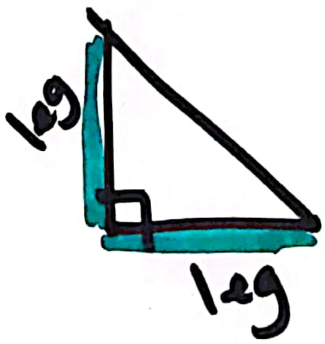
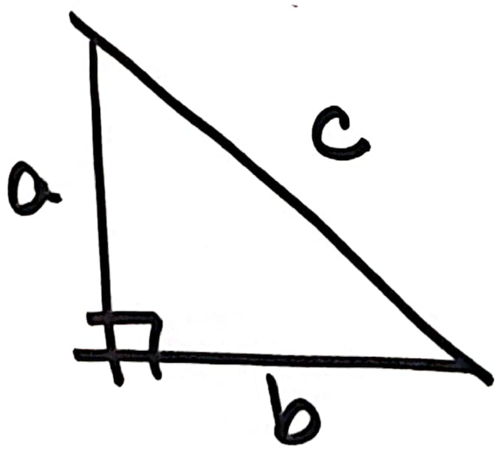
Trig Session #1

A right triangle has <u>one</u> right $\measuredangle = \underline{\underline{90^\circ}}$

The hypotenuse is always the longest side.

The Legs are the sides that form 90° angle.



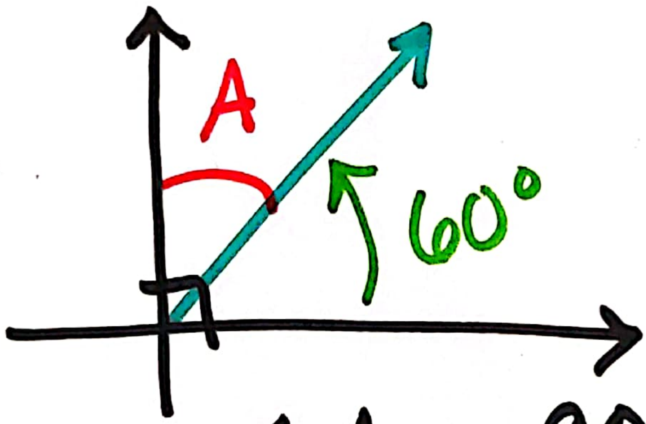


c = hypot

a + b = legs

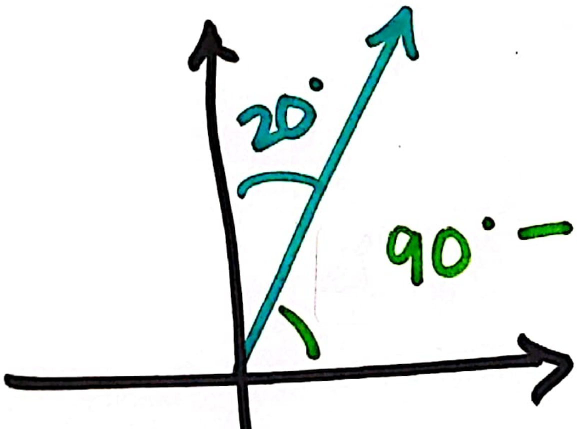
Complementary angles

always sum to 90°.

