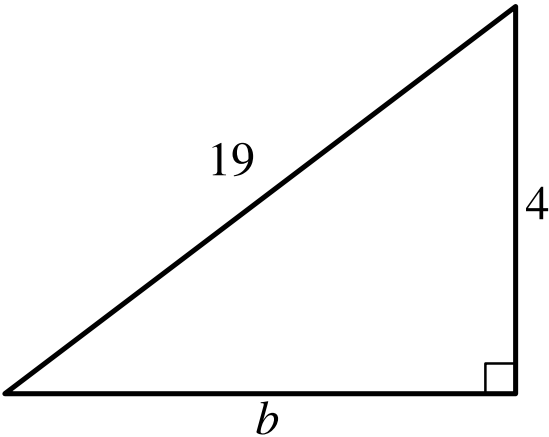


Question ID 2d61bf02

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	Easy

ID: 2d61bf02



Note: Figure not drawn to scale.

Which equation shows the relationship between the side lengths of the given triangle?

- A. $4b = 19$
- B. $4 + b = 19$
- C. $4^2 + b^2 = 19^2$
- D. $4^2 - b^2 = 19^2$

ID: 2d61bf02 Answer

Correct Answer: C

Rationale

Choice C is correct. The Pythagorean theorem states that in a right triangle, the sum of the squares of the lengths of the two legs is equal to the square of the length of the hypotenuse. Therefore, $a^2 + b^2 = c^2$, where a and b are the lengths of the legs and c is the length of the hypotenuse. For the given right triangle, the lengths of the legs are 4 and b , and the length of the hypotenuse is 19 . Substituting 4 for a and 19 for c in the equation $a^2 + b^2 = c^2$ yields $4^2 + b^2 = 19^2$. Thus, the relationship between the side lengths of the given triangle is $4^2 + b^2 = 19^2$.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question ID 26452262

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	Easy

ID: 26452262

A right triangle has legs with lengths of **11** centimeters and **9** centimeters. What is the length of this triangle's hypotenuse, in centimeters?

- A. $\sqrt{40}$
- B. $\sqrt{202}$
- C. 20
- D. 202

ID: 26452262 Answer

Correct Answer: B

Rationale

Choice B is correct. The Pythagorean theorem states that for a right triangle, $c^2 = a^2 + b^2$, where c represents the length of the hypotenuse and a and b represent the lengths of the legs. It's given that a right triangle has legs with lengths of 11 centimeters and 9 centimeters. Substituting 11 for a and 9 for b in the formula $c^2 = a^2 + b^2$ yields $c^2 = 11^2 + 9^2$, which is equivalent to $c^2 = 121 + 81$, or $c^2 = 202$. Taking the square root of each side of this equation yields $c = \pm \sqrt{202}$. Since c represents a length, c must be positive. Therefore, the length of the triangle's hypotenuse, in centimeters, is $\sqrt{202}$.

Choice A is incorrect. This is the result of solving the equation $c^2 = 112 + 92$, not $c^2 = 11^2 + 9^2$.

Choice C is incorrect. This is the result of solving the equation $c^2 = 112 + 92$, not $c^2 = 11^2 + 9^2$.

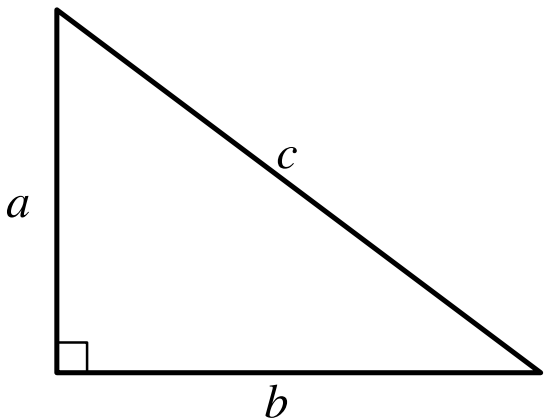
Choice D is incorrect. This is the result of solving the equation $c = 11^2 + 9^2$, not $c^2 = 11^2 + 9^2$.

Question Difficulty: Easy

Question ID ad7bab3b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	Easy

ID: ad7bab3b



Note: Figure not drawn to scale.

For the right triangle shown, $a = 4$ and $b = 5$. Which expression represents the value of c ?

