



TABE Math-E

PAXEN

Unit-6 Geometry

Lesson 47

Perimeter

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Some graphics may not have copied well during the scan process.

# Math-E - Lesson 47 – Perimeter

## Lesson 47

## Perimeter

3.MD.8 – Medium

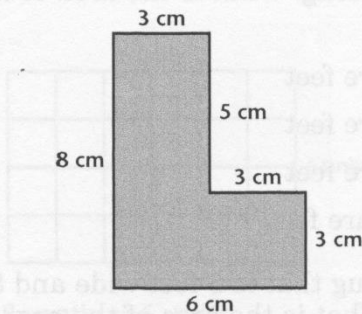
The distance around a shape is called the **perimeter**. To find the perimeter, add the lengths of all the sides.

**Example** What is the perimeter of this shape?

1) Add all the lengths.

$$\begin{array}{r} 3 \text{ cm} \\ 5 \text{ cm} \\ 3 \text{ cm} \\ 3 \text{ cm} \\ 6 \text{ cm} \\ + 8 \text{ cm} \\ \hline 28 \text{ cm} \end{array}$$

The perimeter is 28 centimeters.



**Example** The perimeter of this shape is 28 inches. What is the length of side  $x$ ?

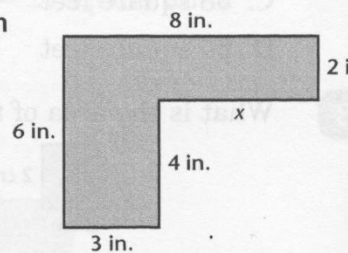
1) Add all the lengths that are given.

$$6 + 8 + 2 + 4 + 3 = 23$$

2) Subtract the total of the known lengths from the perimeter to find the missing side length. (Notice that the length of the opposite side is 8 in. So,  $x + 3 \text{ in.} = 8 \text{ in.}$  You could also find the length of the missing side by subtracting  $8 \text{ in.} - 3 \text{ in.} = 5 \text{ in.}$ )

$$28 - 23 = 5$$

The length of side  $x$  is 5 inches.



**Example** Which rectangle with an area of 12 square units has the greatest perimeter?

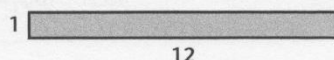
1) Think about rectangles that have an area of 12 square units. Organize your ideas in a table.

| Width | Length | Area               | Perimeter |
|-------|--------|--------------------|-----------|
| 1     | 12     | $1 \times 12 = 12$ |           |
| 2     | 6      | $2 \times 6 = 12$  |           |
| 3     | 4      | $3 \times 4 = 12$  |           |

2) Find the perimeter for each rectangle.

| Width | Length | Area               | Perimeter              |
|-------|--------|--------------------|------------------------|
| 1     | 12     | $1 \times 12 = 12$ | $1 + 12 + 1 + 12 = 26$ |
| 2     | 6      | $2 \times 6 = 12$  | $2 + 6 + 2 + 6 = 16$   |
| 3     | 4      | $3 \times 4 = 12$  | $3 + 4 + 3 + 4 = 14$   |

3) All the rectangles are different sizes, but the areas are the same. Which one has the greatest perimeter?



Greatest perimeter  
26 units

A 1 unit by 12 unit rectangle has an area of 12 square units and the greatest perimeter.

# Math-E - Lesson 47 – Perimeter

## Test Example

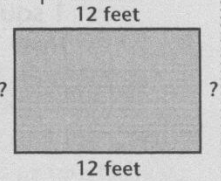
1. A rectangle has a perimeter of 40 feet. The long side has a length of 12 feet. What is the length of one of the short sides?

- A. 8 feet                      B. 10 feet  
C. 16 feet                     D. 28 feet

1. A The total length of the two longer sides is  $12 + 12$ , or 24 feet. The perimeter is 40 feet. Subtract  $40 - 24 = 16$ . The total of the two shorter sides is 16 feet, so one short side is half of 16.  $\frac{16}{2} = 8$  feet

### Hint

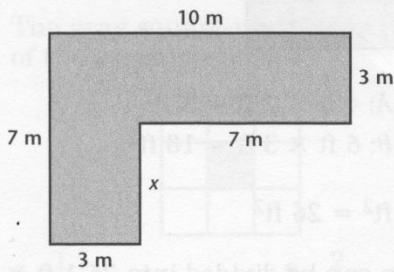
Draw and label a picture to visualize the problem.



