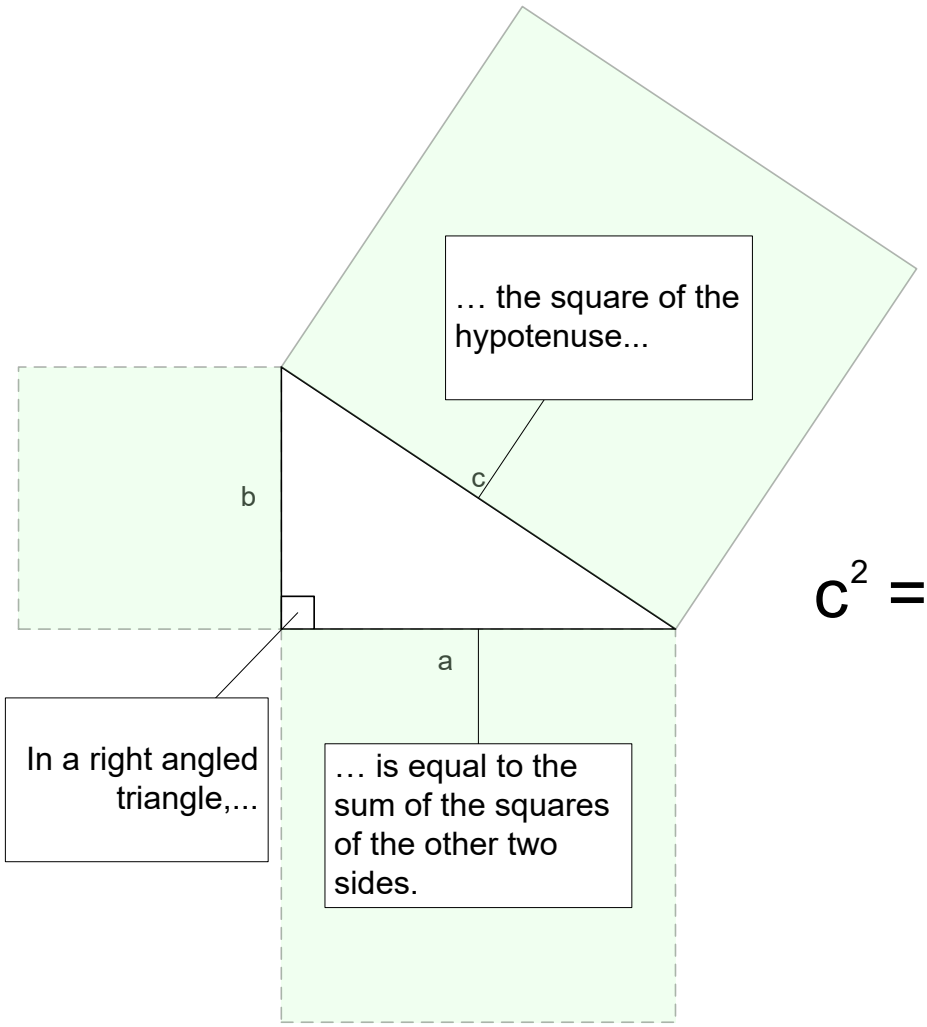


$$c^2 = a^2 + b^2$$

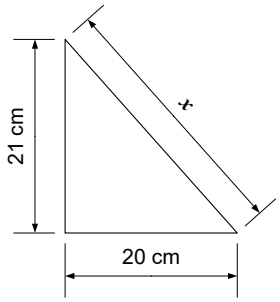
Pythagoras' Theorem and Trigonometry

Some Officers Have

Curley Auburn Hair

'Til Old Age

Worked Example

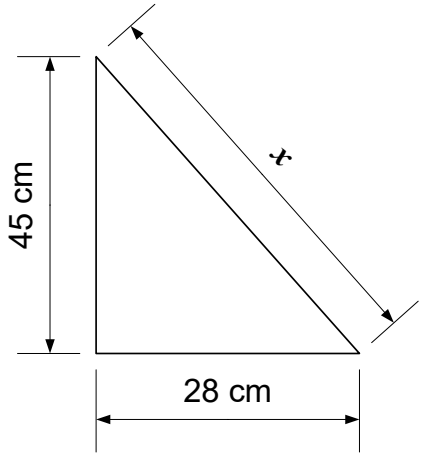


By Pythagoras' Theorem, $c^2 = a^2 + b^2$.

