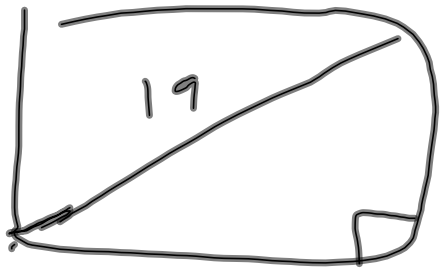
5.



$4x = 4(2.96) = 11.8$

$5x = 5(2.96) = 14.8$

$(5x)^2 + (4x)^2 = 19^2$

$25x^2 + 16x^2 = 361$

$\frac{41x^2}{41} = \frac{361}{41}$

$\sqrt{x^2} = \sqrt{8.8}$

$x = 2.96$

14.

$11, 13, 7\sqrt{6}$ (17.14)

Yes

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

$(11)^2 + (13)^2 = (7\sqrt{6})^2$

$121 + 169 = 294$

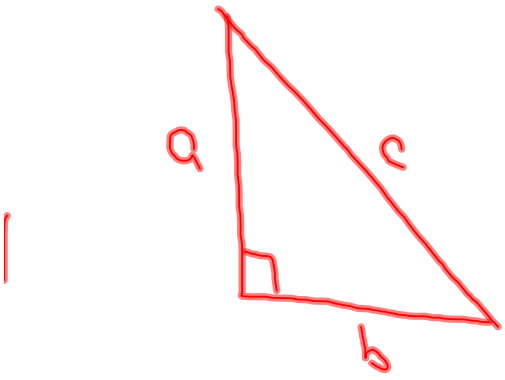
$290 < 294$

obtuse

0-6 +
7-12 ✓
13 -

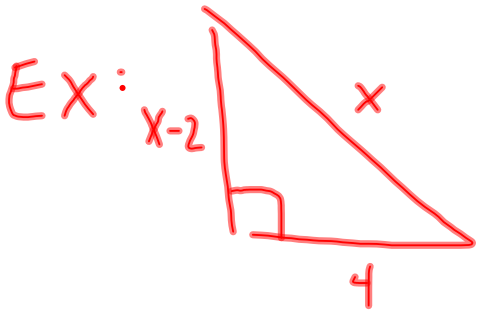
5.7 Pythagorean Theorem

The sum of the squares of the legs of a right $\triangle$, is equal to the square of the hypotenuse.



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

Ex:



$$(4)^2 + (x-2)^2 = x^2$$

$$16 + (x-2)(x-2) = x^2$$

$$16 + x^2 - 4x + 4 = x^2$$

$$x^2 - 4x + 20 = x^2$$

$$-x^2 \qquad\qquad -x^2$$

$$-4x + 20 = 0$$

$$x = 5$$

Pythagorean Triple

set of whole numbers a, b, c, such that $a^2 + b^2 = c^2$

3, 4, 5

6, 8, 10

Properties

1. if $a^2+b^2=c^2$, then the $\triangle$ is right
2. if $a^2+b^2>c^2$, then the $\triangle$ is acute
3. if $a^2+b^2<c^2$, then the $\triangle$ is obtuse

Tell if the following is a triangle. Then classify it.

5, 8, 17

$13 \not> 17$

No

5, 7, 10

Yes

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

$5^2+7^2=10^2$

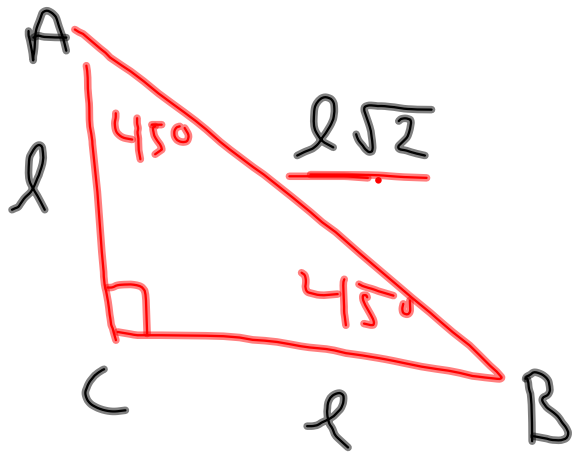
$74<100$

obtuse

5.8 special rt. △'s.

45-45-90 Thm

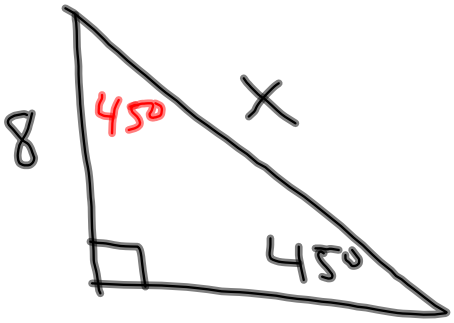
in a $45°-45°-90°$ △, both legs are $\cong$, and the hypotenuse is $\sqrt{2}$ times the length of the legs.



$AC = BC = \ell$

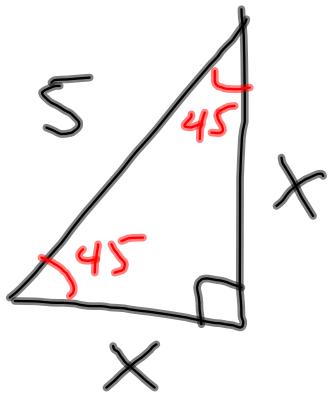
$AB = \ell\sqrt{2}$

Find x.



