

Squares Vs Square Roots Practice

Use the following information to answer the first question.

Statement 1	13 squared is 26.
Statement 2	The square root of 144 is 12.
Statement 3	4.25 squared is 18.0625.
Statement 4	The square root of 400 is 200.

- The 2 true statements are
A) 1 and 2 B) 3 and 4 C) 1 and 4 D) 2 and 3
- From the following list of numbers, 9^2 , $\sqrt{64}$, $(-10)^2$, and $\sqrt{189}$, the smallest number is _____.

Use the following information to answer the next question.

Statement 1	$\sqrt[3]{216}$ means what number multiplied by itself 3 times is equal to 216.
Statement 2	$\sqrt[5]{32}$ means what number multiplied by itself 32 times is equal to 5.
Statement 3	15^2 means to multiply 15 by 2.
Statement 4	22^2 means to square 2.

- The correct statement is
A) 1 B) 2 C) 3 D) 4
- Which of the following is an imperfect square less than 20?
A) $\sqrt{169}$ B) $\sqrt{350}$ C) $\sqrt{500}$ D) $\sqrt{729}$
- If you took a number x , squared it, then again squared that result, and then took its square root, the result would be
A) x B) x^2 C) x^3 D) x^4

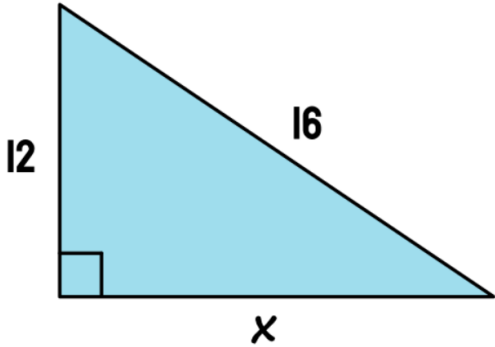
Use the following information to answer the next question.

<p>The formula to determine the volume of a cylinder is $V = \pi r^2 h$</p> <p>Jenna was asked to find the diameter of a cylinder having a volume of 5471.1 cm³ and a height of 21.5 cm. Her work is shown below.</p>	
Step 1	$5471.1 = \pi r^2(21.5)$
Step 2	$\frac{5471.1}{\pi(21.5)} = r^2$
Step 3	$81 = r^2$
Step 4	The diameter is 18 cm.

6. Which of the following statements best describes Jenna's work?

- A) The work is incorrect as the diameter should be 9 cm.
- B) The work is incorrect as the diameter should be 40.5 cm.
- C) The work is incorrect as the radius should be 40.5 cm.
- D) The work is correct.

Use the following information to answer the next question.

<p>Consider the following statements when finding the length of side 'x' in the diagram below.</p>	
	
Statement 1	At no point in the solving process using the Pythagorean Theorem will a number need to be squared.
Statement 2	The answer can be represented by an imperfect square root.
Statement 3	The value of x is approximately 3.3 units.
Statement 4	The value of x is approximately 10.5 units.

7. The two correct statements are

A) 1 and 3

B) 2 and 3

C) 1 and 4

D) 2 and 4

8. The value of $\sqrt{x^2 + 2x + 1}$, when $x = 5$ is _____.

9. The least number that must be added to 358 to make it a perfect square is _____.

10. The square root of 114 is between which two integers? Explain.

11. When 2 is added to the square of $\left(\frac{1}{2}\right)$, the result is a number we shall call m .
Which statement below is not correct?

A) $3 > m$

B) $m < 7$

C) $0 < m$

D) $m > 5$

12. If the area of a square is 45 ft^2 , then the perimeter (distance around the outside of the square), to the closest integer, is _____.

Squares Vs Square Roots Practice Solutions

Use the following information to answer the first question.

Statement 1	13 squared is 26.
Statement 2	The square root of 144 is 12.
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Statement 4	The square root of 400 is 200.

1. The 2 true statements are

A) 1 and 2

B) 3 and 4

C) 1 and 4

D) 2 and 3

Solution

Statement 1

13 squared (13^2) is 169, not 26. This statement is false.

Statement 2

This statement is **true** because $(12)(12)$ is 144.

Statement 3

This statement is **true** because $(4.25)(4.25)$ is 18.0625.

Statement 4

The square root of 400 ($\sqrt{400}$) is 20 because $(20)(20)$ is 400. It is not 200. This statement is false.

The correct answer is D.

2. From the following list of numbers, 9^2 , $\sqrt{64}$, $(-10)^2$, and $\sqrt{189}$, the smallest number is $\sqrt{64}$.

Solution

The equivalent values for each of these numbers:

$$9^2 = (9)(9), \text{ or } 81.$$

$$\sqrt{64} = 8$$

$$(-10)^2 = (-10)(-10), \text{ or } 100$$

$$\sqrt{189} = 13.747\dots$$

Use the following information to answer the next question.

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Statement 4	22^2 means to square 2.

3. The correct statement is

A) 1

B) 2

C) 3

D) 4

Solution

Statement 1

This statement is correct. This is the cube root of 216, which means what number multiplied by itself 3 times is equal to 216.