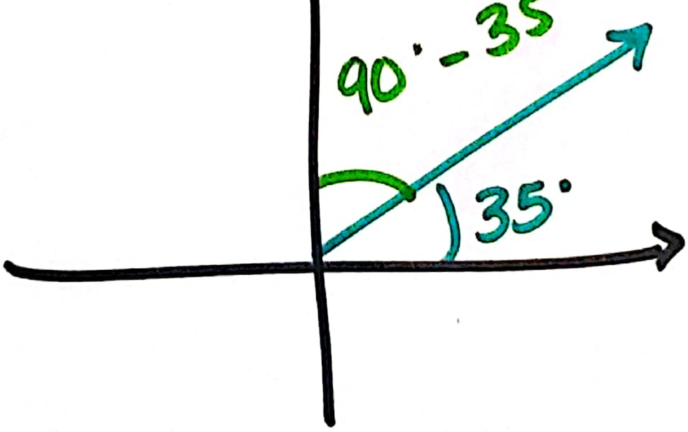


$$\measuredangle A + 60^\circ = 90^\circ$$

$$\measuredangle A = 90^\circ - 60^\circ = \underline{\underline{30^\circ}}$$



$$90^\circ - 20^\circ = \underline{\underline{70^\circ}}$$

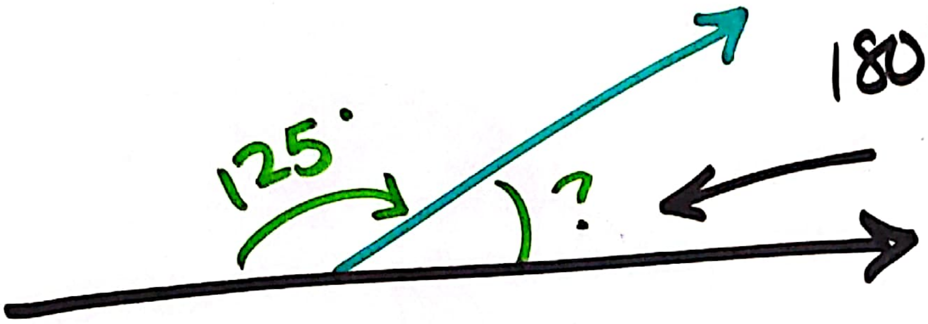


$$90^\circ - 35^\circ = \underline{\underline{55^\circ}}$$

Supplementary ∡'s

always sum to 180°

$180° - 125°$
