

Understand Perimeter



Show What You Know

► Use Nonstandard Units to Measure Length

Use paper clips to measure the object.

1. 



about _____



2. 



about _____



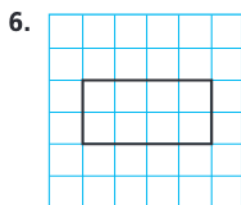
► Add 3 Numbers Write the sum.

3. $2 + 7 + 3 =$ _____

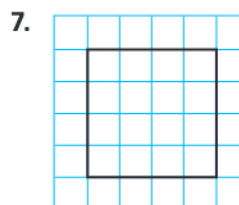
4. $3 + 5 + 2 =$ _____

5. $6 + 1 + 9 =$ _____

► Perimeter on a Grid Count to find the perimeter.



Perimeter = _____ units



Perimeter = _____ units

MATH in the



Julia has a picture frame with side lengths of 12 inches, 9 inches, 12 inches, and 9 inches. She wants to cut and glue one color of ribbon that will fit exactly around the edge. The green ribbon is 42 inches long. The red ribbon is 32 inches long. Find which ribbon she should use to glue around the picture frame.



Name _____

Model Perimeter

I Can model the perimeter of a rectangle and other figures.

Florida's B.E.S.T.

- Geometric Reasoning 3.GR.2.3, 3.GR.2.4
- Mathematical Thinking & Reasoning MTR.1.1, MTR.2.1, MTR.3.1, MTR.4.1, MTR.5.1

Investigate

Perimeter is the distance around a figure.

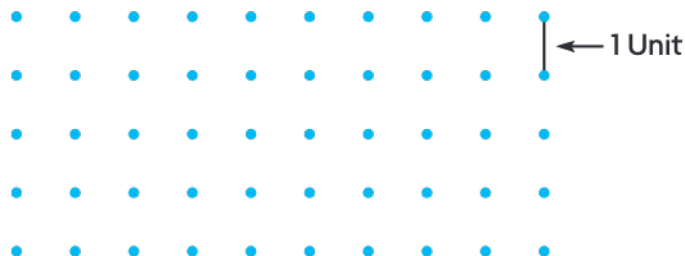
Materials ■ geoboard ■ rubber bands

You can find the perimeter of a rectangle on a geoboard or on dot paper by finding the length of each side. Then add the lengths.

To find each length, count the number of units from the start of each side to the end of each side.

A. Make a rectangle on the geoboard that is 3 units on two sides and 2 units on the other two sides.

B. Draw your rectangle on this dot paper.



C. Write the length next to each side of your rectangle.

D. Add the number of units on each side.

_____ + _____ + _____ + _____ = _____

E. So, the perimeter of the rectangle is _____ units.

Remember

The opposite sides of a rectangle have the same length.

- How would the perimeter of the rectangle change if the length of two of the sides was 4 units instead of 3 units?

Draw Conclusions

- Describe how you would find the perimeter of a rectangle that is 5 units wide and 6 units long.
- Marisol wants to draw a rectangle with a perimeter of 20 units. She makes a rectangle that is 4 units wide and 6 units long. Does her rectangle's perimeter equal 20 units? Explain.
- TR** Is it easier to find the perimeter of a rectangle with all sides of equal length than finding the perimeter of other rectangles? Explain.

Make Connections

You can also use grid paper to find the perimeter of figures and composite figures by counting the number of units on each side. A **composite figure** is made by joining one or more figures.

Start at the arrow and trace the perimeter. Begin counting with 1. Continue counting each unit around the figure until you have counted each unit.



TR 3.1 Complete tasks with mathematical fluency.

If a rectangle has a perimeter of 12 units, how many units wide and how many units long could it be?

A

Perimeter = _____ units

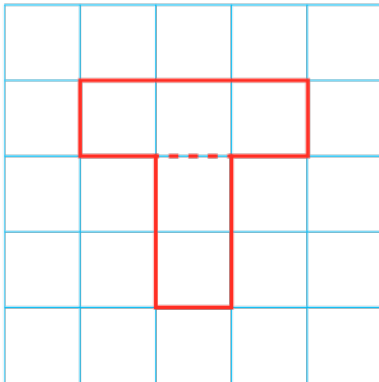
B

Perimeter = _____ units

Share and Show

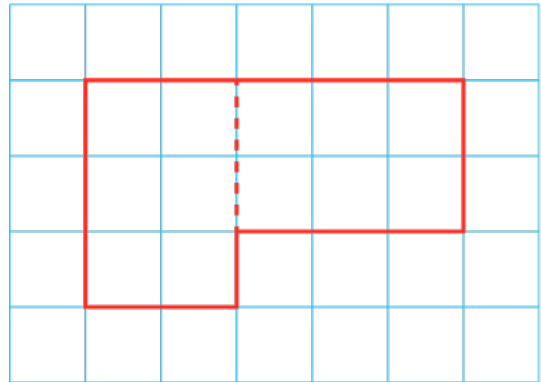
Find the perimeter of the figure or composite figure. Each unit is 1 centimeter.

✓ 1.



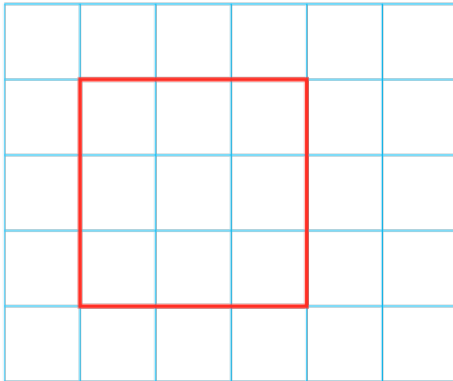
_____ centimeters

✓ 2.



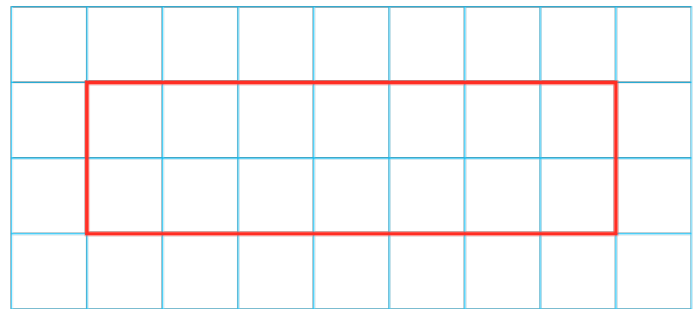
_____ centimeters

3.