- A. $4 + 5$
- B. $\sqrt{(4)(5)}$
- C. $\sqrt{4 + 5}$
- D. $\sqrt{4^2 + 5^2}$

ID: ad7bab3b Answer

Correct Answer: D

Rationale

Choice D is correct. By the Pythagorean theorem, if a right triangle has a hypotenuse with length c and legs with lengths a and b , then $c^2 = a^2 + b^2$. In the right triangle shown, the hypotenuse has length c and the legs have lengths a and b . It's given that $a = 4$ and $b = 5$. Substituting 4 for a and 5 for b in the Pythagorean theorem yields $c^2 = 4^2 + 5^2$. Taking the square root of both sides of this equation yields $c = \pm \sqrt{4^2 + 5^2}$. Since the length of a side of a triangle must be positive, the value of c is $\sqrt{4^2 + 5^2}$.

Choice A is incorrect and may result from conceptual or calculation errors.

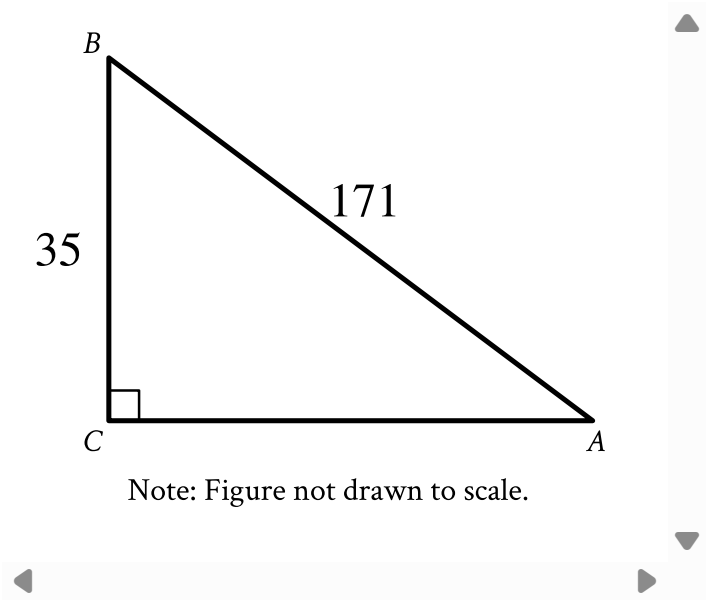
Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Question ID 17f8ba65

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	Easy

ID: 17f8ba65



In the right triangle shown, what is the value of $\sin A$?

- A. $\frac{1}{171}$
- B. $\frac{35}{171}$
- C. $\frac{171}{35}$
- D. 171

ID: 17f8ba65 Answer

Correct Answer: B

Rationale

Choice B is correct. The sine of an acute angle in a right triangle is the ratio of the length of the side opposite that angle to the length of the hypotenuse. The hypotenuse of a right triangle is the side opposite the right angle. In right triangle ABC , side BC is the side opposite angle A and side AB is the hypotenuse. It's given that the length of side BC is 35 units and the length of side AB is 171 units. Therefore, the value of $\sin A$ is $\frac{35}{171}$.

Choice A is incorrect and may result from conceptual or calculation errors.

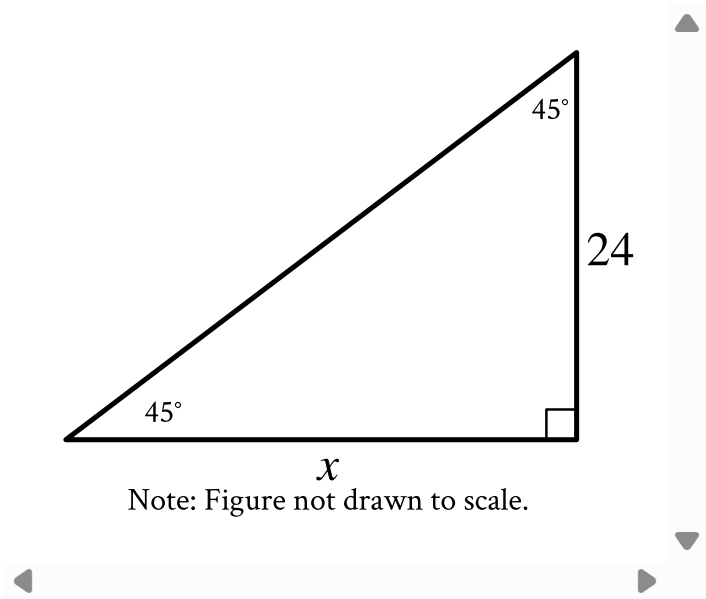
Choice C is incorrect. This is the ratio of the length of the hypotenuse to the length of the side opposite angle A rather than the ratio of the length of the side opposite angle A to the length of the hypotenuse.

Choice D is incorrect. This is the length of the hypotenuse rather than $\sin A$.

Question ID 1d04566c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	Easy

ID: 1d04566c



In the triangle shown, what is the value of x ?

