Unit 7, Lesson 9

Perimeter Problems

Let's solve problems about perimeter.

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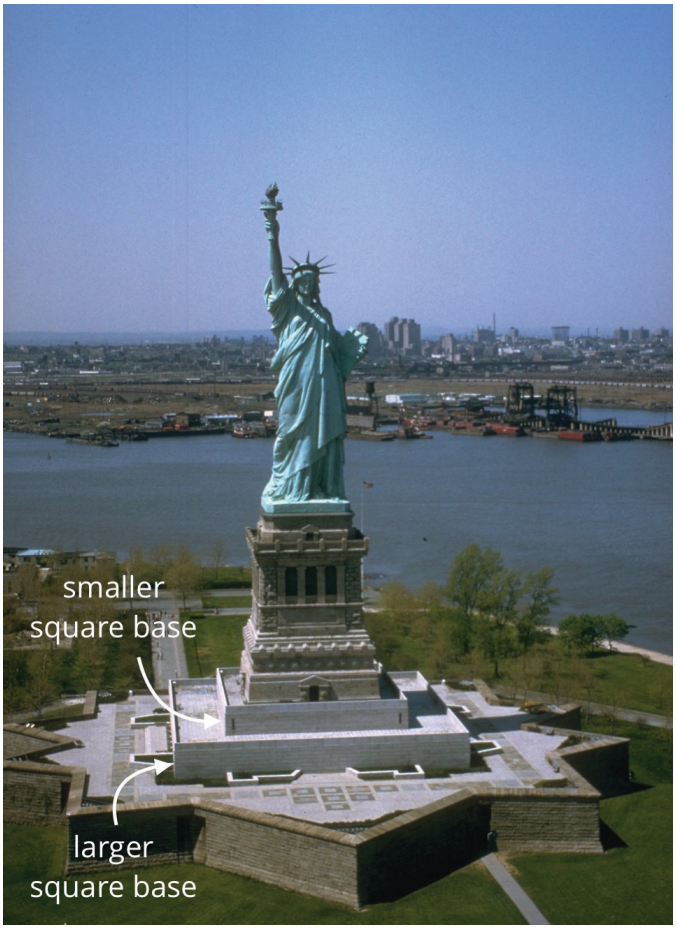
Illustrative Mathematics®

Warm-up

Estimation Exploration: Statue of Liberty

The Statue of Liberty has 2 square bases—1 larger than the other. The larger base has side lengths of 132 feet each.

Estimate the perimeter of the smaller square base.



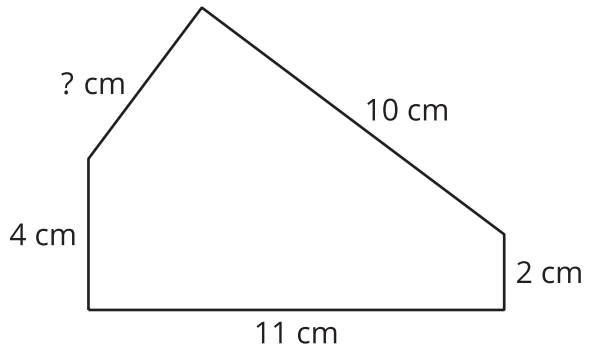
Record an estimate that is:

too low	reasonable	too high

Activity 1

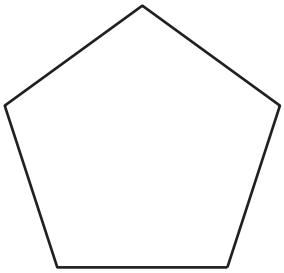
Unknown Measurements

1. This pentagon has a perimeter of 32 cm. What is the unknown side length? Explain or show your reasoning.



2. This rectangle has a perimeter of 56 feet. What are the lengths of the unlabeled sides? Explain or show your reasoning.

3. This pentagon has a perimeter of 65 inches. It has equal side lengths. What is the length of each side? Explain or show your reasoning.



Activity 2

Can I Use Perimeter?

