

Important Concepts . . .

# Preview Review



**Mathematics    Grade 5    TEACHER KEY**

**W2 - Lesson 3: Estimating and  
Taking Measurements**

## Important Concepts of Grade 5 Mathematics

W1 - Lesson 1 .....	Number Sense Numbers 0 to 100 000
W1 - Lesson 2 .....	Exploring Proper Fractions
W1 - Lesson 3 .....	Exploring Decimals
W1 - Lesson 4 .....	Numbers With Up to 2 Decimal Places
W1 - Lesson 5 .....	Multiplication
W1 - Quiz	
W2 - Lesson 1 .....	Division
W2 - Lesson 2 .....	Collecting Data and Analyzing Patterns
W2 - Lesson 3 .....	Estimating and Taking Measurements
W2 - Lesson 4 .....	Perimeter and Area Measurements
W2 - Lesson 5 .....	Metric Measurements
W2 - Quiz	
W3 - Lesson 1 .....	Volume, Capacity, Mass, and Time
W3 - Lesson 2 .....	2-D Shapes and 3-D Objects
W3 - Lesson 3 .....	Transformations
W3 - Lesson 4 .....	Statistics and Probability
W3 - Lesson 5 .....	Chance and Probability
W3 - Quiz	

## Materials Required

Protractor  
Ruler  
Calculator

**A textbook is not  
needed.**

**This is a stand-alone  
course.**

Mathematics Grade 5

Version 5

Preview/Review W2 - Lesson 3 TEACHER KEY

Publisher: Alberta Distance Learning Centre

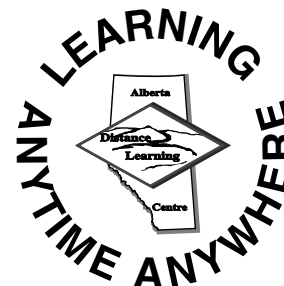
Author: Leslie Friesen

In-House Teacher: Sue Rees

Project Coordinator: Dennis McCarthy

Preview/Review Publishing Coordinating Team: Nina Johnson,

Laura Renkema, and Donna Silgard



Alberta Distance Learning Centre has an Internet site that you may find useful. The address is as follows: <http://www.adlc.ca>

The use of the Internet is optional. Exploring the electronic information superhighway can be educational and entertaining. However, be aware that these computer networks are not censored. Students may unintentionally or purposely find articles on the Internet that may be offensive or inappropriate. As well, the sources of information are not always cited and the content may not be accurate. Therefore, students may wish to confirm facts with a second source.

### ALL RIGHTS RESERVED

Copyright © 2007, by Alberta Distance Learning Centre, 4601-63 Avenue, Barrhead, Alberta, Canada, T7N 1P4. Additional copies may be obtained from Alberta Distance Learning Centre.

No part of this courseware may be reproduced or transmitted in any form, electronic or mechanical, including photocopying (unless otherwise indicated), recording, or any information storage and retrieval system, without the written permission of Alberta Distance Learning Centre.

Every effort has been made both to provide proper acknowledgement of the original source and to comply with copyright law. If cases are identified where this effort has been unsuccessful, please notify Alberta Distance Learning Centre so that appropriate corrective action can be taken.

**IT IS STRICTLY PROHIBITED TO COPY ANY PART OF THESE MATERIALS UNDER THE TERMS OF A LICENCE FROM A COLLECTIVE OR A LICENSING BODY.**

# Preview/Review Concepts for Grade Five Mathematics

## *TEACHER KEY*



***W2 - Lesson 3:  
Estimating and Taking  
Measurements***

# OBJECTIVES

By the end of this lesson, you should

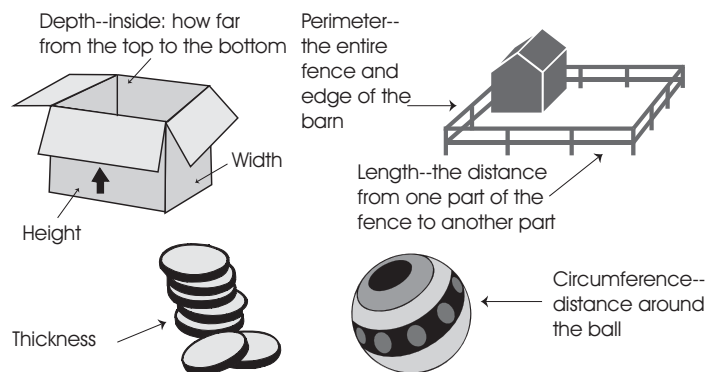
- understand the concepts of measurement including length, width, height, depth, thickness, perimeter, and circumference
- both estimate and measure various items
- use a three-step problem-solving process

