

Important Concepts . . .

Preview Review



Mathematics

Grade 5

**W2 - Lesson 4: Perimeter and Area
Measurements**

Important Concepts of Grade 5 Mathematics

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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
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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

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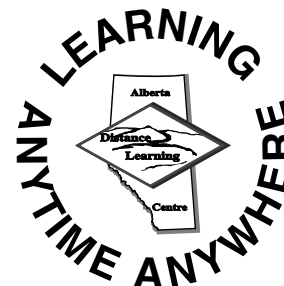
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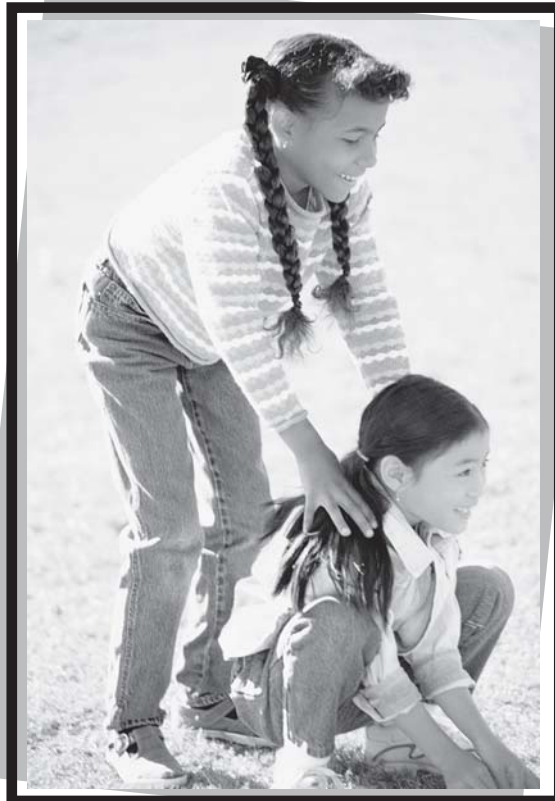
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Preview/Review Concepts for Grade Five Mathematics



***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 m² for the area of your yard. This is read as “200 square metres”.

Estimate:

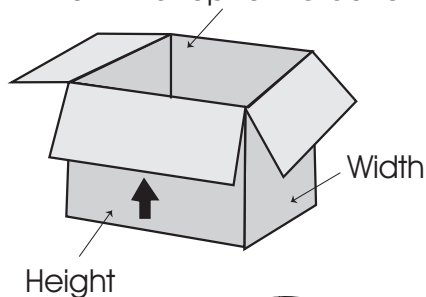
The best *educated* guess is an estimate. In this unit, we will be estimating various measurements.

Height:

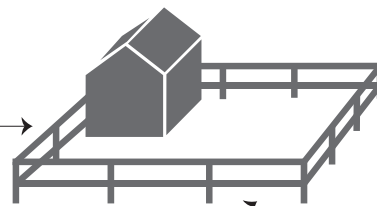
The measurement of distance from bottom to top is height.

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.

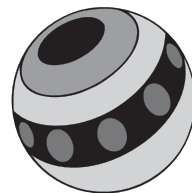
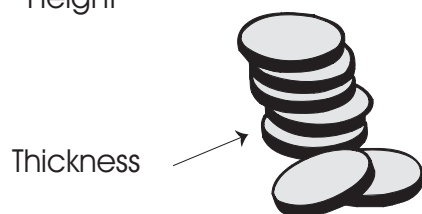
Depth--inside: how far from the top to the bottom



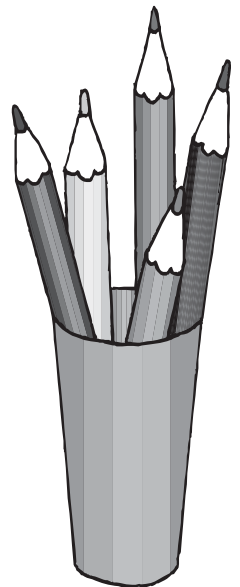
Perimeter--the entire fence and edge of the barn