Statement 2

This statement is false. This is the 5th root of 32, which means what number multiplied by itself 5 times is equal to 32.

Statement 3

This statement is false. 15^2 means to square 15, which means to multiply 15 by itself, not by 2.

Statement 4

This statement is false. 22^2 means to square 22.

The correct answer is A.

4. Which of the following is an imperfect square less than 20?

A) $\sqrt{169}$

B) $\sqrt{350}$

C) $\sqrt{500}$

D) $\sqrt{729}$

Solution

$\sqrt{169} = 13$, but this is a perfect square less than 20.

$\sqrt{350} = 18.708 \dots$ This is an imperfect square less than 20.

$\sqrt{500} = 22.360 \dots$ This is an imperfect square greater than 20.

$\sqrt{729} = 27$, which is a perfect square greater than 20.

The correct answer is B.

5. If you took a number x , squared it, then again squared that result, and then took its square root, the result would be

A) x

B) x^2

D) x^3

D) x^4

Solution

Squaring x results in x^2 . Then $(x^2)^2$ results in x^4 . Then $\sqrt{(x^4)}$ results in x^2 .

The correct answer is B.

Use the following information to answer the next question.

The formula to determine the volume of a cylinder is $V = \pi r^2 h$ Jenna was asked to find the diameter of a cylinder having a volume of 5471.1 cm^3 and a height of 21.5 cm. Her work is shown below.	
Step 1	$5471.1 = \pi r^2 (21.5)$
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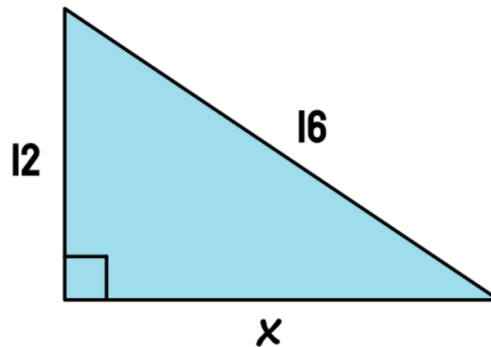
D) The work is correct.

Solution

Since the work is correct, the correct answer is D.

Use the following information to answer the next question.

Consider the following statements when finding the length of side 'x' in the diagram below.



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7. The two correct statements are

A) 1 and 3

B) 2 and 3

C) 1 and 4

D) 2 and 4

Solution

Statement 1

Since the Pythagorean Theorem relationship is $\text{hypotenuse}^2 = \text{side}^2 + \text{side}^2$, the solving process must include a number being squared. Statement 1 is not correct.

Statement 2

Using $\text{hypotenuse}^2 = \text{side}^2 + \text{side}^2$ to solve for x,

$$16^2 = 12^2 + x^2$$

$$256 = 144 + x^2$$

Subtract 144 from both sides.

$$256 - 144 = 144 - 144 + x^2$$

$$112 = x^2$$

Take the square root of both sides.

$$\sqrt{112} = \sqrt{x^2}$$

$$\sqrt{112} = x$$

Since the square root of 112 is not a perfect square, the answer can be represented by an imperfect square root. Statement 2 is correct.

Statement 3

This statement is not correct.

Statement 4

This statement is correct.

The correct answer is D.

8. The value of $\sqrt{x^2 + 2x + 1}$, when $x = 5$ is 6.

Solution

Substitute 5 for x.

$$\sqrt{(5)^2 + 2(5) + 1}$$

$$= \sqrt{36}$$

$$= 6$$

9. The least number that must be added to 358 to make it a perfect square is 3.

Solution

The square root of 358 is 18.920... The closest integer is 19. Squaring 19, will result in 361. By adding 3 to 358, we arrive at 361, which is the nearest perfect square.

10. The square root of 114 is between which two integers? Explain.

Solution

$$\sqrt{100} = 10$$

$$\sqrt{121} = 11$$

We use these perfect squares as benchmarks. In comparing the radicands, since 114 is between 100 and 121, we know that $\sqrt{114}$ must be between 10 and 11.

11. When 2 is added to the square of $\left(\frac{1}{2}\right)$, the result is a number we shall call m . Which statement below is not correct?

A) $3 > m$

B) $m < 7$

C) $0 < m$

D) $m > 5$

Solution

$$\left(\frac{1}{2}\right)^2 = \frac{1}{4}$$

$$2 + \frac{1}{4} = 2\frac{1}{4}, \text{ or } 2.25.$$

Thus $m = 2.25$.

The only inequality that is not correct is $m > 5$, because 2.25 is not greater than 5.

The correct answer is D.

12. If the area of a square is 45 ft^2 , then the perimeter (distance around the outside of the square), to the closest integer, is 27.

Solution

$$\sqrt{45} = 6.708 \dots$$

Each side of the square is 6.708.... Adding the 4 sides together will result in the perimeter. $4(6.708\dots) = 26.832\dots$

The closest integer representing the perimeter is 27 feet.