

# Overview of the Concept: Linear Measurement

## Book Summaries

Title	Level	Summary
Measure Me	D	This photographed explanatory text features two children who use nonstandard units to measure and compare their bodies.
How Long Is a Dog's Tail?	G	This illustrated explanatory text features a group of children who use various forms of nonstandard measurement to measure their dogs.
Captain Foot and the Treasure	I	Captain Foot and his pirates set out to find a buried treasure on an island in this illustrated fantasy narrative. They follow the directions on a map written by Captain Foot's grandfather. After two unsuccessful attempts, they finally find the treasure, and make an important discovery about nonstandard measurement.

## Target Outcomes

WNCP	Ontario	APEF
<p>Shape and Space (Measurement)</p> <ul style="list-style-type: none"> <li>Select an appropriate nonstandard unit to measure length.</li> <li>Estimate, measure, record, compare, and order objects by length, height, and distance around, using nonstandard units.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate that a nonstandard unit is used repeatedly to measure (e.g., count the number of floor tiles to measure the length of the classroom).</li> <li>Use mathematical language to describe dimensions (e.g., height, length).</li> <li>Select an appropriate nonstandard unit to measure length.</li> <li>Estimate, measure, and record the linear dimensions (e.g., length, height) of objects using nonstandard units, and compare and order objects by their linear dimensions.</li> <li>Compare two objects and identify similarities and differences (e.g., compare the length and width of two pencils).</li> </ul>	<p>Shape and Space:</p> <ul style="list-style-type: none"> <li>Identify and use nonstandard and standard units of measurement and appreciate their role in communication.</li> <li>Estimate and determine measurements in everyday problem situations and develop a sense of the relative size of units.</li> </ul> <p>D1 identify procedures (not involving units) to compare and/or order lengths, capacities, and areas</p> <p>D3 identify and use nonstandard units to estimate and measure length, capacity, time, mass, and area</p>

# Measure Me

## Before Reading

Ask two students to come to the front of the room and compare their heights. Ask, *Who is taller? Who is shorter? What could we use to measure their heights? Say, We can also measure body parts. Ask, Whose arms are longer? Whose legs are longer? What could we use to measure?* Discuss the students' suggestions.

## Previewing the Text

- Show the cover of the book and read the title. Ask, *What are the children doing? What do you think they're going to do with a body outline? Does the title give you a clue?*
- Say, *This is a book about a boy named Atul and a girl named Pat, who use different things to measure and compare parts of their bodies.*
- Support the students in a book walk. Discuss the pictures to help students access the meaning of the text, and introduce any unfamiliar vocabulary, expressions, and language structures.

**Pages 2–3:** Say, *Pat and Atul are going to measure their bodies. Ask, What are the things they are going to use? Discuss or tell the names of the various items on page 3, including the chart on which they'll record their measurements. Ask, According to the chart, what five things are they going to measure? What does the chart say they will use to measure their arms? feet? legs? hands? bodies?*

**Pages 4–11:** For each double-page spread, ask, *What did the children measure here? What did they use to measure? About how long is Pat's/Atul's arm? foot? leg? hand? body?* Encourage the students to use the pictures *and* text to prove their answers.

**Pages 14–15:** Point to each of the children and restate their names. Ask, *Is Atul shorter or taller than Pat? Is Pat shorter or taller than Atul? How do you know?*

**Page 16:** Assist the students in reading the chart and ask them to compare Pat's and Atul's measurements. Encourage the use of comparative language (e.g., longer, shorter).

## Level D

### Text Type

informational text

### Word Count

100 (not including print within photographs), 132 (including print within photographs)

### High Frequency Words

about, and, are, at, going, here, is, it, look, the, they, to

### Content Words

measure, bodies, arm, cubes, long, foot, paperclips, leg, pencils, hand, beans, body, boxes, shorter, taller

### Text Features

- 16-book page
- 1–2 lines per page
- photographs
- strong picture clues
- chart
- print within photographs
- numerals within text

### Working with Words

The “an” Chunk

### Cross-Curricular Links

Mathematics

Music

Science

## Reading the Text

Encourage students to read the book independently, at their own pace. Remember that subvocalizing (reading softly out loud) by early readers is to be expected and is often helpful. Observe and assist individual students as necessary. Give specific praise to students you observe using reading strategies.