## Glossary of Terms

**Circumference:** The perimeter (distance around) of a circle or a round object is the circumference.

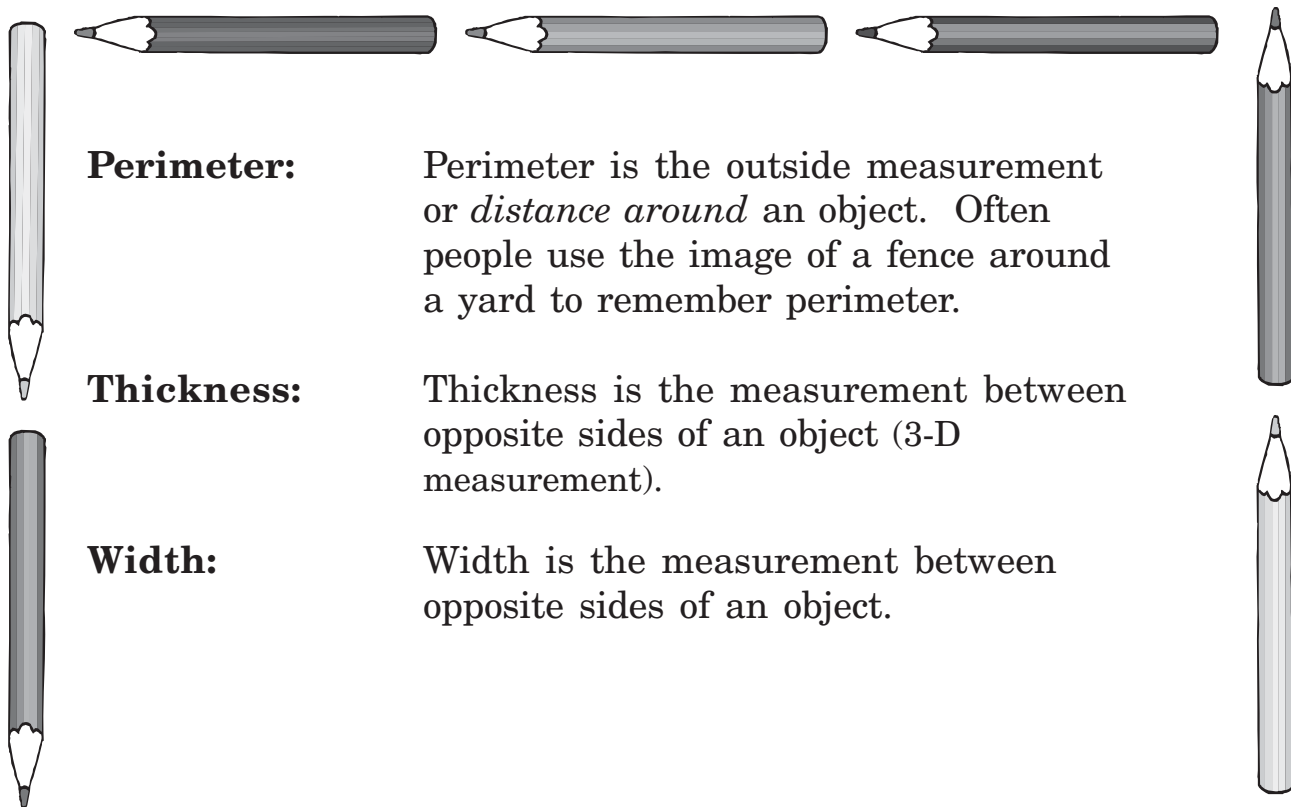
**Depth:** Measurement of the distance from top to bottom or height of an object is its depth. (3-D measurement)

**Estimate:** An estimate is the best *educated* guess. In this unit, you will be estimating various measurements.



**Height:** Height is the measurement of *how high* an object is.

**Length:** Measured in units such as mm, cm, and km, length is often thought of as a measurement of distance or the measurement of *how long* an object is.