- A. 24
- B. 45
- C. 48
- D. 69

ID: 1d04566c Answer

Correct Answer: A

Rationale

Choice A is correct. Since the two acute angles have the same measure and the third angle is a right angle, the triangle shown is an isosceles right triangle. In an isosceles right triangle, the two legs have the same length. The figure shows that the length of one leg of the triangle is 24 and the length of the other leg of the triangle is x . It follows that the value of x is 24.

Choice B is incorrect. This is the measure, in degrees, of one of the angles shown.

Choice C is incorrect and may result from conceptual errors.

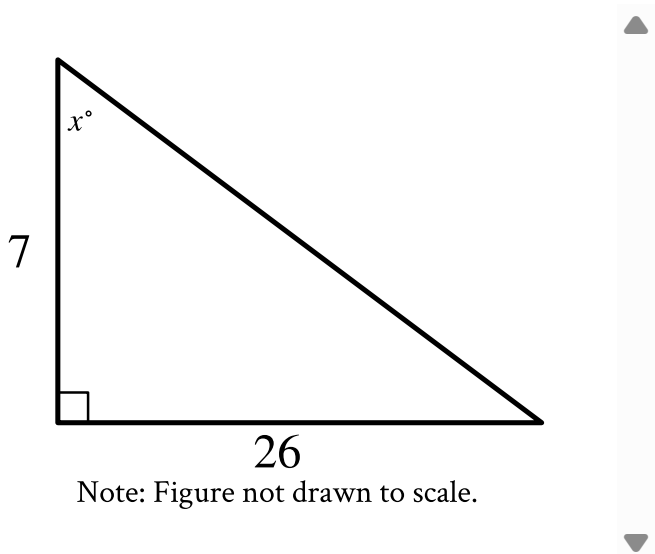
Choice D is incorrect and may result from conceptual errors.

Question Difficulty: Easy

Question ID 19471dcf

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	Easy

ID: 19471dcf



In the triangle shown, what is the value of $\tan x^\circ$?

- A. $\frac{1}{26}$
- B. $\frac{19}{26}$
- C. $\frac{26}{7}$
- D. $\frac{33}{7}$

ID: 19471dcf Answer

Correct Answer: C

Rationale

Choice C is correct. The tangent of an acute angle in a right triangle is defined as the ratio of the length of the side opposite the angle to the length of the shorter side adjacent to the angle. In the triangle shown, the length of the side opposite the angle with measure x° is 26 units and the length of the side adjacent to the angle with measure x° is 7 units. Therefore, the value of $\tan x^\circ$ is $\frac{26}{7}$.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect and may result from conceptual or calculation errors.

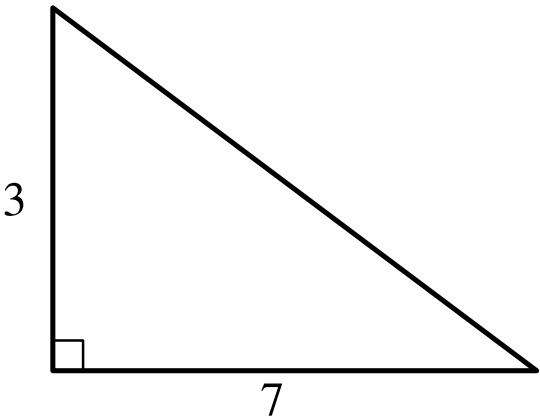
Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 07b04f80

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	Easy

ID: 07b04f80



Note: Figure not drawn to scale.

The lengths of the legs of a right triangle are shown. Which of the following is closest to the length of the triangle's hypotenuse?

- A. 3.2
- B. 5
- C. 7.6
- D. 20

ID: 07b04f80 Answer

Correct Answer: C

Rationale

Choice C is correct. The Pythagorean theorem states that for a right triangle, $a^2 + b^2 = c^2$, where a and b represent the lengths of the legs of the triangle and c represents the length of its hypotenuse. In the triangle shown, the legs have lengths of 3 and 7. Substituting 3 for a and 7 for b in the equation $a^2 + b^2 = c^2$ yields $3^2 + 7^2 = c^2$, which is equivalent to $9 + 49 = c^2$, or $58 = c^2$. Taking the positive square root of both sides of this equation yields $\sqrt{58} = c$. Thus, the value of c is approximately 7.6. Therefore, of the given choices, 7.6 is the closest to the length of the triangle's hypotenuse.

Choice A is incorrect and may result from conceptual or calculation errors.

