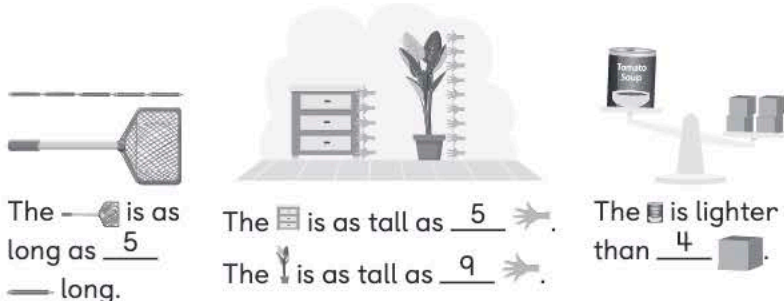
In this chapter, your student's foundation knowledge of how to compare groups of objects by applying counting strategies from Chapter 5 will be extended to compare length, height, and weight. Your student will:

- use comparison language to **compare length, height, and weight** for a variety of objects.

Circle the objects that are short.
✗ the objects that are long.

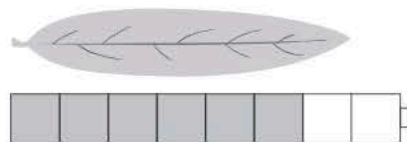


- measure length, height, and weight** using countable nonstandard units.



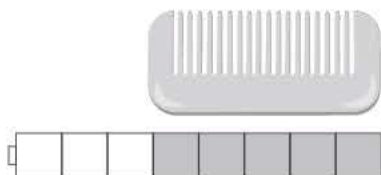
- apply his/her knowledge of **countable nonstandard measurements** in concrete and pictorial representations.

Color to show the length.



Key Ideas

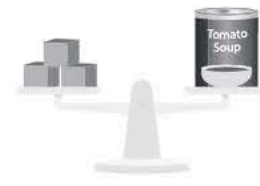
- We can use concrete and pictorial representations to explore the measuring of an object using the attributes length, height, and weight.



The is about 8 tall.

The is about 7 tall.

The is about 12 tall.



The is as heavy as 3 .

- We can make observations about the lengths, heights, and weights of objects using the comparison language.

Circle the lighter object.



- We can measure lengths, heights, and weights of objects using nonstandard units, a prerequisite skill of standard measurement.



The is about 3 long

Materials You Will Need

- buttons, paperclips, or cotton balls
- crayons/markers
- fruits/vegetables
- 11 index cards
- magazines
- 2 paper bags
- 10 pipe cleaners
- scissors
- string/twine
- tape or glue
- 55 connecting cubes (two colors)
- Counting Tape - 1 to 20 (TR23)

8A Length

Learning Objective(s)

- Compare the lengths of two objects.
- Measure length using nonstandard units.

Vocabulary

- short
- shorter
- same length
- long
- longer
- as long as

Material(s)

- 4 index cards
- paperclips
- string/twine
- 20 connecting cubes (two colors)
- magazines
- 10 pipe cleaners
- tape or glue

LENGTH (Student Book, pages 68 to 76)

Lesson Opener


Task

Complete the following discussion/activity before you open the Student Book. Refer your student to **Learn** and **Learn Together** in the Student Book for reflection after your student has explored the concepts. Use questions to build understanding and direct instruction to refine understanding.

MOVEMENT: Use two colors of connecting cubes for this activity. Choose one color to build a train and keep it the same throughout the activity. This will be the designated train for this activity. Build another train that is visibly longer than the other. Place the trains horizontally on the table. Encourage your student to hop if the designated train is longer than the other train. Have your student close his/her eyes while you rebuild the train. Place it horizontally on the table and encourage your student to clap if the designated train is shorter than the other train. For example, if you build a blue train that is 5 cubes long and you build a red train that is 7 cubes long then your student will hop. But if your red train is 3 cubes long he/she will clap. Repeat several times.

CONCRETE: Use a string/twine and index cards for this activity. Cut the string into 10 pieces of varied lengths and include a few that are of the same length. Write “shorter,” “longer,” and “same length” on index cards. Scatter the strings on the table. Jumble the vocabulary cards and place them face down on the table. Invite your student to turn over a card, read it together, and then find two strings that match the card. For example, if your student turns over the index card “shorter,” he/she would find a string and then another one that is shorter. When your student thinks he/she has the correct strings, have him/her verbalize the complete math sentence. For example, “this string is shorter than this string.” Repeat several times. For an added challenge, make an index card that says “as long as” and have him/her find strings that fit.

