



# GUIDED PRACTICE: 2D MEASUREMENT– TRIANGLES WITH “MISSING” MEASUREMENTS

**Pythagoras' Theorem**

$$a^2 + b^2 = c^2$$

*c is the hypotenuse*

- It is the longest side
- It is always opposite the right angle

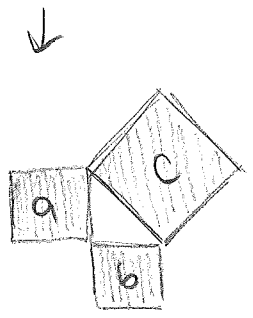
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*a and b are the two shorter sides*

- They are always adjacent to the right angle

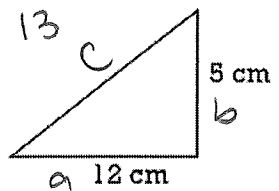
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Proof activity



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

Ex: find missing leg, then find A and P



$$a^2 + b^2 = c^2$$

$$12^2 + 5^2 = c^2$$

$$144 + 25 = c^2$$

$$\sqrt{169} = \sqrt{c^2}$$

$$13 = c$$

$$P = 12 + 5 + 13$$

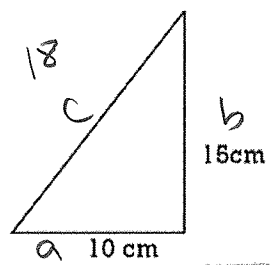
$$P = 30 \text{ cm}$$

$$A = bh \div 2$$

$$A = 5(12) \div 2$$

$$A = 30 \text{ cm}^2$$

Ex: find missing leg, then find A and P



$$a^2 + b^2 = c^2$$

$$10^2 + 15^2 = c^2$$

$$100 + 225 = c^2$$

$$325 = c^2$$

$$18 = c$$

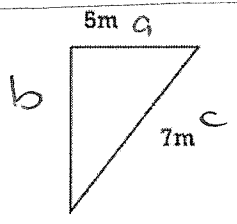
$$P = 18 + 15 + 10$$

$$P = 43 \text{ cm}$$

$$A = bh \div 2$$

$$A = 15(10) \div 2$$

$$A = 75 \text{ cm}^2$$



$$a^2 + b^2 = c^2$$

$$5^2 + b^2 = 7^2$$

$$25 + b^2 = 49$$

$$b^2 = 49 - 25$$

$$b^2 = 24$$

$$4.9 \text{ m}$$

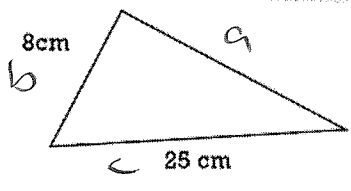
$$P = 5 + 7 + 4.9$$

$$P = 16.9 \text{ m}$$

$$A = bh \div 2$$

$$A = 4.9(5) \div 2$$

$$A = 12.25 \text{ m}^2$$



$$a^2 + b^2 = c^2$$

$$a^2 + 8^2 = 25^2$$

$$a^2 + 64 = 625$$

$$a^2 = 625 - 64$$

$$\sqrt{a^2} = \sqrt{561}$$

$$a = 23.7$$

$$P = 8 + 25 + 23.7$$

$$P = 56.7 \text{ cm}$$

$$A = bh \div 2$$

$$A = 8(23.7) \div 2$$

$$A = 94.8 \text{ cm}^2$$