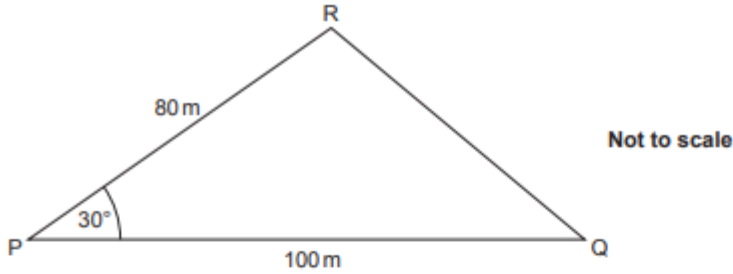


**SINE AND COSINE QUESTIONS**

**OCR GCSE – Thursday 5 November 2020 – Paper 5 (Non-Calculator) Higher Tier**

**1.**

**18** The diagram shows a triangular field PQR which is used to grow organic carrots.



PQ = 100 m, PR = 80 m and angle RPQ = 30°.

In recent years, an average of 2.5 kg of carrots has been harvested from each square metre of the field.

**(a)** Use this information to work out the total mass of carrots that might have been harvested from the field in 2019.

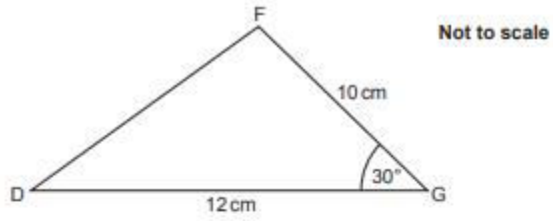
**(a)** .....kg [4]

**(b)** Why might the answer to part **(a)** be unreliable?

.....  
..... [1]

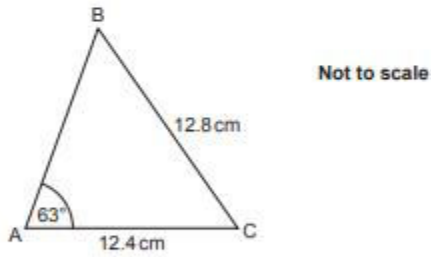
2.

15 (a) Calculate length DF in this triangle.



(a) ..... cm [3]

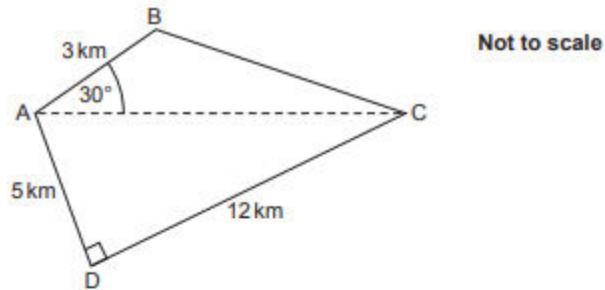
(b) Calculate angle ACB in this triangle.



(b) .....° [4]

3.

20 The diagram shows some land in the shape of a quadrilateral, ABCD.



$AB = 3\text{ km}$ ,  $AD = 5\text{ km}$ ,  $CD = 12\text{ km}$  and angle  $BAC = 30^\circ$ .

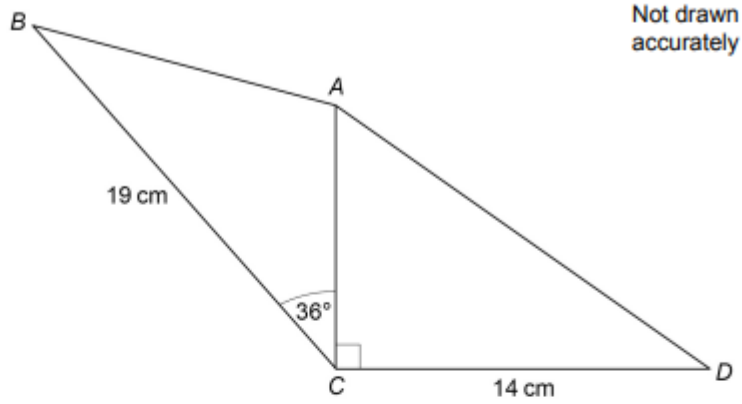
The land is sold for £10 million per square kilometre.

Calculate the total cost of the land.

£ ..... million [7]

4.

16 *ABC* and *ACD* are triangles.



The area of *ACD* is  $80.5 \text{ cm}^2$

Work out the area of *ABC*.

Give your answer to 3 significant figures.

