$\sqrt{39}$

~~$1 \cdot 39$~~

$3 \cdot 13$

~~1~~

4

9

16

25

36

49

64

81

100

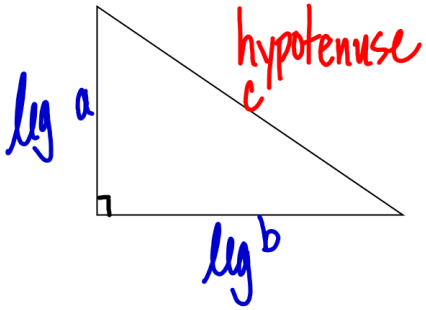
$\sqrt{50}$

$\sqrt{25 \cdot 2}$

$\sqrt{25}\ \sqrt{2}$

$5\sqrt{2}$

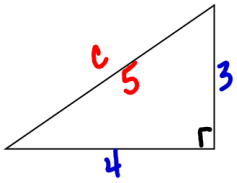
4.7 Right Triangles



side opposite the right ∠ longest side

Pythagorean Theorem

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



$3^2 + 4^2 = c^2$

$9 + 16 = c^2$

$\sqrt{25} = \sqrt{c^2}$

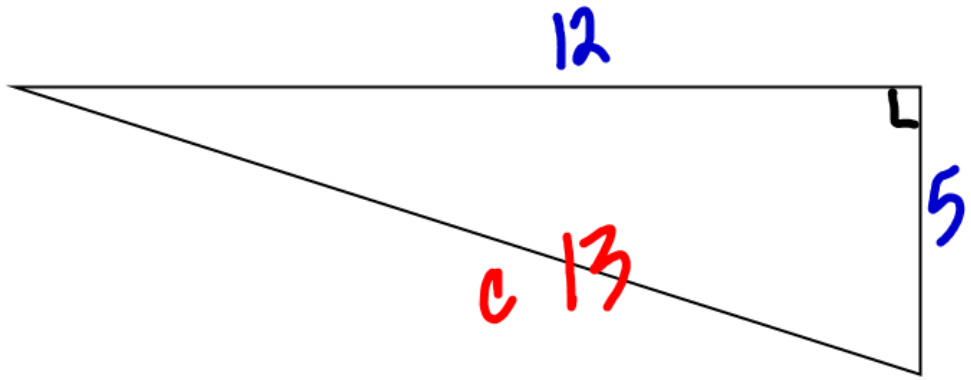
$5 = c$

$5^2 = 25$

$\sqrt{25} = 5$

Pythagorean Triple

3 numbers are natural numbers



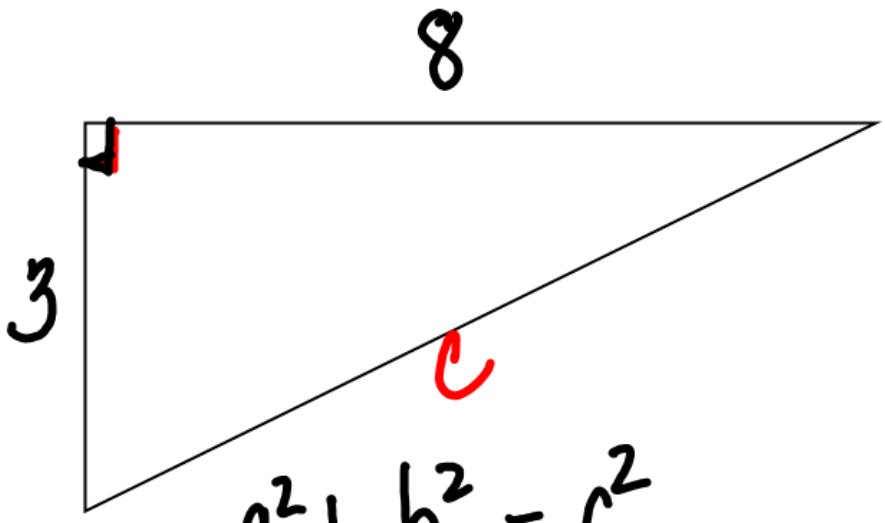
$$a^2 + b^2 = c^2$$

$$5^2 + 12^2 = c^2$$

$$25 + 144 = c^2$$

$$\sqrt{169} = \sqrt{c^2}$$

$$13 = c$$



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

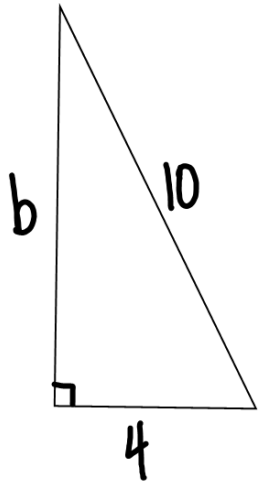