$$\therefore x^2 = 20^2 + 21^2$$
$$= 400 + 441$$
$$= 841$$
$$\therefore x = \sqrt{841}$$
$$= 29\ cm$$

Follow the worked example to answer the following questions

1



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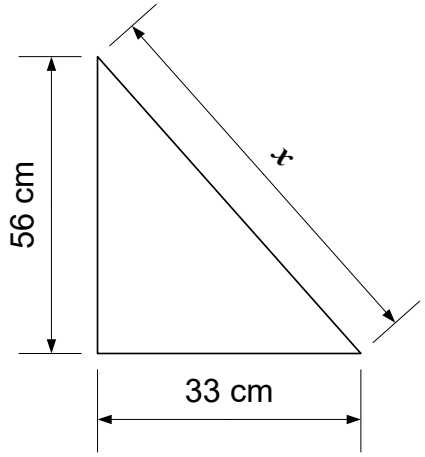

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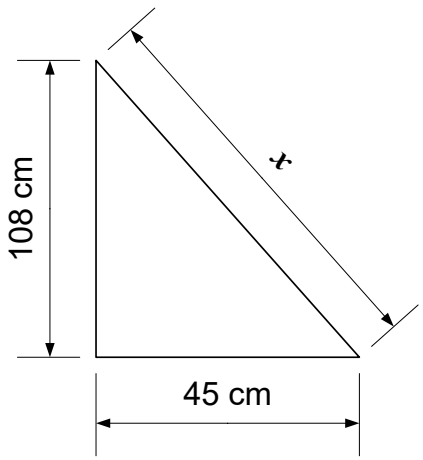

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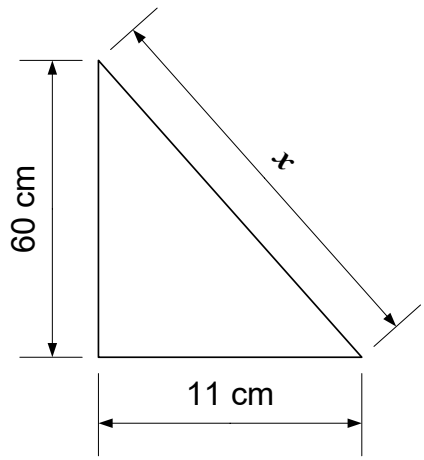
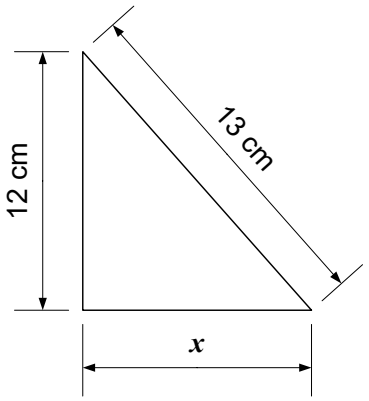


Worked Example

Sometimes, we have to calculate the length of one of the sides which is not the hypotenuse.



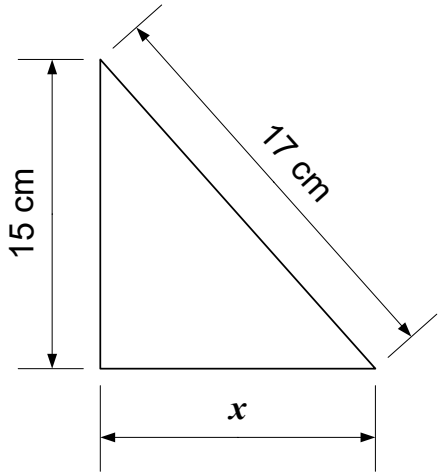
By Pythagoras' Theorem, $c^2 = a^2 + b^2$.