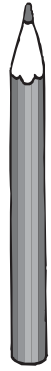
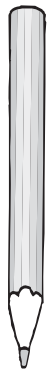


Length--the distance from one part of the fence to another part



Circumference--distance around the ball



**Length:**

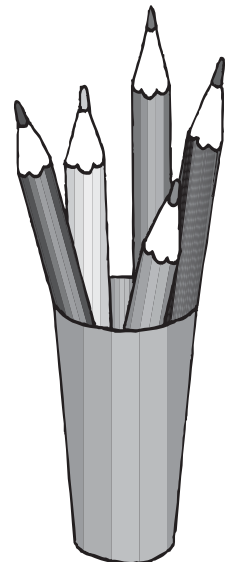
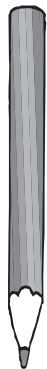
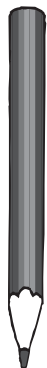
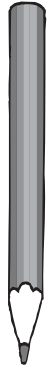
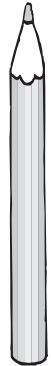
Measured in units such as mm, cm, and km, length is a measurement of distance or the measurement of *how long* an object is.

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:

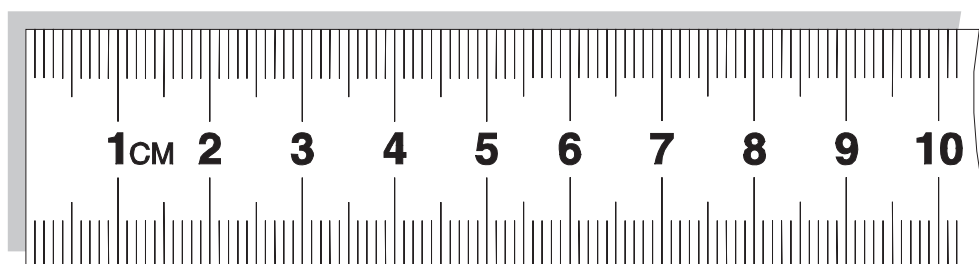
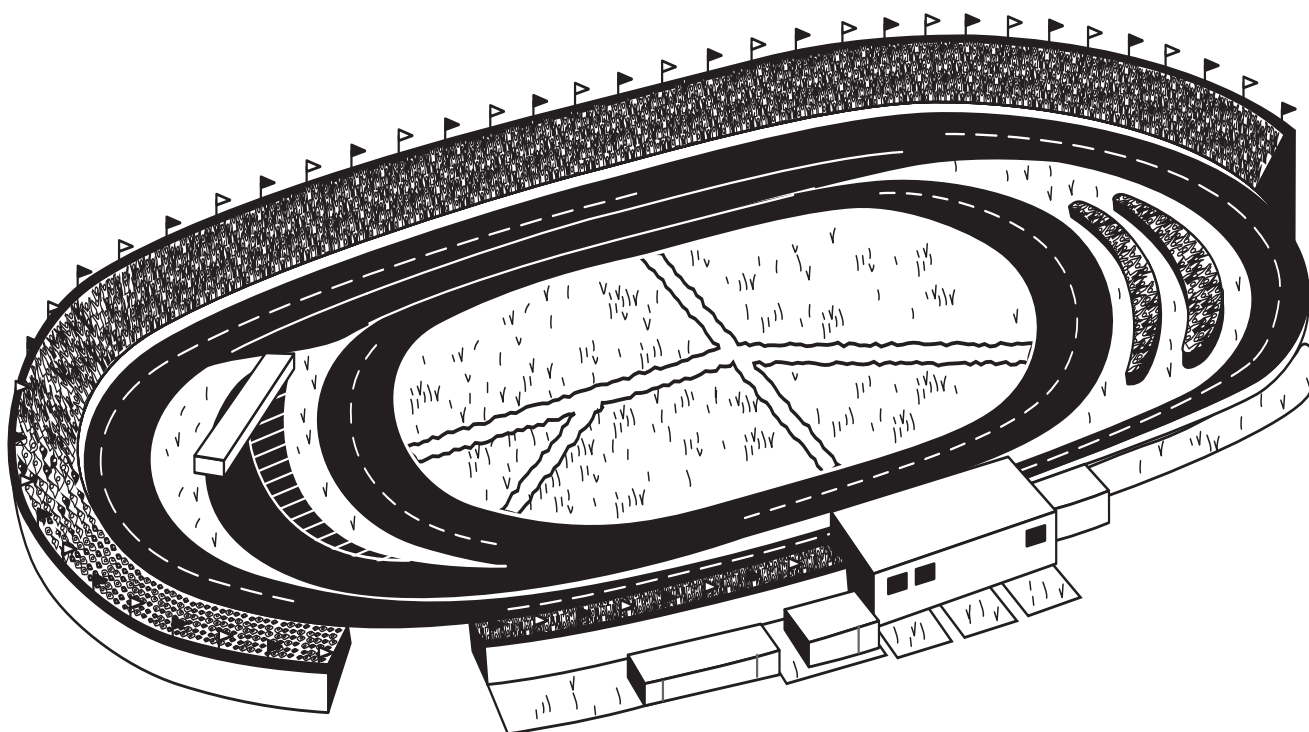
Width is the measurement between opposite sides of an object.



