

Answer on Question #47799 – Math – Geometry

I have a simple right angle triangle. All I am given is h (the hypotenuse) and that ratio of x:y is 2:3. What is the formula to find x and y in terms of h?

Solution

$$\frac{x}{y} = \frac{2}{3} \Rightarrow 3x = 2y \Rightarrow y = \frac{3}{2}x$$

Write the Pythagorean theorem:

$$x^2 + \left(\frac{3}{2}x\right)^2 = h^2$$

$$\frac{13}{4}x^2 = h^2$$

$$\frac{\sqrt{13}}{2}x = h$$

$$x = \frac{2h}{\sqrt{13}}$$

$$y = \frac{3}{2}x = \frac{3}{\sqrt{13}}h$$

Answer:

$$x = \frac{2h}{\sqrt{13}}$$

$$y = \frac{3}{\sqrt{13}}h$$