Name	Class

MATHS TEACHER HUB

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Non-right-angle triangles

(9 – 1) Topic booklet

Higher

These questions have been collated from previous years GCSE Mathematics papers.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.	Total Marks

Instructions

•Use **black** ink or ball-point pen.
•**Fill in the boxes** at the top of this page with your name, centre number and candidate number.
•Answer **all** questions.
•Answer the questions in the spaces provided
– *there may be more space than you need*.
•Diagrams are NOT accurately drawn, unless otherwise indicated.
•You must **show all your working out.**
•If the question is a **1H** question you are not allowed to use a calculator.
•If the question is a **2H** or a **3H** question, you may use a calculator to help you answer.

Information

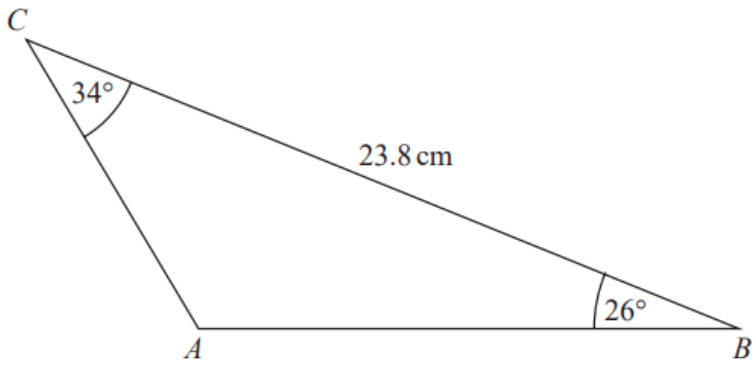
•The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question*.

Advice

•Read each question carefully before you start to answer it.
•Keep an eye on the time.
•Try to answer every question.
•Check your answers if you have time at the end.

Answer ALL questions
Write your answers in the space provided.
You must write down all the stages in your working.

13 Here is triangle ABC.

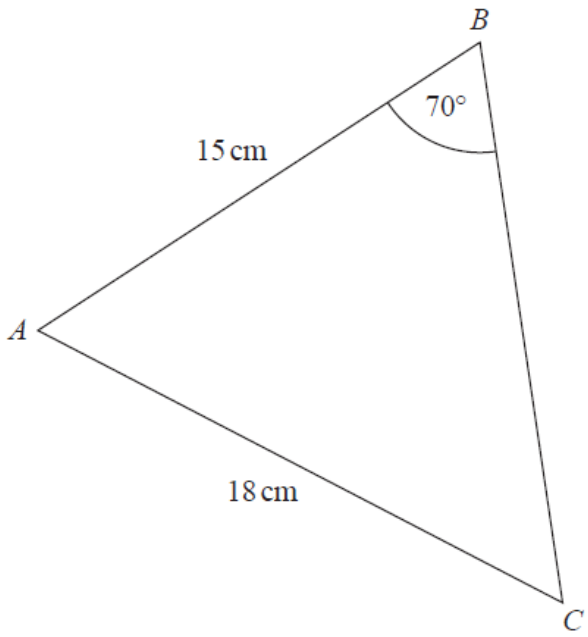


Work out the length of AB.
Give your answer correct to 1 decimal place.

..... cm

November 2020 – Paper 2H **(Total for Question 13 is 3 marks)**

13 ABC is a triangle.

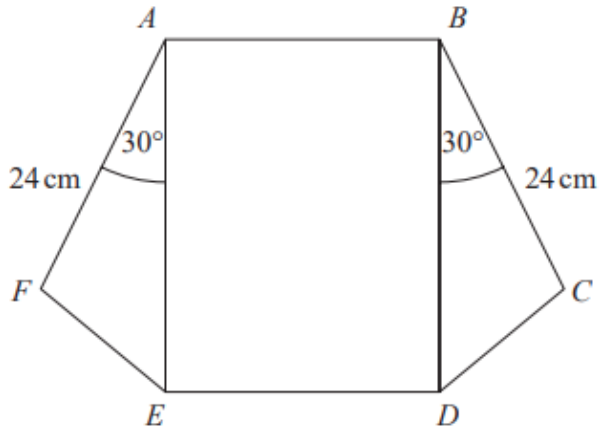


Calculate the size of angle BAC.
Give your answer correct to 1 decimal place.