W2 - Lesson 4: Perimeter and Area Measurements

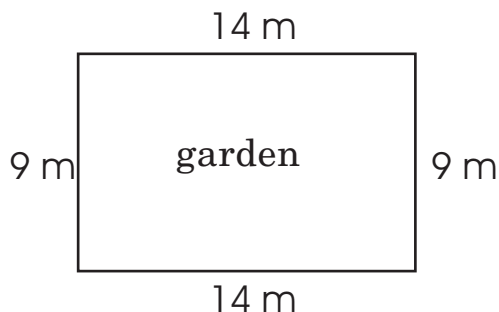
Concepts:

- 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.

a.

6 m



b.

4 cm



c.

7 cm



d.

10 m



e.

12 cm



f.

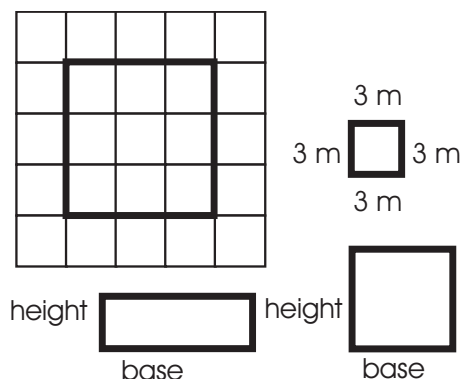
7 m



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

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

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.