$$a^2 = c^2 - b^2$$

$$\therefore x^2 = 13^2 - 12^2$$
$$= 169 + 144$$
$$= 25$$
$$\therefore x = \sqrt{25}$$
$$= 5\ cm$$

Follow the worked example to find the answers to the following questions

5



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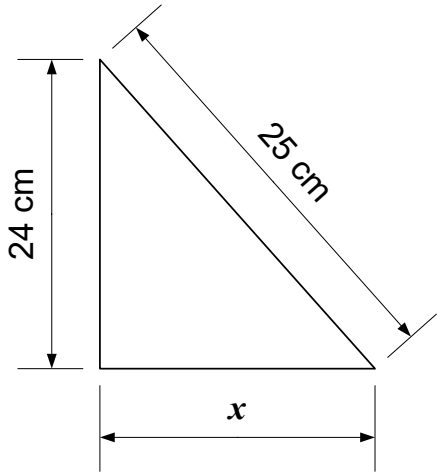

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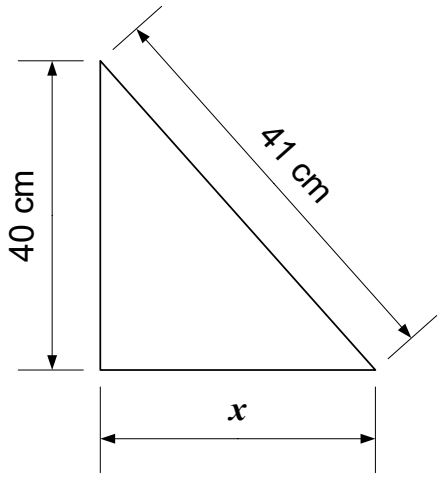

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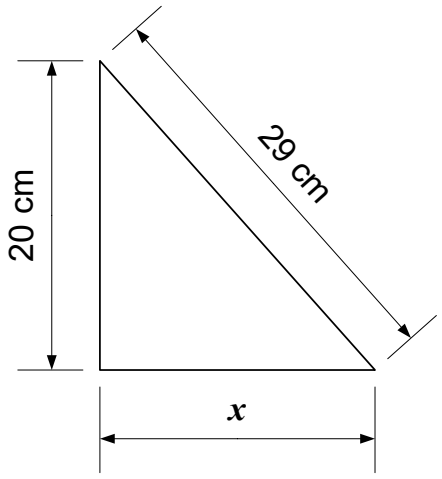
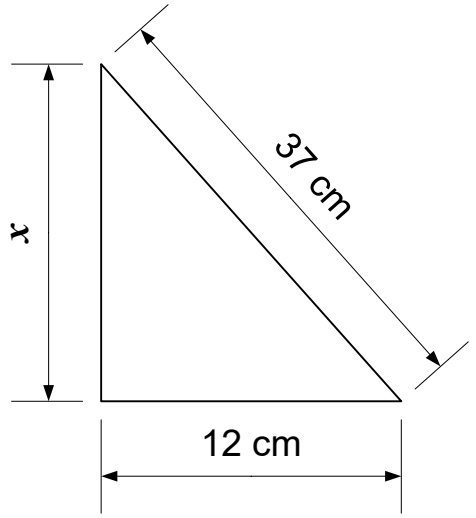


Select the most appropriate method to calculate the following:

9



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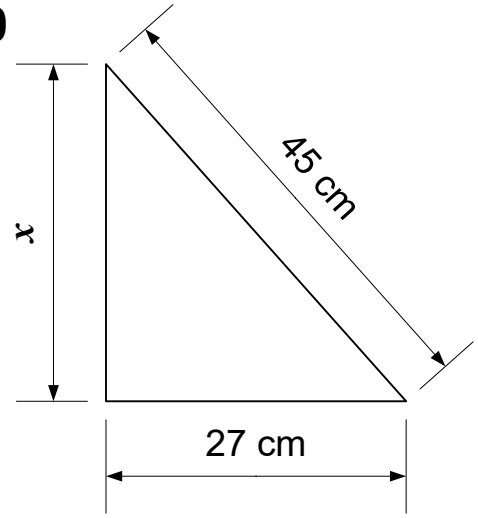

