Important Concepts . . .

Preview Review

Mathematics Grade 5 TEACHER KEY

W2 - Lesson 4: Perimeter and Area Measurements

V5-07

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 4 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

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Preview/Review Concepts for Grade Five Mathematics

TEACHER KEY

W2 - Lesson 4: Perimeter and Area Measurements

OBJECTIVES

By the end of this lesson, you should

- calculate perimeter of various shapes
- calculate area of various objects
- use a three-step problem-solving process

Glossary of Terms

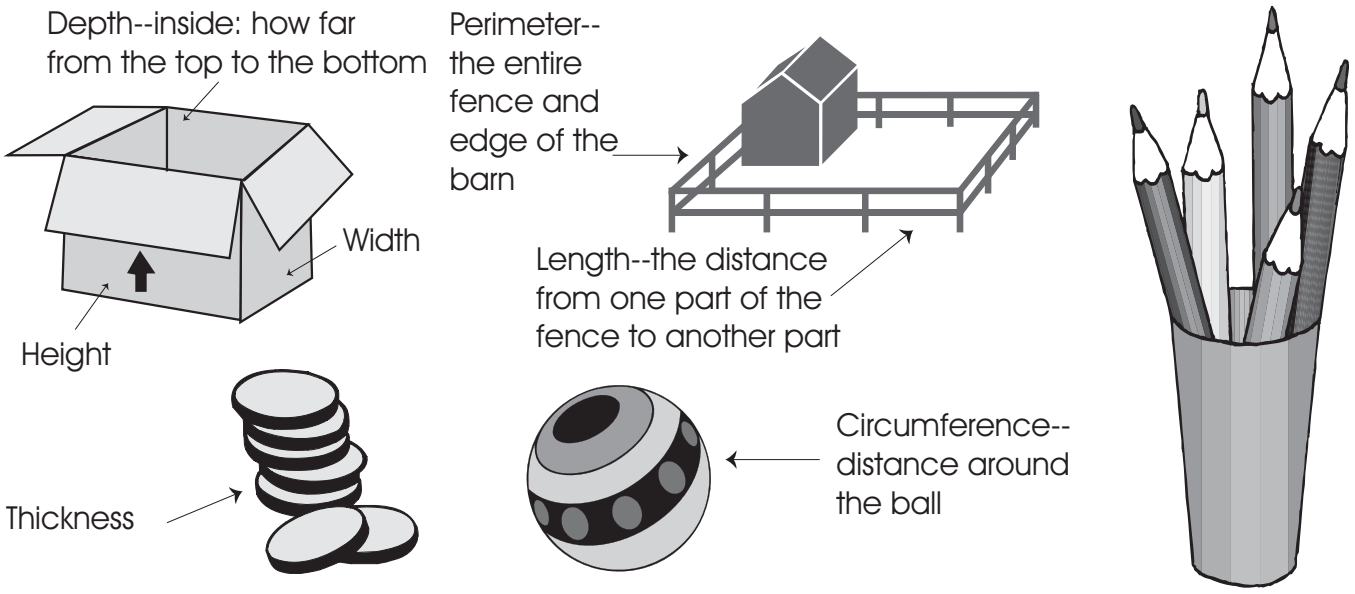
Area: Area is the amount of surface covered by a figure. In a backyard, area is the *grass*. (Units of area are written with a small raised 2.)

Example: You might write 200 m^2 for the area of your yard. This is read as "200 square metres".

Estimate: The best *educated* guess is an estimate. In this unit, we will be estimating various measurements.

Height: The measurement of distance from bottom to top is height.

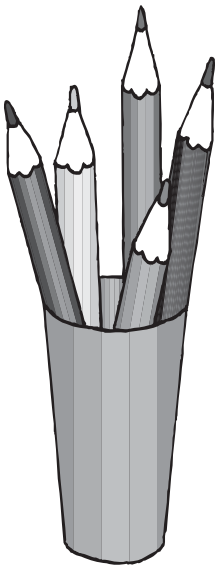
Irregular Shape: Any shape that has at least one side of a different length than the others is irregular. Rectangles are regular because no one side is different.



Length: Measured in units such as mm, cm, and km, length is 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.