$= 55°$

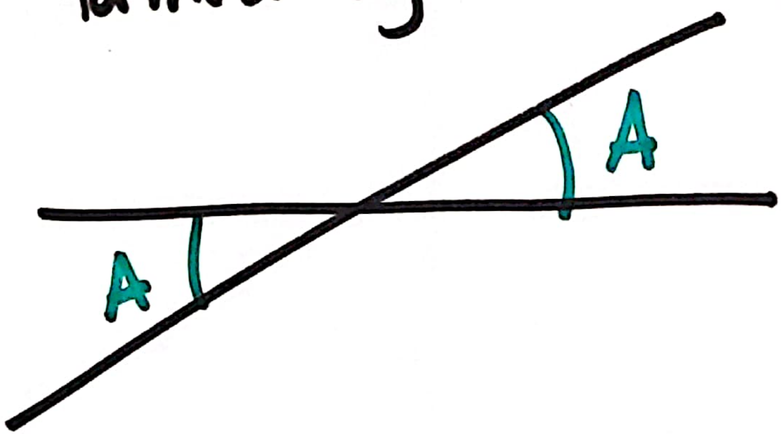


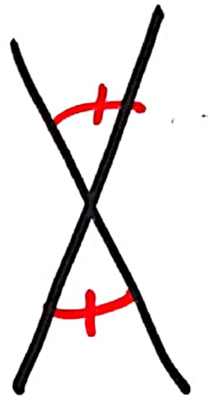
$\measuredangle = 180 - 85 = 95°$

$180° - 40°$
$= 140°$

Vertical Angles

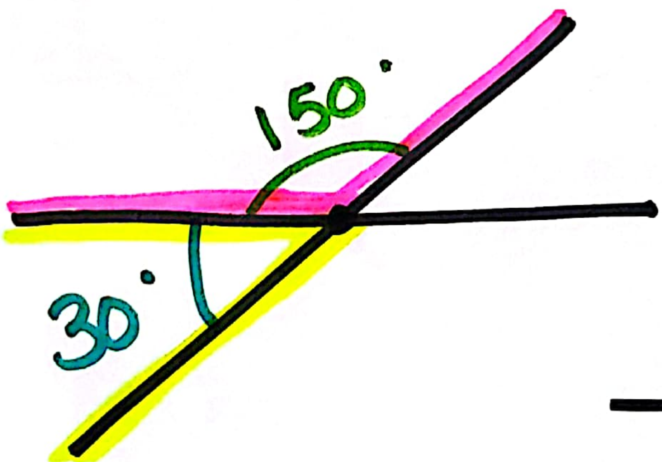
formed by intersecting lines

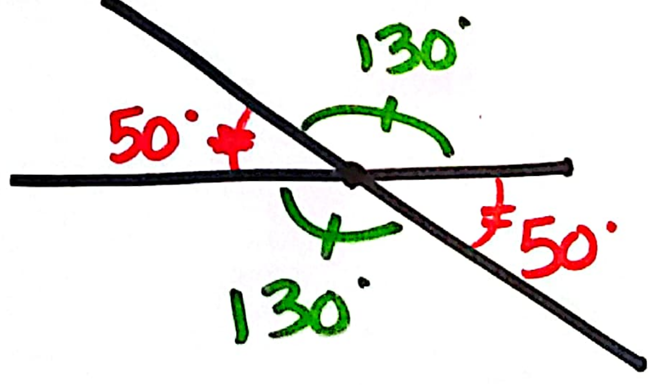




Adjacent Angles

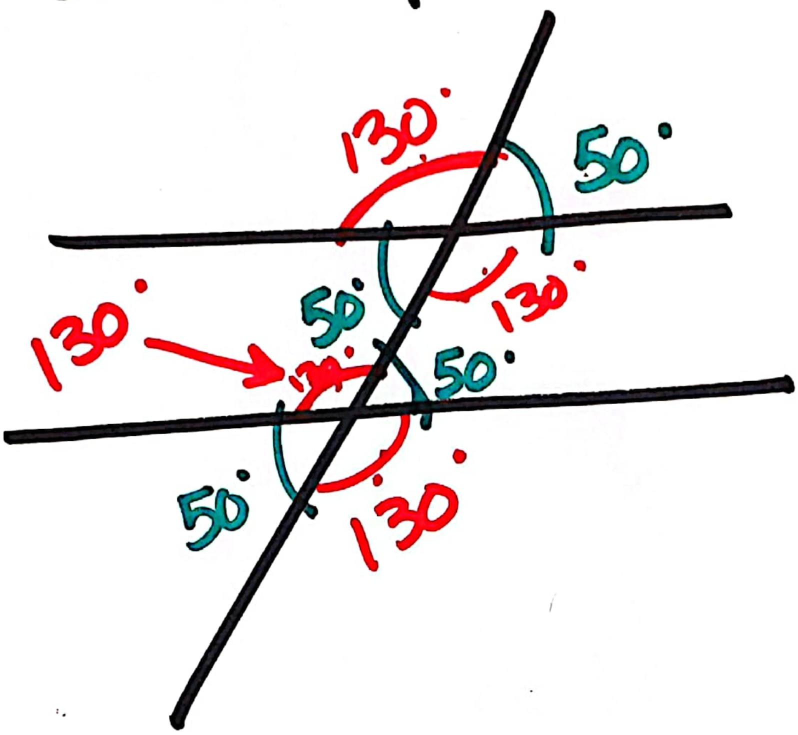
share a common vertex
& a common side.