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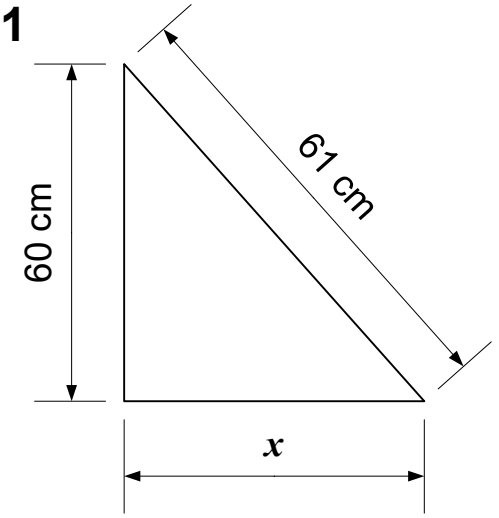

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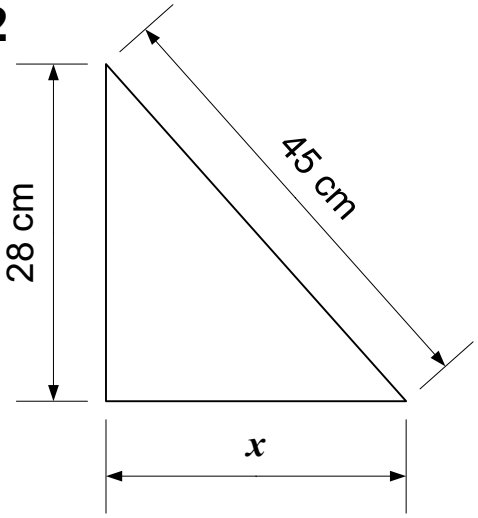

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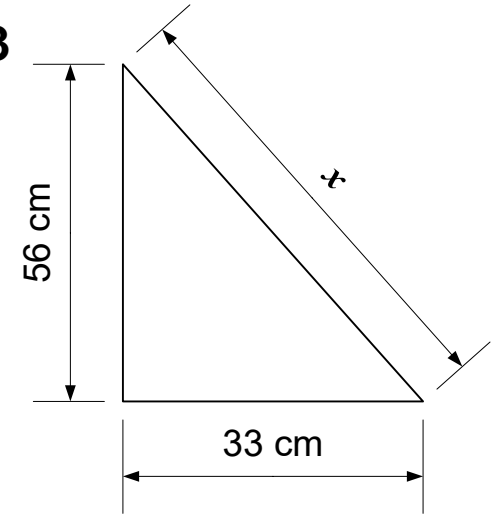