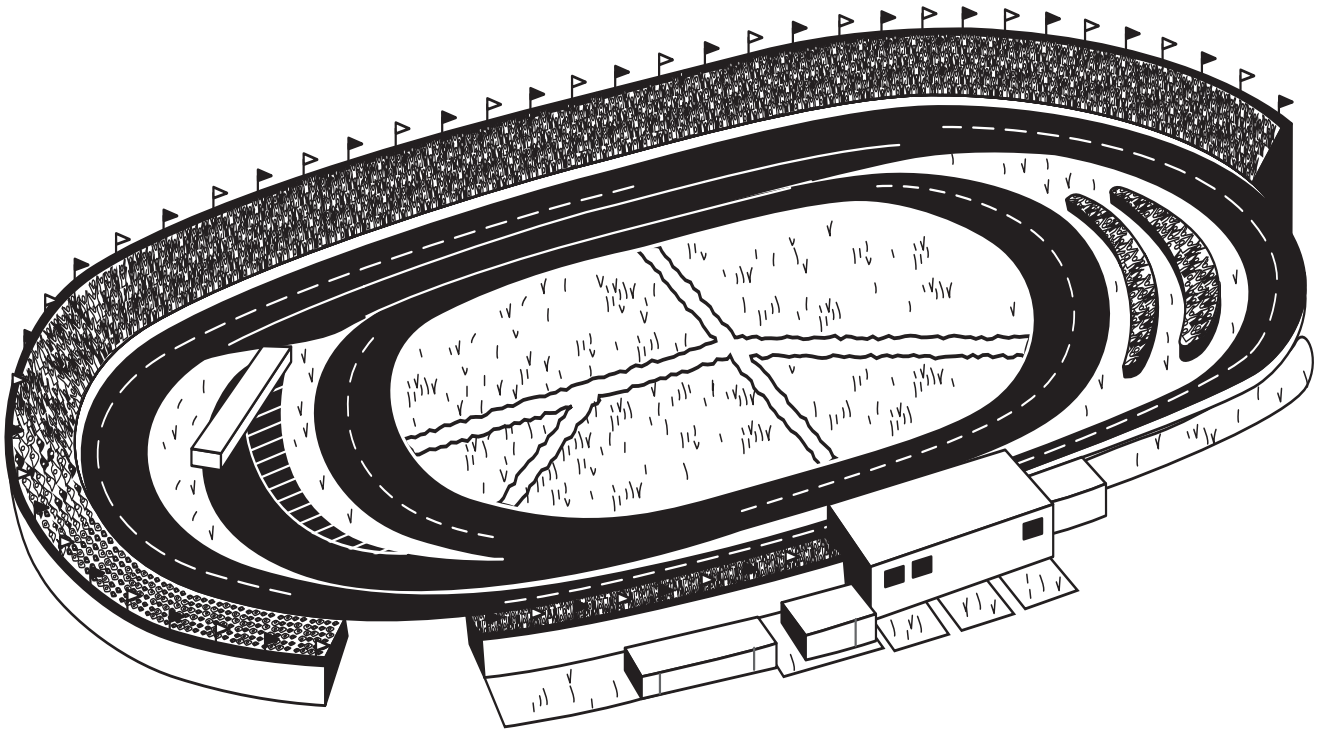
Width: Width is the measurement between opposite sides of an object.

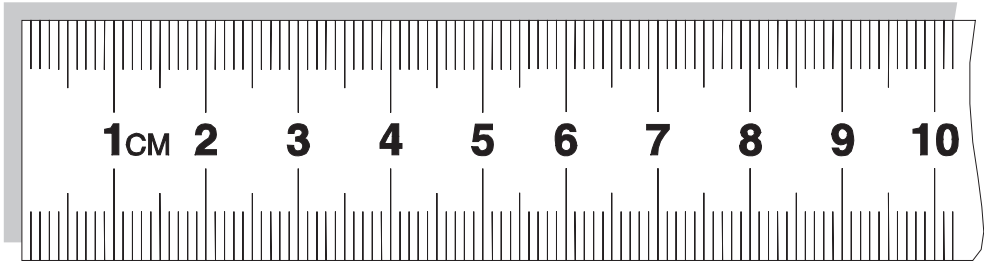


W2 - Lesson 4: Perimeter and Area Measurements

Concepts:

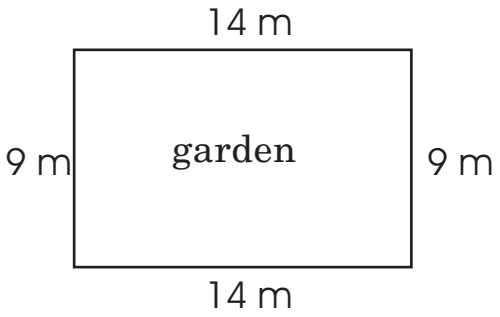
- Calculating Perimeter
- Calculating Area
- Estimating Area and Taking Measurements
- Creating an Object with a Given Area or Perimeter





Calculating 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. If the object is regular and all 4 sides are the same, you can multiply the length of the side by 4 to get the perimeter. If the object is irregular and all 4 sides are different, you must add all 4 sides together.

