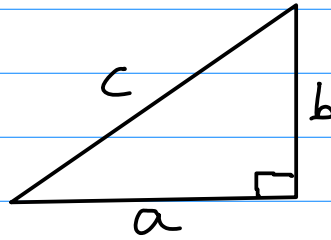
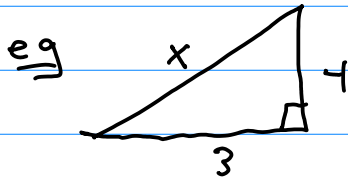


Triangles

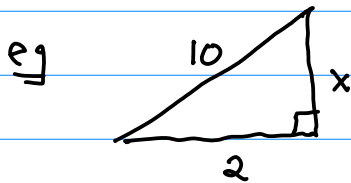
Pythagorean Th:



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



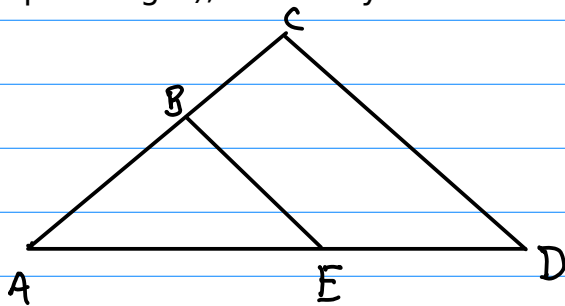
$$x = \sqrt{3^2 + 4^2} = \sqrt{25} = 5.$$



$$\begin{aligned} 2^2 + x^2 &= 10^2 \\ x^2 &= 10^2 - 2^2 \Rightarrow x^2 = 96 \\ \Rightarrow x &= \sqrt{96} \end{aligned}$$

Similar Triangles

If two triangles have parallel sides (or share the same sides, not necessarily of equal length), then they are said to be "similar".

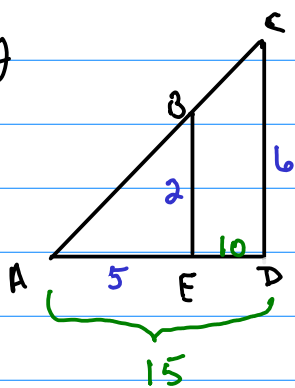


$\triangle ABE$ is similar to $\triangle ACD$

Ratios of corresponding sides are equal.

$$\frac{\text{Big side}}{\text{Small side}} = \frac{\text{Big side}}{\text{Small side}} \quad \text{Here: } \frac{AC}{AB} = \frac{CD}{BE} = \frac{AD}{AE}$$

eg



Find ED

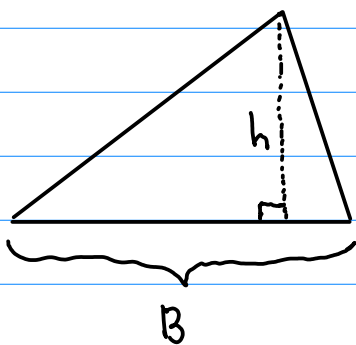
$$\text{Similar} \Rightarrow \frac{AD}{AE} = \frac{CD}{BE}$$

$$\Rightarrow \frac{AD}{5} = \frac{6}{2} \Rightarrow \frac{AD}{5} = 3$$

$$\Rightarrow AD = 15$$

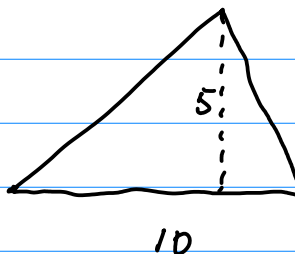
$$\Rightarrow ED = 10$$

Areas of triangles; Isosceles and Equilateral Triangles.



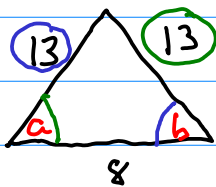
$$A = \frac{Bh}{2}$$

eg



$$A = \frac{10(5)}{2} = \underline{\underline{25}}$$

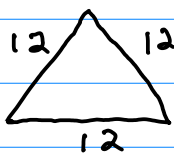
Isosceles Δ : Two sides of equal length.



is isosceles!

Fact: Opp. angles are equal! \Rightarrow Angles a & b are equal.

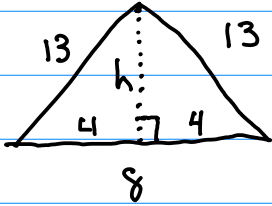
Equilateral: All sides have equal length!



is equilateral

Fact: All equilateral Δ 's are also equiangular (60°)

UP



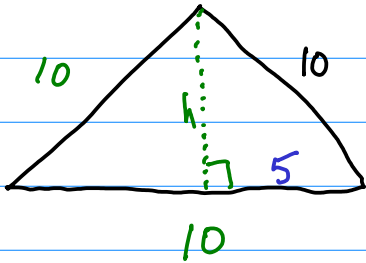
Find area!

$$h: h^2 + 4^2 = 13^2 \Rightarrow h^2 = 13^2 - 4^2 = 153$$

$$\Rightarrow h = \sqrt{153}$$

$$\Rightarrow A = \frac{Bh}{2} = \frac{(8)\sqrt{153}}{2} = \boxed{4\sqrt{153}}$$

eg



Equilateral. Find area.

$$h^2 + 5^2 = 10^2 \Rightarrow h^2 = 10^2 - 5^2 = 75$$

$$\Rightarrow h = \sqrt{75}$$

$$A = \frac{Bh}{2} = \frac{10\sqrt{75}}{2} = \boxed{5\sqrt{75}}$$