Section 8.1 Geometric Mean

Obj: Find geometric mean between two numbers
Use geometric mean including right triangles and their parts.

Find the mean between 12 and 18

$\frac{12+18}{2} = \frac{30}{2} = \boxed{15}$

Find the geometric mean between 12 and 18.

$\frac{12}{x} = \frac{x}{18}$ $x^2 = 216$

$\sqrt{x^2} = \sqrt{216}$

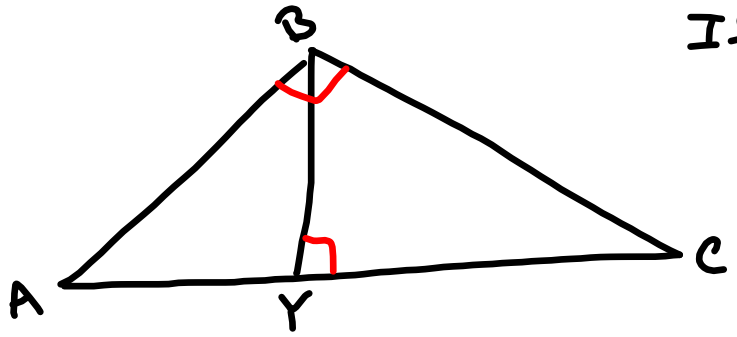
$\boxed{x = 14.70}$

$\frac{12}{14.70} \approx .82$

$\frac{14.70}{18} \approx .82$

Find the Geometric mean between 9 and 37.

$\boxed{18.25}$

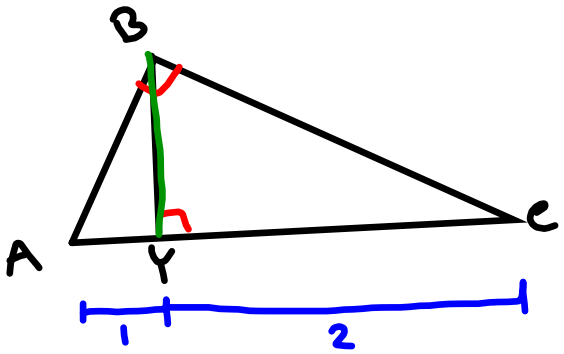


If an altitude is drawn to the hypotenuse of right triangle, then the original triangle is divided into two similar triangles which are similar to the original.

$\triangle ABY \sim \triangle BCY$

$\triangle ABY \sim \triangle ACB$

$\triangle BCY \sim \triangle ACB$



If an altitude is drawn to the hypotenuse of a right, then the altitude is the geometric mean between the two segments of the hypotenuse.

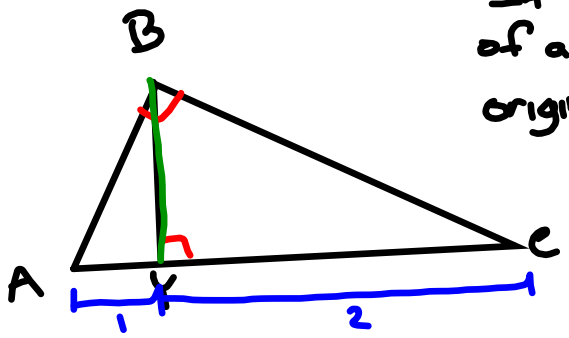
$$\frac{AY}{BY} = \frac{BY}{YC}$$

$BY = 10, YC = 20$, Find AY

$$\frac{x}{10} = \frac{10}{20} \quad 20x = 100 \quad \boxed{x = 5}$$

$AC = 25, AY = 8$, Find BY

$$\frac{8}{x} = \frac{x}{17} \quad \boxed{x = 11.66}$$



If an altitude is drawn to the hypotenuse of a right triangle, then either leg of the original triangle is the geometric mean between the original hypotenuse and the segment of the hypotenuse adjacent to the original leg.

If $\overline{AB}$

$$\frac{AC}{AB} = \frac{AB}{AY}$$

If $\overline{BC}$

$$\frac{AC}{BC} \times \frac{BC}{YC}$$

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