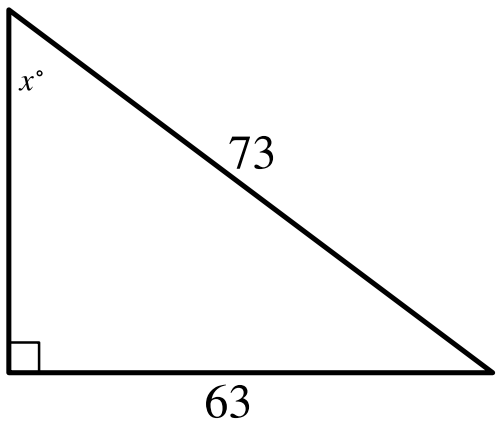
Choice B is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question ID 7921cbe8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	Easy

ID: 7921cbe8



Note: Figure not drawn to scale.

In the right triangle shown, what is the value of $\sin x^\circ$?

- A. $\frac{1}{73}$
- B. $\frac{10}{73}$
- C. $\frac{63}{73}$
- D. $\frac{136}{73}$

ID: 7921cbe8 Answer

Correct Answer: C

Rationale

Choice C is correct. The sine of an acute angle in a right triangle is the ratio of the length of the side opposite that angle to the length of the hypotenuse. In the right triangle shown, it's given that the length of the side opposite the angle with measure x° is 63 units and the length of the hypotenuse is 73 units. Therefore, the value of $\sin x^\circ$ is $\frac{63}{73}$.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID ee884080

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	Easy

ID: ee884080

Triangle ABC is similar to triangle DEF , where angle A corresponds to angle D , and angles C and F are right angles. If $\cos B = \frac{1}{22}$, what is the value of $\cos E$?

- A. $\frac{1}{22}$
- B. $\frac{1}{23}$
- C. $\frac{21}{22}$
- D. $\frac{22}{23}$

ID: ee884080 Answer

Correct Answer: A

Rationale

Choice A is correct. The cosine of an acute angle in a right triangle is defined as the ratio of the length of the leg adjacent to that angle to the length of the hypotenuse. It's given that angle C is a right angle in triangle ABC and that angle F is a right angle in triangle DEF . Therefore, $\cos B$ is equal to the ratio of the length of side BC to the length of side AB , and $\cos E$ is equal to the ratio of the length of side EF to the length of side DE . It's also given that triangle ABC is similar to triangle DEF , where angle A corresponds to angle D . Since similar triangles have proportional side lengths, $\frac{BC}{AB} = \frac{EF}{DE}$. Therefore, the value of $\cos B$ is equal to the value of $\cos E$. Since $\cos B = \frac{1}{22}$, the value of $\cos E$ is $\frac{1}{22}$.

Choice B is incorrect and may result from conceptual errors.

Choice C is incorrect and may result from conceptual errors.

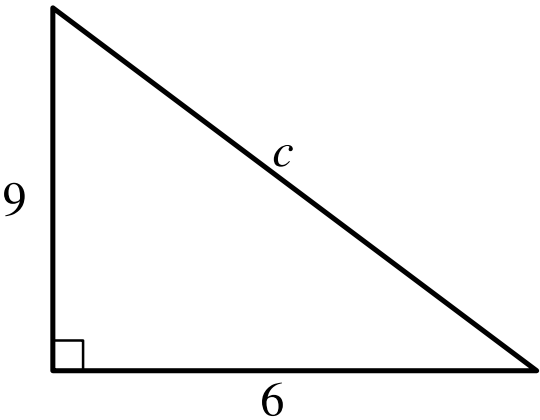
Choice D is incorrect and may result from conceptual errors.

Question Difficulty: Easy

Question ID 3ae04874

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Right triangles and trigonometry	Easy

ID: 3ae04874



Note: Figure not drawn to scale.

In the right triangle shown, which of the following is closest to the value of c ?

- A. 7.5
- B. 10.8
- C. 15
- D. 58.5

ID: 3ae04874 Answer

Correct Answer: B

Rationale

Choice B is correct. By the Pythagorean theorem, if a right triangle has a hypotenuse with length t and legs with lengths r and s , then $r^2 + s^2 = t^2$. It's given in the right triangle shown that the legs have lengths of 9 and 6 and the hypotenuse has a length of c . Substituting 9 for r , 6 for s , and c for t in $r^2 + s^2 = t^2$ yields $9^2 + 6^2 = c^2$, or $117 = c^2$. Taking the square root of both sides of this equation yields $\pm\sqrt{117} = c$. Since the length of a side of a triangle must be positive, the value of c is $\sqrt{117}$, which is approximately equal to 10.8167. Of the choices, 10.8 is the closest to the value of c .

Choice A is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