.....°

(Total for Question 13 is 4 marks)

14 The diagram shows a rectangle, *ABDE*, and two congruent triangles, *AFE* and *BCD*.



area of rectangle *ABDE* = area of triangle *AFE* + area of triangle *BCD*

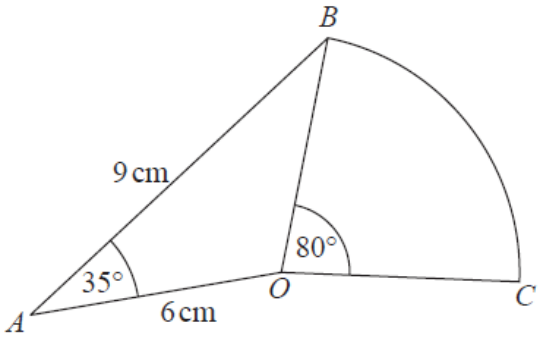
$$AB : AE = 1 : 3$$

Work out the length of *AE*.

..... cm

June 2019 – Paper 3H **(Total for Question 14 is 4 marks)**

14 *OAB* is a triangle.
OBC is a sector of a circle, centre *O*.

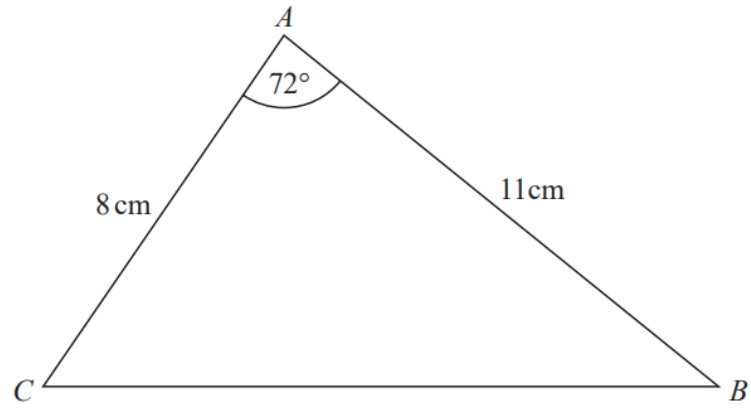


Calculate the area of *OBC*.
Give your answer correct to 3 significant figures.

..... cm^2

(Total for Question 14 is 4 marks)

15 Here is triangle ABC.



(a) Find the length of BC.
Give your answer correct to 3 significant figures.

..... cm

(3)

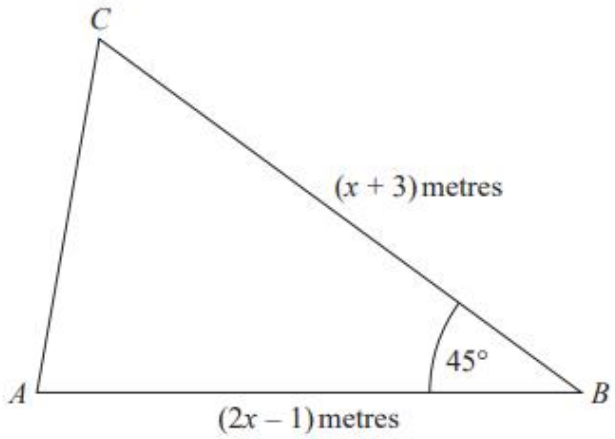
(b) Find the area of triangle ABC.
Give your answer correct to 3 significant figures.

..... cm^2

(2)

(Total for Question 15 is 5 marks)

15

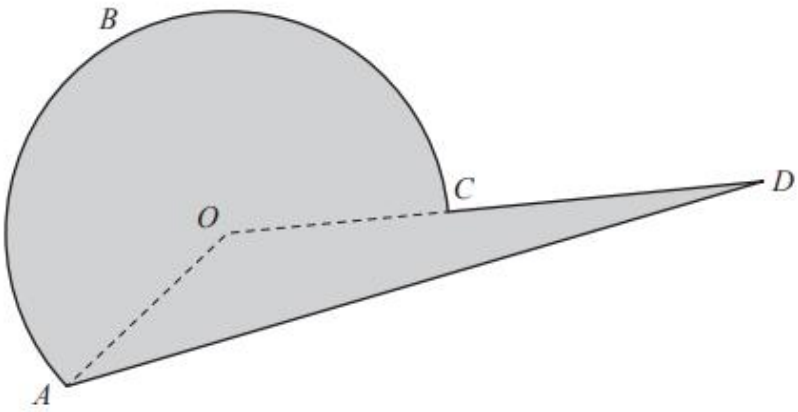


The area of triangle ABC is $6\sqrt{2}$ m^2.

