6.1 Length

Focus: metric measure, Imperial measure, measurement references

Warm Up

1. Solve *without* a calculator.

   a) 14 × 1 = _____

   b) 14 × 10 = _____

   c) 14 × 100 = _____

2. Solve *without* a calculator.

   a) 0.7 × 10 = _____

   b) 0.7 × 100 = _____

   c) 0.7 × 1000 = _____

3. Describe the pattern when multiplying by 10, 100, and 1000.

   _____

   _____

4. Count by 12s.

   _____, _____, _____, _____, _____

   _____, _____, _____, _____, _____

5. Write 2 pairs of numbers that multiply to 12.

   _____ × _____

   _____ × _____

Metric Length

1. Measure each line in the chart. Record the length in centimetres and in millimetres. The first one is done for you.
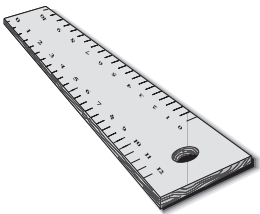
	Length in Centimetres	Length in Millimetres
a) _____	4.3 cm	43 mm
b) _____		
c) _____		
d) _____		
e) _____		
f) _____		
g) _____		
h) _____		

2. Draw lines of the following lengths. Do not use a ruler. Instead, estimate each of the lengths.

Length	Estimation
a) 1 cm	
b) 5 cm	
c) 10 mm	
d) 5 mm	
e) 15 mm	

f) Measure each line in the chart. Label the actual measurement. See how close you were.

- Estimating the length of an item or distance is difficult without something to help you.
- Using a set of **personal references** can help you estimate certain lengths.
- A personal reference for 1 m might be the distance from the end of your nose to the tip of your longest finger when your arm is out-stretched. A personal reference for 1 cm might be the width of your cell phone's key.

> Go to pages 187–188 to write a definition for **personal references** in your own words.

3. Collect 4 personal references that will help you estimate the common lengths in the chart. Describe your personal references in the chart.

Metric Length	Personal Metric Reference
1 cm	
10 cm	
1 m	
2 m	

4. Go to #13 on page 194 and complete the column titled Metric Length.

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5. a) Complete the "Units" column by stating the metric unit that you would use to measure each item.

| Item	Unit	Estimate	Metric Measurement
length of classroom			
height of a light switch			
thickness of a loonie			
diameter of a penny			
width of classroom door			

b) Complete the "Estimate" column by estimating the metric measure of each item. Use the personal references you have gathered.

c) Complete the "Measurement" column by measuring each item using a ruler or measuring tape.
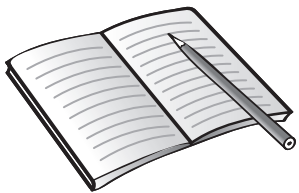
6. a) Which personal reference could you use to estimate the length of this page? _____

b) Explain how you could use this personal reference to make the estimate.

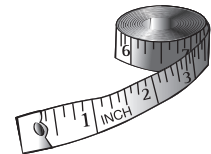_____

_____

Imperial Length

7. a) What is half of a half? _____

b) What is half of your answer for part a)? _____

8. This diagram of an inch is divided into 16 equal parts. Identify each fraction shown with an arrow.

0   1

_____ _____ ___ _____
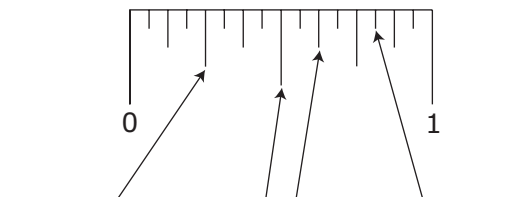
9. Measure each line. Record the length in inches or fractions of an inch.

a) _____

b) _____

c) _____

d) _____

e) ____

f) _____

g) _____

h) _____

Length in Inches

10. Draw lines of the following lengths. Do not use a ruler. Instead, estimate each of the lengths.

There are two short forms for inch: in. and ".

Length	Estimation
a) 1 inch	
b) 2 in.	
c) 3"	
d) $\frac{1}{2}$ inch	
e) $1\frac{1}{2}$ in.	

f) Measure each line in the chart. Label the actual measurement. See how close you were.

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11. a) How many inches are in 1 foot? _____

b) How many inches are in $\frac{1}{2}$ foot? _____

c) How many inches are in 2 feet? _____

d) How many inches are in 3 feet? _____

> In the Imperial system:
> - 12 inches is referred to as 1 _____
> - 3 feet is referred to as 1 _____

- As with metric measurement, it's easier to estimate Imperial lengths using references.
- Good references use parts of the body or common things around you.
- The Imperial system was developed around personal references.

12. Collect 4 personal references that will help you estimate the following Imperial lengths.

Imperial Lengths	Personal Imperial Reference
1 inch	
1 foot	
2 feet	
3 feet	

13. What lengths could you use these body parts to estimate?

Personal Reference	Metric Length	Imperial Length
Your outstretched hand		
The length of your foot		
The length of your arm		
Your height		

Chapter 6

14. a) Complete the "Units" column with the Imperial unit that you would use to measure each item.

Item	Unit	Estimate	Imperial Measurement
Length of classroom			
Height of a light switch			
Thickness of a loonie			
Diameter of a penny			
Width of classroom door			

b) Complete the "Estimate" column by estimating the Imperial measure of each item. Use the personal references you have gathered.

c) Complete the "Imperial Measurement" column by measuring each item using a ruler or measuring tape.

15. a) Which personal references would you use to estimate the height of the classroom in Imperial measurement?

_____

b) Explain how you would use that personal reference.

_____

_____

☑ Check Your Understanding

1. You are planning a special party and want to buy a tablecloth for a large table you have borrowed.

a) Explain which personal references you would use and how you would use them to measure the size of the

cloth you need. _____

_____

_____

_____

b) Would you use metric or Imperial personal references? Explain your choice. _____

Chapter 6