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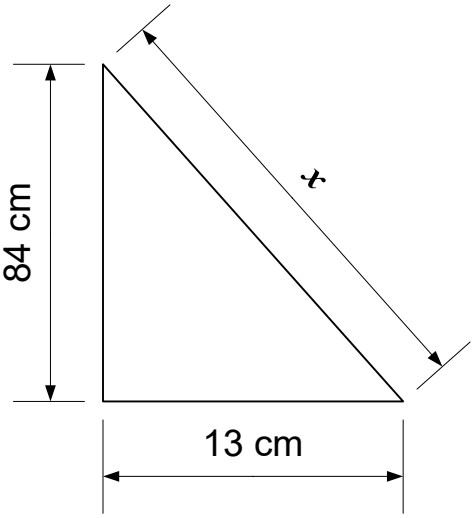
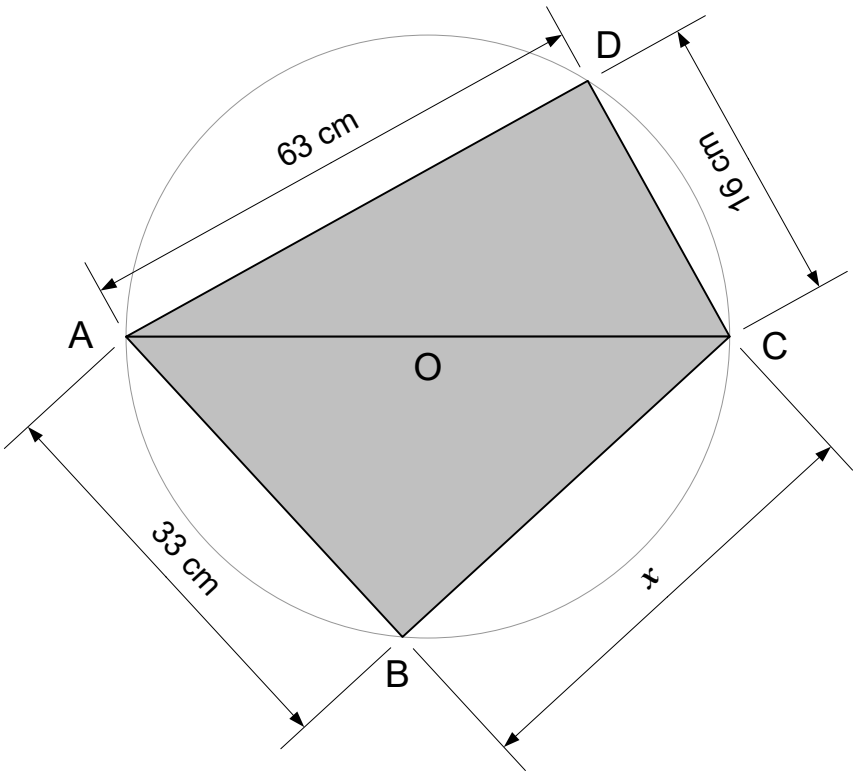


Use Pythagoras' Theorem to solve this problem



AOC is a diameter in the circle.

Angle ABC and Angle ADC are angles subtended by the diameter (which means that they are right angles).

AD= 63cm.

DC = 16cm.

Use this information to find the diameter of the circle.

AB = 33cm.

Use this and the information you have found to find the length of BC.

A quadrilateral where all the vertices rest on the circumference of a circle is called a cyclic quadrilateral.

Find the area of the cyclic quadrilateral by adding the area of each triangle together.

Find the radius of the circle.

Find the area of the *unshaded* part of the circle.

Trigonometry

$$\sin\theta = \frac{Opposite}{Hypotenuse} \qquad \cos\theta = \frac{Adjacent}{Hypotenuse} \qquad \tan\theta = \frac{Opposite}{Adjacent}$$

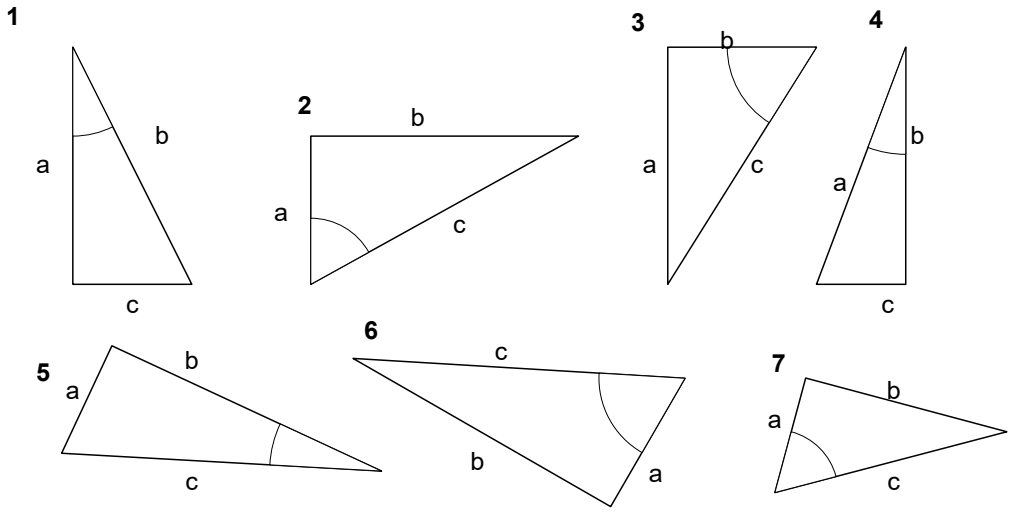
Remember that when you are finding a **side**, use Sin, Cos or Tan on your calculator.