## Practice

Read each question. Select the correct answer.

Use the shape below to answer questions 1 and 2.



1. What is the length of side  $x$ ?  
A. 3 meters                      B. 4 meters  
C. 7 meters                      D. 10 meters
2. What is the perimeter of the shape?  
A. 10 meters                     B. 24 meters  
C. 30 meters                     D. 34 meters
3. A rectangular swimming pool is 25 feet long and 10 feet wide. What is the perimeter around the edge of the pool?  
A. 50 feet                        B. 60 feet  
C. 70 feet                        D. 80 feet
4. A town is making a dog park. It will be 30 yards long and 15 yards wide. How much fencing will be needed?  
A. 90 yards  
B. 90 square yards  
C. 225 yards  
D. 225 square yards

5. Which rectangle has the same perimeter as a square with 3-inch sides?

- A. 6 in.  
1 in.
- B. 2 in.  
4 in.
- C. 12 in.  
1 in.
- D. 4 in.  
3 in.

6. Ali is building a patio with a perimeter of 20 feet and an area of 25 square feet. What is the length and width of the patio?

- A. length = 5 feet, width = 4 feet  
B. length = 5 feet, width = 5 feet  
C. length = 10 feet, width = 2 feet  
D. length = 15 feet, width = 5 feet

# Math-E - Lesson 47 – Perimeter

## Lesson 47

## Perimeter

(3.MD.8)

- 1. B.** The length of the opposite side is 7 meters, so  $x + 3 = 7$ .  $7 - 3 = 4$ ;  $x = 4$  meters
- 2. D.**  $7 + 10 + 3 + 7 + 4 + 3 = 34$  meters
- 3. C.**  $25 + 10 + 25 + 10 = 70$  feet
- 4. A.**  $30 + 15 + 30 + 15 = 90$  yards
- 5. B.** A square with 3-inch sides has a perimeter equal to  $3 + 3 + 3 + 3$ , or 12 inches. Option B perimeter =  $4 + 2 + 4 + 2$ , or 12 inches.
- 6. B.** perimeter =  $5 + 5 + 5 + 5 = 20$  feet; area =  $5 \times 5 = 25$  square feet

# Math-E - Practice 47 – Perimeter

## Practice 47

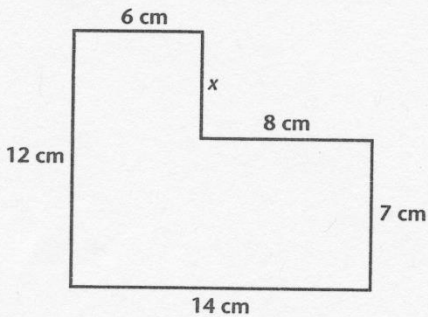
## Perimeter

3.MD.8 – Medium

**Area** = length  $\times$  width

**Perimeter** = sum of all side lengths

Use the diagram to answer question 1.



**1 Part A**

What is the length of side  $x$ ?

- A. 3 cm
- B. 5 cm
- C. 10 cm
- D. 12 cm

**Part B**

What is the perimeter of the figure?

- A. 42 cm
- B. 47 cm
- C. 52 cm
- D. 60 cm

**2** Which two rectangles have a perimeter equal to a square with 6-inch sides?

- A. 12 in. 1 in.
- B. 11 in. 3 in.
- C. 10 in. 2 in.
- D. 10 in. 5 in.
- E. 8 in. 4 in.
- F. 8 in. 2 in.

**3** Dion builds a rectangular deck that has a perimeter of 56 feet and an area of 192 square feet. What are the dimensions of the deck?

