

Squares and Area Models

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. Which of these numbers is not a perfect square: 121, 2, 100, or 4?
a. 121 b. 2 c. 100 d. 4
- _____ 2. Which of these numbers is a square number: 14, 49, 98, or 56?
a. 14 b. 49 c. 98 d. 56
- _____ 3. Which 2 consecutive square numbers is 54 between?
a. 53 and 55 b. 28 and 32 c. 49 and 64 d. 12 and 16
- _____ 4. What is the area of a square with side length 10 units?
a. 200 square units c. 20 square units
b. 40 square units d. 100 square units

Problem

5. The numbers 2, 3, 5, 7, 11, and 13 are written on separate cards. Which pairs of numbers give a sum that is a perfect square? Find all possible solutions.
6. A square and a rectangle have the same area. The rectangle has length 9 cm and height 16 cm. Find the area and perimeter of the square.
7. Tammy wants to install a wallpaper border around the perimeter of her bedroom. The floor area of her bedroom is 361 m^2 . She has 72 m of wallpaper. Does she have enough wallpaper? How do you know?

Squares and Area Models**Answer Section**

MULTIPLE CHOICE

1. ANS: B PTS: 1 DIF: Easy
REF: 1.1 Square Numbers and Area Models LOC: 8.N1
TOP: Number KEY: Conceptual Understanding
2. ANS: B PTS: 1 DIF: Easy
REF: 1.1 Square Numbers and Area Models LOC: 8.N1
TOP: Number KEY: Conceptual Understanding
3. ANS: C PTS: 1 DIF: Easy
REF: 1.1 Square Numbers and Area Models LOC: 8.N1
TOP: Number KEY: Conceptual Understanding
4. ANS: D PTS: 1 DIF: Easy
REF: 1.1 Square Numbers and Area Models LOC: 8.N1
TOP: Number KEY: Conceptual Understanding

PROBLEM

5. ANS:
 $2 + 7 = 9$
 $3 + 13 = 16$
 $5 + 11 = 16$
- PTS: 1 DIF: Moderate REF: 1.1 Square Numbers and Area Models
LOC: 8.N1 TOP: Number KEY: Problem-solving Skills

6. ANS:

Find the area of the square.

The area of the square is the same as the area of the rectangle.

The area of the rectangle is: $9 \times 16 = 144 \text{ cm}^2$

So, the area of the square is 144 cm^2 .

Find the side length of the square:

Find a number which, when multiplied by itself, gives 144.

$$12 \times 12 = 144$$

So, the square has side length 12 cm.

Perimeter is the distance around the square.

$$\begin{aligned} \text{So, } P &= 12 \text{ cm} + 12 \text{ cm} + 12 \text{ cm} + 12 \text{ cm} \\ &= 48 \text{ cm} \end{aligned}$$

The perimeter of the square is 48 cm.

PTS: 1 DIF: Difficult REF: 1.1 Square Numbers and Area Models

LOC: 8.N1 TOP: Number

KEY: Procedural Knowledge | Communication | Problem-solving Skills

7. ANS:

Find the side length of the bedroom:

Find a number which, when multiplied by itself, gives 361.

$$19 \times 19 = 361$$

So, the bedroom has side length 19 m.

Perimeter is the distance around the bedroom.

$$\begin{aligned} \text{So, } P &= 19 \text{ m} + 19 \text{ m} + 19 \text{ m} + 19 \text{ m} \\ &= 76 \text{ m} \end{aligned}$$

The perimeter of the bedroom is 76 m.

Tammy does not have enough wallpaper because the amount of wallpaper she has is less than the perimeter of her bedroom.

PTS: 1 DIF: Difficult REF: 1.1 Square Numbers and Area Models

LOC: 8.N1 TOP: Number

KEY: Procedural Knowledge | Communication | Problem-solving Skills