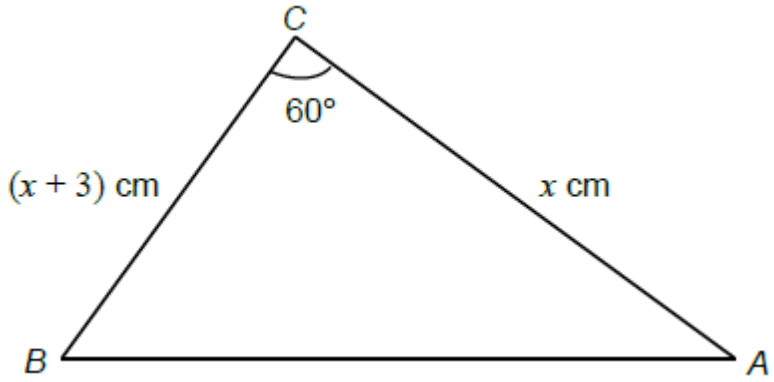
Trigonometry 2 (H)

A collection of 9-1 Maths GCSE Sample and Specimen questions from AQA, OCR, Pearson-Edexcel and WJEC Eduqas.

Name:	
Total Marks:	

1. The area of the triangle is $\sqrt{300}$ cm^2.



Calculate the length of AB.

[8]

2.

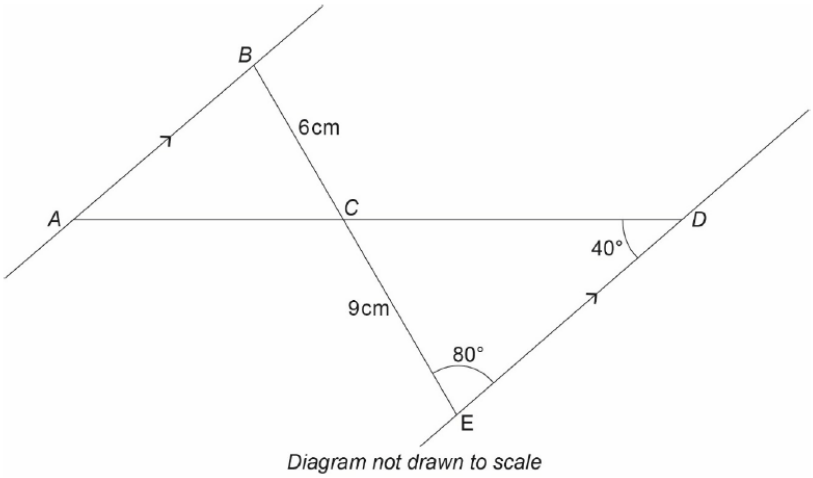


Diagram not drawn to scale

Given that AB is parallel to *ED*, calculate the length of *AB*.

[4]

3. In triangle RPQ,

RP = 8.7 cm
PQ = 5.2 cm
Angle PRQ = 32°

(a) Assuming that angle PQR is an acute angle, calculate the area of triangle RPQ.

Give your answer correct to 3 significant figures.

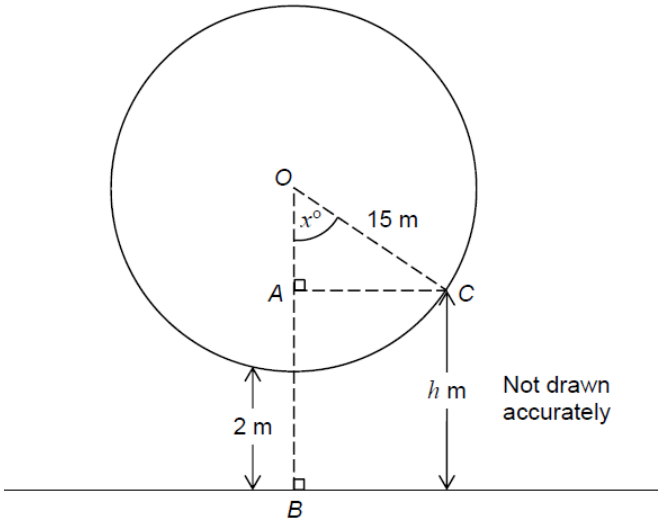
.....cm^2 [4]

(b) If you did not know that angle PQR is an acute angle, what effect would this have on your calculation of the area of triangle RPQ?

[1]

4. 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.



