Question No. 1 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

Question

1. A right triangle has legs with lengths 35 and 84. Which of the following is the quickest method to finding the length of the hypotenuse?

(A) Apply the Pythagorean Theorem and solve for *c.*
(B) Use the fact that this is a 3:4:5 right triangle.
(C) Use the fact that this is a 5:12:13 right triangle.
(D) Use the fact that this is a 30-60-90 right triangle.
(E) Use the fact that this is a 45-45-90 right triangle.

Feedback

A. Incorrect!
Although the Pythagorean theorem would lead to the correct answer, it is not the quickest method to solve.

B. Incorrect!
The triangle is not a 3:4:5 triangle. We know this because 35:84 is not equivalent to 3:4.

C. Correct!
This method can be used because the triangle is a 5:12:13 triangle. We can tell this because 35:84 is equivalent to 5:12.

D. Incorrect!
The hypotenuse would have to be twice the length of the shortest leg, or 70, for this to be a 30-60-90 triangle. This is impossible since one leg is 84 and the hypotenuse must be the longest side!

E. Incorrect!
The legs would have equal lengths if this were a 45-45-90 triangle.

Solution

The Pythagorean theorem will work, but not without plenty of arithmetic. Quickly testing some of the other shortcuts for right triangles rewards us with a quicker method – recognizing that 35:84 is the same as 5:12.

The correct answer is (C).

Question No. 2 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.	
 Question	**2.** One leg of a right triangle has a length of 6.5 units and the hypotenuse is 8.3 units long. Estimate the length of the unknown leg to the nearest tenth. (A) 5.2 (B) 1.8 (C) 6.5 (D) 7.4 (E) 14.8
 Feedback	A. Correct! The Pythagorean theorem is applied to find the unknown leg length is approximately 5.2 units.
	B. Incorrect! This is the difference between the two given measurements. Use the Pythagorean theorem to approximate the unknown leg length.
	C. Incorrect! This is the given leg length. Use the Pythagorean theorem to approximate the unknown leg length.
	D. Incorrect! Use the Pythagorean theorem to approximate the unknown leg length.
	E. Incorrect! The legs of a right triangle cannot be longer than its hypotenuse.
 Solution	Apply the Pythagorean theorem: $(6.5)^2 + b^2 = (8.3)^2$ $42.25 + b^2 = 68.89$ $b^2 = 26.64$ $b \approx 5.2$ **The correct answer is (A).**

Question No. 3 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

Question

3. The length of the hypotenuse of a right triangle is 36 units and the length of a leg of that triangle is 18 units. Which of the following provides a method to find the other leg?

(A) Using the fact that this is a 3:4:5 right triangle.
(B) Using the fact that this is a 5:12:13 right triangle.
(C) Using the fact that this is a 30-60-90 right triangle.
(D) Using the fact that this is a 45-45-90 right triangle.
(E) Subtract the given leg lengths.

Feedback

A. Incorrect!
For this to be correct, 18:36 must give a ratio of 3:5 or 4:5. Instead the ratio is 2.5:5 or 1:2.

B. Incorrect!
For this to be correct, 18:36 must give a ratio of 5:13 or 12:13. Instead the ratio is 2.5:5 or 1:2.

C. Correct!
The length of the leg in this case is exactly half the length of the hypotenuse. That indicates a 30-60-90 triangle.

D. Incorrect!
For this to be correct, 18:36 must give a ratio of $\sqrt{2}$:1. Instead the ratio is 2.5:5 or 1:2.

E. Incorrect!
This method cannot be used to find the missing leg length. Use the fact that the ratio of the leg to the hypotenuse is 1:2 to solve.

Solution

Note that the given leg length is exactly half the length of the hypotenuse. That indicates a 30-60-90 triangle.

The correct answer is (C).

Question No. 4 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.	
 Question	**4.** The interior angles of a regular polygon each measure 120°. What is the name of this regular polygon? (A) Triangle (B) Square (C) Hexagon (D) Octagon (E) Decagon
 Feedback	A. Incorrect! The interior angles of a regular triangle are each 60°, not 120°.
	B. Incorrect! The interior angles of a square are each 90°, not 120°.
	C. Correct! The interior angles of a regular hexagon are each 120°.
	D. Incorrect! The interior angles of a regular octagon are each 60°, not 120°.
	E. Incorrect! The interior angles of a regular decagon are each 144°, not 120°.
 Solution	Test each of the answers using (n – 2) (180) to find the measurement of an interior angle. The interior angles of a regular hexagon are each 120°. **The correct answer is (C).**

Question No. 5 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

Question

5. The diameter of a circle is 10 units. A line is drawn from a point on the circle to another point on the circle. Which of the following is not a possible measurement for the drawn line?