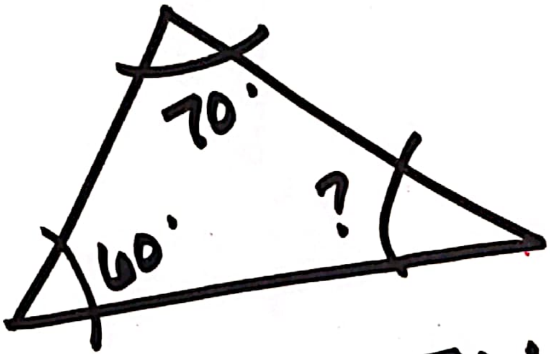


Transversals

cut 2 parallel lines

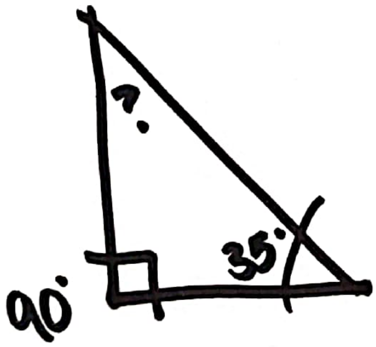


Triangle



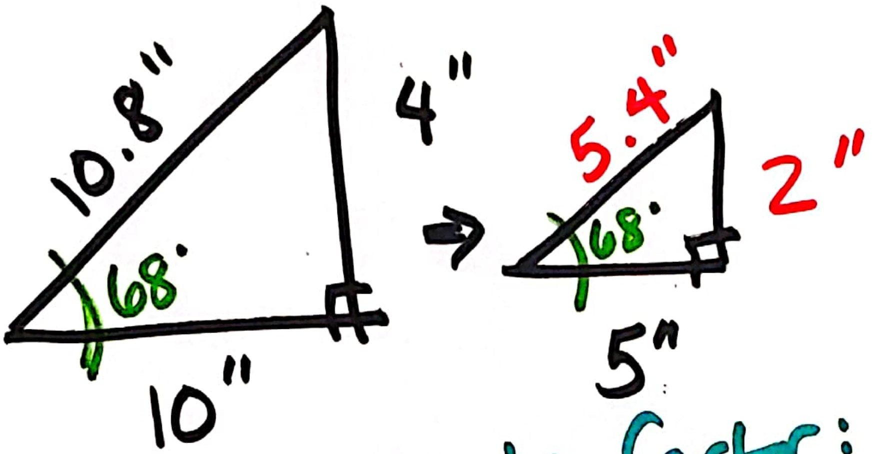
Sum of all ∡'s in any △ is = $\underline{\underline{180°}}$