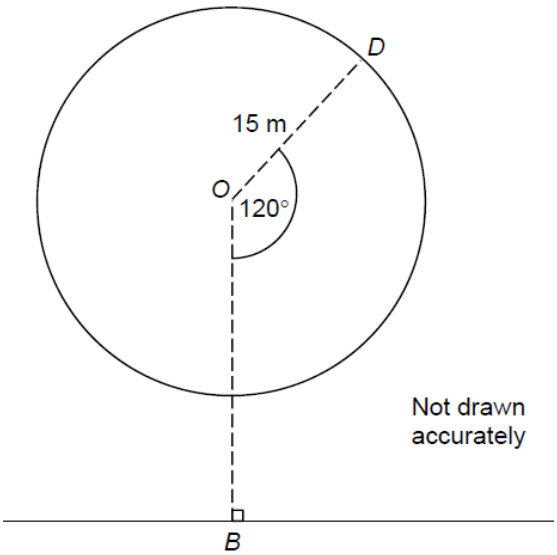
(a) *C* is a point on the wheel, *h* metres above horizontal ground.

Angle *COB* = $x°$

Show that $h = 17 - 15 \cos x°$

[2]

(b) *D* is a point on the wheel.

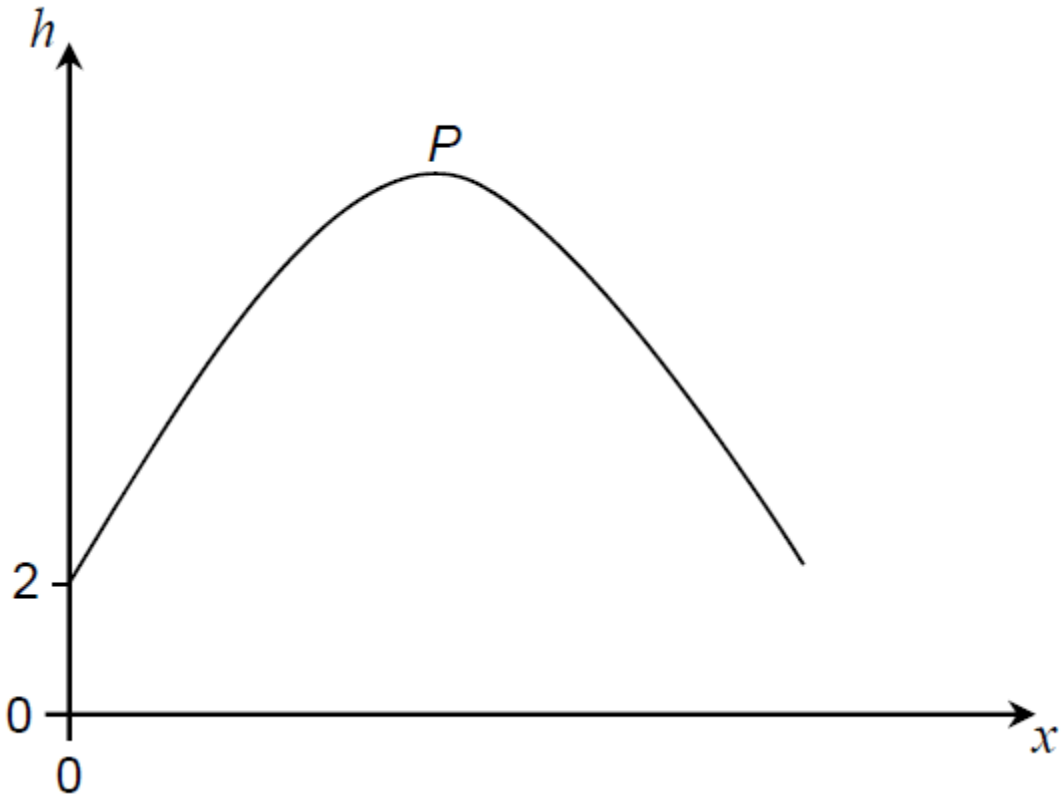


Angle *DOB* = 120°

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

[2]

(c) Here is a sketch of the graph h = 17 - 15 cos x° for one complete turn of the wheel.



P is the highest point on the graph.

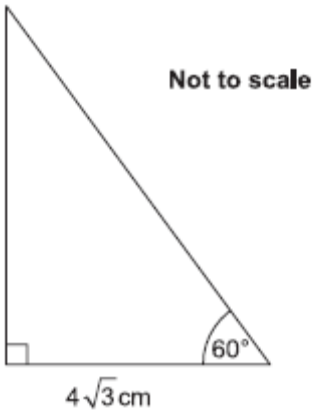
Work out the coordinates of P.

(_____ , _____) [2]

5. (a) Write down the exact value of tan 60°.