## Revisiting the Text

You may choose to do only some of these activities, over several days.

- Divide the students into two groups. Have one group read the pages that describe Pat's measurements and point to each body part that she is measuring. Have the second group read and point to all the body parts that describe Atul's measurements. When finished, have the groups switch parts.
- Write the body part words (arm, foot, leg, hand, body) from the story on index cards. Using the text as a reference, have the students work with a partner to sequence the cards and retell the story to each other.
- Collect the same nonstandard units of measurement that were used to measure in the book and provide them to the students. Ask the students to reread the book with a partner, and demonstrate the correct number of each item used in the story to measure (e.g., 26 cubes, 21 cubes, 3 pencils, 2 pencils).
- Create sentence strips of pages 4 to 13 on coloured construction paper. Use one colour of construction paper for Pat's measurements and a different colour of paper for Atul's measurements. Cut each of the sentence strips between the words "is" and "about." Mix up the strips and ask the students, as a group, to reconstruct the sentences using the book as a reference. Have the students read each sentence as it is put together. When they are finished, the students can sort the coloured strips and have all of Pat's measurements in one column and Atul's corresponding measurements in a second column.
- To orally reinforce comparative language, go through the book and ask, *Whose (body part) is longer? Whose (same body part) is shorter?* Encourage the students to answer the questions in complete sentences (e.g., Pat's arm is longer than Atul's; Atul's arm is shorter than Pat's).

## Working with Words: the "an" chunk

Write the word "an" on chart paper and have the students read it. Explain to them that it is a little word that can sometimes be found in bigger words. Then, ask the students to search the text and find all of the words that contain the little word "an" (and, hand, than). Record these words on the chart paper and underline the "an" chunk in each of them. Brainstorm other "an" words to add to the list. Discuss the fact that the little word "an" can be found at the beginning, the middle, or the end of a word.

## Extending Activities

### Measure Bodies

Working in partners, have the students use **BLM 5-1: Let's Measure!** to measure, record, and compare their body part measurements. They can use the chart on page 16 as a reference.

### Measure Me Booklet

Have students create their own “Measure Me” booklet, using the patterned text from the book as a model:

“Look at my \_\_\_\_\_ . It is about \_\_\_\_\_ \_\_\_\_\_ long.”  
(body part) (number) (nonstandard unit)

The last page could read: “Look at me. I am \_\_\_\_\_.”  
(student's name)

This language activity could follow the activity described above, in which students complete **BLM 5-1: Let's Measure!** Students can use the data from their column of measurements to write their booklets.

### Shorter or Taller Than Me

Have the students find things in their own life that are shorter or taller than themselves. Prepare a T-chart with the headings, “Shorter than Me” and “Taller than Me.” Ask the students to draw pictures of the things they found to be shorter or taller than themselves on the appropriate side of the T-chart. As a further extension, the students can work in partners to measure each other's heights using an appropriate nonstandard unit of measurement. Use this same item to measure various things around the classroom or school and add these to their T-chart.

## Cross-Curricular Links

### Mathematics

Prepare a measurement scavenger hunt sheet that lists the types of items you would like the students to find. For example, ask the students to find five things in the classroom that are longer than 3 paperclips, shorter than 8 paperclips, the same length as 6 beans, longer than 2 tissue boxes, and so on. Provide these nonstandard units of measurement to the students and have them work individually or in pairs to find and measure the items.

**Music**

Have the students sing, with actions, the familiar song, “Head and Shoulders, Knees and Toes.” On chart paper, prepare a cloze version of this song, leaving blanks for all of the body parts. Invite the students to suggest different body parts to fill in the blanks and create their own version of the song. Read and sing the song with actions.