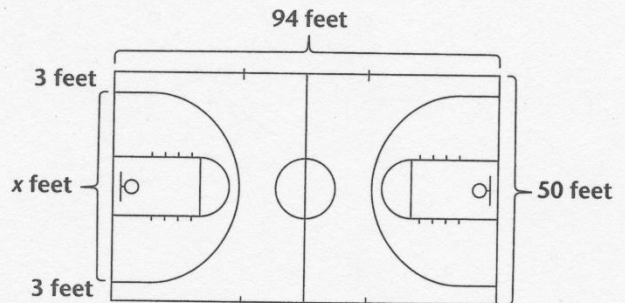
- A. length = 16 ft, width = 12 ft
- B. length = 20 ft, width = 8 ft
- C. length = 18 ft, width = 10 ft
- D. length = 14 ft, width = 14 ft

**4** Which rectangle has a perimeter equal to its area?

- A. length = 4 m, width = 6 m
- B. length = 5 m, width = 5 m
- C. length = 3 m, width = 6 m
- D. length = 3 m, width = 8 m

Use the information to answer question 5.

The dimensions of a basketball court are shown.



**5 Part A**

What is the length of the part of the basketball court labeled with an  $x$ ?

- A. 6 ft
- B. 44 ft
- C. 50 ft
- D. 56 ft

**Part B**

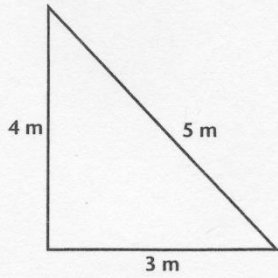
What is the perimeter of the basketball court?

- A. 100 ft
- B. 144 ft
- C. 188 ft
- D. 288 ft



# Math-E - Practice 47 – Perimeter

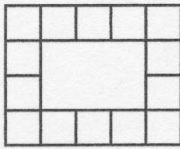
- 6 What is the perimeter of the triangle?



- A. 8 m                      B. 9 m  
C. 12 m                     D. 15 m

Use the information to answer question 7.

Malcolm uses 14 square tiles to frame the perimeter of the floor in his living room as shown. Each tile has an area of 4 square feet.



- 7 **Part A**

What is the length and width of the floor?

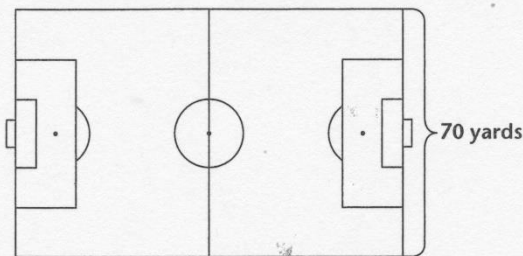
- A. length = 6 ft, width = 12 ft  
B. length = 8 ft, width = 10 ft  
C. length = 10 ft, width = 12 ft  
D. length = 12 ft, width = 14 ft

**Part B**

What is the perimeter of the floor?

- A. 18 ft                      B. 36 ft  
C. 40 ft                      D. 80 ft

- 8 A soccer field has a perimeter of 360 yards. What is the length of the soccer field?



- A. 70 yd                      B. 100 yd  
C. 110 yd                    D. 130 yd

- 9 Which square has an area equal to its perimeter?

- A. side length = 2 ft  
B. side length = 3 ft  
C. side length = 4 ft  
D. side length = 5 ft

Use the information to answer question 10.

Wyetta designs a rectangular-shaped flower bed in her yard. She has edging pavers that are six inches long by four inches wide.

- 10 **Part A**

Wyetta wants to use 12 pavers for the length of her flower bed and 6 pavers for the width of her flower bed. How many pavers does she need?

- A. 18 pavers                B. 20 pavers  
C. 24 pavers                D. 32 pavers

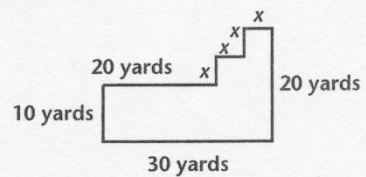
**Part B**

What is the perimeter of the flower bed?

- A. 72 in.                      B. 96 in.  
C. 192 in.                    D. 204 in.

Use the information to answer question 11.

Ige is a security guard. She walks her guard dog around the perimeter of the fence as shown.



- 11 **Part A**

What is the value of  $x$ ?

- A. 1 yd                        B. 2 yd  
C. 4 yd                        D. 5 yd

**Part B**

How many yards does Ige walk when she walks around the perimeter of the fence?