_____ centimeters

4.



_____ centimeters

On Your Own

Find the perimeter.

5. a rectangle with four sides that measure 5 centimeters, 6 centimeters, 5 centimeters, and 6 centimeters

_____ centimeters

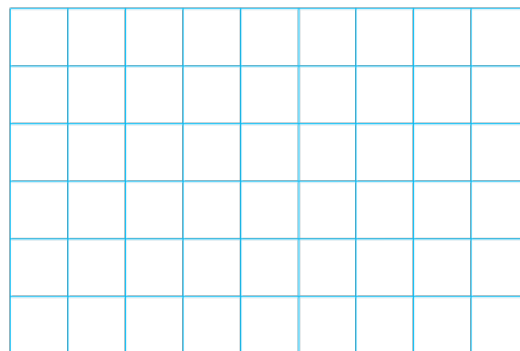
6. a rectangle with four sides that measure 10 inches, 10 inches, 8 inches, and 8 inches

_____ inches

7. Explain how to find the perimeter of a rectangle with a length of 12 inches and a width of 11 inches.

8. Luisa drew a rectangle with a perimeter of 18 centimeters. Select the rectangles that Luisa could have drawn. Mark all that apply. Use the grid to help you.

- Ⓐ 9 centimeters long and 2 centimeters wide
 Ⓑ 6 centimeters long and 3 centimeters wide
 Ⓒ 4 centimeters long and 4 centimeters wide
 Ⓓ 5 centimeters long and 4 centimeters wide
 Ⓔ 7 centimeters long and 2 centimeters wide



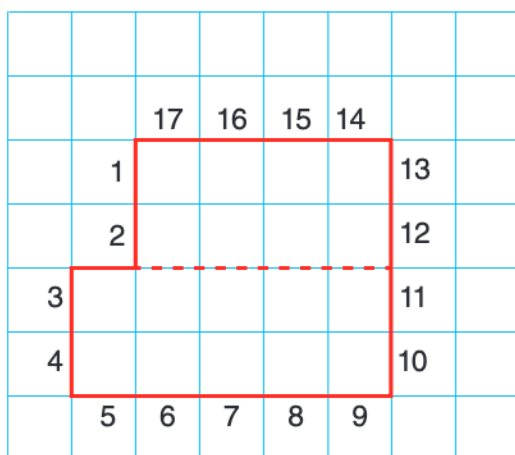
9. **MTR** Kevin is solving perimeter problems. He counts the units and says that the perimeter of this figure is 18 units.



Look at Kevin's solution.

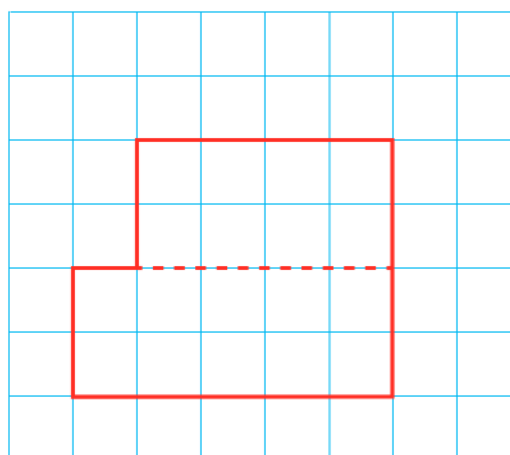
Correct Kevin's error.

A



Perimeter = 17 units

B



Perimeter = ___ units

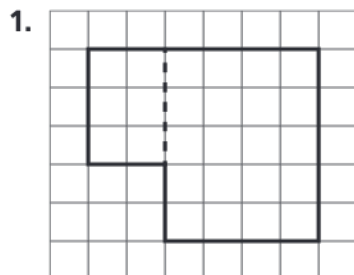
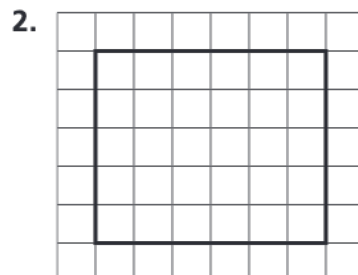
- Describe the error Kevin made. Circle the place in the drawing of Kevin's solution where he made an error.

Model Perimeter

Go Online

Interactive Examples

Find the perimeter of the figure.

22 units

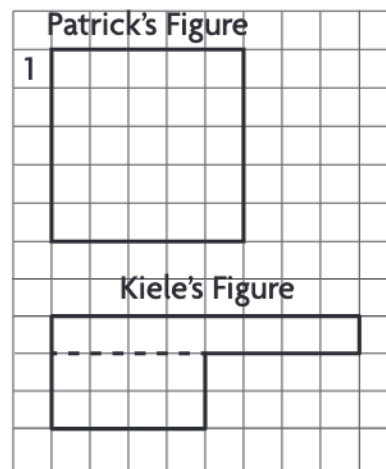
_____ units


Problem Solving

Use the drawing for Problems 3–5. Each unit represents 1 foot.

3. What is the perimeter of Patrick's figure?

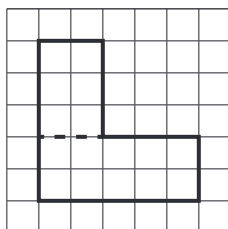
4. How much greater is the perimeter of Kiele's shape than the perimeter of Patrick's figure?



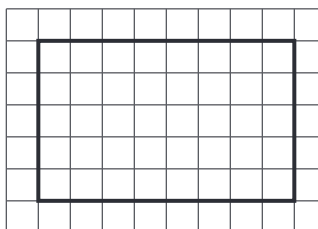
5. **WRITE**  *Math* Describe how to find the perimeter of Kiele's shape.

Lesson Check

6. Find the perimeter of the figure.



7. Find the perimeter of the figure.
Each unit represents 1 meter.



Spiral Review

8. Order the numbers from least to greatest.

3,651; 3,657; 3,561

9. Write another way to group the factors.
Then find the product.

$$(6 \times 4) \times 2$$

10. Compare. Write $<$, $>$, or $=$.

$$9,284 \bigcirc 9,824$$

11. What number comes next?

15, 22, 29, 36, 43, . . .

Name _____

Find Perimeter

I Can find the perimeter of a rectangle by measuring the lengths of the sides and then adding the lengths of the sides.

Florida's B.E.S.T.