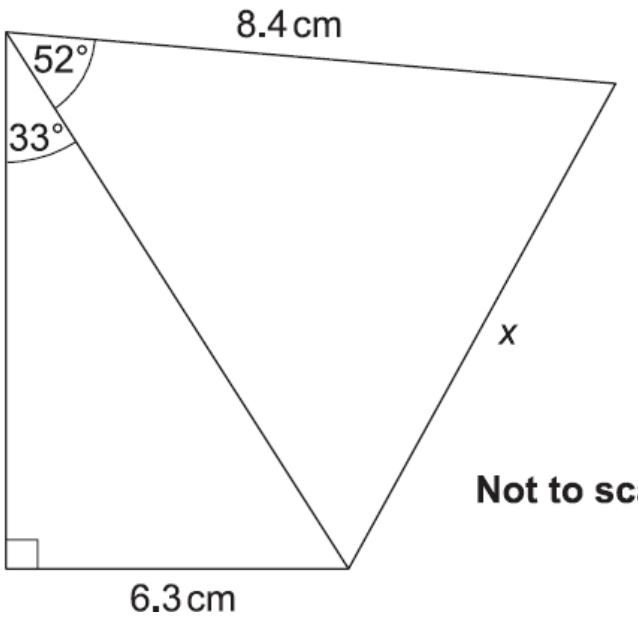
(a) ..... [1]

(b) Find the exact area of this triangle.



(b) ..... cm^2 [4]

6. Calculate x.



..... cm [5]

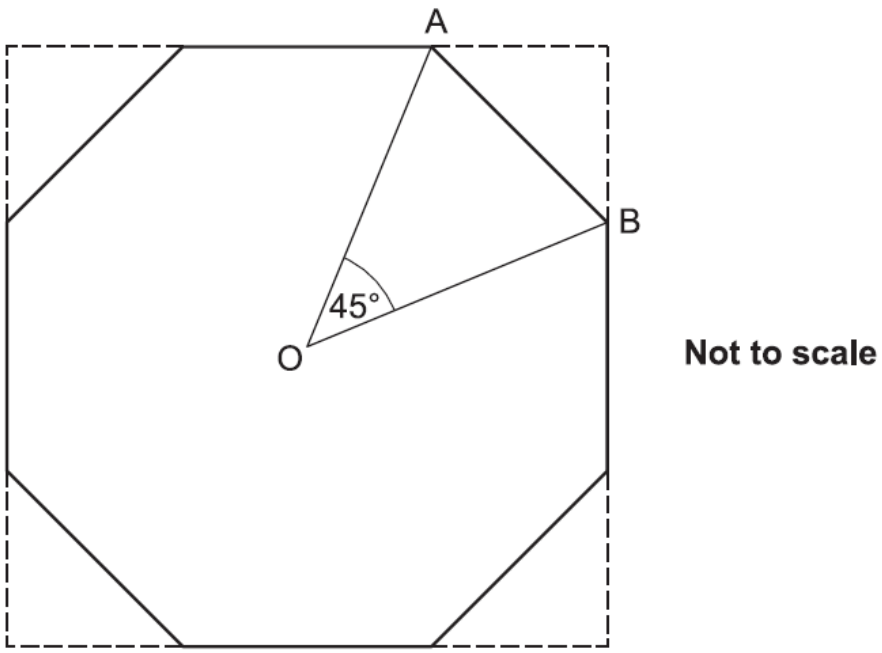
7. Simon cuts the corners off a square piece of card to leave the regular octagon shown below.

O is the centre of the octagon.

A and B are vertices of the octagon.

OA = OB = 5 cm.

Angle AOB = 45°.



a) (i) Work out the area of the octagon.

(a)(i) ..... cm^2 [3]

(ii) Work out the area of the original square piece of card.

(ii) ..... cm2 [5]

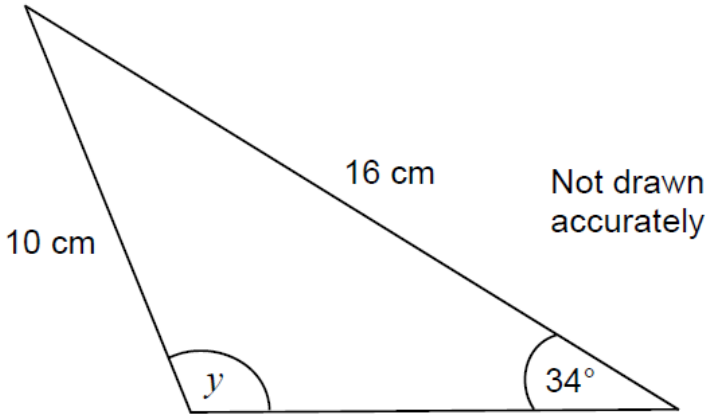
b) Simon now makes a table top using the card as a model.