Focus Question

 **What do you want to find out when you compare the length of two objects?**

Invite your student to ponder this question as you go through the lesson. Revisit this question when you reach the end of the lesson to check his/her understanding.

Teaching Tip

Provide opportunities for your student to make observations about length in the real world. Encourage him/her to use the vocabulary words in complete math sentences when comparing.

Practice On Your Own (Student Book, pages 73 to 76)

- **QUESTION 1** assesses your student's ability to identify objects that have the same length.
- **QUESTIONS 2 and 3** assess your student's ability to compare lengths and identify the longer/shorter object.
- **QUESTION 4** assesses your student's ability to measure the length of the two objects by counting the pencils and based on the count, determine which is longer/shorter.
- **QUESTION 5** assesses your student's ability to accurately indicate and record the length of two objects using a pictorial representation of cubes and then determine which of the two objects is longer/shorter. In this question, the start point of the objects is not the same.

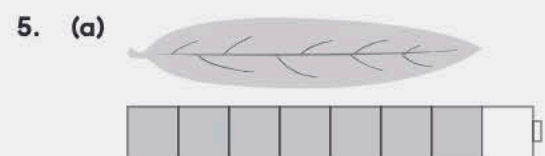
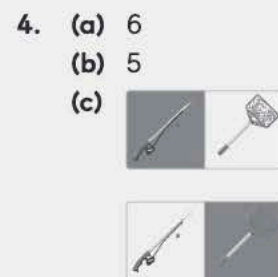
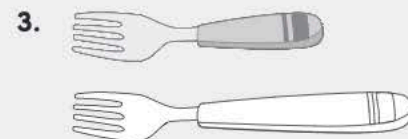
Think!

- **QUESTION 6** assesses your student's ability to visually discern and determine the longer water hose.

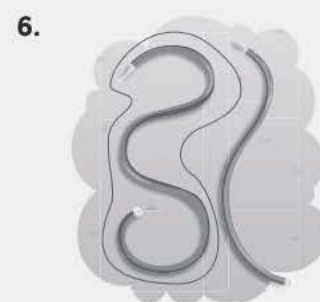
For Additional Support

If your student has difficulty in determining which objects are shorter and longer, encourage him/her to draw lines at the beginning and end of each object to see more clearly which one is longer and which one is shorter.

Practice On Your Own Answers (Student Book, pages 73 to 76)



Think!



8C Weight

Learning Objective(s)

- Compare the weights of two objects.
- Measure weight using nonstandard units.

Vocabulary

- heavy
- heavier
- same weight
- light
- lighter
- as heavy as

Material(s)

- buttons, paperclips, or cotton balls
- fruits/vegetables
- 3 index cards
- 2 paper bags
- scissors
- crayons/markers
- glue
- magazines
- pencils
- 20 connecting cubes

WEIGHT (Student Book, pages 83 to 88)

Lesson Opener

Task


Complete the following discussion/activity before you open the Student Book. Refer your student to **Learn** and **Learn Together** in the Student Book for reflection after your student has explored the concepts. Use questions to build understanding and direct instruction to refine understanding.

MOVEMENT: Make vocabulary index cards with the words: “heavier,” “lighter,” and “same weight.” Provide your student with two objects with obvious weight differences such as an apple and a pencil to hold in his/her hands. Hold up and read a vocabulary card, and invite your student to tilt one way or the other according to the card. For example, if you hold up the vocabulary card “lighter,” he/she tilts toward the lighter object. Change out an object and choose a new vocabulary card. Replace one object with something of the same weight. For example, change out the apple and replace it with another pencil. Encourage your student to stand still if both are of the same weight. Repeat several times with a variety of objects.

CONCRETE: Use two paper bags, fruits and vegetables, pencils and paper clips for this activity. Fill one bag with fruits and vegetables and the other with pencils and paper clips, varying their quantities. Encourage your student to make a guess as to which of the bags will weigh more, based on the quantities and objects. Then, allow him/her to hold the bags and determine that the bag with fruits/vegetables weighs more. Repeat several times, changing the objects and the number of objects.

PICTORIAL: Give your student the Recording Journal and some crayons/markers. Invite him/her to create a drawing that shows heavy and light objects. Then, encourage your student to use the vocabulary words to describe the items in the picture. Help him/her to write the comparison sentences on the page. For example, you may write, “The bus is heavier than the dog.”