<div style="display: flex; align-items: center;"> <div style="text-align: center;"> <div style="border: 1px solid black; width: 60px; height: 60px; margin: 0 auto;"></div> <div style="display: flex; justify-content: space-around; width: 60px;"> 6 m 6 m </div> </div> <div style="flex-grow: 1; border-bottom: 1px solid black; margin-left: 20px;"></div> </div>	<div style="display: flex; align-items: center;"> <div style="text-align: center;"> <div style="border: 1px solid black; width: 80px; height: 40px; margin: 0 auto;"></div> <div style="display: flex; justify-content: space-around; width: 80px;"> 4 cm 7 cm </div> </div> <div style="flex-grow: 1; border-bottom: 1px solid black; margin-left: 20px;"></div> </div>
<div style="display: flex; align-items: center;"> <div style="text-align: center;"> <div style="border: 1px solid black; width: 30px; height: 70px; margin: 0 auto;"></div> <div style="display: flex; justify-content: space-around; width: 30px;"> 7 cm 3 cm </div> </div> <div style="flex-grow: 1; border-bottom: 1px solid black; margin-left: 20px;"></div> </div>	<div style="display: flex; align-items: center;"> <div style="text-align: center;"> <div style="border: 1px solid black; width: 100px; height: 100px; margin: 0 auto;"></div> <div style="display: flex; justify-content: space-around; width: 100px;"> 10 m 10 m </div> </div> <div style="flex-grow: 1; border-bottom: 1px solid black; margin-left: 20px;"></div> </div>
<div style="display: flex; align-items: center;"> <div style="text-align: center;"> <div style="border: 1px solid black; width: 40px; height: 120px; margin: 0 auto;"></div> <div style="display: flex; justify-content: space-around; width: 40px;"> 12 cm 6 cm </div> </div> <div style="flex-grow: 1; border-bottom: 1px solid black; margin-left: 20px;"></div> </div>	<div style="display: flex; align-items: center;"> <div style="text-align: center;"> <div style="border: 1px solid black; width: 180px; height: 70px; margin: 0 auto;"></div> <div style="display: flex; justify-content: space-around; width: 180px;"> 7 m 14 m </div> </div> <div style="flex-grow: 1; border-bottom: 1px solid black; margin-left: 20px;"></div> </div>

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

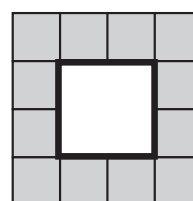
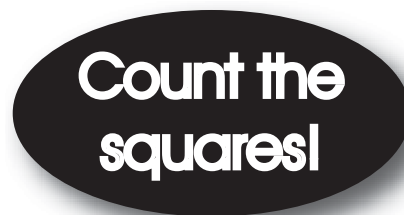
3. What is the area of a backyard if the lengths of the sides are 10m, 5m, 10m, and 5m?
- _____

Estimating Area and Taking Measurements

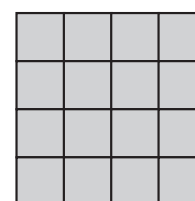
Estimate area and perimeter using grids.

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.



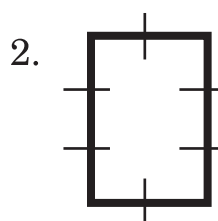
Perimeter



Area



Estimate the area



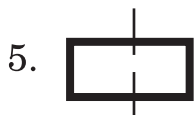
Estimate the perimeter



Estimate the area



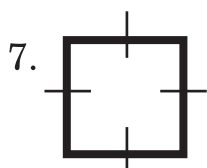
Estimate the perimeter



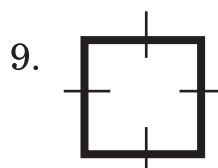
Estimate the area



Estimate the perimeter



Estimate the area



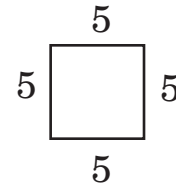
Estimate the perimeter

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?

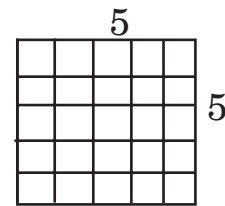
Again, the easiest way is to create a square with the information. Because the formula for area is base times height, your answer will be $a^2 = 25$.

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.