The sides of the table top are 8 times as long as the sides of the card model.

Find the ratio of the area of Simon's table top to the area of the card model.

b) ..... : ..... [2]

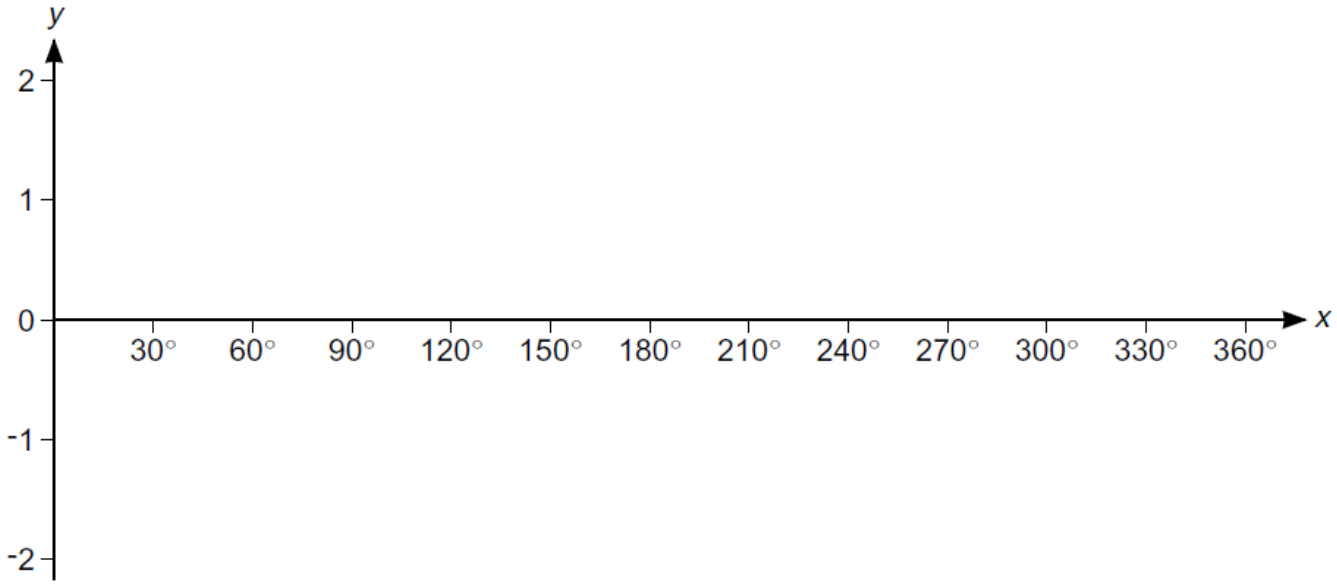
8. In the triangle, angle y is obtuse.



Work out the size of angle y.

[3]

9. (a) Sketch the graph of $y = \sin x$ for $0^o \leq x \leq 360^o$.



[2]

b) (i) Write down the coordinates of the maximum point of $y = \sin x$ for $0^o \leq x \leq 360^o$.

b)(i) (..... , ...) [1]

ii) Write down the coordinates of the maximum point of $y = 3 + \sin x$ for $0^o \le x \le 360^o$.

ii) (..... , ...) [1]

c) One solution to the equation $4 \sin x = k$ is $x = 60^o$.

