

**Multi-Step** Tell if the measures can be the side lengths of a triangle. If so, classify the triangle as acute, obtuse, or right.

12.  $1\frac{1}{2}, 1\frac{3}{4}, 3\frac{1}{4}$

$1.5 + 1.75 \neq 3.25$

Therefore, these are not possible side lengths of a  $\Delta$ !

13. 5.9, 6, 8.4

$5.9^2 + 6^2 \square 8.4^2$

$34.81 + 36 \square 70.56$

$70.81 \square 70.56$

$C^2$  is smaller therefore it is an acute  $\Delta$ !

14. 11, 13,  $7\sqrt{6}$  <sup>(17.15)</sup>

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

$121 + 169 \square 294$

$290 \square 294$

$C^2$  is greater therefore it is an obtuse  $\Delta$ !

22. 10, 12, 15

$10^2 + 12^2 \square 15^2$

$100 + 144 \square 225$

$244 \square 225$

$C^2$  is smaller therefore this is an acute  $\Delta$ !

23. 8, 13, 23

$8 + 13 \neq 23$

Therefore, these are not possible side lengths of a  $\Delta$ !

24. 9, 14, 17

$9^2 + 14^2 \square 17^2$

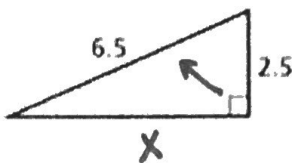
$81 + 196 \square 289$

$277 \square 289$

$C^2$  is greater therefore this is an obtuse  $\Delta$ !

Find the missing side length. Tell if the side lengths form a Pythagorean triple. Explain.

19.



$2.5^2 + x^2 = 6.5^2$

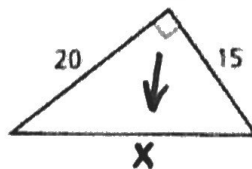
$6.25 + x^2 = 42.25$

$x^2 = 36$

$x = 6$

This is not a pythagorean triple because not all sides are whole numbers.

20.



$20^2 + 15^2 = x^2$

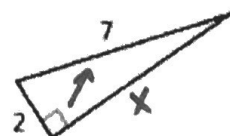
$400 + 225 = x^2$

$625 = x^2$

$25 = x$

Yes, these form a pythagorean triple.

21.



$2^2 + x^2 = 7^2$

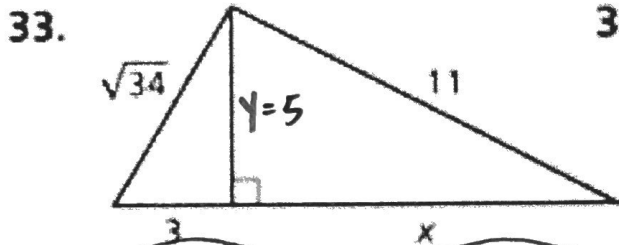
$4 + x^2 = 49$

$x^2 = 45$

$x = \sqrt{45} = 3\sqrt{5}$

Not a pyth. Triple!  
6.1

Find the value of  $x$ . Give your answer in simplest radical form.



$$y^2 + 3^2 = \sqrt{34}^2$$

$$y^2 + 9 = 34$$

$$y^2 = 25$$

$$y = 5$$

$$5^2 + x^2 = 11^2$$

$$25 + x^2 = 121$$

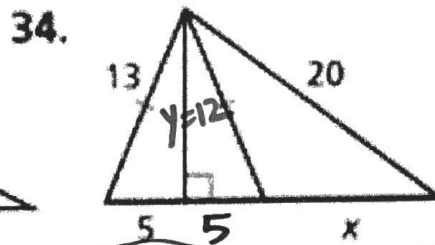
$$x^2 = 96$$

$$x = \sqrt{96}$$

$$\quad \uparrow$$

$$\quad \sqrt{16 \cdot 6}$$

$$\boxed{x = 4\sqrt{6}}$$



$$y^2 + 5^2 = 13^2$$

$$y^2 + 25 = 169$$

$$y^2 = 144$$

$$y = 12$$

$$12^2 + (5+x)^2 = 20^2$$

$$144 + 25 + 5x + 5x + x^2 = 400$$

$$x^2 + 10x + 169 = 400$$

$$x^2 + 10x - 231 = 0$$

$$\frac{-10 \pm \sqrt{10^2 - 4(1)(-231)}}{2(1)}$$

$$\frac{-10 \pm \sqrt{100 + 924}}{2}$$

$$\frac{-10 \pm \sqrt{1024}}{2}$$

$$\frac{-10 \pm 32}{2}$$

$$\boxed{x = 11}$$

$$\cancel{x = -21}$$