[4 marks]

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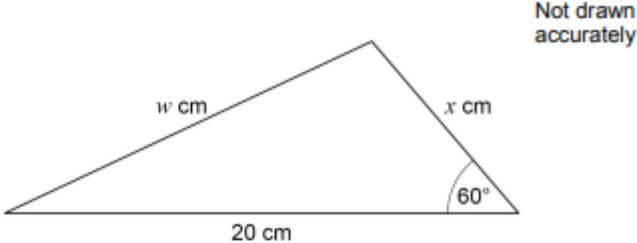
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Answer \_\_\_\_\_  $\text{cm}^2$

5.

26 The area of this triangle is  $25\sqrt{3} \text{ cm}^2$



Work out the value of  $w$ .  
Give your answer in the form  $a\sqrt{b}$  where  $a$  and  $b$  are integers greater than 1

[5 marks]

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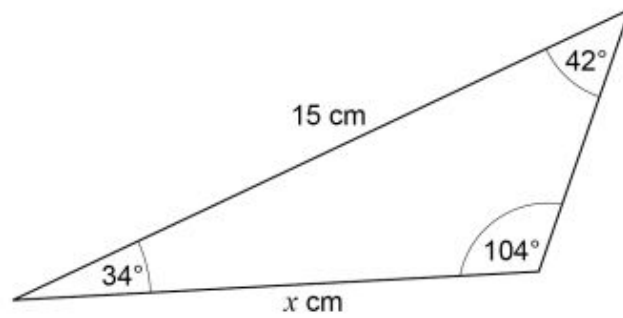
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Answer \_\_\_\_\_

6.

17 Here is a triangle.



Not drawn accurately

Circle the correct equation.

[1 mark]

$$\frac{\sin x}{42} = \frac{\sin 15^\circ}{104}$$

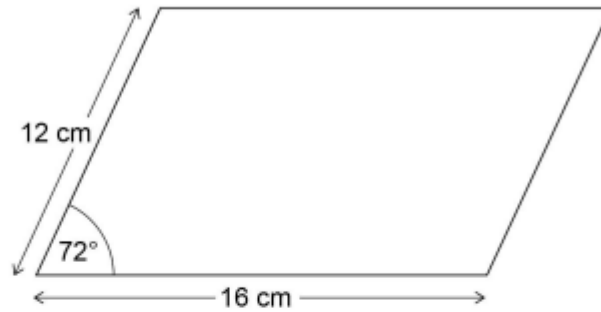
$$\frac{x}{\sin 42^\circ} = \frac{15}{\sin 104^\circ}$$

$$\frac{\sin x}{34} = \frac{\sin 15^\circ}{104}$$

$$\frac{x}{\sin 42^\circ} = \frac{15}{\sin 34^\circ}$$

7.

17 Work out the area of the parallelogram.



Not drawn accurately

[3 marks]

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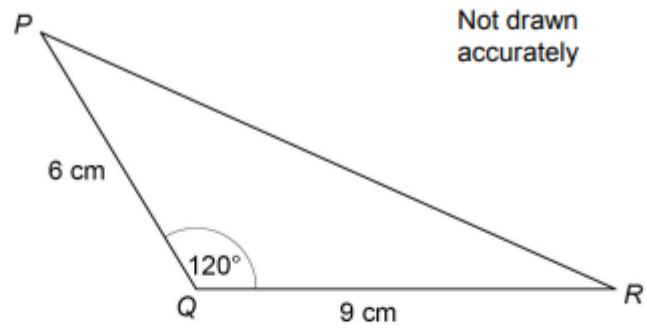
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Answer \_\_\_\_\_  $\text{cm}^2$

8.

22 Here is a triangle.



Work out the length  $PR$ .

[3 marks]

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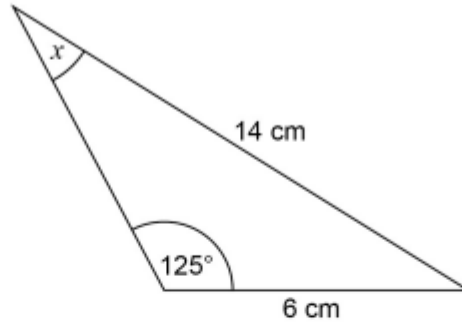
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Answer \_\_\_\_\_ cm



9.