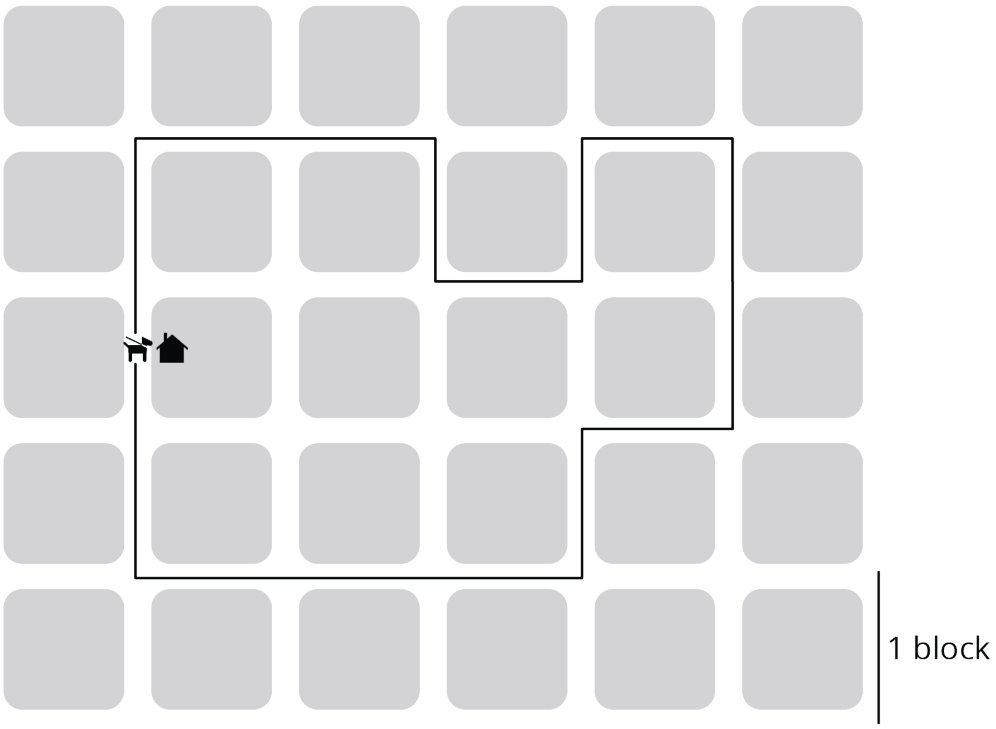
Solve each problem. Explain or show your reasoning.

1. A rectangular park is 70 feet on the shorter side and 120 feet on the longer side. How many feet of fencing is needed to enclose the boundary of the park?

2. Priya drew a square picture. One side is 9 inches long. How many inches of ribbon does Priya need to make a frame around the picture?

3. A rectangular flower bed has a fence that measures 32 feet around. One side of the flower bed measures 12 feet. What are the lengths of the other sides?

4. Kiran took his dog for a walk. Their route is shown. How many blocks did they walk?

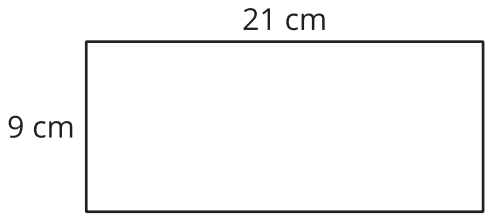


5. A rectangular room is 10 feet by 8 feet. Each tile is 1 square foot. How many tiles are needed to cover the floor of the room?

Section B Summary

We learned that **perimeter** is the boundary of a flat shape.

We can find the length of a perimeter by adding the lengths of all the sides of the shape. We can also use multiplication when the shape has some equal side lengths.

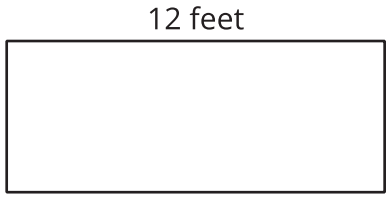


$$9 + 9 + 21 + 21$$

$$(2 \times 9) + (2 \times 21)$$

We used our knowledge of shapes to find the perimeter even when some side lengths were missing, and to use the perimeter to find missing side lengths.

For example, if we know the perimeter of this rectangle is 32 feet, we can find the lengths of the three unlabeled sides.



A rectangle has 2 pairs of equal sides. So, we know 1 other side must be 12 feet.

$$32 - 12 - 12 = 8$$

Now we know the other 2 sides have a combined length of 8 feet.

$$8 \div 2 = 4$$

The 3 unlabeled sides are 12 feet, 4 feet, and 4 feet.