When you are finding an **angle**, use Sin^{-1}, Cos^{-1} and Tan^{-1} on your calculator.

1 Copy and fill in the table below with the exact values. Do NOT use a calculator as you may get asked these questions on the Non-Calculator paper.

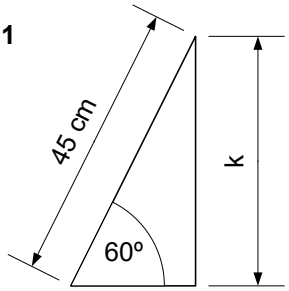
Angle	Sin	Cos	Tan
0°			
30°			
45°			
60°			
90°			

2 Label the sides in relation to the angles marked.



Without using a calculator, find the exact values of k.

1



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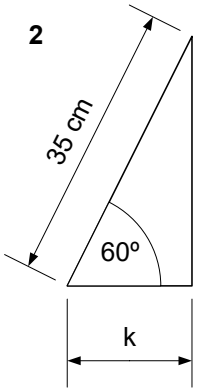

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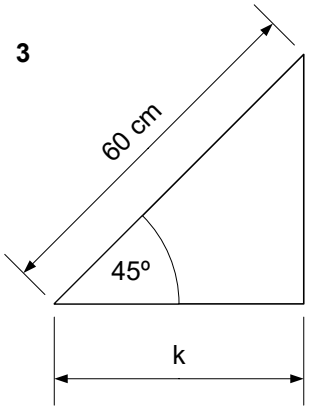

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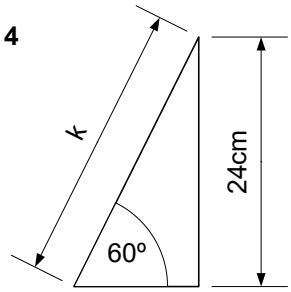

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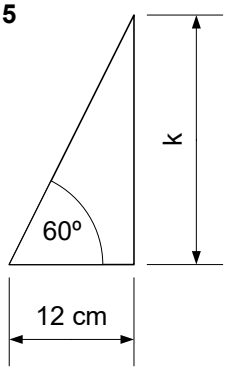

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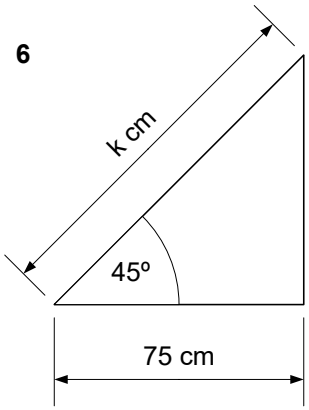

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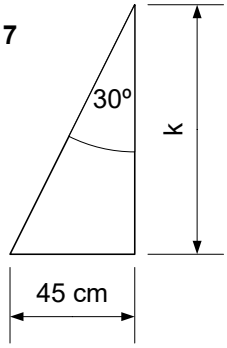

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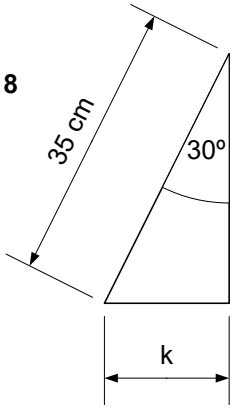