**Science**

Have the students review the text to find the words relating to parts of the body. Ask the students to use these words, and others they know, to create a labelled diagram of themselves. Identify and discuss the senses (e.g., hearing, touch, smell, taste, sight) and/or other functions of each part of the body.

# How Long Is a Dog's Tail?

## Before Reading

Ask the students if any of them owns a dog, or if they know someone who does. If there are students in the group who have no personal experience with dogs, ask them to talk about famous dogs they may know (e.g., Clifford). Discuss the various characteristics of the dogs (e.g., large, small, long tail). Continue the discussion by showing materials that feature images of dogs (e.g., calendars, magazines, books) and discuss the animals in terms of relative length, height, width, and so on.

## Previewing the Text

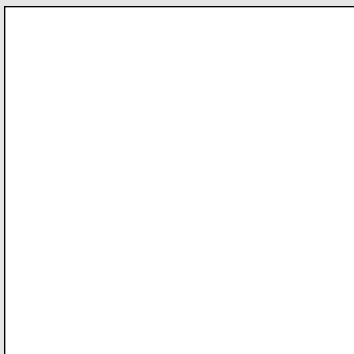
- Show the cover of the book and read the title. Ask, *How do the title and picture fit together?*
- Say, *This is a book about some children who use different objects to measure big and small dogs.*
- Support the students in a book walk. Discuss the pictures to help students access the meaning of the text, and introduce any unfamiliar vocabulary, expressions, and language structures.

**Pages 2–3:** Point to the dogs in the picture and say, *Here are two dogs, Puff and Lulu. Ask, What are the children going to measure? What are they using to measure? How many crayons do you think he'll need to measure Puff's tail? How many for Lulu's tail?*

**Pages 4–5:** Confirm the students' predictions. Ask, *How many crayons long is Puff's/Lulu's tail? Whose tail is longer? Have the students locate the part of the text that proves their response.*

**Pages 6–7:** Point to the dogs in the picture and say, *Here are two dogs, Jack and Goldy. Explain the concept of using a ribbon, first, to measure around the dog, then laying bones along the ribbon to find out how many would go "around" the dog. Ask, How many bones do you think it would take to measure around Jack? How many do you think it would take to measure around Goldy?*

**Pages 8–9:** Confirm the students' predictions. Draw their attention to the word "would" on page 8 and discuss its unconventional spelling, then have the students locate the word "would" on page 9.



## Level G

### Text Type

explanation

### Word Count

204 (not including print within illustrations), 205 (including print within illustrations)

### High Frequency Words

a, about, all, and, are, big, but, from, go, going, he, her, here, him, his, how, I, is, it, look, my, of, she, some, the, they, this, to, too, very, will

### Content Words

crayons, measure, tail, long, short, longer, ribbon, around, bones, bigger, small, big, eleven, wide, twelve, cubes, puppy, fifteen, smaller, tallest, shortest, high

### Text Features

- 16-page book
- 2–4 lines per page
- illustrations
- moderate picture clues
- print within illustrations
- italics
- bold

### Working with Words

Comparative Words

### Cross-Curricular Links

Science

Science/Art

Language Arts

**Pages 10–11:** Point to and name the dogs in the picture. Say, *The children are going to measure how wide their dogs are.* Ask, *What are they going to use to measure?* Have the students say the word “cubes” slowly. Ask, *What sounds can you hear?* Have the students locate the word “cubes” on each page.

**Pages 12–13:** Ask, *Which dog is smaller, Woody or Minny?* Say, *Yes, Minny is only four cubes wide. The boy needed a lot more cubes to measure Woody.* Ask, *How many cubes did he need?*

**Pages 14–15:** Say, *The children used blocks to measure the dogs, from tallest to shortest.* Say, *Point to the dog that is the tallest.* Ask, *How many blocks high is he?* Continue asking, *How many blocks high?* for each of the other dogs. Ask, *Which dog is the shortest? What are all of the dogs looking at?*

**Page 16:** Say, *All of the dogs are pretty happy. Why?*

### Reading the Text

Encourage students to read the book independently, at their own pace. Remember that subvocalizing (reading softly out loud) by early readers is to be expected and is often helpful. Observe and assist individual students as necessary. Give specific praise to students you observe using reading strategies.