**20** Work out the size of angle  $x$ .



Not drawn accurately

**[3 marks]**

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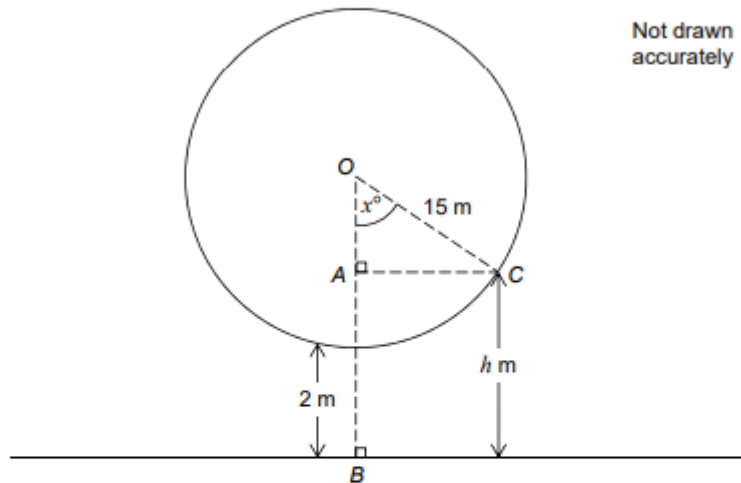
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Answer \_\_\_\_\_ degrees

AQA GCSE – Sample Paper 2 (Calculator) Higher Tier

10.

- 24 A Big Wheel is modelled as a circle with centre  $O$  and radius 15 metres.  
The wheel turns in an anticlockwise direction.  
The lowest point on the wheel is always 2 metres above horizontal ground.



Not drawn accurately

- 24 (a)  $C$  is a point on the wheel,  $h$  metres above horizontal ground.  
Angle  $COB = x^\circ$

Show that  $h = 17 - 15 \cos x^\circ$

[2 marks]

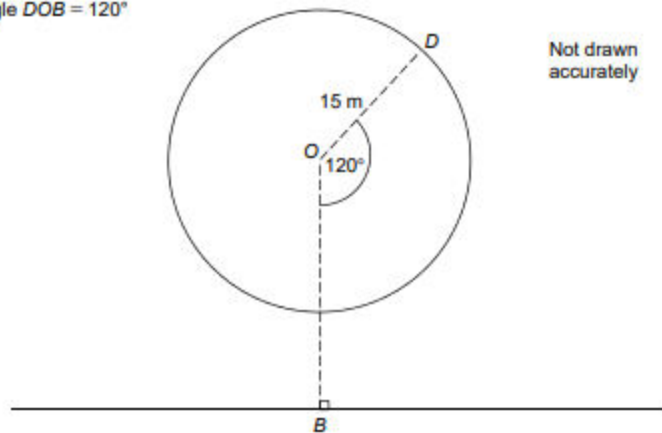
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- 24 (b)  $D$  is a point on the wheel.  
Angle  $DOB = 120^\circ$



Not drawn accurately

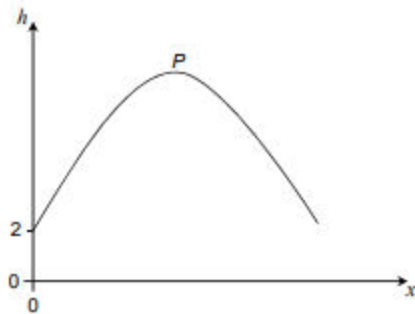
Work out the height of  $D$  above horizontal ground.

[2 marks]

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Answer \_\_\_\_\_ metres

- 24 (c) Here is a sketch of the graph  $h = 17 - 15 \cos x^\circ$  for one **complete** turn of the wheel.  
 $P$  is the highest point on the graph.



Work out the coordinates of  $P$ .

[2 marks]

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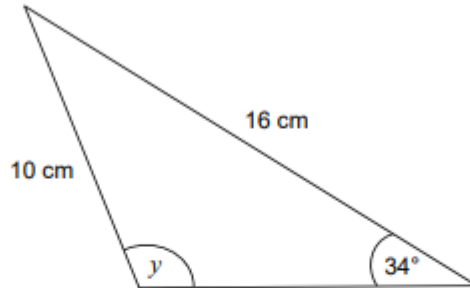
Answer ( \_\_\_\_\_ , \_\_\_\_\_ )

AQA GCSE – Sample Paper 3 (Calculator) Higher Tier

11.

20 In the triangle, angle  $y$  is obtuse.

Not drawn accurately



Work out the size of angle  $y$ .

[3 marks]

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Answer \_\_\_\_\_ degrees

AQA GCSE – Sample Paper 3 (Calculator) Higher Tier

11.

20	$\frac{\sin y}{16} = \frac{\sin 34}{10}$	M1	oe
	$\frac{\sin 34}{10} \times 16$ or [63.47, 63.5]	M1	
	[116.5, 116.53]	A1	