

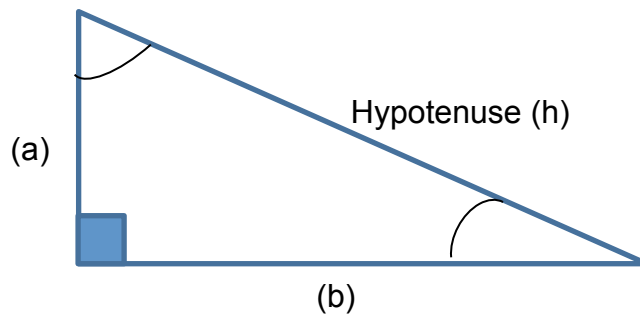


City & Guilds 2357-13, Level 3 Diploma Unit 309: Electrical Science

Pythagoras theorem of right-angled triangles:

Pythagoras theorem applies to right-angled triangles only and states:

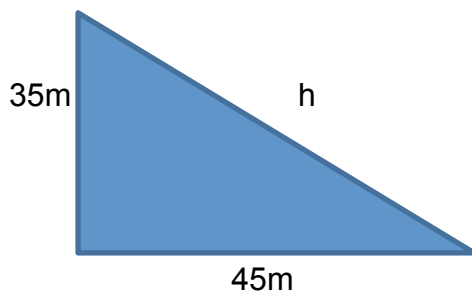
'The square on the hypotenuse is equal to the sum of the squares on the other two sides'



Expressed as a formula: $h = \sqrt{a^2 + b^2}$

Try these problems: Find the unknown quantity and show all workings.

1)



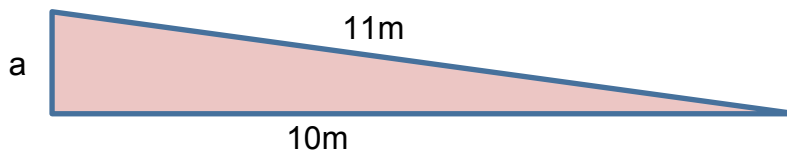
$$h = \sqrt{a^2 + b^2} \text{ so } h = \sqrt{35^2 + 45^2}$$

$$h = \sqrt{1225 + 2025}$$

$$h = \sqrt{3250}$$

$$h = 57\text{m}$$

2)



$h = \sqrt{a^2 + b^2}$ now we need to rearrange the formula for (a). First remove the square root by squaring (h)

$h^2 = a^2 + b^2$ next subtract (b^2) from the right of the formula

$h^2 = a^2 - b^2$ and subtract (b^2) from the left

$h^2 - b^2 = a^2$ turn the formula around

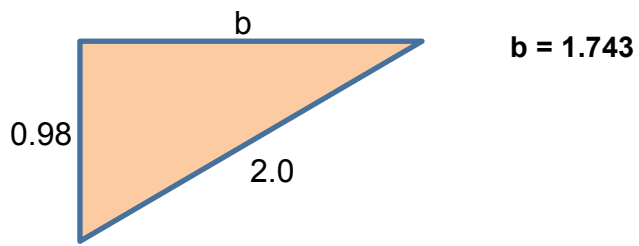
$a^2 = h^2 - b^2$ and then reinstate the square root

$$a = \sqrt{h^2 - b^2} \quad a = \sqrt{11^2 - 10^2}$$

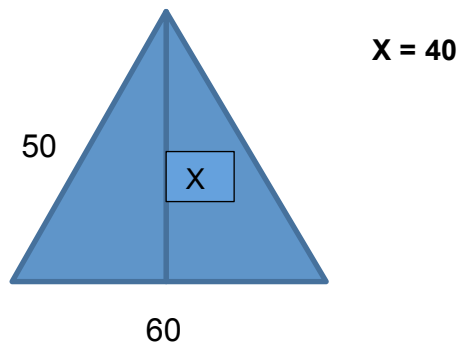
$$a = 4.58\text{m}$$



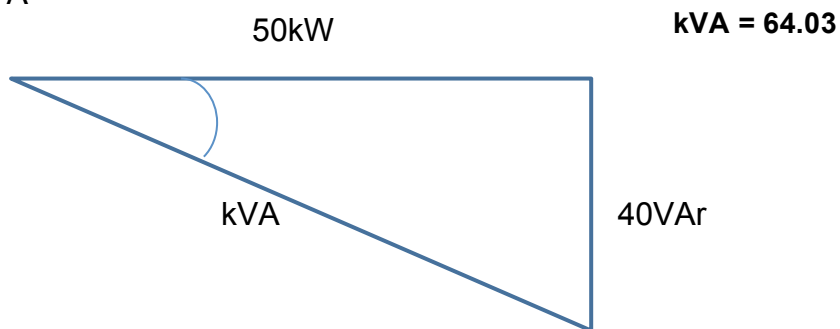
3)



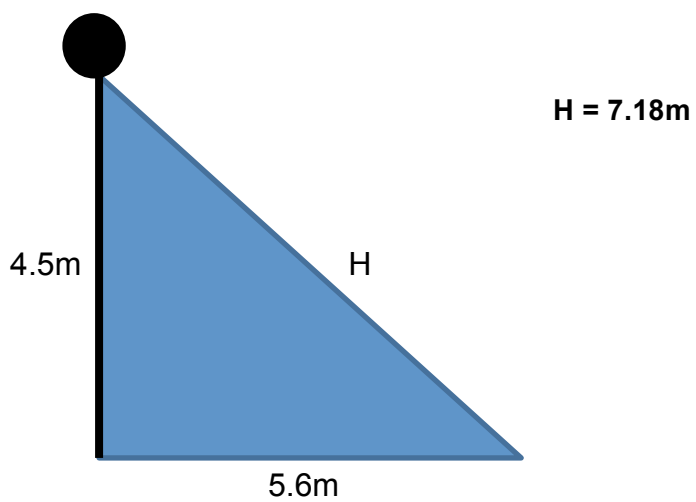
4) Find side X



5) Find kVA



6) Find length H



Check your answers.