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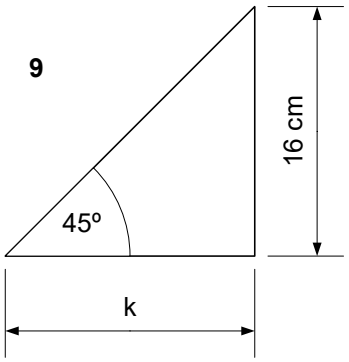
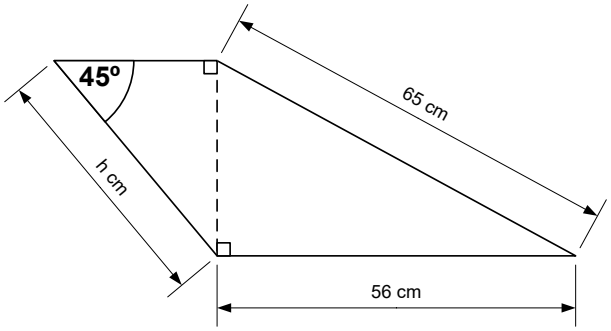
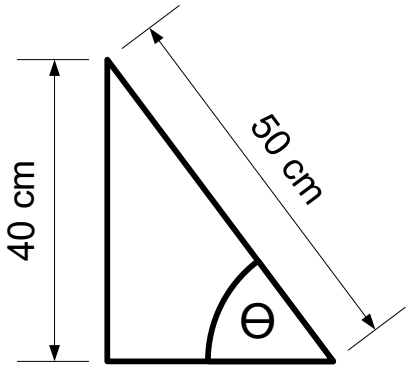


10 Combine your knowledge of Pythagoras and Trigonometry to calculate the value of h.



Use you calculator to answer the following questions.

Worked Example



Some Officers Have

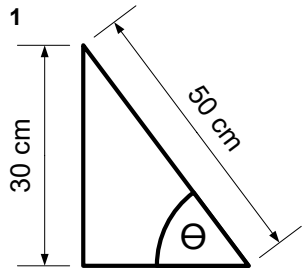
$$\sin\theta = \frac{Opposite}{Hypotenuse}$$

$$\therefore \theta = \sin^{-1}\frac{Opposite}{Hypotenuse}$$

$$= \sin^{-1}\left(\frac{40}{50}\right)$$
$$= 53.13010235$$
$$= 57°\ 7'48.368"$$

Follow the worked example to calculate the following angles.

1



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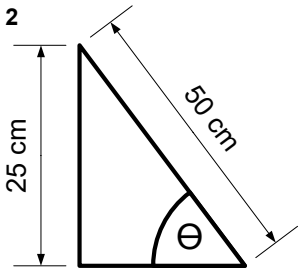

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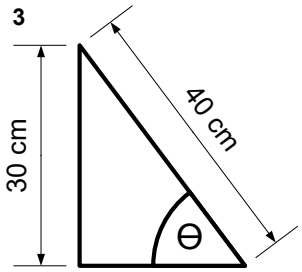

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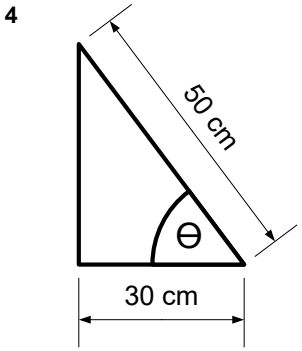

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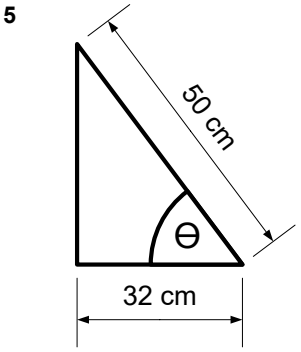

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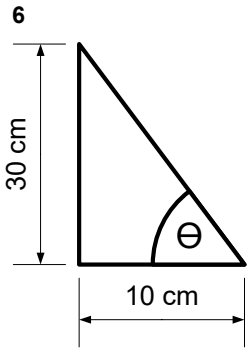

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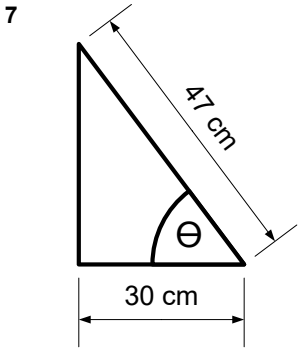

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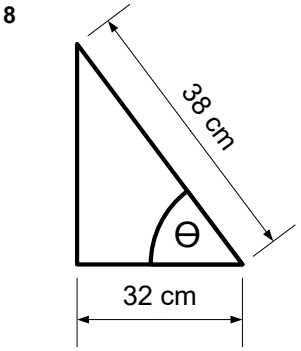

9