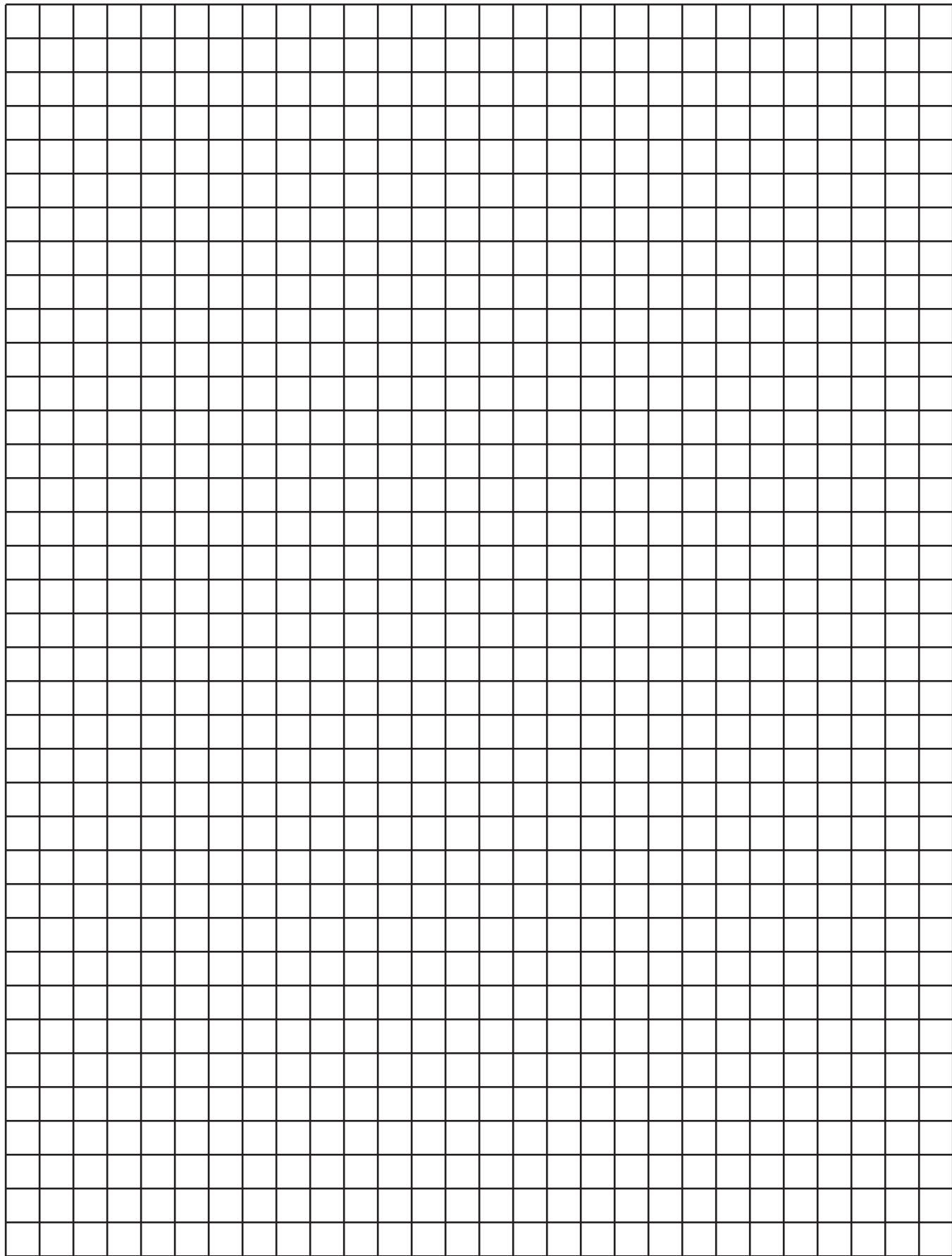
1. Use the graph paper on the following page to create as many different shapes as possible with the following perimeters.

Perimeters: 12 and 16



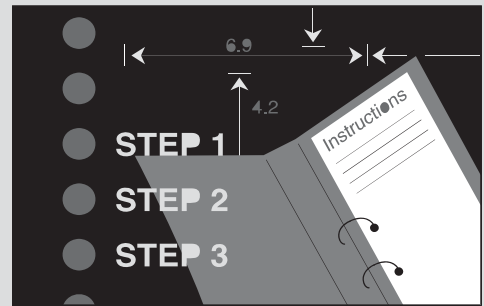
Label your shape by writing the number inside the shape.

2. Create 3 shapes that each have an area of 36.
3. Create 3 shapes that each have an area of 49.



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? _____
 - c. How much area will Greg cover in grass? _____