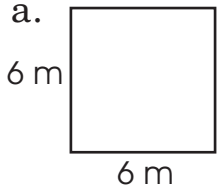


9 m + 14 m + 9 m + 14 m = 46 m

If you walked around the edge of the garden, you would travel 46 m.

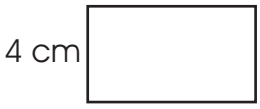
Find the perimeter for each of the following.

a.



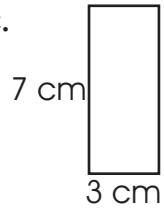
24 m

b.



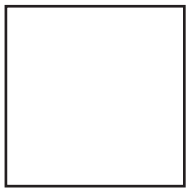
22 cm

c.



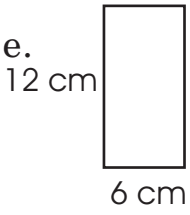
20 cm

d.



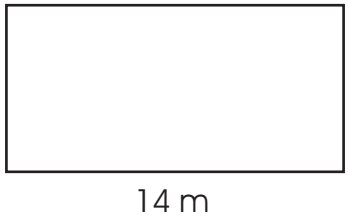
40 m

e.



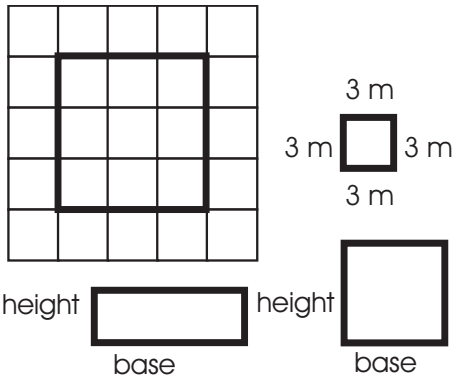
36 cm

f.



42 m

Calculating Area



Area is found in two common ways.

1. Count squares on a grid
2. Use a formula

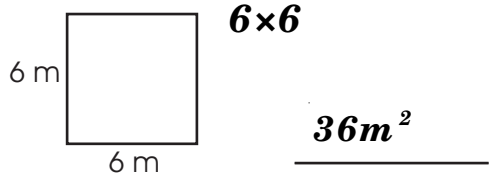
The Area Formula for a Rectangle or Square

Area = base × height

This formula can be used to find the areas of squares and rectangles.

Try the following questions.

1. Show your work and answer for each.



6×6

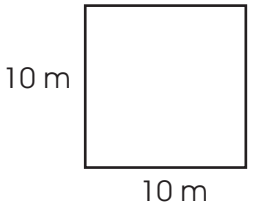
36m²

4×7

28cm²

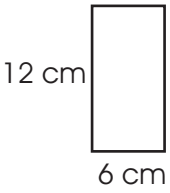
3×7

21cm²



10×10

100m²



6×12

72cm²

7×14

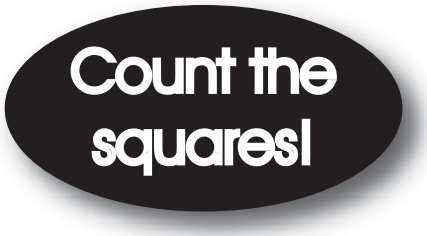
98m²

2. What is the area of a backyard if the lengths of the sides are 5m, 5m, 5m, and 5m? ***25m²***

3. What is the area of a backyard if the lengths of the sides are 10m, 5m, 10m, and 5m?

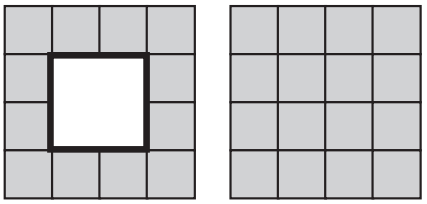
50m²

Estimating Area and Taking Measurements

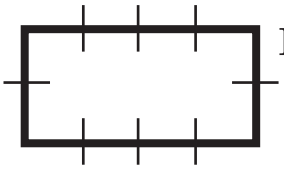


Estimate area and perimeter using grids.

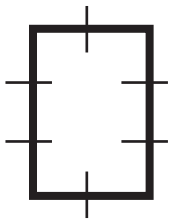
Perimeter and area are easily found on a grid. Just count the squares!



