

Glossary of Terms

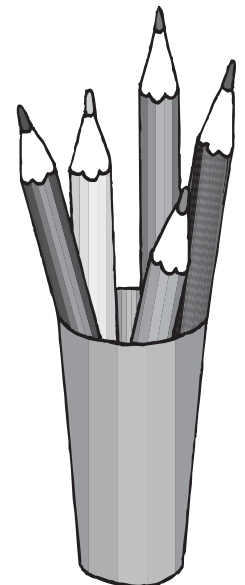
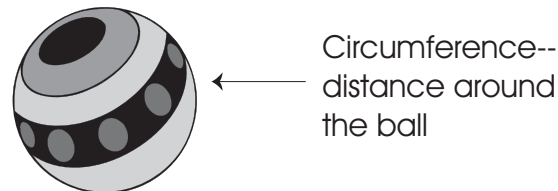
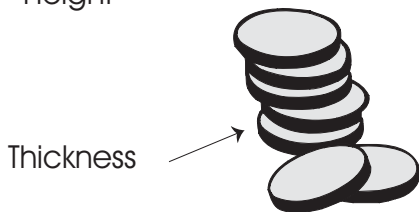
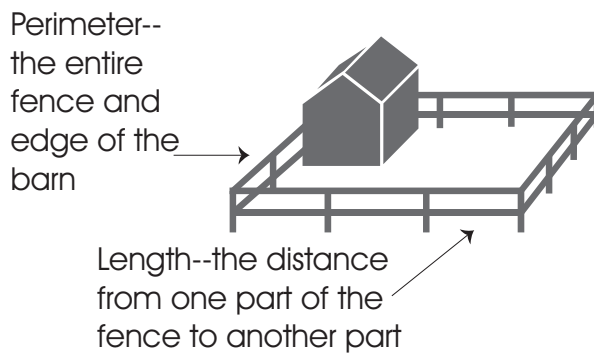
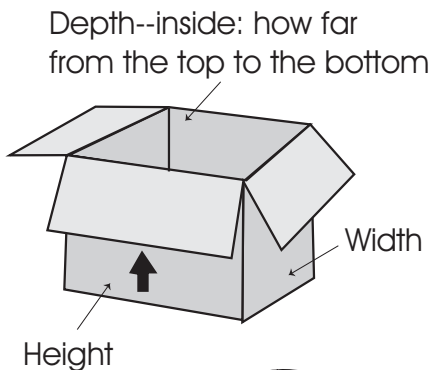
Area: Area is the amount of surface covered by a figure. In a backyard, area is the *grass*. (Units of area are written with a small raised 2.)

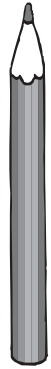
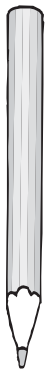
Example: You might write 200 m² for the area of your yard. This is read as “200 square metres”.

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:

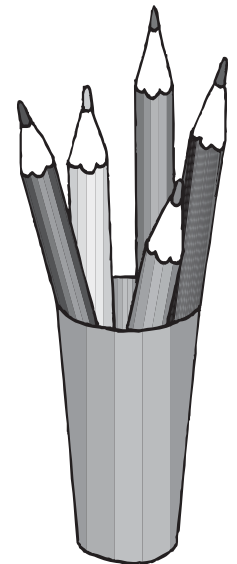
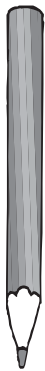
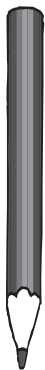
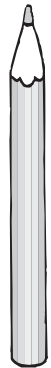
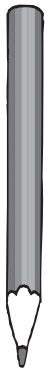
Measured in units such as mm, cm, and km, length is a measurement of distance or the measurement of *how long* an object is.

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:

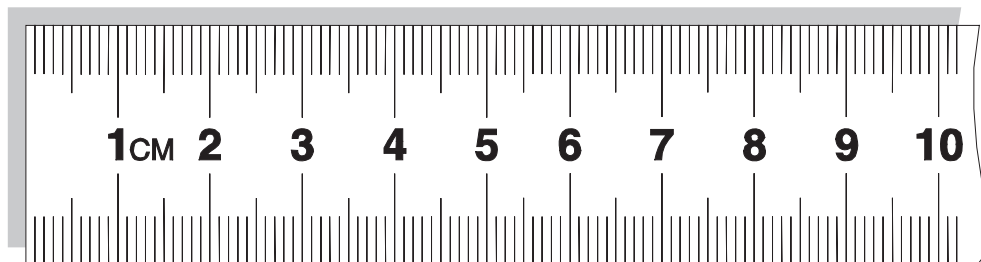
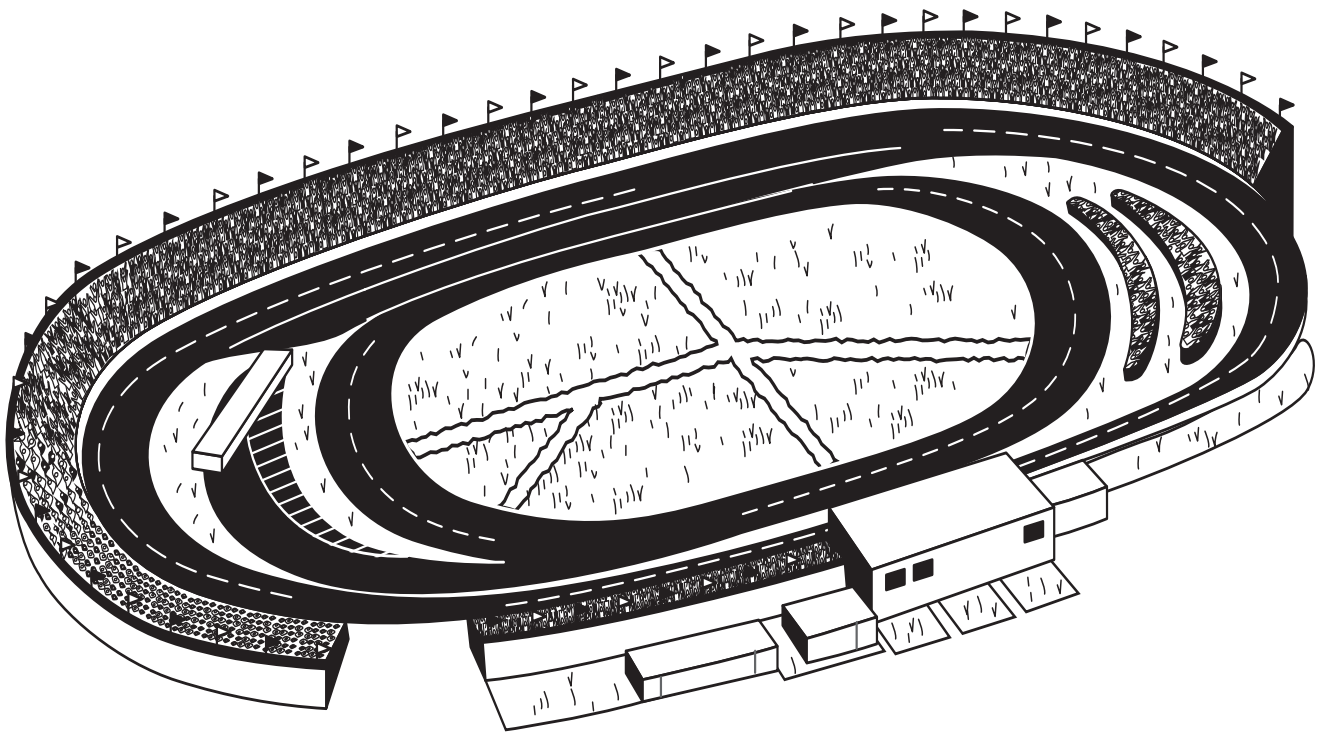
Width is the measurement between opposite sides of an object.



W2 - Lesson 4: Perimeter and Area Measurements

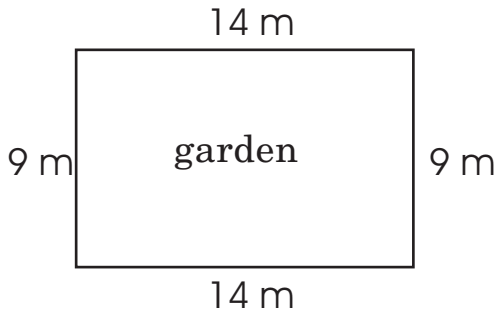
Concepts:

- 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.



$$9\text{ m} + 14\text{ m} + 9\text{ m} + 14\text{ m} = 46\text{ m}$$

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

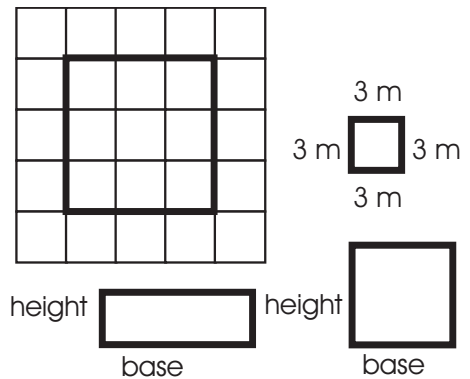
Find the perimeter for each of the following.

<p>a.</p> <p style="text-align: right;"><u>24 m</u></p>	<p>b.</p> <p style="text-align: right;"><u>22 cm</u></p>
<p>c.</p> <p style="text-align: right;"><u>20 cm</u></p>	<p>d.</p> <p style="text-align: right;"><u>40 m</u></p>
<p>e.</p> <p style="text-align: right;"><u>36 cm</u></p>	<p>f.</p> <p style="text-align: right;"><u>42 m</u></p>

Calculating Area

Area is found in two common ways.