### Revisiting the Text

You may choose to do only some of these activities, over several days.

- Have the students reread alternate pages of the book with a partner, then have them switch roles.
- Have the students look in the book to identify the dogs that match these descriptions:
  - My tail is 5 crayons long.*
  - I am 4 cubes wide.*
  - I am 6 blocks high.*
  - It would take about 5 bones to go around me.*
  - My tail is 1 crayon long.*
  - I am the shortest dog.*
  - I am 15 cubes wide.*
- Have the students orally retell the main events of the book in sequence using the pictures as reference. Have them indicate which part of the dog the children were measuring first, then next, and last. Encourage the students to include supporting details in their oral retell of the book.
- Review the elements of a narrative (e.g., character, setting, problem, solution). Discuss with the students how this book is different from a story. (The text and the pictures provide information, the text asks questions, and readers have to find the answers.)
- Invite the students to read aloud their favourite parts of the book. They may read to a partner or to the group, and tell why they liked the part.

## **Working with Words: comparative endings**

Discuss with the students the endings “er” and “est,” which we add to words when we want to compare. Give examples such as “warm, warmer, warmest” and “late, later, latest” (to show the convention when a word ends in “e”). Have the students search the text to locate words that include these endings. Have the students complete **BLM 5-2: Comparative Endings** by adding these endings to the word to complete the chart. Then have the students choose one word from the middle column (ending in “er”) and write a sentence with it.

## **Extending Activities**

### **Measure an “Animal”**

Have the students bring in a favourite stuffed animal toy. Together, decide which animal parts will be measured and what objects (nonstandard units) they will use to measure each part. Ask the students to estimate how many objects it will take to measure each body part. Then, have the students measure their stuffed animals. The students then record their findings on a chart divided into three columns to show the body parts, their estimates, and the actual measurements.

### **What Is This Long?**

Give pairs of students strips of paper that they cut to certain, different lengths, for example, 5 cubes long; 3 blocks long; 8 pencils long; 7 crayons long. Each pair should have a different length. Write the lengths on the cut strips. Have the students look for objects in the classroom that are about the same length (or circumference) as their measuring strip, and use their strips to confirm their estimates. Have them record the objects they find that are close to the same size.

## **Cross-Curricular Links**

### **Science**

Provide a large drawing of a dog’s body on chart paper. Have the students identify the different parts of the dog’s body and print labels for the parts. When complete, choral read each of the labels. Then, have the students describe ways in which dogs and humans are similar and different. Use a Venn diagram to show the comparison.

### **Science/Visual Arts**

Assemble a collection of books about pets for the students to peruse. Brainstorm and record, in a list format, all of the different types of pets the students know. Ask the students to use the list to help them think of a pet that they do not have, but would really like to own. Have them create a “Wanted” poster for that pet. The students can draw a picture of the pet and then underneath, write the name and a description of the pet that they want. Encourage the use of words to describe the size of the animal, or the size of its various body parts (e.g., big, small, long tail, wide body, short hair).

**Language Arts**

Read aloud stories that have dogs as characters (e.g., Clifford, Sam, and Bingo). Brainstorm ideas for a story with a dog as a main character. Select one idea and, using a shared or interactive writing approach, begin to write a group story that individual students can then finish on their own and illustrate.