**Perimeter:**

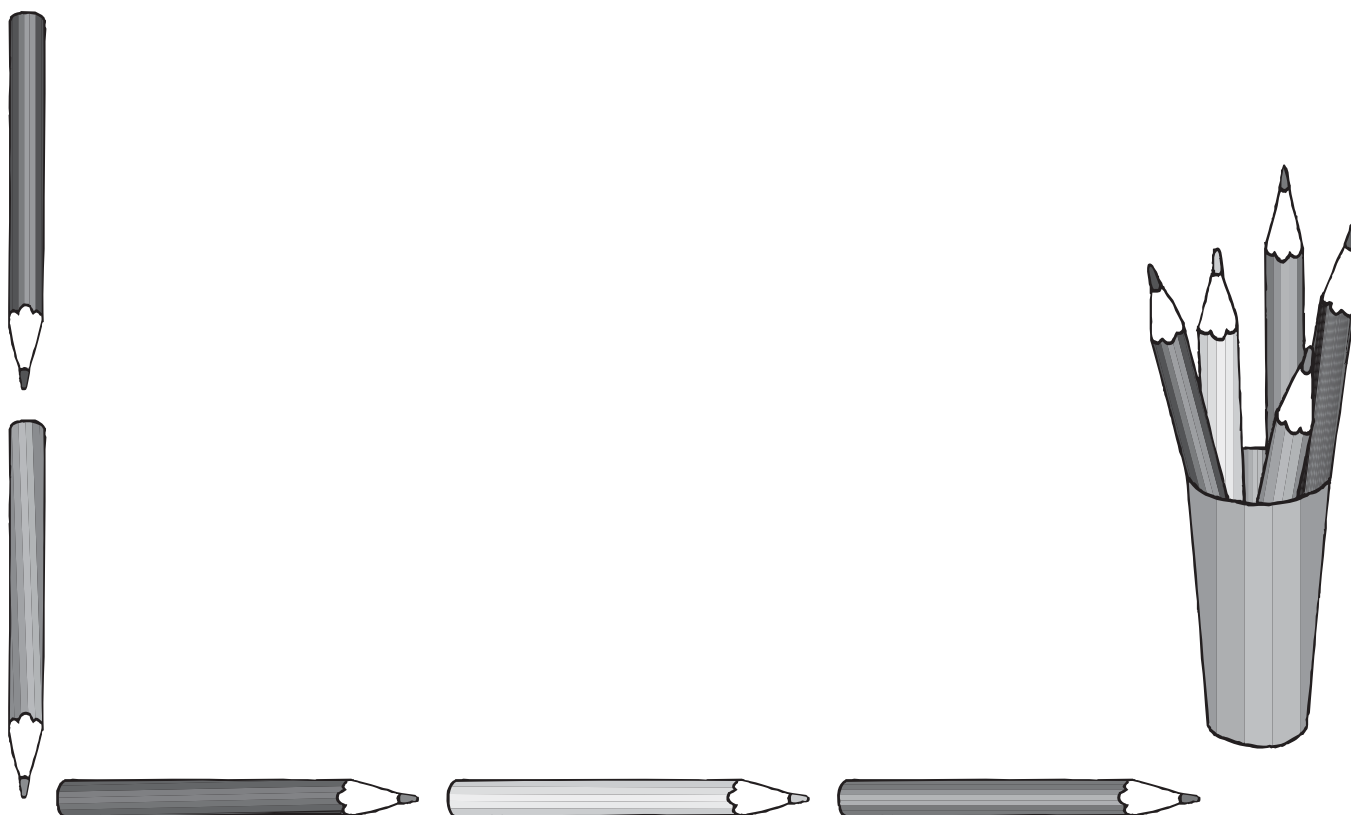
Perimeter is the outside measurement or *distance around* an object. Often people use the image of a fence around a yard to remember perimeter.