- Geometric Reasoning 3.GR.2.3, 3.GR.2.4
- Mathematical Thinking & Reasoning
MTR.1.1, MTR.2.1, MTR.3.1, MTR.4.1,
MTR.5.1, MTR.6.1, MTR.7.1



UNLOCK the Problem



Find the perimeter of the cover of a notebook.

Example Materials ■ inch ruler

STEP 1 Estimate the perimeter of a notebook in inches. Record your estimate. _____ inches

STEP 2 Use an inch ruler to measure the length of each side of the notebook to the nearest inch.

STEP 3 Record and add the lengths of the sides measured to the nearest inch.

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

So, the perimeter of the notebook cover measured to the nearest inch is _____ inches.



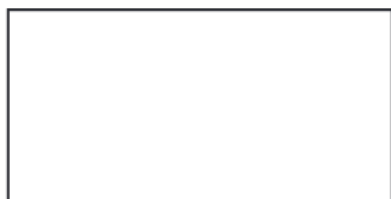
Math Talk

MTR 6.1 Assess reasonableness of solutions.

How does your estimate compare with your measurement?

Try This! Find the perimeter. **Materials** ■ inch ruler ■ centimeter ruler

Use an inch ruler to find the length of each side.

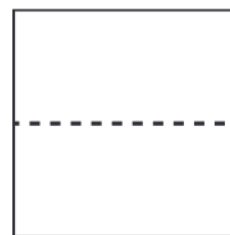


Add the lengths of the sides:

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

The perimeter is _____ inches.

Use a centimeter ruler to find the length of each side of the composite figure.

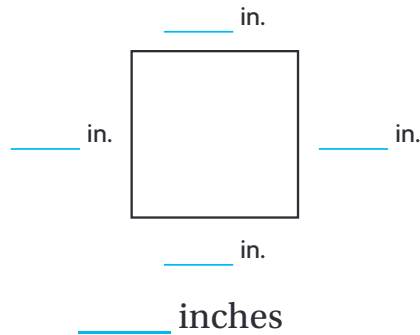


Add the lengths of the sides:

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

The perimeter is _____ centimeters.

1. Find the perimeter of the square in inches.



Think: How long is each side?

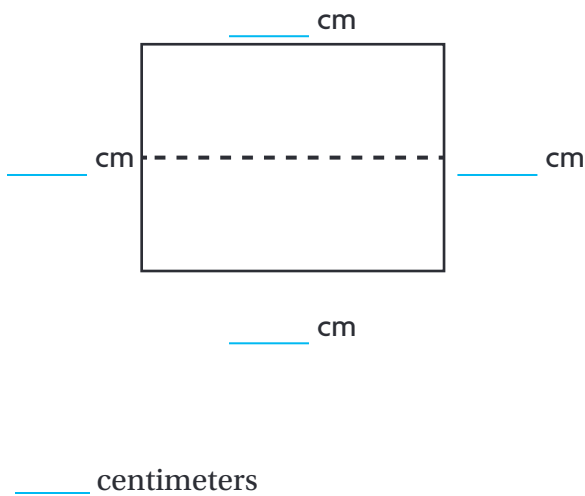


TR 3.1 Complete tasks with mathematical fluency.

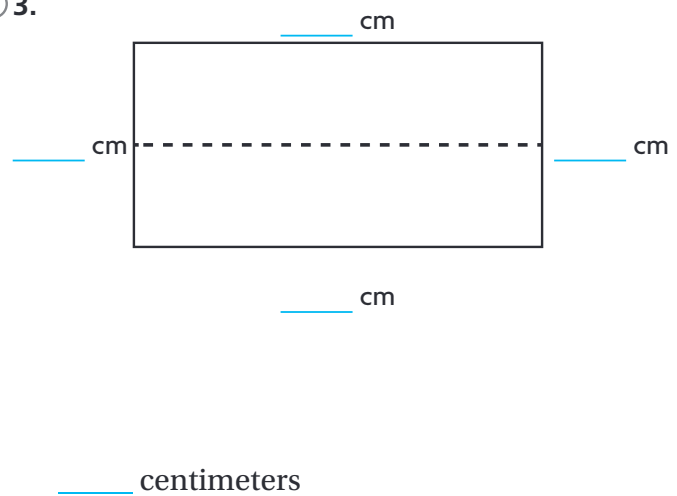
How do you use addition to find the perimeter of a figure?

Use a centimeter ruler to find the perimeter.

- 2.

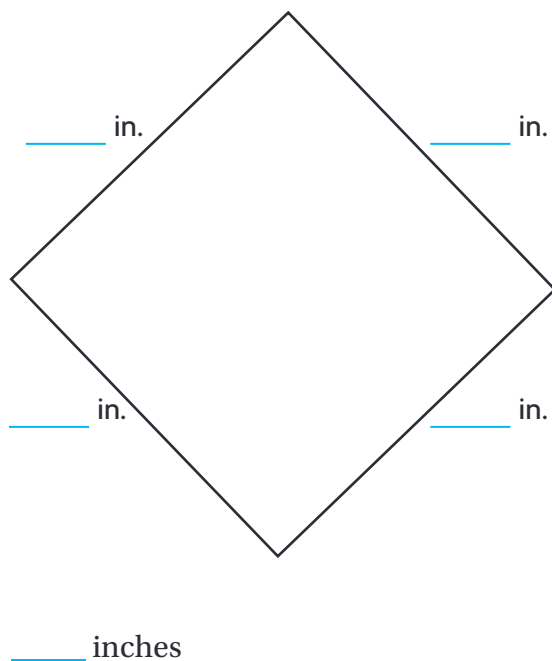


- 3.

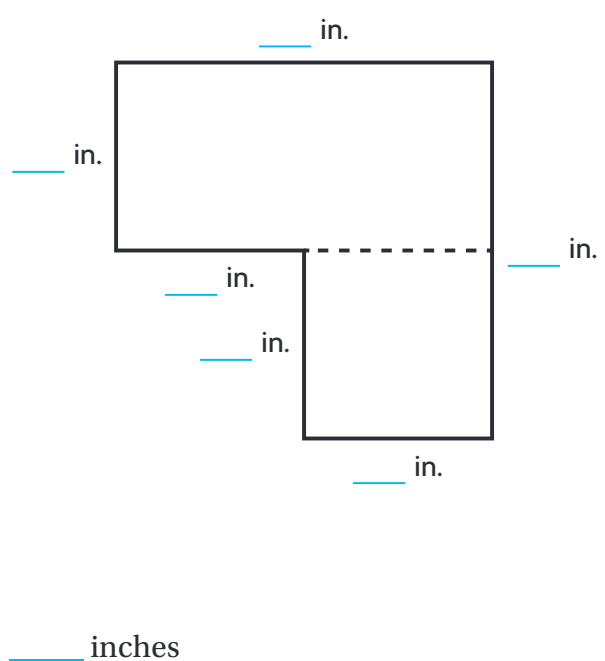


Use an inch ruler to find the perimeter.

