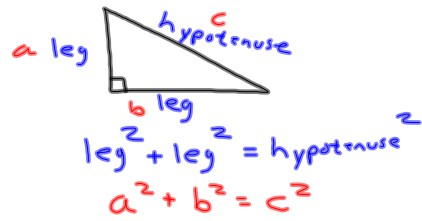
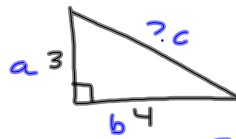


9-4-13  
5<sup>th</sup> Geo

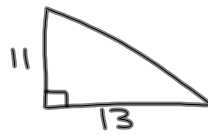
### Pythagorean Theorem Right triangle



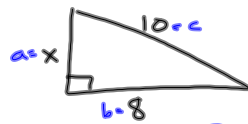
$$\text{leg}^2 + \text{leg}^2 = \text{hypotenuse}^2$$
$$a^2 + b^2 = c^2$$



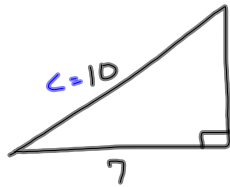
$$a^2 + b^2 = c^2$$
$$3^2 + 4^2 = c^2$$
$$9 + 16 = c^2$$
$$\sqrt{25} = \sqrt{c^2}$$
$$5 = c$$



$$a^2 + b^2 = c^2$$
$$11^2 + 13^2 = c^2$$
$$121 + 169 = c^2$$
$$\sqrt{290} = \sqrt{c^2}$$
$$17.0 \approx c$$

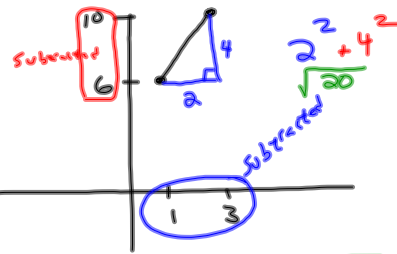


$$a^2 + b^2 = c^2$$
$$a^2 + 8^2 = 10^2$$
$$a^2 + 64 = 100$$
$$\begin{array}{r} -64 \\ \hline \sqrt{a^2} = \sqrt{36} \\ a = 6 \end{array}$$



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 a^2 + 7^2 &= 10^2 \\
 a^2 + 49 &= 100 \\
 \underline{-49 \quad -49} \\
 \sqrt{a^2} &= \sqrt{51} \\
 a &\approx 7.1
 \end{aligned}$$

Find the distance from  
(1, 6) to (3, 10).



$$\text{Distance formula} = \sqrt{\Delta x^2 + \Delta y^2}$$

Ex: Find the distance from  
(2, 7) to (5, 17).

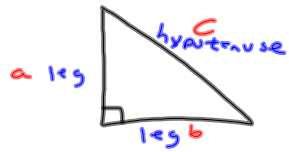
$$\begin{aligned}
 D &= \sqrt{\Delta x^2 + \Delta y^2} \\
 &= \sqrt{3^2 + 10^2} \\
 &= \sqrt{9 + 100} \\
 &= \sqrt{109} \\
 &\approx 10.4
 \end{aligned}$$

Find the distance from  
(-2, 4) to (3, 1)  $3 - -2 = 5$   
 $4 - 1 = 3$

$$\begin{aligned}
 \text{Distance} &= \sqrt{\Delta x^2 + \Delta y^2} \\
 &= \sqrt{5^2 + 3^2} \\
 &= \sqrt{25 + 9} \\
 &= \sqrt{34} \\
 &\approx 5.8
 \end{aligned}$$

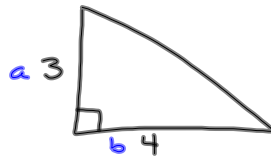
9-4-13  
6<sup>th</sup> Geo

### Pythagorean Theorem Right Triangle

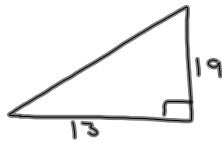


$$\text{leg}^2 + \text{leg}^2 = \text{hypotenuse}^2$$
$$a^2 + b^2 = c^2$$

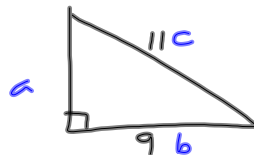
Example



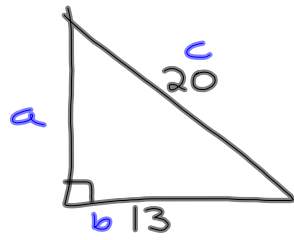
$$a^2 + b^2 = c^2$$
$$3^2 + 4^2 = c^2$$
$$9 + 16 = c^2$$
$$\sqrt{25} = \sqrt{c^2}$$
$$5 = c$$



$$a^2 + b^2 = c^2$$
$$13^2 + 19^2 = c^2$$
$$169 + 361 = c^2$$
$$\sqrt{530} = \sqrt{c^2}$$
$$23.0 \approx c$$

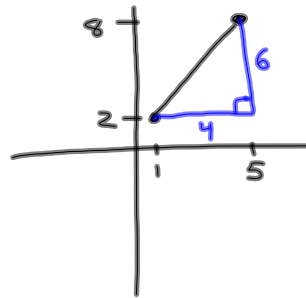


$$a^2 + b^2 = c^2$$
$$a^2 + 9^2 = 11^2$$
$$a^2 + 81 = 121$$
$$\begin{array}{r} -81 \\ \hline \sqrt{a^2} = \sqrt{40} \end{array}$$
$$a \approx 6.3$$



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 a^2 + 13^2 &= 20^2 \\
 a^2 + 169 &= 400 \\
 -169 & \quad -169 \\
 \hline
 \sqrt{a^2} &= \sqrt{231} \\
 a &\approx 15.2
 \end{aligned}$$

Find the distance from  $(1, 2)$  to  $(5, 8)$ .



$$\begin{aligned}
 4^2 + 6^2 &= c^2 \\
 \sqrt{\dots} &= \sqrt{c^2} \\
 D &= \sqrt{\Delta x^2 + \Delta y^2}
 \end{aligned}$$

Find the distance from  $(2, 1)$  to  $(6, 7)$ .

$$\begin{aligned}
 D &= \sqrt{\Delta x^2 + \Delta y^2} \\
 &= \sqrt{4^2 + 6^2} \\
 &= \sqrt{16 + 36} \\
 &= \sqrt{52} \\
 &\approx 7.2
 \end{aligned}$$