Calculate the value of x.
Give your answer correct to 3 significant figures.

(Total for Question 15 is 5 marks)

16 Here is a shaded shape $ABCD$.



The shape is made from a triangle and a sector of a circle, centre O and radius 6 cm.
OCD is a straight line.

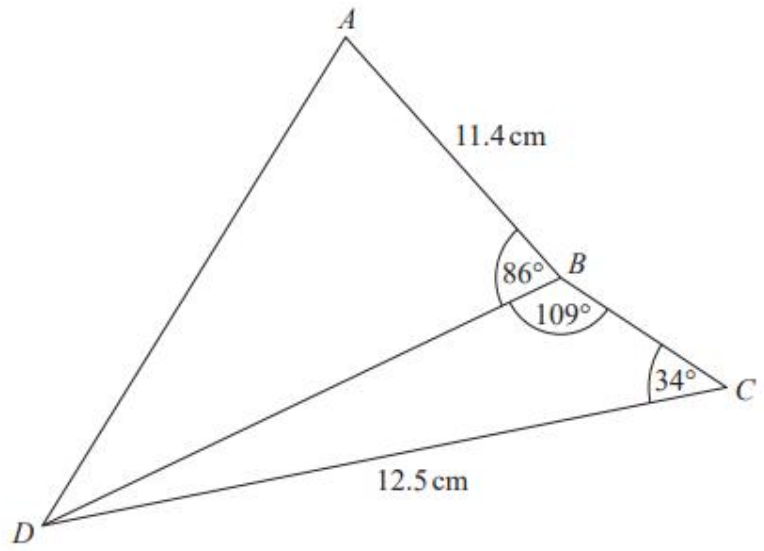
$AD = 14$ cm
Angle $AOD = 140°$
Angle $OAD = 24°$

Calculate the perimeter of the shape.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 16 is 5 marks)

17

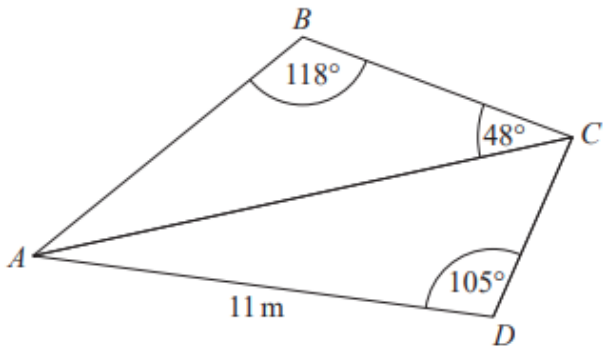


Work out the length of AD.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 17 is 5 marks)

17 *ABC* and *ADC* are triangles.



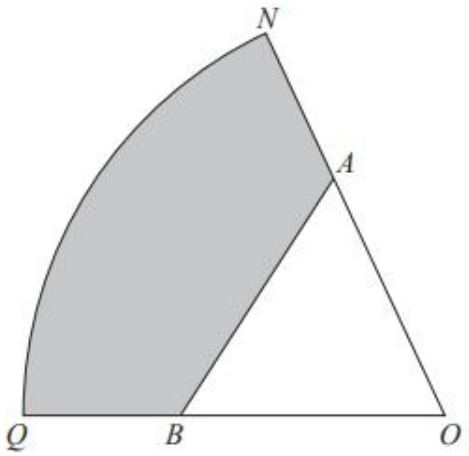
The area of triangle *ADC* is $56\,m^2$

Work out the length of *AB*.
Give your answer correct to 1 decimal place.

..... m

(Total for Question 17 is 5 marks)

17



ONQ is a sector of a circle with centre *O* and radius 11 cm.