# Captain Foot and the Treasure

## Before Reading

Show the students a map rolled into a scroll. Tell them that you have found a map which will lead to a treasure hidden somewhere in the classroom (a treat that you have hidden). Open the map and read the directions (e.g., “*To find the treasure, YOU must take 6 steps across the classroom. Turn left and take 4 steps toward the blackboard,*” etc.). Have some students who are of various heights follow the directions. The group will discover that each student ends up in a different spot. Mark the spots. Then ask, *What is the problem? Say, We are going to read a book that will help us with this problem.*

## Previewing the Text

- Show the cover of the book and read the title. Discuss the art.
- Say, *This story is about Captain Foot and his pirates, Long John, Corky, and a boy named Smarty. They use a map to try to find a buried treasure on this island. Point to the island on the cover. Ask, Do you think they’ll find the treasure? Do you think the treasure will be gold, or something else? Record the students’ predictions.*
- Support the students in a book walk. Discuss the pictures to help students access the meaning of the text, and introduce any unfamiliar vocabulary, expressions, and language structures.

**Pages 2–3:** Ask, *What is Captain Foot looking at?* Elicit the words “map,” “buried treasure,” and “island” in your discussion. You may want to focus the students’ attention on the unconventional spelling of the word “island.” Say, *Captain Foot found the treasure map inside one of his Grandfather’s boots. Point out the portrait of his grandfather on the wall, and explain the phrase “Ahoy, maties!”*

**Pages 4–5:** Point out and introduce the pirates Long John, Corky, and the boy named Smarty in the picture. Say, *Captain Foot is shouting orders at Long John. He has to take the right number of steps to find the treasure. Ask, How many steps does Long John have to take across the sand? How do you know?* (picture and text)

## Level I

### Text Type

narrative (fantasy)

### Word Count

278 (not including speech balloons), 287 (including speech balloons)

### High Frequency Words

a, and, as, at, boy, but, for, go, had, have, he, his, I, is, it, look, my, no, now, of, on, said, so, some, that, the, then, there, they, this, to, very, was, we, went, where, with, you, your

### Content Words

captain, boots, grandfather’s, map, treasure, island, buried, pirates, orders, steps, sand, tree, stream, waterfall, across, turned right, along, toward, problem, clue, measure, longer, legs, long, length

### Text Features

- 16-page book
- 2–9 lines per page
- illustrations
- moderate picture clues
- dialogue
- speech balloons
- varying text placement
- print within illustrations
- italics
- bold

### Working with Words

Compound Words

### Cross-Curricular Links

**Pages 6–7:** Ask, *What is Long John walking toward on page 6?* (elicit “waterfall”) *On page 7, what clues in the picture show us that they didn’t find the treasure?* Draw the students’ attention to the speech balloon, the characters’ puzzled expressions, and the text. Explain or model the pronunciation of “Aarrgh!” in the speech balloon.

**Pages 8–9:** Say, *Captain Foot ordered Corky to try and find the treasure.* Ask, *What does “ordered” mean?* Have the students locate the word on the page, then have them practise reading the last line of text as though they were giving an order. Ask, *Do you think Corky’s footsteps will lead to the treasure?*

**Pages 10–11:** Ask, *Did they find the treasure? What is Smarty doing in this picture?* (checking the distance between Corky’s footsteps) *What do you think the problem might be?* Read the text in the speech balloon to the students, then allow them to practise reading it with expression.

**Pages 12–13:** Say, *Captain Foot is standing beside the picture of his Grandfather.* Ask, *What do you notice about Captain Foot and his grandfather? What is Smarty doing? Do you think Smarty has found a clue to help them find the treasure? What did he figure out? Do you think he’s right?*

**Pages 14–15:** Confirm the students’ predictions. Ask, *Whose footsteps have lead them to the treasure?* Say, *Check the words to find out how long the captain’s legs were.* Explain the phrase “jumped for joy.”

**Page 16:** Ask, *What was the treasure?* (new boots) Refer back to the predictions the students made about what the treasure might be. Choral read the speech balloon.

## Reading the Text

Encourage students to read the book independently, at their own pace. Remember that subvocalizing (reading softly out loud) by early readers is to be expected and is often helpful. Observe and assist individual students as necessary. Give specific praise to students you observe using reading strategies.

## Revisiting the Text

You may choose to do only some of these activities, over several days.