- 4.



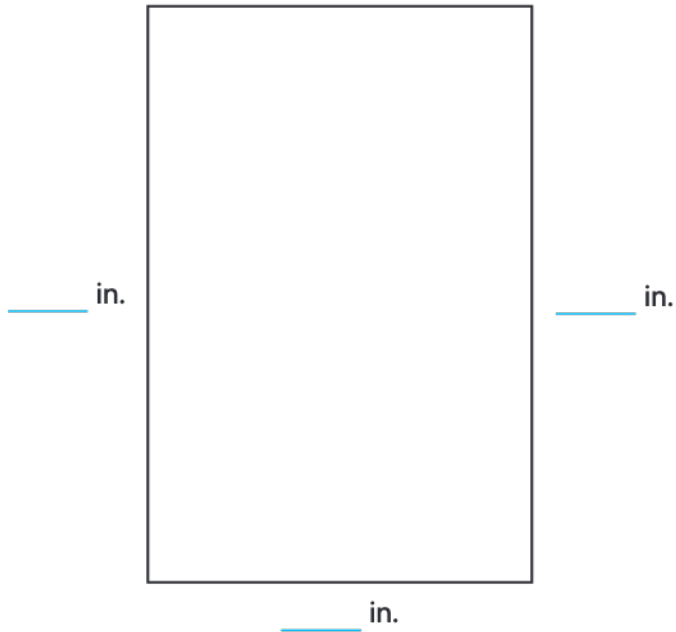
- 5.



On Your Own

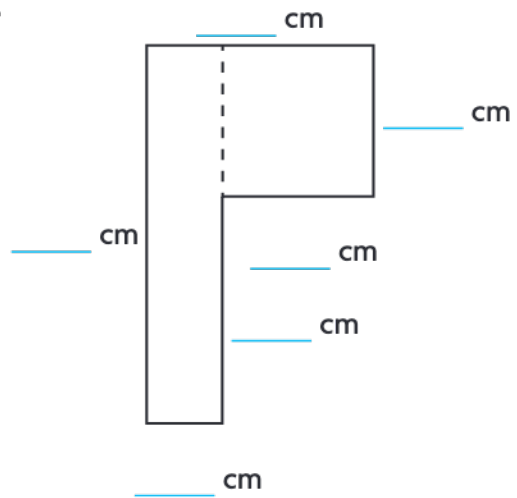
Use a ruler to find the perimeter.

6. _____ in.



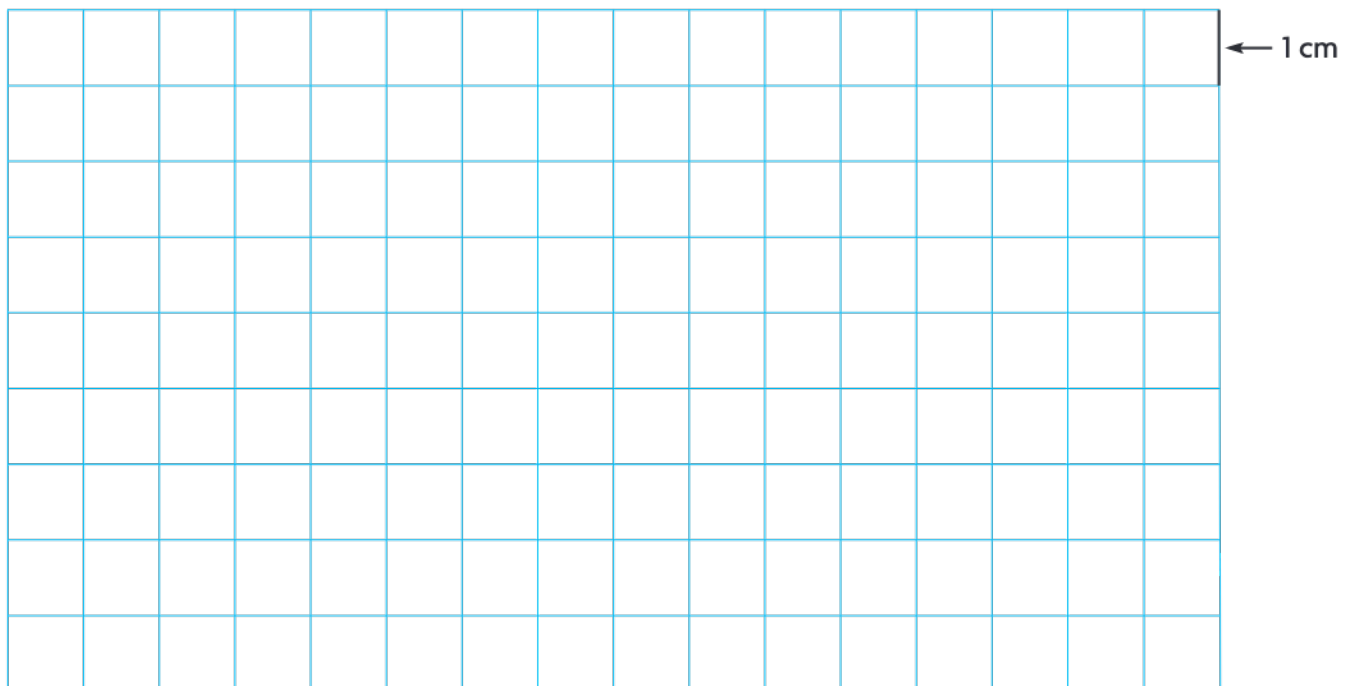
_____ inches

7.



_____ centimeters

8. **MTR** Use the grid paper to draw a rectangle that has a perimeter of 24 centimeters. Label the length of each side.



Problem Solving • Applications

Use the photos for problems 9 and 10.