**Thickness:**

Thickness is the measurement between opposite sides of an object (3-D measurement).

**Width:**

Width is the measurement between opposite sides of an object.

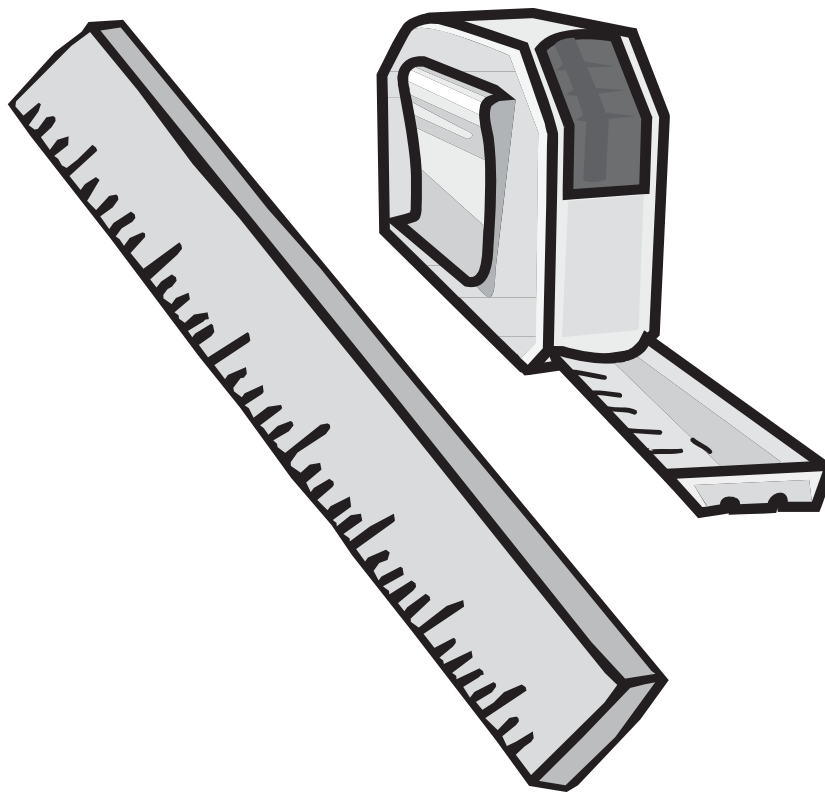


## W2 - Lesson 3: Estimating and Taking Measurements

### Concepts:

- Length, Width, Height, Depth, Thickness, Perimeter, and Circumference
- Choosing the Best Unit of Measurement
- Estimate and Measure Items in the Room

**You need a ruler and measuring tape to complete this lesson.**



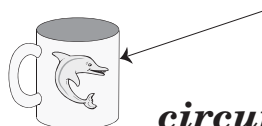
## Length, Width, Height, Depth, Thickness, Perimeter, and Circumference

Half the success of taking measurements is knowing **what** to measure! Use the following terms from the glossary to show what needs to be measured.

<b>circumference</b>	<b>thickness</b>	<b>perimeter</b>
<b>length</b>	<b>depth</b>	<b>width</b>
		<b>height</b>

1. Each term can be used more than once.

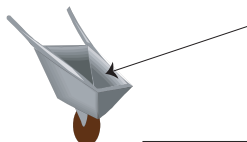
a.



*circumference*

Hint: the distance around the cup

c.



*depth*

Hint: how far down inside the wheelbarrow

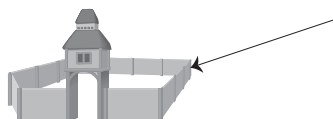
e.



*thickness or length*

Hint: how big is the hose

g.



*perimeter*

Hint: the distance around the outside of the wall

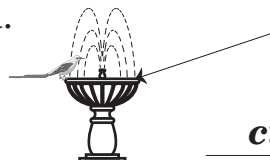
b.



*width or length*

Hint: the side of the barn

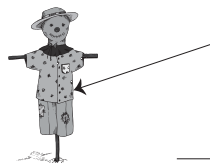
d.