$180 - 60° - 70°$
$= \underline{\underline{50°}}$



$180° - 90° - 35°$
$= \underline{\underline{55°}}$

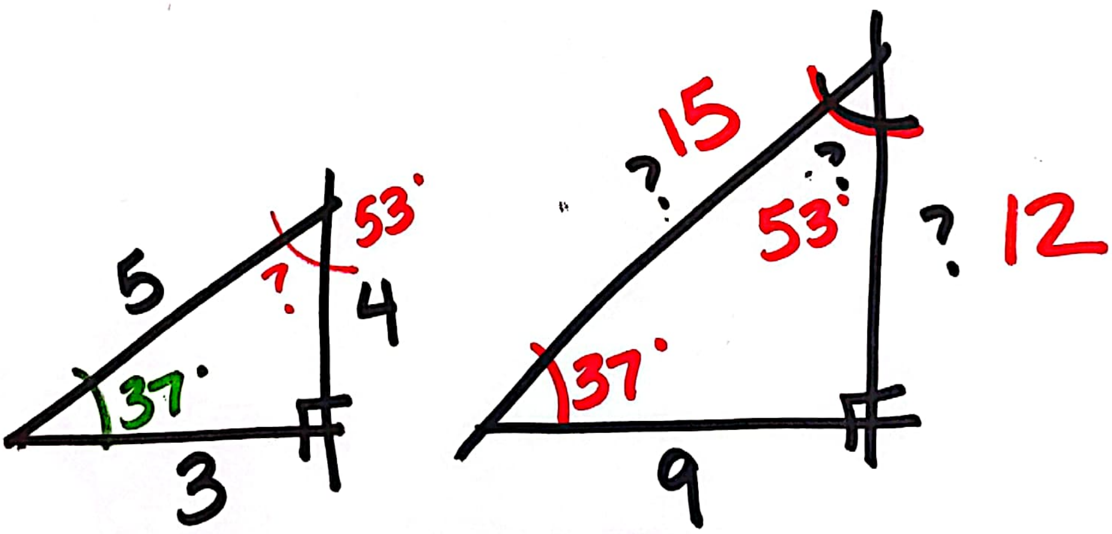
Similar Triangles



★Angles stay the same!★

★sides are scaled★

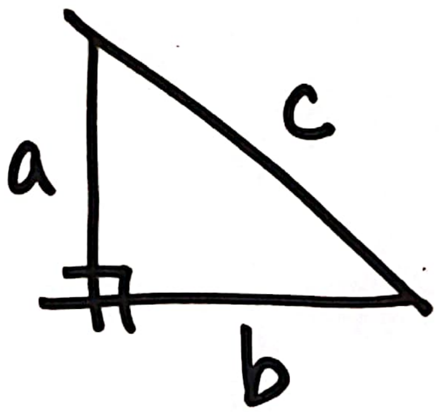
Scale factor: $\frac{1}{2}$



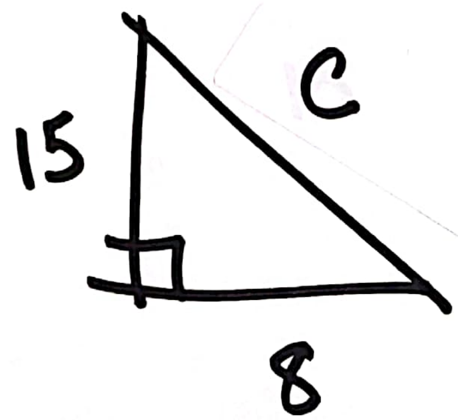
Scale: 3

$$
\begin{array}{r}
180^\circ \\
-90^\circ \\
-37^\circ \\
\hline
53^\circ
\end{array}
$$

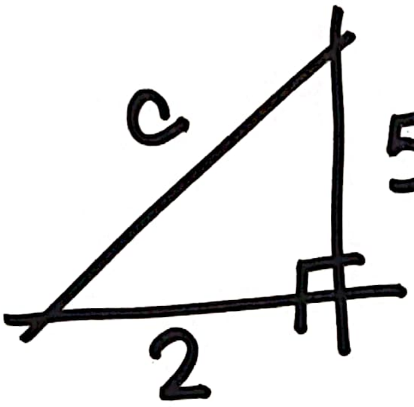
Pythagorean Thm:



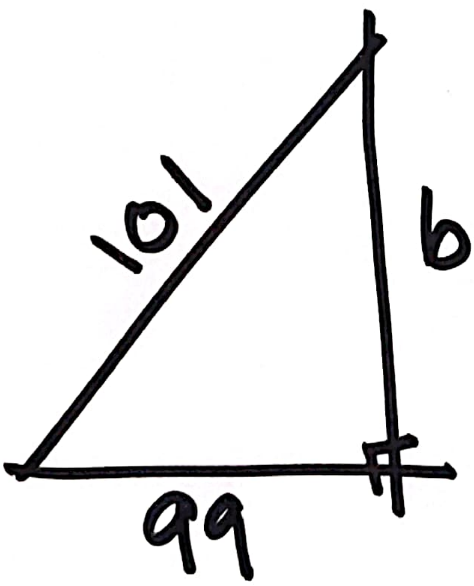
$$c^2 = a^2 + b^2$$
$$c = \sqrt{a^2 + b^2}$$



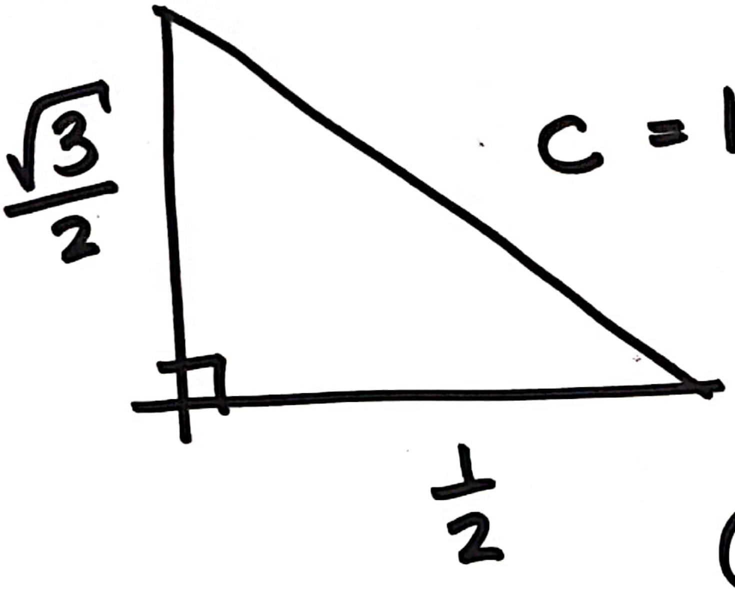
$$c^2 = 15^2 + 8^2$$
$$c^2 = 225 + 64$$
$$\sqrt{c^2} = \sqrt{289}$$
$$\underline{\underline{c = 17}}$$