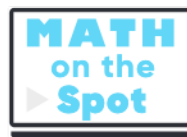
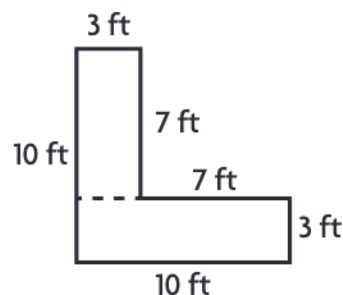
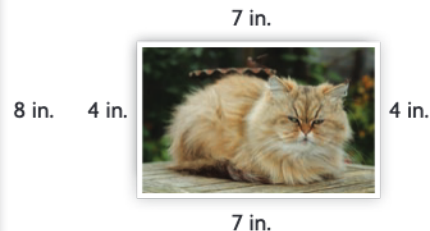
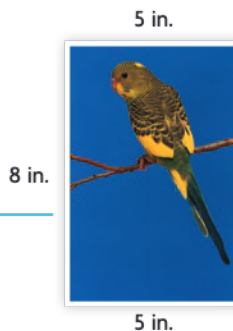
9. Which of the animal photos has a perimeter of 26 inches?

10. How much greater is the perimeter of the bird photo than the perimeter of the cat photo?

11. Arturo's garden has two parts. One part is for flowers and the other part is for vegetables. Describe how to find the perimeter of Arturo's garden.

12. **MTR** Erin is putting a fence around a square garden. Each side of the garden is 3 meters long. The fence costs \$5 for each meter. How much will the fence cost?

13. Use an inch ruler to measure this sticker to the nearest inch. Then write an equation you can use to find its perimeter.

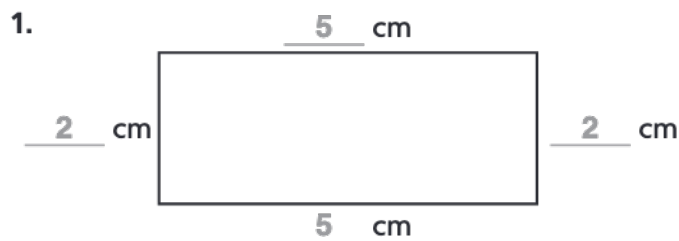


Find Perimeter

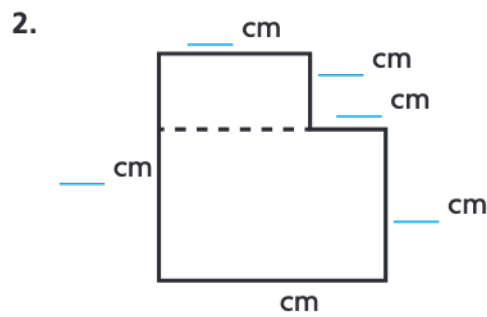
Go Online

Interactive Examples

Use a ruler to find the perimeter.



14 centimeters



_____ centimeters

Problem Solving

Draw a picture to solve problems 3 and 4.

3. Evan has a square sticker that measures 5 inches on each side. What is the perimeter of the sticker?


4. Sophie draws a figure that has 4 sides. Each side is 9 centimeters. What is the perimeter of the figure?

5. Draw a composite figure that has a perimeter of 20 units.

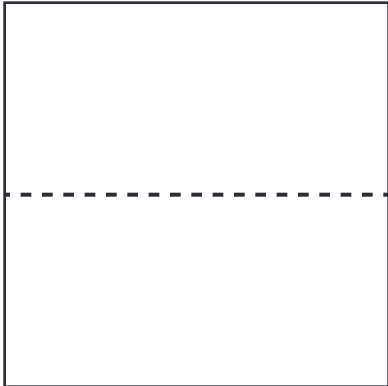
Lesson Check

Use an inch ruler for Problems 1 and 2.

6. Ty cut a label the size of the figure shown. What is the perimeter, in inches, of Ty’s label?

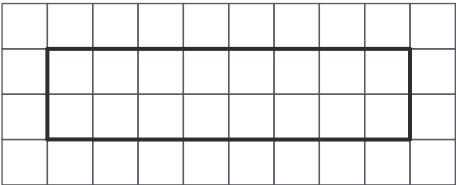


7. Julie drew the composite figure shown. What is the perimeter, in inches, of the figure?



Spiral Review

8. What is the perimeter of the figure below?



9. Four friends want to share 3 sets of scented markers equally. Each set has 12 markers. How many scented markers will each friend get?

10. Find the missing factor.

$6 \times \underline{\hspace{1cm}} = 2,400$

11. Compare. Write $<$, $>$, or $=$.

$5,940 \bigcirc 6,049$

Name _____

Use a Formula to Find Perimeter

I Can use a formula to find the perimeter of a rectangle.

Florida's B.E.S.T.

- Geometric Reasoning 3.GR.2.3
- Mathematical Thinking & Reasoning
MTR.1.1, MTR.2.1, MTR.4.1, MTR.5.1, MTR.7.1



UNLOCK the Problem Real World

Julio is putting a stone border around his rectangular garden. The length of the garden is 7 feet. The width of the garden is 5 feet. How many feet of stone border does Julio need?

Perimeter is the distance around a shape.

To find how many feet of stone border Julio needs, find the perimeter of the garden.

Use addition.

Perimeter of a Rectangle = length + width + length + width

$$7 + 5 + 7 + 5 = \underline{\hspace{2cm}}$$

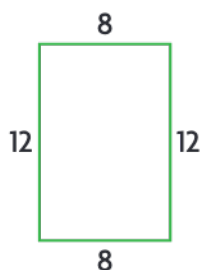
The perimeter is feet.

So, Julio needs feet of stone border.

Use multiplication.

A Find the perimeter of a rectangle.

Perimeter = $(2 \times \text{length}) + (2 \times \text{width})$



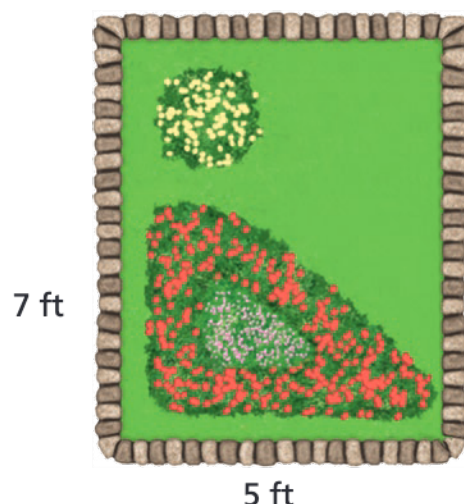
$$\text{Perimeter} = (2 \times 12) + (2 \times 8)$$

$$= 24 + 16$$

$$= \underline{\hspace{2cm}}$$

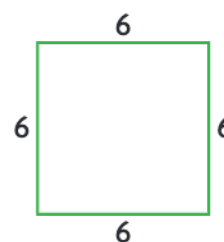
So, the perimeter is units.

