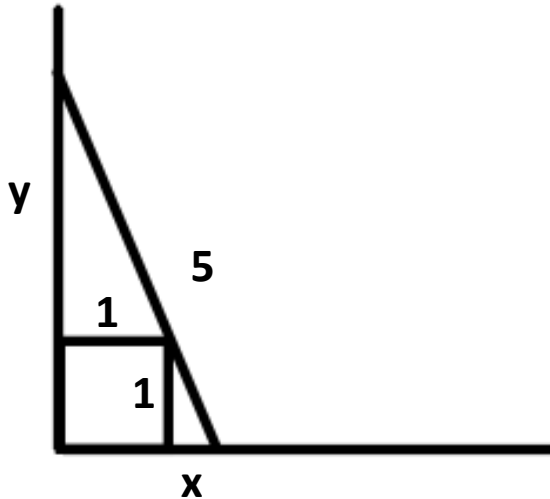


October 25th

A cube box with side length 1m is placed against the base of a wall.

A 5m ladder is placed against the wall and it touches the edge of the box.



Since the 2 triangles are similar:

$$x:1 = 1:y \quad \therefore xy = 1 \quad \therefore x = 1/y$$

Pythagoras for the whole triangle:

$$(x + 1)^2 + (y + 1)^2 = 25$$

$$x^2 + 2x + 1 + y^2 + 2y + 1 = 25$$

$$1/y^2 + 2/y + y^2 + 2y - 23 = 0$$

$$y^4 + 2y^3 - 23y^2 + 2y + 1 = 0$$

$$y = 3.83 \quad \text{or} \quad y = 0.26 \quad (\text{plus 2 negative values})$$

Therefore the ladder will reach **4.83m or 1.26 m**