$x = 8 \cdot \sqrt{2}$

Find x

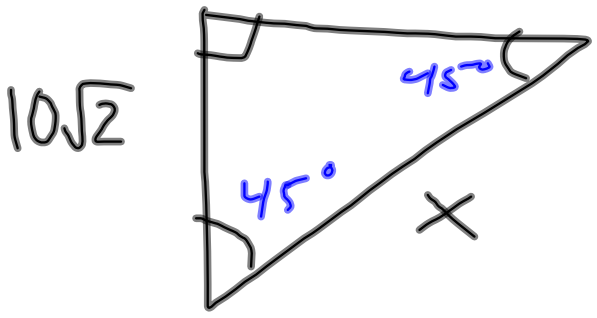


$$\frac{5}{\sqrt{2}} = \frac{x\sqrt{2}}{\sqrt{2}}$$

$$x = \frac{5\sqrt{2}}{\sqrt{2}\sqrt{2}}$$ Rationalize

$$= \frac{5\sqrt{2}}{2}$$ $\sqrt{4}$

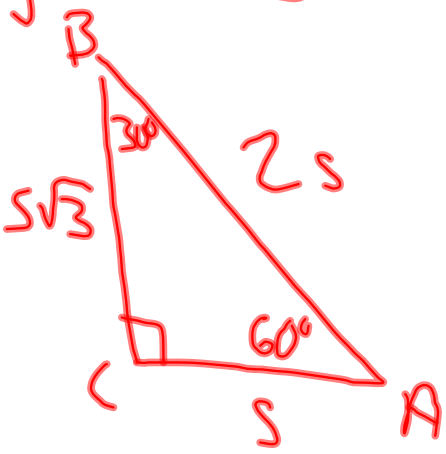
Find x.



$$x = 10\sqrt{2} \cdot \sqrt{2}$$
$$= 10 \cdot \sqrt{4}$$
$$= 10 \cdot 2$$
$$= 20$$

30-60-90° Theorem

In a 30°-60°-90° △, the hypotenuse is twice the shortest leg, and the longer leg is $\sqrt{3}$ times the shorter leg.

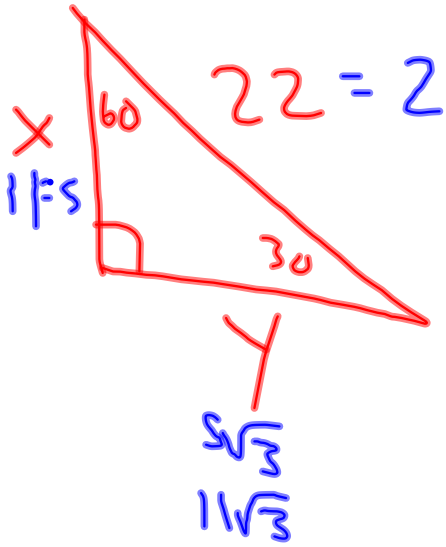


AC = s

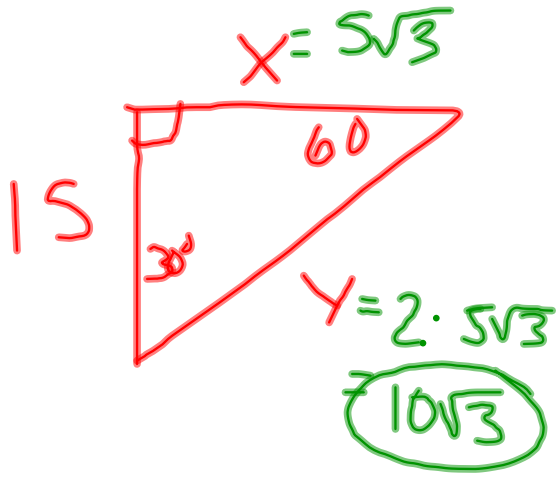
AB = 2s

BC = s√3

Find x + y



s = 11

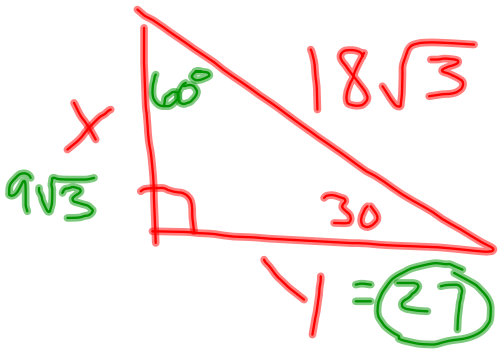


$$\frac{5\sqrt{3}}{\sqrt{3}} = \frac{15}{\sqrt{3}}$$

$$5 = \frac{15}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$$

$$= \frac{15\sqrt{3}}{\sqrt{9}}$$

$$= \frac{15\sqrt{3}}{3} = 5\sqrt{3}$$



$\frac{2s}{2} = \frac{18\sqrt{3}}{2}$

$s = 9\sqrt{3}$

$x = (27)$

$5\sqrt{3}$

$9\sqrt{3}\sqrt{3}$

$9\sqrt{9}$

$9 \cdot 3$

(27)

P. 360

1-15