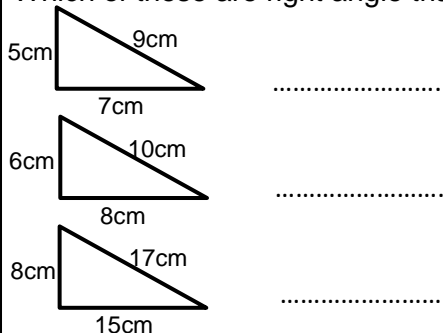




**Starter**

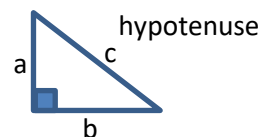
Which of these are right angle triangles



**Top Tips!**

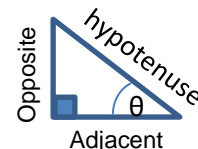
**Pythagoras** -  $a^2 + b^2 = c^2$

- Identify the Hypotenuse
- If you need to find the hypotenuse ADD
- If you need to find a short side SUBTRACT.



**Trigonometry** – SOH – CAH – TOA

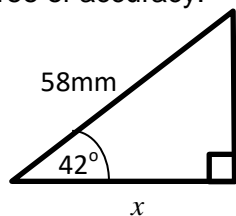
$$\sin \vartheta = \frac{\text{Opposite}}{\text{Hypotenuse}} \quad \cos \vartheta = \frac{\text{Adjacent}}{\text{Hypotenuse}} \quad \tan \vartheta = \frac{\text{Opposite}}{\text{Adjacent}}$$



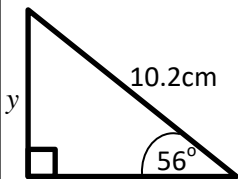
If you're finding the angle don't forget to use  $\text{Sin}^{-1}$ ,  $\text{Cos}^{-1}$  or  $\text{Tan}^{-1}$

**Skills:**

Calculate the missing length to an appropriate degree of accuracy.

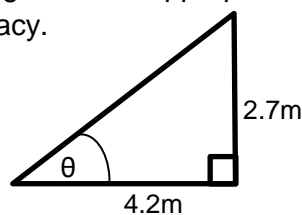


$x = \dots\dots\dots$  mm

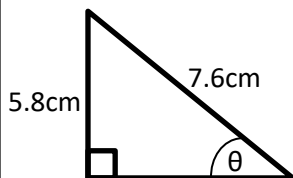


$y = \dots\dots\dots$  cm

Calculate the angle  $\theta$  to an appropriate degree of accuracy.



$\theta = \dots\dots\dots^\circ$



$\theta = \dots\dots\dots^\circ$

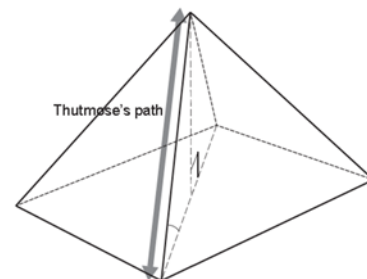
**Examination Question:**

**2014 Summer Link Applications U2 Higher Q7ai&ii**

Thutmose lives in Egypt and has an interest in pyramids



- (a) The Egyptians built right pyramids. Thutmose visits a pyramid that has a square base measuring 230 metres by 230 metres. The vertical height of this pyramid is 146 metres. Thutmose makes his way up from the ground to the top of the pyramid along one of the sloping edges.



- (i) Calculate the length of Thutmose's path along the edge of the pyramid, as shown in the diagram above. [5]

- (ii) Calculate the angle of elevation of Thutmose's path with the horizontal ground, as shown in the diagram opposite. [3]

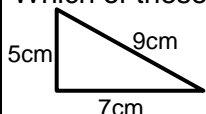
**Assessment for Learning**

**Video / QR code**



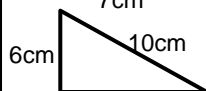
**Starter**

Which of these are right angle triangles



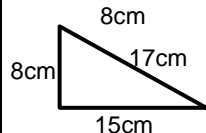
$$5^2 + 7^2 \neq 9^2$$

**Not a right angle**



$$6^2 + 8^2 = 10^2$$

**Is a right angle**



$$8^2 + 15^2 = 17^2$$

**Is a right angle**

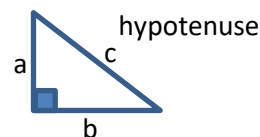
**Top Tips!**

**Pythagoras** -  $a^2 + b^2 = c^2$

· Identify the Hypotenuse

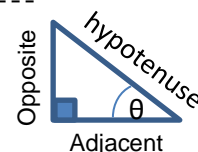
If you need to find the hypotenuse ADD

If you need to find a short side SUBTRACT.