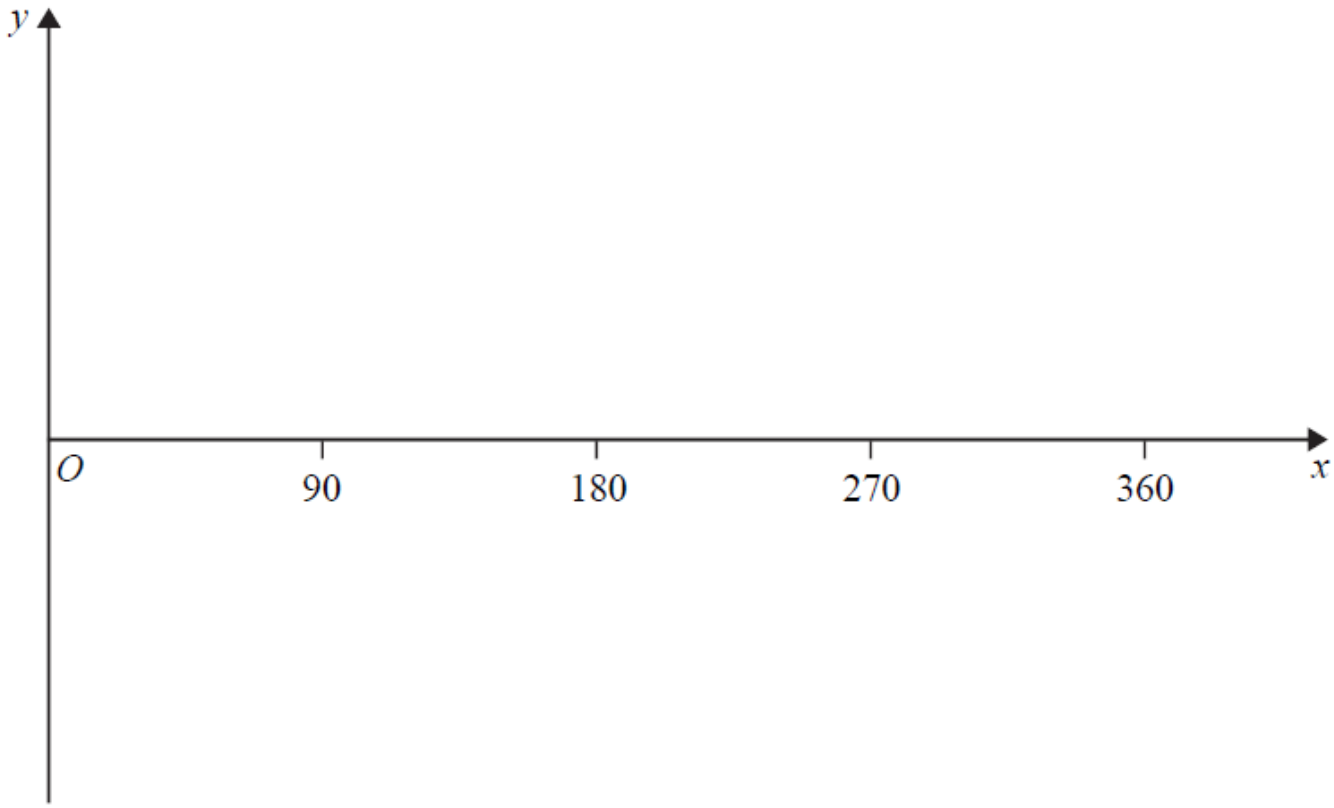
i) Find the value of k .

c)(i) k = ... [2]

ii) Find another solution for x in the range $0^o \le x \le 360^o$.

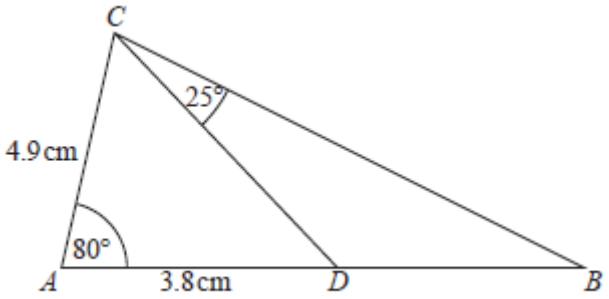
ii) x = ... ^{o} [1]

10 Sketch the graph of $y = \cos x^\circ$ for $0 \le x \le 360$



[2]

11.



ABC is a triangle.

D is a point on AB.

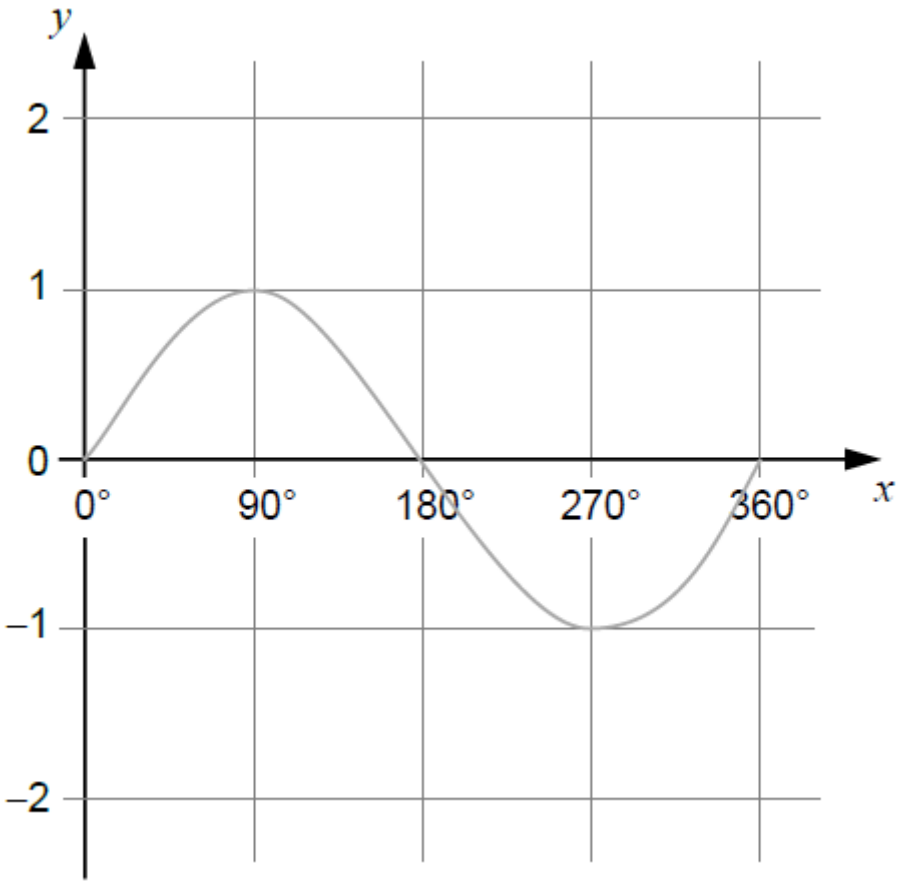
Work out the area of triangle *BCD*.