(A) 2 units
(B) 3 units
(C) 5 units
(D) 8 units
(E) 11 units

Feedback

A. Incorrect!
A chord for the circle could be 2 units long.

B. Incorrect!
A chord for the circle could be 3 units long.

C. Incorrect!
The radius of this circle is 5 units long.

D. Incorrect!
A chord of 8 units is possible since this is smaller than the diameter.

E. Correct!
It is impossible to draw a line in a circle from one point on the circle to another that is longer than the diameter. Thus a chord of 11 units is impossible.

Solution

It is impossible to draw a chord longer than the diameter of a circle. The diameter of this circle is 10 units, making a chord of 11 units is impossible.

The correct answer is (E).

Question No. 6 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

Question

6. A right triangle has leg lengths of 14.1 and 14.1. Which of the following is closest to the length of the third side?

(A) $20\sqrt{2}$
(B) 1
(C) 20
(D) 14.1
(E) 28.2

Feedback

A. Incorrect!
Use the Pythagorean theorem to compute the length hypotenuse.

B. Incorrect!
Use the Pythagorean theorem to compute the length hypotenuse.

C. Correct!
You applied the Pythagorean theorem to reach the final answer.

D. Incorrect!
Use the Pythagorean theorem to compute the length hypotenuse.

E. Incorrect!
This is the sum of the given leg lengths. Use the Pythagorean theorem to compute the length hypotenuse.

Solution

Apply the Pythagorean theorem to find the length of the hypotenuse.

$c^2 = (14.1)^2 + (14.1)^2$

$c^2 \approx 200 + 200$

$c^2 = 400$

$c = 20$

The correct answer is (C).

Question No. 7 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

Question

7. Which of the following is a possible unit for area?

(A) square meter
(B) liter
(C) cubic meter
(D) cubic centimeter
(E) yard

Feedback

A. Correct!
You correctly identified square meters as a unit of area.

B. Incorrect!
The liter is a unit of volume and is not an area unit.

C. Incorrect!
The cubic meter is a unit of volume and is not an area unit.

D. Incorrect!
The cubic centimeter is a unit of volume and not an area unit.

E. Incorrect!
Yards are used to measure distance and length, not area.

Solution

This question is testing your knowledge of units. The units to measure the area of a two-dimensional space are always squared.

The correct answer is (A).

Question No. 8 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.	
 Question	**8.** A cylinder has a height of 15 cm and a radius of 5 cm. What is the surface area of the cylinder? (A) 100π (B) 200π (C) 400π (D) 75π (E) 3π
 Feedback	A. Incorrect! You forgot to multiply by 2. Review the formula for the surface area of a cylinder and try again.
	B. Correct! You correctly applied the formula for the surface area of cylinder.
	C. Incorrect! This answer is twice the correct answer. Review the formula for the surface area of a cylinder and try again.
	D. Incorrect! Review the formula for the surface area of a cylinder and try again.
	E. Incorrect! Review the formula for the surface area of a cylinder and try again.
 Solution	Use the formula for the surface area of a cylinder. $2\pi \times r \times (r + h) = \pi \times 5 \times (20) = 200\pi$ **The correct answer is (B).**

Question No. 9 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

Question

9. A rectangle has side lengths of 5 units and 12 units. How long is the diagonal of the rectangle?

(A) 7
(B) 12
(C) 13
(D) 15
(E) 17

Feedback

A. Incorrect!
The diagonal and two sides of the rectangle form a right triangle. Use this information to find the length of the diagonal.

B. Incorrect!
The diagonal and two sides of the rectangle form a right triangle. Use this information to find the length of the diagonal.

C. Correct!
You recognized that the diagonal and two sides form a right triangle and then used this information to solve.

D. Incorrect!
The diagonal and two sides of the rectangle form a right triangle. Use this information to find the length of the diagonal.

E. Incorrect!
The diagonal and two sides of the rectangle form a right triangle. Use this information to find the length of the diagonal.

Solution

The diagonal and two sides of the rectangle form a right triangle. You can use the Pythagorean triple 5:12:13 to find the length of the diagonal. The diagonal is 13 units long.

The correct answer is (C).

Question No. 10 of 10

Instructions: (1) Read the problem statement and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

Question

10. The area of a figure is approximated by using four rectangles of width 4 units and lengths of 2, 4, 8, and 12 units. What is the approximate area of the figure?

(A) 26 square units
(B) 30 square units
(C) 52 square units
(D) 78 square units
(E) 104 square units

Feedback

A. Incorrect!
Find the sum of the areas of each rectangle to solve.

B. Incorrect!
Find the sum of the areas of each rectangle to solve.

C. Incorrect!
Find the sum of the areas of each rectangle to solve.

D. Incorrect!
Find the sum of the areas of each rectangle to solve.

E. Correct!
You correctly multiplied each of the lengths by 4 then added the products to get the correct area.

Solution

Find the sum of the areas of each rectangle to solve.

(4 x 2) + (4 x 4) + (4 x 8) + (4 x 12) = 8 + 16 + 32 + 48 = 104 square units

The correct answer is (E).