**Trigonometry** – SOH – CAH – TOA

$$\sin \vartheta = \frac{\text{Opposite}}{\text{Hypotenuse}} \quad \cos \vartheta = \frac{\text{Adjacent}}{\text{Hypotenuse}} \quad \tan \vartheta = \frac{\text{Opposite}}{\text{Adjacent}}$$



If you're finding the angle don't forget to use  $\sin^{-1}$ ,  $\cos^{-1}$  or  $\tan^{-1}$

**Skills:**

Calculate the missing length to an appropriate degree of accuracy.

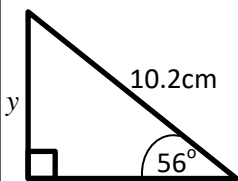
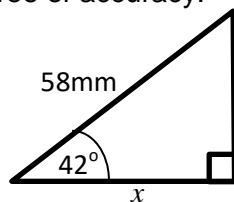
**SOH CAH TOA**

$$\cos 42 = \frac{x}{58}$$

$$x = 58 \times \cos 42$$

$$x = 43.102$$

$$x = 43.1\text{mm}$$



**SOH CAH TOA**

$$\sin 56 = \frac{y}{10.2}$$

$$y = 10.2 \times \sin 56$$

$$y = 8.456$$

$$y = 8.5\text{cm}$$

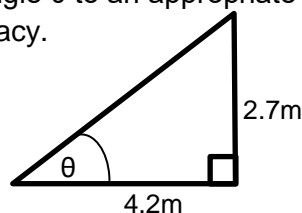
Calculate the angle  $\theta$  to an appropriate degree of accuracy.

**SOH CAH TOA**

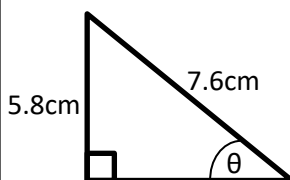
$$\tan \theta = \frac{2.7}{4.2}$$

$$\tan^{-1} (2.7 \div 4.2)$$

$$\theta = 32.735$$



$$\theta = 32.7^\circ$$



**SOH CAH TOA**

$$\sin \theta = \frac{5.8}{7.6}$$

$$\sin^{-1} (5.8 \div 7.6)$$

$$\theta = 49.743$$

$$\theta = 49.7^\circ$$

**Examination Question:**

**2014 Summer Link Applications U2 Higher Q7ai&ii**

Thutmose lives in Egypt and has an interest in pyramids

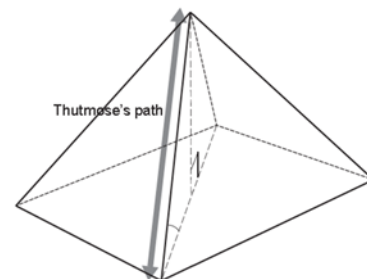


(a) The Egyptians built right pyramids.

Thutmose visits a pyramid that has a square base measuring 230 metres by 230 metres.

The vertical height of this pyramid is 146 metres.

Thutmose makes his way up from the ground to the top of the pyramid along one of the sloping edges.



(i) Calculate the length of Thutmose's path along the edge of the pyramid, as shown in the diagram above. [5]

Diagonal distance of square base

$$c^2 = 230^2 + 230^2 \quad c = 325.3\text{m}$$

Distance to centre of square base

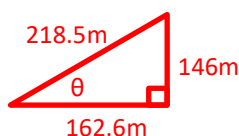
$$325.3 \div 2 = 162.6\text{m}$$

Length along edge of pyramid

$$c^2 = 146^2 + 162.6^2$$

$$C = 218.5\text{m}$$

(ii) Calculate the angle of elevation of Thutmose's path with the horizontal ground, as shown in the diagram opposite. [3]



**SOH CAH TOA**

$$\tan \theta = \frac{146}{162.6}$$

$$\theta = 41.9^\circ$$