- Discuss the landmarks that are used on the map that match what is on the island (three trees, a stream, waterfalls), and why they are important. Have the students study the illustration on page 15 and describe how the three pirates—while following the same directions—took different routes. Remind them to refer to the landmarks in their descriptions.
- Have students use a piece of paper folded into three sections labelled “Beginning,” “Middle,” and “End.” Ask them to draw a picture and write a sentence to describe an important event from the story in each of the sections. Ask the students to explain their choice of events and have them use the illustrations to retell the story in their own words.

- Using **BLM 5-3: Sequence Booklets**, have the students cut out the sentence strips, arrange them in sequence to make a booklet, and then read the booklet.
- Draw a story map on chart paper showing the following elements: title, characters, setting, problem, solution, and ending. Review these story elements with the students. Together, go through the book and examine each page to complete the story map. Read the completed story map as a group.

### **Working with Words: compound words**

Ask the students to locate compound words in the book (grandfather, outside, waterfall, everyone). List these words on the board. Have the students identify the two smaller words that make up the larger word. Erase the first or second section of a word and have the students substitute other small words to create new compound words.

### **Extending Activities**

#### **Find the Treasure**

Refer to the Before Reading activity and remind the students of the problem that was encountered (the treasure was not found because all three students ended up in different spots in the classroom). Now that they have read the book, ask them if they can solve the problem. If necessary, prompt them with the question, *Whose steps do we need to use to find the treasure?* Then, reread and follow the directions on the map to show the students that your footsteps were needed to lead them to the treasure. When you have taken the proper number of steps, surprise the students with a “treasure treat.”

#### **Create a Treasure Map**

Create a sketch of your schoolyard that includes key landmarks (e.g., trees, playground, fence, soccer field). In small groups, have the students decide where they would like to hide a treasure in the schoolyard, and have them create their own treasure map. Remind the students to include a picture and encourage them to use directional phrases (e.g., “toward the playground,” “past the sandbox”) in their written set of directions. Use the treasure map on page 3 of the text as an example.

#### **Describe Your Treasure**

Have the students bring in something that is their favourite treasure to show and share with their classmates. Ask the students to draw a picture of their treasure. Below the picture, have them describe the treasure and explain why it is special to them.

## **Cross-Curricular Links**

### **Physical Education**

Have the students move in various ways (e.g., hop, skip, jump, heel-toe walk) across the gym. Have them count the number of hops it takes to get across the gym, the number of skips, and so on. Share and compare results. Discuss the reason for differences among the students.

### **Drama**

Assign the roles of narrator, Captain Foot, Corky, Long John, and Smarty, and have the students rehearse and act out the story. The students may use props and costumes, and create a backdrop for their play. They may present the play to another class.

### **Social Studies**


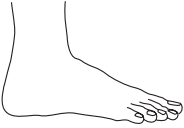


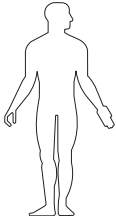
Through discussion, help the students to develop a basic understanding of maps and their purpose. Have them create a model, using concrete materials (e.g., blocks), of a familiar area in their local community. For example, the students could create a concrete map of their route to school. Have the students use a birds-eye view (view from above) of the model they constructed to draw a simple pictorial map of the area. Have them use their own symbols on the map to identify buildings and other places in their community.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Let's Measure!

Use things in your classroom to measure each of your body parts.

	_____	_____
arm 		
foot 		
leg 		
hand 		
body 		

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Comparative Endings

Add the endings “er” and “est” to these words

	er	est
tall		
short		
long		
small		
wide		
high		

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Sequence Booklet

Cut out the sentence strips and put them in the correct order. Staple them together and read the story

They still did not find the treasure.

Then, Captain Foot took the right number of steps and found the treasure.

The Captain gave orders to Long John to try and find the treasure.

Then, Corky dug a deep hole but there was no treasure.

The Captain gave orders to Corky to try and find the treasure.

Captain Foot found a treasure map in his Grandfather's boots.

Smarty looked at the map and found an important clue.

Captain Foot and the Treasure