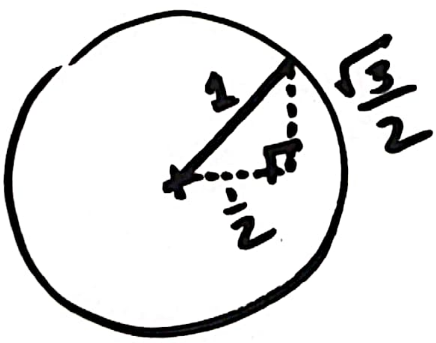


$$c^2 = a^2 + b^2$$
$$c^2 = 2^2 + 5^2$$
$$c^2 = 4 + 25 = 29$$
$$c = \sqrt{29} = \underline{\underline{5.4}}$$



$$c^2 = a^2 + b^2$$
$$b^2 = c^2 - a^2$$
$$b^2 = 101^2 - 99^2$$
$$b^2 = 10,201 - 9801$$
$$\sqrt{b^2} = \sqrt{400}$$
$$\boxed{b = 20}$$





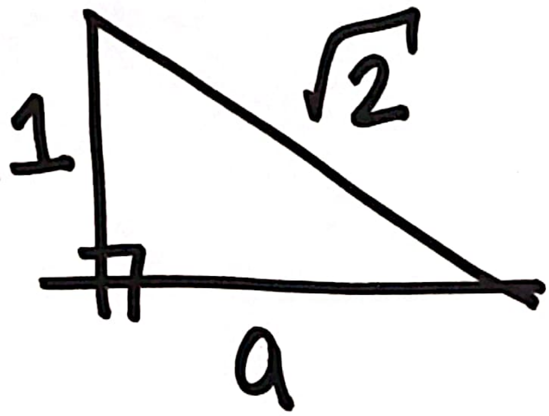
$$c^2 = a^2 + b^2$$

$$c^2 = \left(\frac{\sqrt{3}}{2}\right)^2 + \left(\frac{1}{2}\right)^2$$

$$c^2 = \frac{\sqrt{3} \cdot \sqrt{3}}{4} + \frac{1}{4}$$

$$c^2 = \frac{3}{4} + \frac{1}{4} = 1$$

$$\boxed{c = 1}$$



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

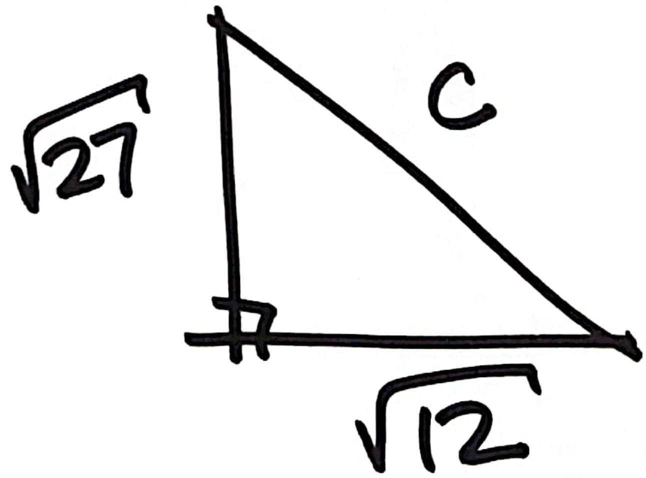
$$a^2 = c^2 - b^2$$

$$a^2 = (\sqrt{2})^2 - (1)^2$$

$$a^2 = \underbrace{\sqrt{2} \cdot \sqrt{2}}_{\sqrt{2 \cdot 2} = 2} - 1$$

$$a^2 = 2 - 1 = 1$$

$$\sqrt{a^2} = \sqrt{1} \rightarrow \boxed{a = 1}$$



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

$$c^2 = \left(\sqrt{27}\right)^2 + \left(\sqrt{12}\right)^2$$

$$c^2 = 27 + 12 = 39$$

$$c = \sqrt{39} = \underline{\underline{6.24}}$$

Recap of radicals in math:

$$\sqrt{27} + \sqrt{12}$$

$$\sqrt{3 \cdot 3 \cdot 3} + \sqrt{2 \cdot 2 \cdot 3}$$

$$3\boxed{\sqrt{3}} + 2\boxed{\sqrt{3}} = \underline{\underline{5\sqrt{3}}}$$