- Circle the numbers you will use.
- What are you asked to find?



B Find the perimeter of a square.

Perimeter = $4 \times \text{one side}$



$$\text{Perimeter} = 4 \times 6$$

$$= \underline{\hspace{2cm}}$$

So, the perimeter is units.

Math Talk

MTR 4.1

Engage in discussions on mathematical thinking.

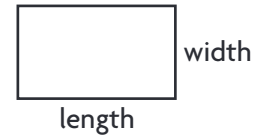
How is using addition and using multiplication to find the perimeter of a rectangle related?

Use a Formula

A **formula** is a mathematical rule. You can use a formula to find perimeter.

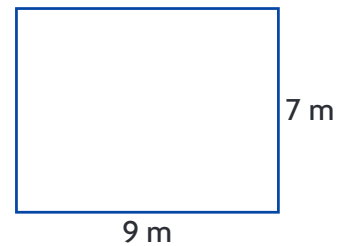
$$P = (2 \times \ell) + (2 \times w)$$

↑
↑
↑
 perimeter length width



Example Find the perimeter of the rectangle.

$$P = (2 \times \ell) + (2 \times w)$$
$$= (2 \times \underline{\hspace{2cm}}) + (2 \times \underline{\hspace{2cm}}) \quad \text{Think: Write the measures you know.}$$
$$= \underline{\hspace{2cm}} + \underline{\hspace{2cm}} \quad \text{Think: Do what is in parentheses first.}$$
$$= \underline{\hspace{2cm}}$$



The perimeter of the rectangle is _____ meters.

1. Can you use the Distributive Property to write the formula $P = (2 \times \ell) + (2 \times w)$ another way? Explain.

Try This! Write a formula for the perimeter of a square.

Use the letter P for perimeter.

Use the letter for the length of a side.

Formula: _____

2. Justify the formula you wrote for the perimeter of a square.

Share and Show

Math
Board

1. Find the perimeter of the rectangle.

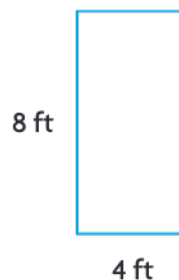
$$P = (2 \times \ell) + (2 \times \underline{\hspace{1cm}})$$

$$= (2 \times \underline{\hspace{1cm}}) + (2 \times \underline{\hspace{1cm}})$$

$$= \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$

$$= \underline{\hspace{1cm}}$$

The perimeter is _____ feet.



Formulas for Perimeter

Rectangle:

$$P = (2 \times \ell) + (2 \times w) \text{ or}$$

$$P = 2 \times (\ell + w)$$

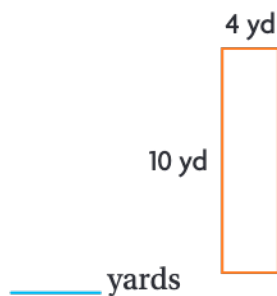
Square:

$$P = 4 \times s$$

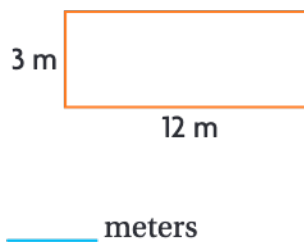
Math
TalkMTR
7.1Apply mathematics to
real-world contexts.What does *yd* stand for?
What does *m* stand for?

Find the perimeter of the rectangle or square.

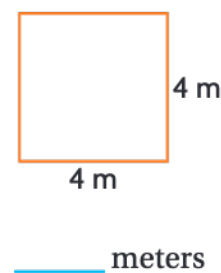
2.



3.



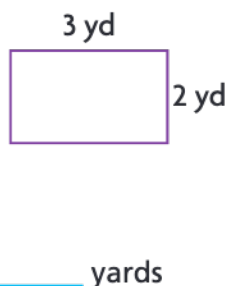
4.

Math
TalkMTR
5.1Use patterns and
structure.Can you use the formula
 $P = (2 \times \ell) + (2 \times w)$ to
find the perimeter of a
square? Explain.

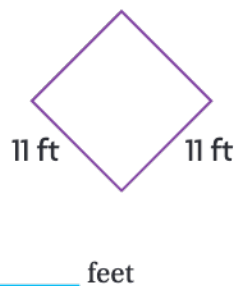
On Your Own

Find the perimeter of the rectangle or square.

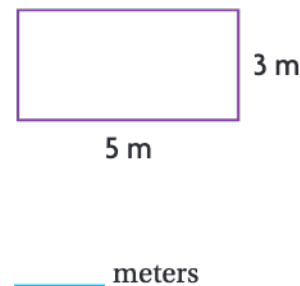
5.



6.



7.



8. Robert wants to put lights around the front of his house. The house is 12 yards long and 7 yards high. How many yards of lights does he need?

9. What is the perimeter of a square with a side length of 10 meters?

Problem Solving · Applications



10. **TR** Alejandra plans to sew fringe on a scarf. The scarf is shaped like a rectangle. The length of the scarf is 4 feet. The width is 2 feet. How much fringe does Alejandra need?

a. Draw a picture of the scarf, and label the given measurements on your drawing.

b. What do you need to find?

c. What formula will you use?

d. Use the formula to show the steps you use to solve the problem.

e. Complete.

The length of the scarf is _____ feet.

The width is _____ feet.

So, the perimeter is $(\text{ } \times \text{ }) +$

$(\text{ } \times \text{ }) = \text{ }$ feet.

f. Alejandra needs _____ of fringe.

11. Marco is making a frame for a picture. The picture frame will be 8 inches long and 10 inches wide. What is the perimeter of the picture frame?

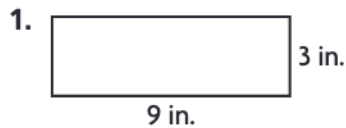
12. Akira is building a sandbox that is 5 yards long and 3 yards wide. What is the perimeter of the sandbox? Show your work.