Complete the following questions by estimating either the perimeter or the area as required.

1.  Estimate the area

8 cm²

2.  Estimate the perimeter

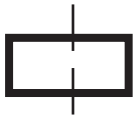
10 cm

3.  Estimate the area

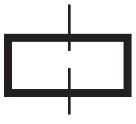
5 cm²

5.  Estimate the perimeter

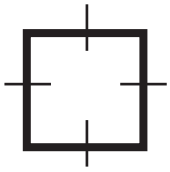
12 cm

5.  Estimate the area

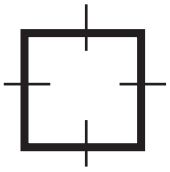
2 cm²

7.  Estimate the perimeter

6 cm

7.  Estimate the area

4 cm²

9.  Estimate the perimeter

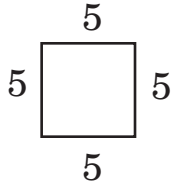
8 cm

Creating an Object with a Given Area or Perimeter

If the **perimeter** is 20, how do you draw the shape?

The easiest way is to create a square with the information. Because a square has four equal sides, you just divide the perimeter by 4 to find out how many squares per side.

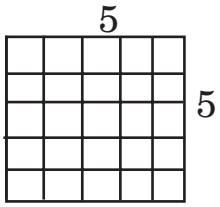
In this case, $20 \div 4 = 5$, or 5 units per side.



If the **area** is 25, how do you draw the shape on the graph?

Again, the easiest way is to create a square with the information. Because the formula for area is base times height, your answer will be $a^2 = 25$.

or $a \times a = 25$
or you can use doubles until you get to 25
$2 \times 2 = 4$, $3 \times 3 = 9$, $4 \times 4 = 16$, $5 \times 5 = 25$
Count the squares; there are 25.



To draw a shape with an area of 25, you can draw a square with 5 squares on each side.

1. Use the graph paper on the following page to create as many different shapes as possible with the following perimeters.

   Perimeters: 12 and 16

   Label your shape by writing the number inside the shape.

2. Create 3 shapes that each have an area of 36.

3. Create 3 shapes that each have an area of 49.
   (For this exercise, there could be much trial and error)

Perimeter of 12

1. 12

2. 12

3. 12

Perimeter of 16

1. 16

2. 16

3. 16

4. 16

Area of 36

1. 36 — 6 × 6 = 36

2. 36 — 4 × 9 = 36

3. 36 — 2 × 18 = 36

Area of 49

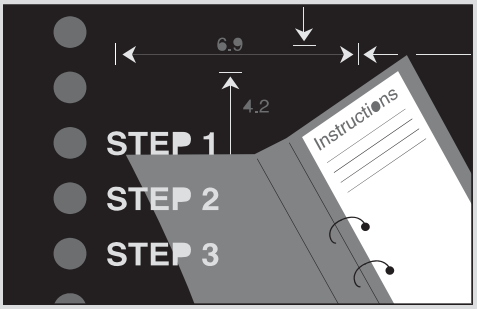
1. 49 — 7 × 7 = 49

2. 49 — 7 × 7 = 49

3. 49 — 7 × 7 = 49

3–Step Problem-Solving Process

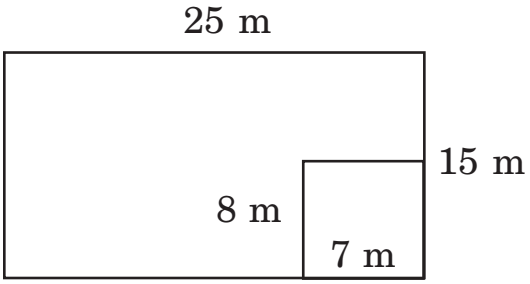
1. Write the problem in a number question.
2. Solve the problem. **Show your work.**
3. Write a sentence with the answer.



Greg will be working on his backyard this summer. He needs to build a fence, plant grass, and rototill an area for a garden. Using the following information, help Greg figure out what he needs.

- Greg's backyard is rectangular in shape.
- The length is 25 m.
- The width is 15 m.
- Greg wants a garden that is 56 m² coverage.

a. Draw a diagram of Greg's backyard including the section set aside for the garden.



b. How long will Greg's fence be? ***80 m***
Fence/Perimeter = 25 + 15 + 25 + 15 = 80 metres in length.

c. How much area will Greg cover in grass? ***319 m²***
Total Area = 15 × 25 = 375 m²
If 56 m² is garden then the rest can be covered by grass 375 - 56 = 319 m².