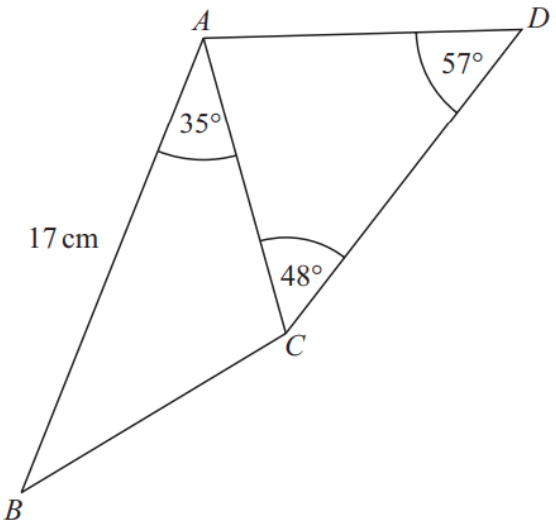
A is the point on *ON* and *B* is the point on *OQ* such that *AOB* is an equilateral triangle of side 7 cm.

Calculate the area of the shaded region as a percentage of the area of the sector *ONQ*.
Give your answer correct to 1 decimal place.

.....%

(Total for Question 17 is 5 marks)

18 $ABCD$ is a quadrilateral.



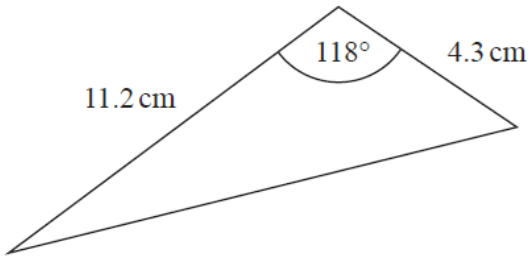
The area of triangle ABC is $54\,cm^2$

Calculate the area of triangle ACD.
Give your answer correct to 3 significant figures.

..... cm^2

(Total for Question 18 is 5 marks)

18 Here is a triangle.

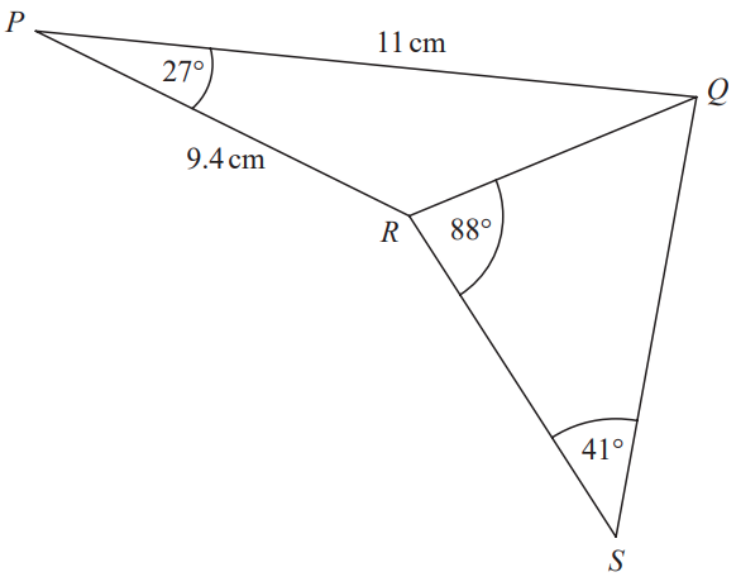


Work out the area of the triangle.
Give your answer correct to 3 significant figures.

..... cm^2

(Total for Question 18 is 2 marks)

18 PQR and QRS are triangles.

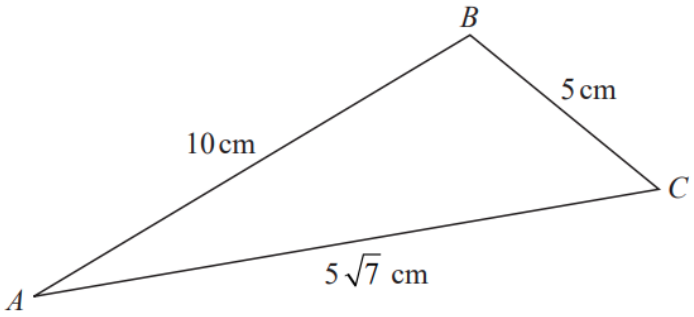


Calculate the length of QS.
Give your answer correct to 3 significant figures.
You must show all your working.