Use a Formula to Find Perimeter

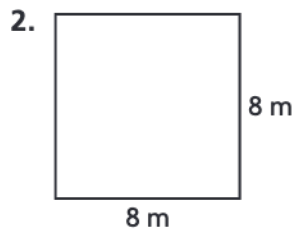
Go Online

Interactive Examples

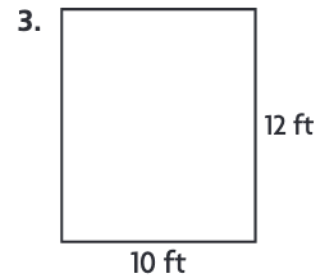
Use a formula to find the perimeter of the rectangle or square.



$$\begin{aligned} P &= (2 \times \ell) + (2 \times w) \\ &= (2 \times 9) + (2 \times 3) \\ &= 18 + 6 \\ &= 24 \end{aligned}$$

24 inches

_____ meters



_____ feet

Problem Solving

4. Troy is making a flag shaped like a square. Each side measures 12 inches. He wants to add ribbon along the edges. He has 36 inches of ribbon. Does he have enough ribbon? Explain.

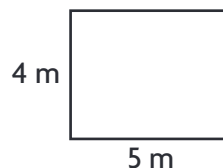
5. The width of the Ochoa Community Pool is 6 yards. The length is 12 yards. What is the perimeter of the pool?

6.  **WRITE** *Math* Viviana says the perimeter of her bedroom is 46 feet. Her room is 11 feet long and 12 feet wide. Is she right? Explain.

Lesson Check

7. What is the perimeter of a square window with sides 3 feet long?

8. What is the perimeter of the rectangle?



Spiral Review

9. Round to the nearest hundred.

372

10. Find the unknown number.

$$m \times 12 = 84$$

$m =$

11. Find the unknown number.

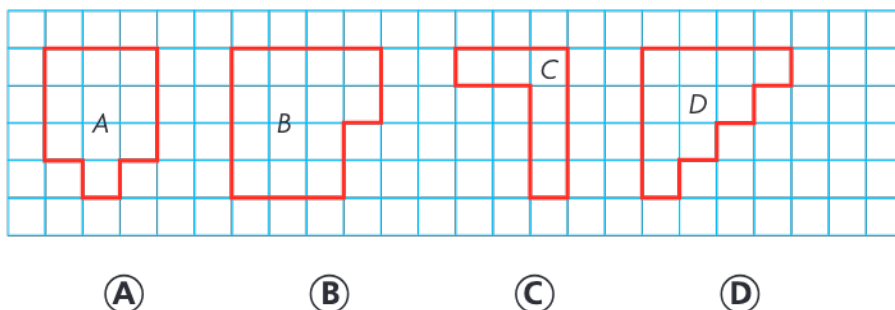
$$v \div 11 = 9$$

$v =$

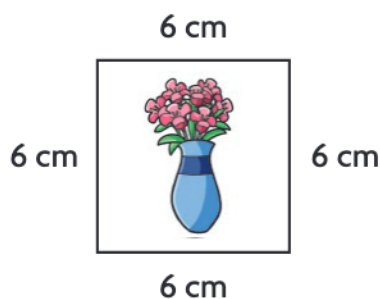
12. Zahara scores 24 points during a basketball game. Two of her baskets are 3-point shots. She scores the rest of her points with 2-point baskets. How many 2-point baskets does Zahara score during the game?

Chapter Review

1. Find the perimeter of each figure on the grid. Identify the figures that have a perimeter of 14 units. Mark all that apply.

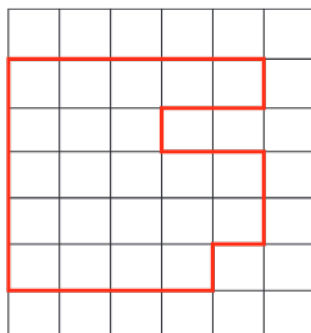


2. Kim wants to put trim around a picture she drew. How many centimeters of trim does Kim need for the perimeter of the picture?



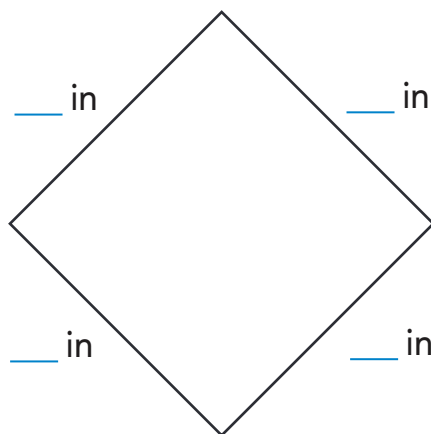
_____ centimeters

3. Terrence drew this figure on grid paper. What is the perimeter of the figure?



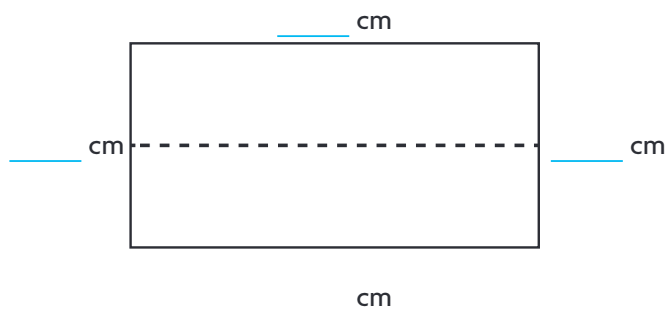
_____ units

4. Use an inch ruler to find the length of each side. Then find perimeter.



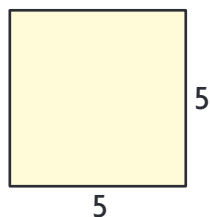
 inches

5. Use a centimeter ruler to find the length of each side. Then find the perimeter.



 centimeters

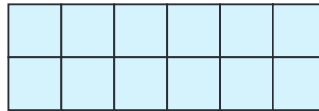
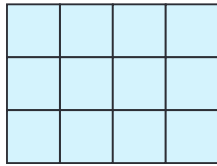
6. Write a formula that can be used to find the perimeter of the square shown. Then find the perimeter.



Name _____

7. Tomas drew two rectangles on grid paper.

Circle the words that make the sentence true.



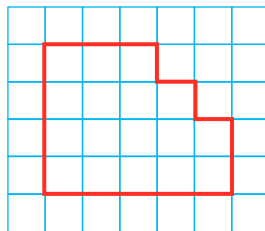
B

Rectangle *A* has a perimeter that is

less than
the same as
greater than

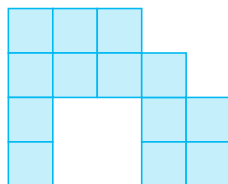
the perimeter of rectangle *B*.