$3^2 + 8^2 = c^2$

$9 + 64 = c^2$

$\sqrt{73} = \sqrt{c^2}$

$\sqrt{73} = c$ Exact

$8.5 \approx c$ Approximate



$a^2+b^2=c^2$ $\qquad$ $c^2-a^2=b^2$

$4^2+b^2=10^2$

$16+b^2=100$

$-16 \qquad -16$

$\sqrt{b^2}=\sqrt{84}$

$b=\sqrt{84}$

$1\cdot 84$
$2\cdot 42$
$4\cdot 21$
$6\cdot 14$
$7\cdot 12$

$b=\sqrt{4\cdot 21}$

$b=\sqrt{4}\cdot\sqrt{21}$

$b=2\sqrt{21}$ Exact

$b\approx 9.2$ Approximate

Lengths of sides

6, 8, 10

$c = 10$ biggest

$6^2 + 8^2 \stackrel{?}{=} 10^2$

$36 + 64 = 100$

$100 = 100$

Yes Right Δ

5, 6, 8

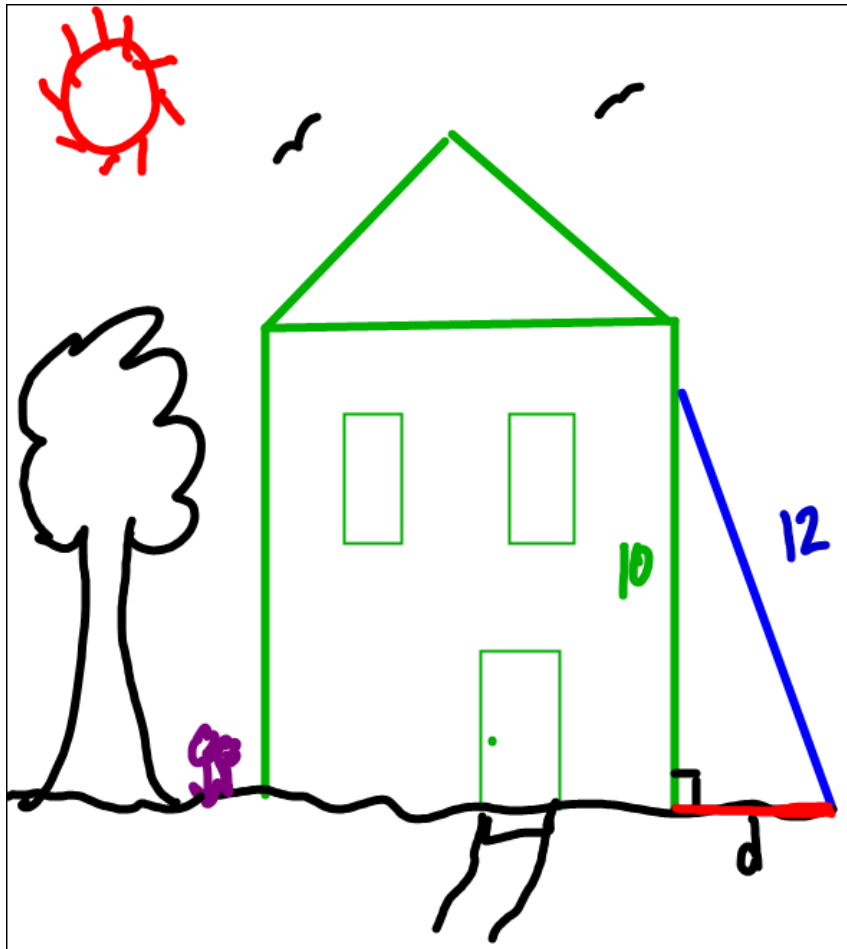
$c = 8$ largest number

$5^2 + 6^2 = 8^2$

$25 + 36 = 64$

$61 \neq 64$

No Not a Right Δ



$$d^2 + 10^2 = 12^2$$

$$d^2 + 100 = 144 \quad -100$$

$$\sqrt{d^2} = \sqrt{44}$$

$$d \approx 6.6 \text{ ft}$$

p253

30 - 60 E