Give your answer correct to 3 significant figures.

..... cm^2 [2]

12. a) The graph of y = sin x is shown for $0° \leqslant x \leqslant 360°$

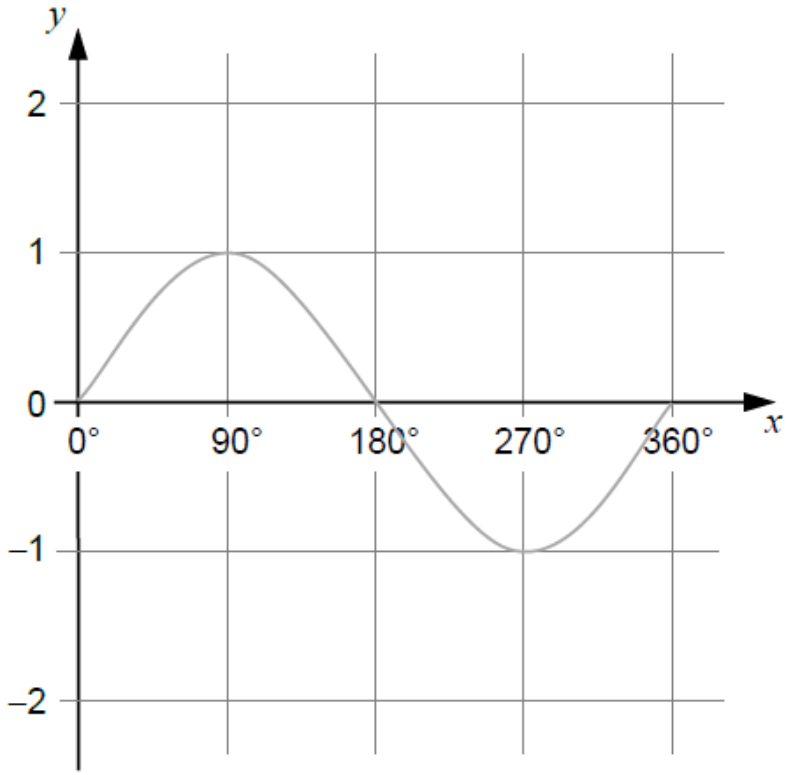
On the grid sketch the graph of y = sin x −1 for $0° \leqslant x \leqslant 360°$



[1]

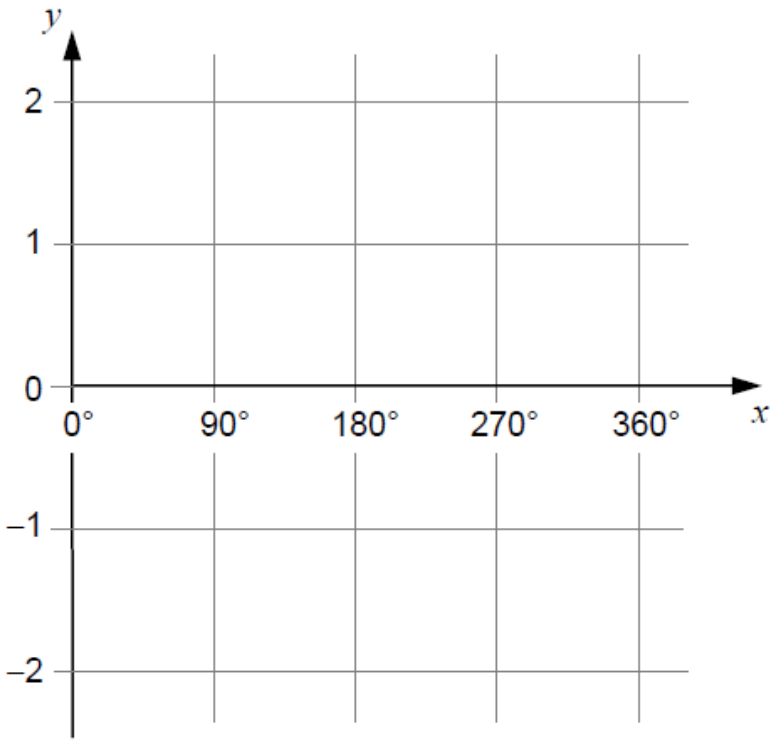
b) The graph of y = sin x is shown on the grid for 0° ⩽ x ⩽ 360°