8. Yuji drew this figure on grid paper. What is the perimeter of the figure?



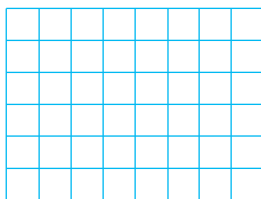
_____ units

9. What is the perimeter of the figure shown? Each square represents 1 square meter.

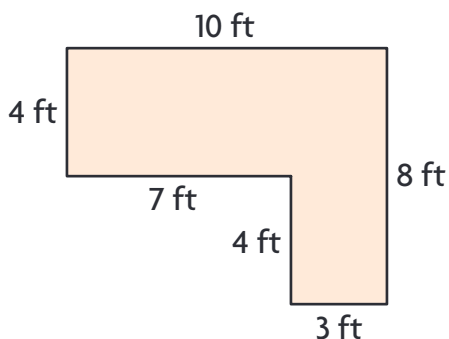


_____ meters

10. Shawn drew a rectangle that was 2 units wide and 6 units long. Draw a rectangle with different side lengths that has the same perimeter.



11. Mrs. Rios put a wallpaper border around the room shown below. Find the perimeter of the room.



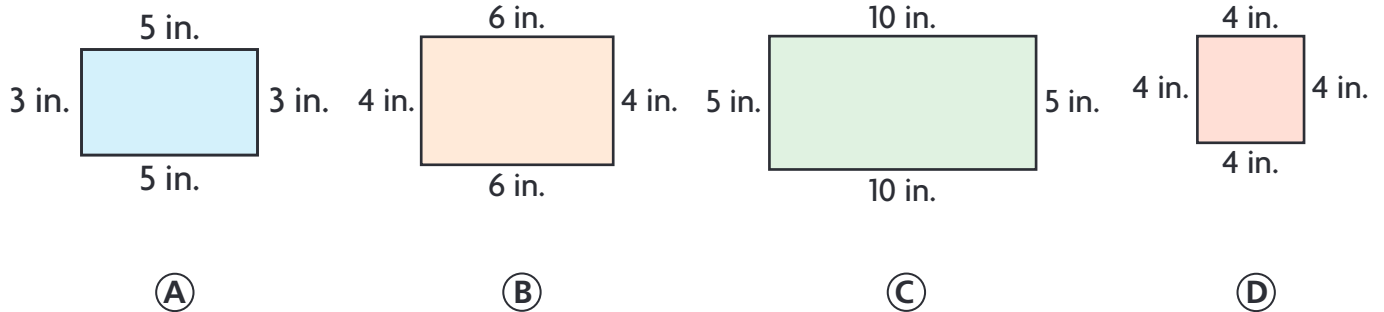
_____ feet

12. Christina is putting a fence around her square garden. Each side of her garden is 2 meters long. The fence costs \$5 for each meter. How much will the fence cost?

\$ _____

Name _____

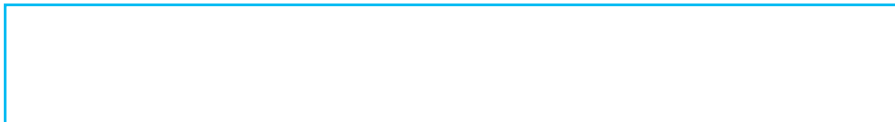
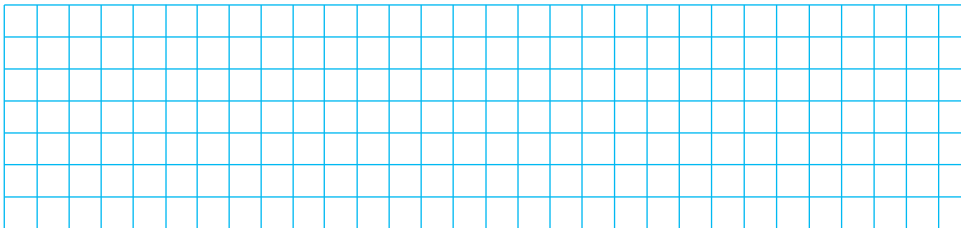
13. Marcus bought some postcards. Each postcard had a perimeter of 16 inches. Which could be one of the postcards Marcus bought? Mark all that apply.



14. Anthony wants to make two different rectangular flowerbeds, each with a perimeter of 24 feet. He will build a wooden frame around each flowerbed.

Part A

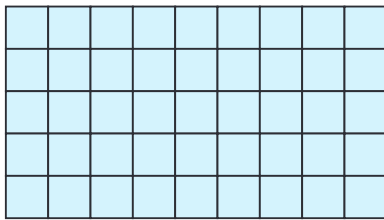
Each unit square on the grid represents 1 square foot. Draw two possible flowerbeds, one longer than the other. Label each with a letter.



Part B

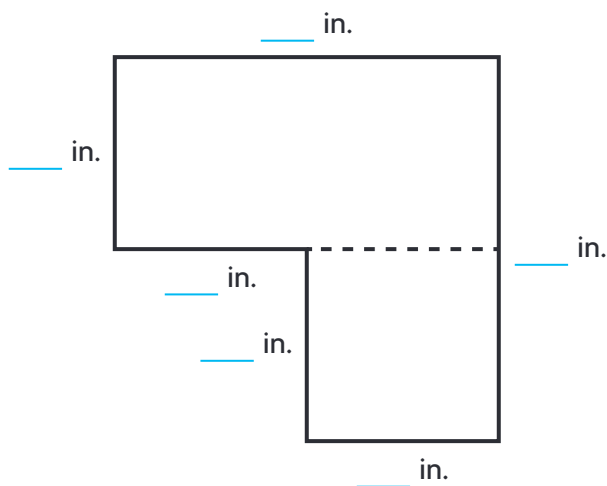
Compare the amount of wood he would need to make a fence around the first flowerbed you drew to the amount of wood he would need to make a fence around the second flowerbed you drew.

15. Alisha draws a sketch of her living room on grid paper. Each square represents 1 square meter. Write and solve an equation that can be used to find the perimeter of the living room in meters.



_____ meters

16. Use an inch ruler to find the length of each side. Then find the perimeter.



_____ inches

17. A book cover in the shape of a rectangle has a length of 10 inches and a width of 6 inches. Write a formula that can be used to find the perimeter of the book cover. Then find the perimeter.