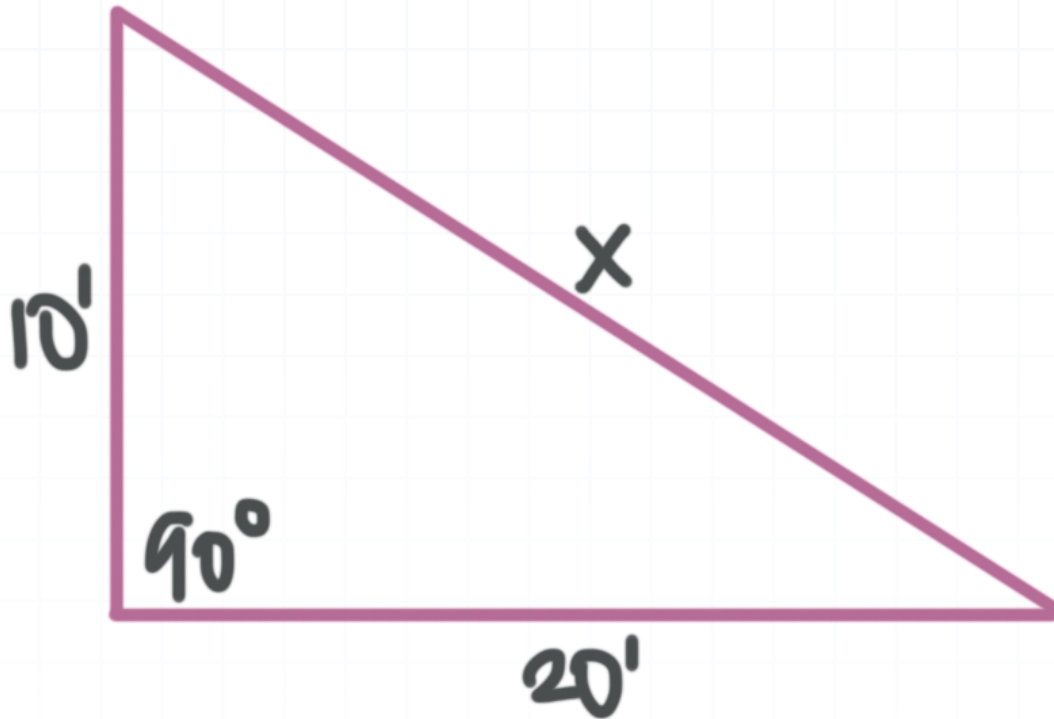


Topic: Pythagorean theorem

Question: Find the length of the hypotenuse.



Answer choices:

- A $5\sqrt{5}$
- B $10\sqrt{5}$
- C $2\sqrt{10}$
- D $4\sqrt{5}$



Solution: B

Since this is a right triangle and we already know the lengths of two of its sides, we can use the Pythagorean theorem to find the length of the third side. The Pythagorean theorem is

$$a^2 + b^2 = c^2$$

where a and b are the lengths of the legs (the sides that form the 90° angle) and c is the length of the hypotenuse.