On this grid sketch the graph of y = −sin x for 0° ⩽ x ⩽ 360°



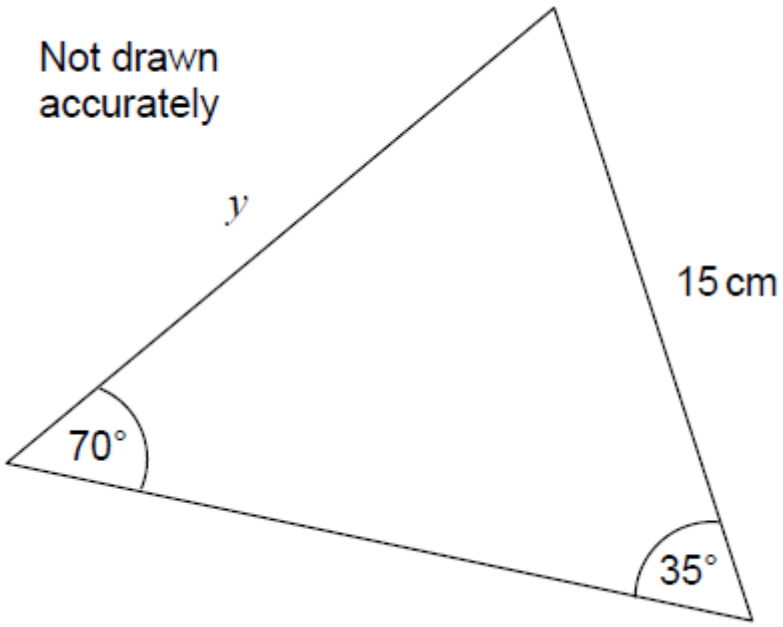
[1]

c) On this grid sketch the graph of y = tan x for 0° ⩽ x ⩽ 360°



[1]

13.

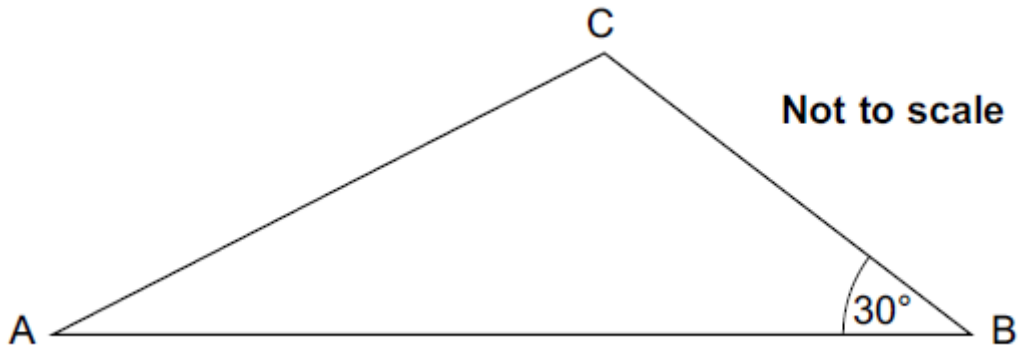


Work out the value of y.

[2]

14. Triangle ABC has area 40 cm^2.

AB = 2BC.

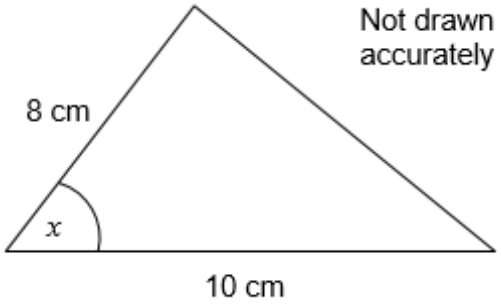


Work out the length of BC.

Give your answer as a surd in its simplest form.