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



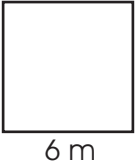


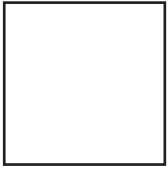


The Area Formula for a Rectangle or Square

$$\text{Area} = \text{base} \times \text{height}$$

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.

 <p style="text-align: right;">6×6</p> <p style="text-align: right;"><u>$36m^2$</u></p>	 <p style="text-align: right;">4×7</p> <p style="text-align: right;"><u>$28cm^2$</u></p>
 <p style="text-align: right;">3×7</p> <p style="text-align: right;"><u>$21cm^2$</u></p>	 <p style="text-align: right;">10×10</p> <p style="text-align: right;"><u>$100m^2$</u></p>
 <p style="text-align: right;">6×12</p> <p style="text-align: right;"><u>$72cm^2$</u></p>	 <p style="text-align: right;">7×14</p> <p style="text-align: right;"><u>$98m^2$</u></p>

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

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

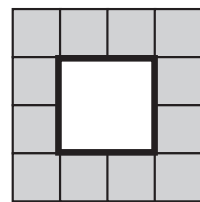
50m²

Estimating Area and Taking Measurements

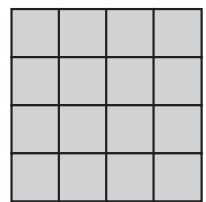


Estimate area and perimeter using grids.

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



Perimeter



Area

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

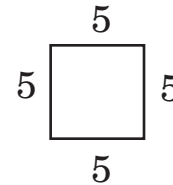
9. Estimate the perimeter
8 cm

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?

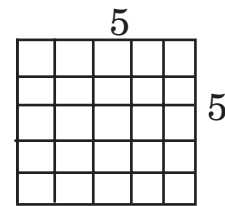
Again, the easiest way is to create a square with the information. Because the formula for area is base times height, your answer will be $a^2 = 25$.

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					Area of 36					
1.	12				1.	36				$6 \times 6 = 36$
2.	12				6					
3.	12					9				
					2.	36				
					4					
Perimeter of 16					Area of 36					
1.	16				3.	18				$4 \times 9 = 36$
2.	16				2	36				
						$2 \times 18 = 36$				
3.	16				Area of 49					
					1.	7				
4.	16				7	49				
					2.	49				
						49				
				3.	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.

●

●

●

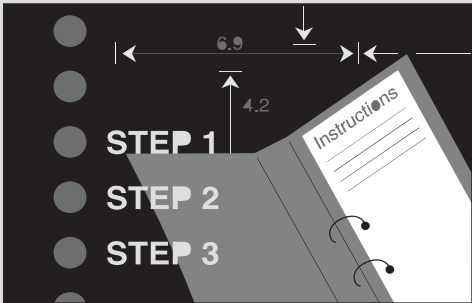
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STEP 1

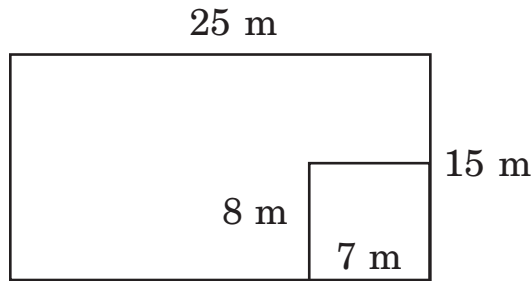
STEP 2

STEP 3



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.

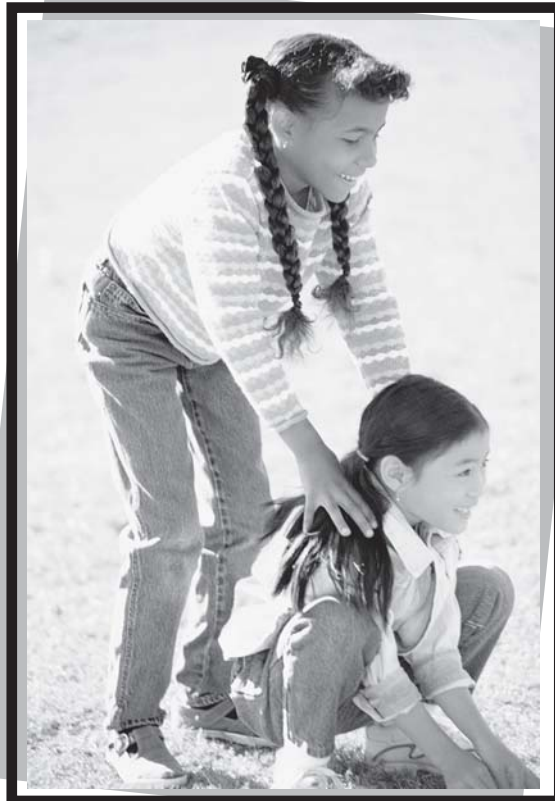
- Greg’s backyard is rectangular in shape.
- The length is 25 m.
- The width is 15 m.
- Greg wants a garden that is 56 m² coverage.
 - a. Draw a diagram of Greg’s backyard including the section set aside for the garden.



- 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.

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