Focus Question

 **What do you want to find out when you compare the weight of two objects?**

Invite your student to ponder this question as you go through the lesson. Revisit this question when you reach the end of the lesson to check his/her understanding.

Caution

Your student may express that the bigger an object is, the heavier it is. Guide them to use nonstandard units of measurement and informal language in a variety of ways to compare, and encourage them to not just rely on visual observations.

Teaching Tip


Encourage your student to use the vocabulary words in complete sentences when making comparisons, such as _____ is heavier than _____, _____ is lighter than _____, or _____ has the same weight as _____.

ABSTRACT: Collect items such as buttons, paperclips, or cotton balls and use a weighing balance for this activity and place them on the table. Put a handful of connecting cubes on the table as well. Encourage your student to make a guess about how many cubes he/she thinks each item may weigh. Have him/her write down the guesses on the whiteboard. Then guide your student to weigh each item on the weighing balance and then, weigh the cubes to see if your student's guesses were close or not. Encourage your student to let you know if the items weigh about the same based on the numbers shown on the weighing balance.

Lesson Development

Learn (Student Book, page 83)

Open the Student Book to page 83. Encourage your student to make observations about what he/she notices on the page. You may wish to ask these questions:

 **What do you notice on this page?** *grapes; pears; watermelon; pumpkins; pineapple; bananas; apples; a boy; a man; scales* **Point to the pears on the table. Which plate of pears do you think is heavier?** *The one with more pears.* **Why do you think that?** *More pears means that it weighs more.* **What is the man holding?** *A bunch of grapes and a watermelon.* **Which one do you think is lighter?** *grapes* **Why do you think the grapes are lighter even though there are more of them?** *When you lift a watermelon, it is heavy; grapes are light. The man is carrying the grapes with one hand, but the watermelon has to be carried under his arm because it is heavy.* **Point to the pumpkins. Which one do you think is lighter?** *small pumpkin* **Why?** *It is smaller.* **What do you notice about the pineapple and the bananas?** *The pineapple weighs more.* **How do you know the pineapple weighs more?** *The scale is tipped toward the pineapple.* **What do you notice about the apples?** *They weigh the same.* **How do you know they weigh the same?** *The scale is balanced.* **What other comparisons can you make?**

Allow your student to compare the fruits to each other using the vocabulary words "heavier," "lighter," or "same weight." For example, he/she may say the grapes are lighter than the bananas or the pumpkin is heavier than the apple.

Discover Together

Use a weighing balance, a whiteboard, marker, and about 10 household items for this activity. Place the balance and objects on the table. Provide your student with the vocabulary index cards you made for the **Lesson Opener**. Invite your student to weigh the items using the weighing balance and set up scenarios to match the vocabulary words. For example, he/she may say, "The soup can is heavier than the paper." When your student has made a scenario, write the math sentences: _____ is heavier than _____, _____ is lighter than _____, and _____ has the same weight as _____ on the whiteboard. Repeat several times. Encourage your student to match and rematch items as he/she likes. Review the math sentences on the whiteboard and ask your student to explain why he/she made that match and how he/she knew it worked. For example, your student may say that he/she decided that the cup was lighter than the water bottle because it had a smaller number on the weighing balance compared to the water bottle.

Learn Together (Student Book, pages 84 and 85)

After your student has explored the concepts in the **Lesson Opener**, **Learn**, and **Discover Together**, and is beginning to show understanding, open the Student Book and look at the pages together.

- **QUESTION 1** requires your student to identify objects that are heavy or light.
🗨️ **How do you decide which items are heavy and which are light?**
- **QUESTIONS 2 and 3** require your student to compare weights and identify the heavier and lighter objects. Guide and encourage your student to discuss how to determine the heavier or lighter objects. Remind him/her to say the comparison sentence.
🗨️ **Which items do you think weigh about the same?**
- **QUESTION 4** requires your student to identify objects that have the same weight.
🗨️ **Which items do you know are heavy?**

Lesson Debrief

- Conclude the lesson and facilitate your student's reflection by asking him/her to answer the **Focus Question** and share his/her thinking.
- Extend the discussion by posing the following questions.
🗨️ **How can you tell if an item is heavy or light? How do you decide if a group of items is about the same weight? Why do you think it may be important to know how much an object weighs?**

Learn Together Answers

(Student Book, pages 84 and 85)

1.



2. (a)



(b)



3. (a)



(b)



4.