*thickness or circumference*

Hint: the ledge that the bird is standing on

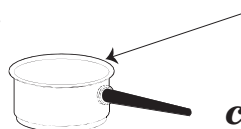
f.



*height*

Hint: how tall is the scarecrow

h.



*circumference*

Hint: the distance around the pot



2. Name 3 things that you would measure using millimetres as the units. *Answers will vary, but they must be realistic.*

a. - thickness of a dime

b. - length of a small insect

c. - amount of rainfall

3. Name 3 things that you would measure using centimetres. *Answers will vary, but they must be realistic.*

a. - height of a dog

b. - length of a pencil

c. - width of a picture frame

4. Name 3 things that you would measure using metres. *Answers will vary, but they must be realistic.*

a. - length of a garden

b. - height of a person

c. - long jump

5. Use the chart on the next page to find answers for the following.

a. How many mm are in 1 cm? 10 mm

b. How many cm are in 1 m? 100 cm

c. How many mm are in 1 km? 1 000 000 mm

## Choosing the Best Unit of Measurement

### Metric Units for Length

mm, cm, dm, m,  
dam, hm, km

millimetres  
centimetres  
decimetres  
metres  
decametres  
hectometres  
kilometres

Units can be compared as follows:

kilometres - Km	hectometres - hm	decametres - dam	metres - m	decimetres - dm	centimetres - cm	millimetres - mm
1 000 m	100 m	10 m	1 m	0.1 m	0.01 m	0.001 m

Each unit is best for measuring a particular **length**. For instance, marathons are measured in kilometres, but pencil leads are measured in mm.

Therefore 1 km = 1 000 m  
and 1 000 mm = 1 m

1. Which unit would you use to measure the following? km  $\longleftrightarrow$  mm

a.



metres

a garden hose

c.



metres

or

centimetres

length of a shovel

metres

e.

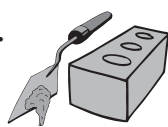


or

centimetres

tape measure

b.



centimetres

or

millimetres

bricks

d.



centimetres

or

millimetres

screws

f.



millimetres

or

centimetres

wrench (the amount the mouth  
can slide open)

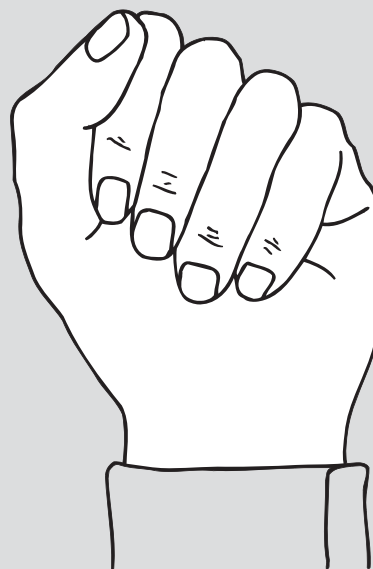
2. Which units would you use to measure the following:

- a. the distance between cities                     *kilometres*
- b. the distance to the moon                     *kilometres*
- c. the distance between houses on a city street                     *metres*

## Estimate and Measure Items in the Room

How do I estimate?

1. Before you can **estimate**, you must know approximately the size of each unit. The easiest way to do this is to measure yourself. For example, how wide is your fingernail? How long is each of your steps as you walk?
2. Guess: The easiest way to estimate is to imagine that you are measuring the object with an imaginary stick. For example, if you need to estimate the length of a wall, you first familiarize yourself with the length of a metre. Next, you start at one end of the wall and mark off one metre just like you would do if you had a metre stick. Continue moving your imaginary metre stick along the wall just as you would a real metre stick.



3. Determining some body measurement is a good starting point.  
Measure the following with a friend:

***Answers will vary (approx only given)***

- a. Length of index finger 9 cm
- b. Width of index fingernail 1 cm
- c. Hand span (tip of thumb to end of pinky while hand is spread as wide as possible) 20 cm
- d. Length from elbow to tip of fingers 33.5 cm
- e. Height from floor to waist 100 cm (1 metre)
- f. Height from floor to chin 154 cm
- g. Width of normal walking pace 80 cm
- h. Length from shoulder to fingertip 70 cm



Estimate the following items in your classroom.