..... cm [6]

15. Which expression gives the area, in cm^2, of this triangle?



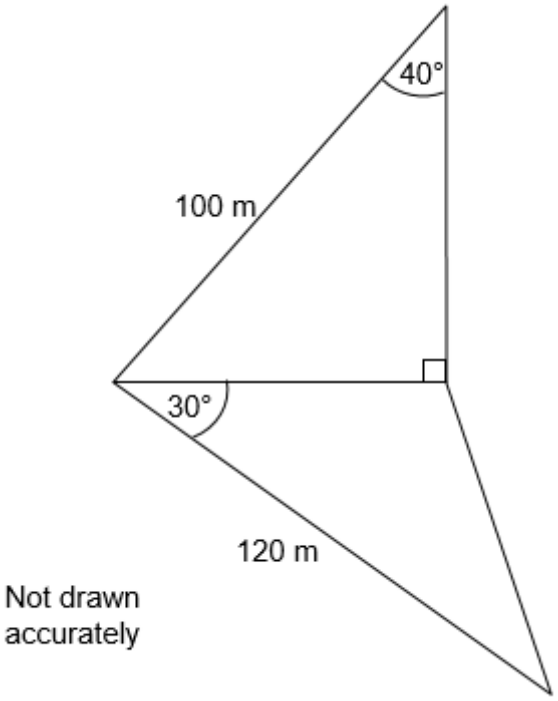
Circle your answer.

[1]

80 sin x 40 sin x 80 cos x 40 cos x

16. Two triangular lawns are shown.

Wire fencing is needed for all five sides.

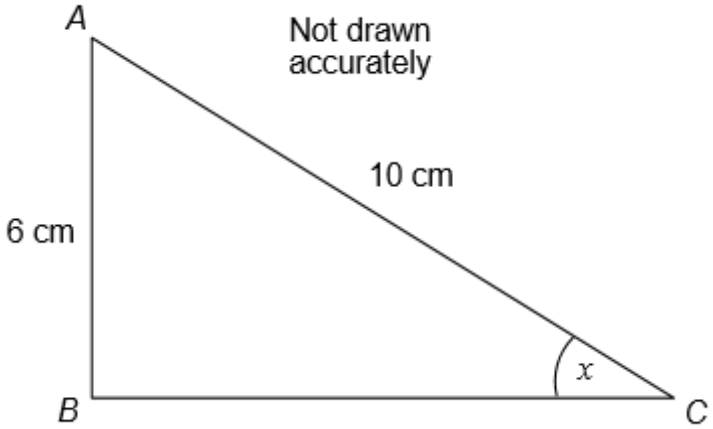


Wire fencing is sold in 50-metre rolls.

Work out the number of rolls needed.

[6]

17.



Kernal is using trigonometry to work out the size of angle x.

He assumes that angle ABC is a right angle.

In fact, the size of angle ABC is 85°

What is the effect of his assumption on the accuracy of his answer?

You must show your working.

[3]

CREDITS AND NOTES

Q	Awarding Body	Q	Awarding Body	Q	Awarding Body
1	WJEC Eduqas	8	AQA	15	AQA
2	WJEC Eduqas	9	OCR	16	AQA
3	Pearson Edexcel	10	Pearson Edexcel	17	AQA
4	AQA	11	Pearson Edexcel		
5	OCR	12	AQA		
6	OCR	13	AQA		
7	OCR	14	OCR		

Notes:

These questions have been retyped from the original sample/specimen assessment materials and whilst every effort has been made to ensure there are no errors, any that do appear are mine and not the exam board s (similarly any errors I have corrected from the originals are also my corrections and not theirs!).

Please also note that the layout in terms of fonts, answer lines and space given to each question does not reflect the actual papers to save space.

These questions have been collated by me as the basis for a GCSE working party set up by the GLOW maths hub - if you want to get involved please get in touch. The objective is to provide support to fellow teachers and to give you a flavour of how different topics "could" be examined. They should not be used to form a decision as to which board to use. There is no guarantee that a topic will or won't appear in the "live" papers from a specific exam board or that examination of a topic will be as shown in these questions.

Links:

AQA http://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300

OCR http://ocr.org.uk/gcsemaths

Pearson Edexcel http://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html

WJEC Eduqas http://www.eduqas.co.uk/qualifications/mathematics/gcse/

Contents:

This version contains questions from:

AQA – Sample Assessment Material, Practice set 1 and Practice set 2

OCR – Sample Assessment Material and Practice set 1

Pearson Edexcel – Sample Assessment Material, Specimen set 1 and Specimen set 2

WJEC Eduqas – Sample Assessment Material