- A. 50 yd                      B. 100 yd  
C. 150 yd                    D. 200 yd

# Math-E - Lesson 47 – Perimeter

## Practice 47

## Perimeter

pp. 36–37

(3.MD.8)

1. **Part A: B.** The left side is 12 cm, so the sum of the two sides on the right is 12 cm:  $7 \text{ cm} + x = 12 \text{ cm}$ .  $7 + 5 = 12$ , so  $x = 5 \text{ cm}$ .

**Part B: C.**  $14 \text{ cm} + 12 \text{ cm} + 6 \text{ cm} + 5 \text{ cm} + 8 \text{ cm} + 7 \text{ cm} = 52 \text{ cm}$ .

2. **C, E.** Perimeter of square =  $6 \text{ in.} \times 4 = 24 \text{ in.}$   
Two rectangles have perimeters of 24 in.  
 $10 \text{ in.} + 10 \text{ in.} + 2 \text{ in.} + 2 \text{ in.} = 24 \text{ in.};$   
 $8 \text{ in.} + 8 \text{ in.} + 4 \text{ in.} + 4 \text{ in.} = 24 \text{ in.}$

3. **A.**  $16 \text{ ft} \times 12 \text{ ft} = 192 \text{ ft}^2;$   
 $16 \text{ ft} + 16 \text{ ft} + 12 \text{ ft} + 12 \text{ ft} = 56 \text{ ft}$ .

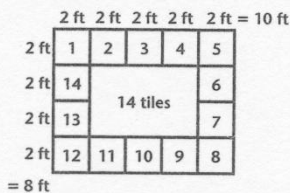
4. **C.**  $6 \text{ m} \times 3 \text{ m} = 18 \text{ m}^2;$   
 $6 \text{ m} + 6 \text{ m} + 3 \text{ m} + 3 \text{ m} = 18 \text{ m}$ .

5. **Part A: B.**  $3 \text{ ft} + 3 \text{ ft} + 44 \text{ ft} = 50 \text{ ft}$ , so  $x = 44 \text{ ft}$ .

**Part B: D.**  $94 \text{ ft} + 94 \text{ ft} + 50 \text{ ft} + 50 \text{ ft} = 288 \text{ ft}$ .

6. **C.**  $5 \text{ m} + 4 \text{ m} + 3 \text{ m} = 12 \text{ m}$ .

7. **Part A: B.** The square tiles with an area of  $4 \text{ ft}^2$  have side lengths of 2 ft. The length of the floor is 5 tiles, or 10 ft and the width is 4 tiles, or 8 ft.



**Part B: B.**  $10 \text{ ft} + 10 \text{ ft} + 8 \text{ ft} + 8 \text{ ft} = 36 \text{ ft}$

8. **C.**  $360 \text{ yd} = 110 \text{ yd} + 110 \text{ yd} + 70 \text{ yd} + 70 \text{ yd}$ .

9. **C.**  $4 \text{ m} + 4 \text{ m} + 4 \text{ m} + 4 \text{ m} = 16 \text{ m};$   
 $4 \text{ m} \times 4 \text{ m} = 16 \text{ m}^2$ .

10. **Part A: D.** Wyetta needs 12 pavers on both the top and the bottom:  $12 + 12 = 24$ . She then needs 4 pavers in the middle on both sides:  $4 + 4 = 8$ .  $24 + 8 = 32$  pavers.

**Part B: C.** One paver is 6 inches long:  $12 \times 6 = 72 \text{ in.}$   
One paver is 4 inches wide:  $6 \times 4 = 24 \text{ in.}$   
 $72 \text{ in.} + 72 \text{ in.} + 24 \text{ in.} + 24 \text{ in.} = 192 \text{ in.}$

11. **Part A: D.** The right side is 20 yd, so the sum of the three sides on the left is 20 yd:  
 $x + x + 10 = 20$ , or  $5 + 5 + 10 = 20$ .  
The bottom is 30 yd, so the sum of the three sides on the top is 30 yd:  
 $x + x + 20 = 30$ , or  $5 + 5 + 20 = 30$ .  
The value for  $x$  is 5 yd.

**Part B: B.**  $30 \text{ yd} + 10 \text{ yd} + 20 \text{ yd} + 5 \text{ yd} + 5 \text{ yd} + 5 \text{ yd} + 5 \text{ yd} + 20 \text{ yd} = 100 \text{ yd}$ .