***Answers will vary with circumstances***

- a. width of your desk 1 m      b. height of the classroom door 2.3 m  
c. length of this page 27 cm      d. perimeter of your desk top 180 cm  
e. length of your ruler 30 cm      f. circumference of your pencil 2.5 cm  
g. depth of the bookshelf 30 cm      h. length of the chalkboard 4 m

Measure the following items in your classroom.

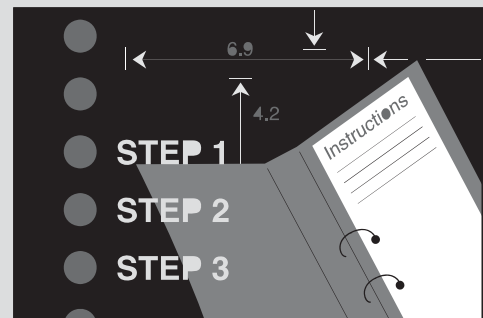
***Answers will vary (accept reasonable)***

- a. width of your desk \_\_\_\_\_      b. height of your desk \_\_\_\_\_  
c. length of this page \_\_\_\_\_      d. perimeter of your desk top \_\_\_\_\_  
e. length of your ruler \_\_\_\_\_      f. circumference of your pencil \_\_\_\_\_  
g. width of the classroom \_\_\_\_\_      h. thickness of your desktop \_\_\_\_\_

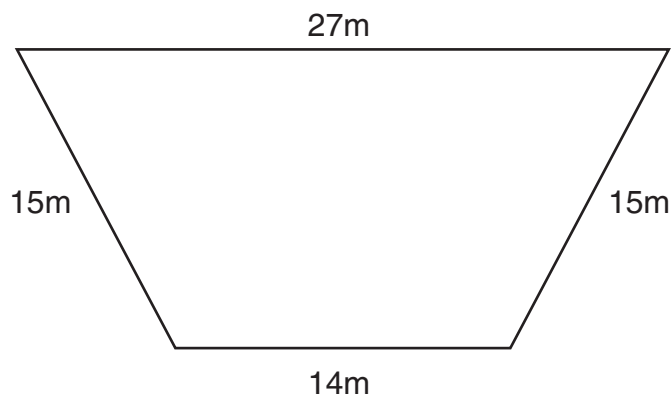


### 3-Step Problem-Solving Process

1. Write the problem in a number question.
2. Solve the problem. **Show your work.**
3. Write a sentence with the answer.



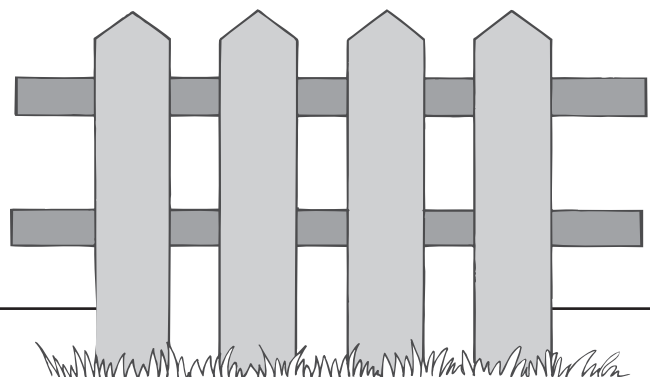
1. Because Mark is building a fence for his yard, he made the following diagram. He needs to know the perimeter of the yard before he can buy the fencing materials. What is the perimeter?



$$P = 27m + 15m + 14m + 15m$$

$$P = 71 \text{ metres}$$

*The perimeter of the yard measures 71 metres*



- 
2. Doug wanted to measure the circumference of a giant beach ball. Unfortunately, he had only a metre stick for measuring. How can Doug measure the circumference and still have a fairly accurate measurement? Think of two ways to go about this task.

***1. Roll the beach ball along the ruler one complete rotation.***

***2. Hold the beach ball, and move the metre stick around the ball.***

- 
3. Estimate the height of the classroom. Give two reasons you chose your answer. Your answers should demonstrate that you have made an educated guess.

***Answers will vary as will reasons.  
(Approx = 3 metres or 10 feet)***