..... cm

(Total for Question 18 is 4 marks)

20 Here is triangle ABC.

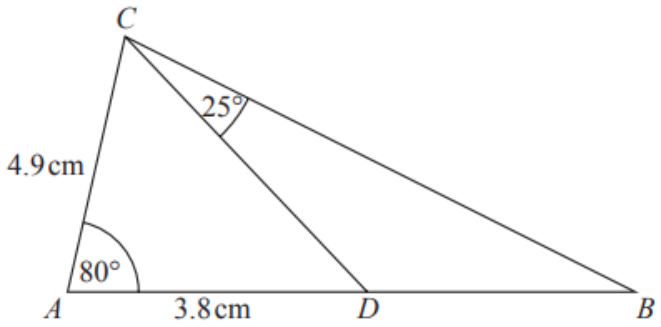


Find the size of angle ABC.
You must show all your working.

.....°

(Total for Question 20 is 4 marks)

21



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

(Total for Question 21 is 5 marks)

21 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?

.....

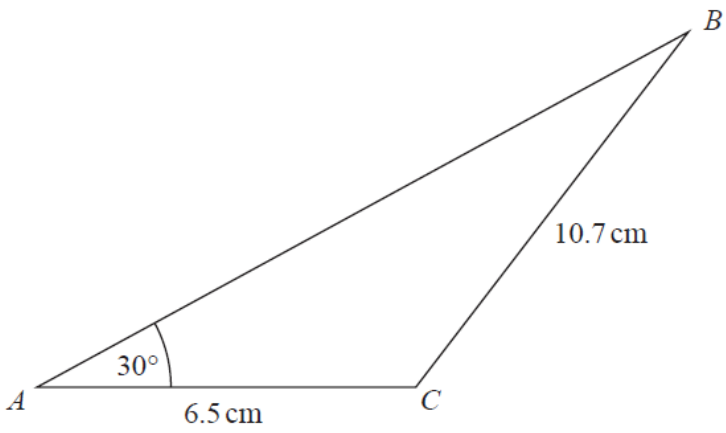
.....

.....

(1)

(Total for Question 21 is 5 marks)

22 Here is a triangle ABC.

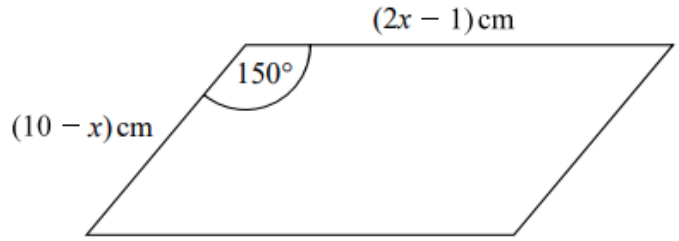


Work out the value of $\sin ABC$

Give your answer in the form $\frac{m}{n}$ where m and n are integers.

(Total for Question 22 is 4 marks)

23 The diagram shows a parallelogram.



The area of the parallelogram is greater than 15 cm^2

(a) Show that $2x^2 - 21x + 40 < 0$

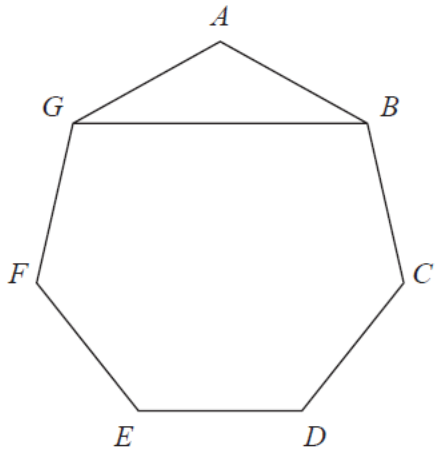
(3)

(b) Find the range of possible values of x.

(3)

(Total for Question 23 is 6 marks)

26 *ABCDEFG* is a regular heptagon.



The area of triangle *ABG* is 30 cm^2

Calculate the length of *GB*.
Give your answer correct to 3 significant figures.
You must show all your working.

..... cm

(Total for Question 26 is 5 marks)