Plugging in the lengths we've been given, we get

$$(10 \text{ ft})^2 + (20 \text{ ft})^2 = c^2$$

$$100 \text{ ft}^2 + 400 \text{ ft}^2 = c^2$$

$$500 \text{ ft}^2 = c^2$$

$$c = \sqrt{500} \text{ ft}$$

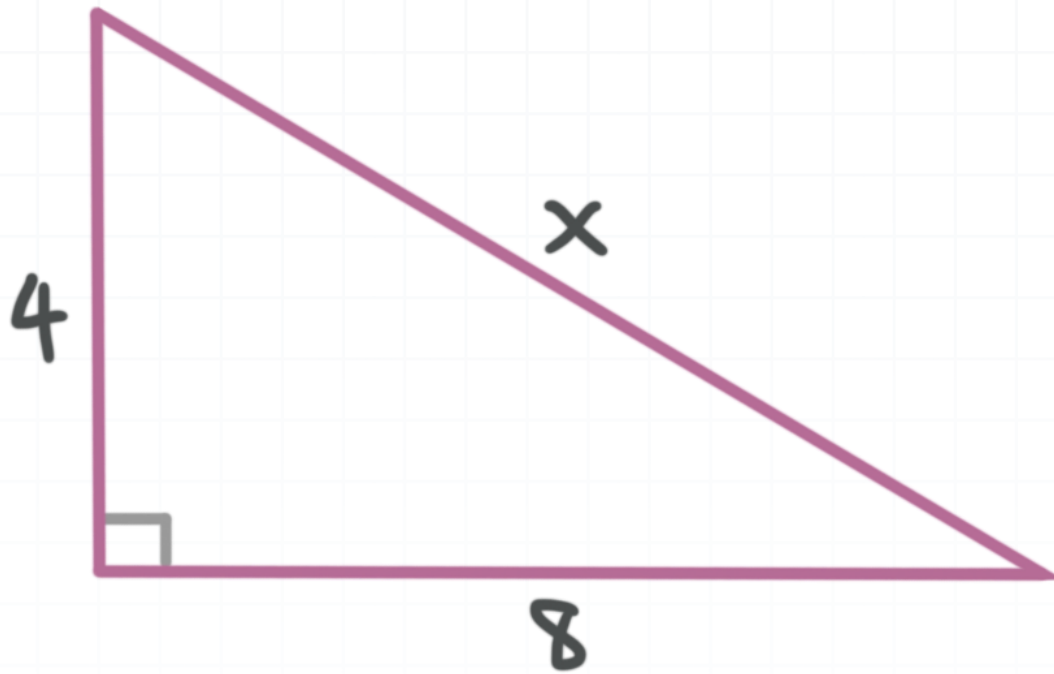
$$c = \sqrt{100 \cdot 5} \text{ ft}$$

$$c = 10\sqrt{5} \text{ ft}$$



Topic: Pythagorean theorem

Question: Find the length of the unknown side.



Answer choices:

- A 5
- B $5\sqrt{4}$
- C 6
- D $4\sqrt{5}$



Solution: D

The unknown side of this triangle is the hypotenuse, so plug the lengths of the two legs for a and b into the Pythagorean theorem.

$$a^2 + b^2 = c^2$$

$$4^2 + 8^2 = x^2$$

$$16 + 64 = x^2$$

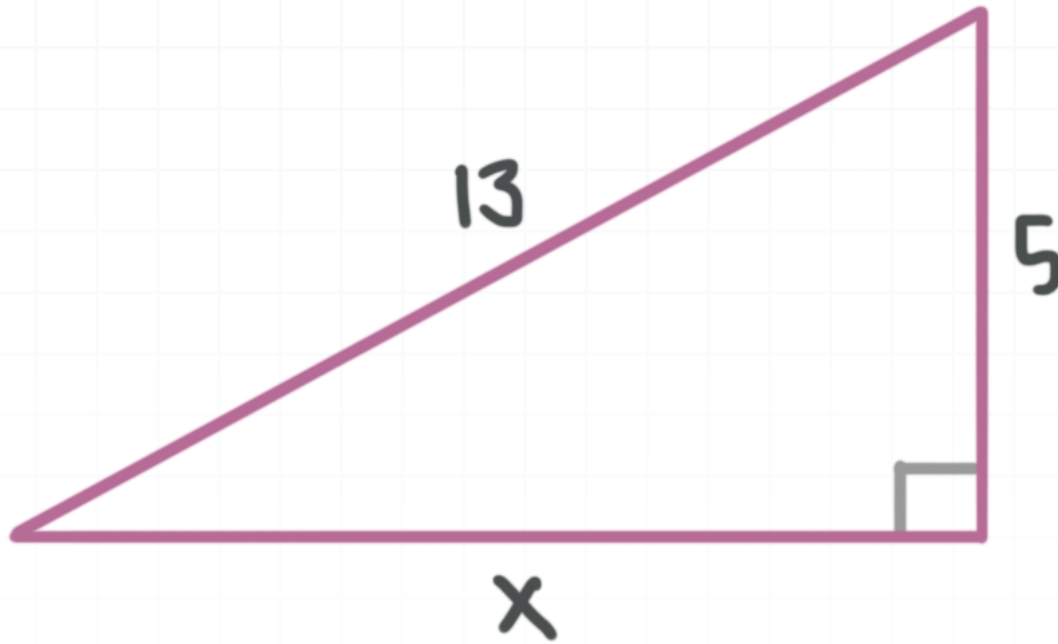
$$80 = x^2$$

$$x = \sqrt{80}$$

$$x = \sqrt{16 \cdot 5}$$

$$x = 4\sqrt{5}$$



Topic: Pythagorean theorem**Question:** Find the value of x .**Answer choices:**

A $2\sqrt{5}$

B $5\sqrt{5}$

C 6

D 12



Solution: D

The figure we've been given is a rectangle, which means that the side opposite the side of length 5 must also have length 5.

In the figure, there are actually two right triangles (one in the top half of the rectangle and the other in the bottom half). We'll use the Pythagorean theorem to find x , which is the length of one of the legs of the right triangle in the bottom half of the figure.

If we plug all three side lengths, including x , into the Pythagorean theorem, we get

$$a^2 + b^2 = c^2$$

$$5^2 + x^2 = 13^2$$

$$25 + x^2 = 169$$

$$x^2 = 169 - 25$$

$$x^2 = 144$$

$$x = \sqrt{144}$$

$$x = 12$$

