Name	Class

MATHS TEACHER HUB

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Angle facts

(9 – 1) Topic booklet

Foundation

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 **1F** question you are not allowed to use a calculator.
•If the question is a **2F** or a **3F** question, you may use a calculator to help you answer.

Information

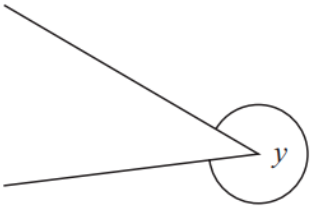
•The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question*.

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.

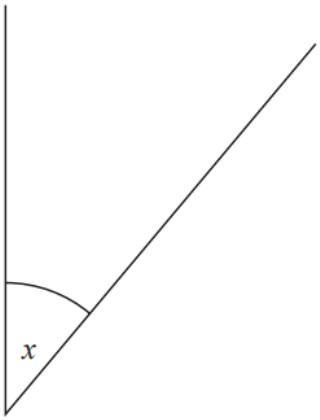
3 Write down the mathematical name for the type of angle marked y.



.....

May 2024 – Paper 1F **(Total for Question 3 is 1 mark)**

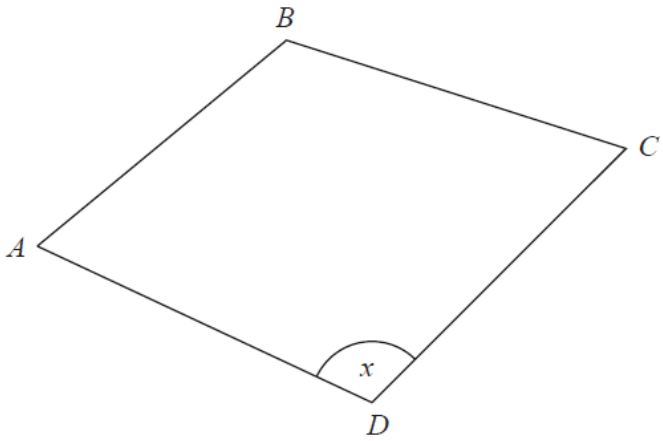
4 Measure the size of the angle marked x.



.....°

November 2023 – Paper 1F **(Total for Question 4 is 1 mark)**

6 Here is a quadrilateral $ABCD$.



(a) Measure the length of the side AB.
Give your answer in centimetres.

..... centimetres
(1)

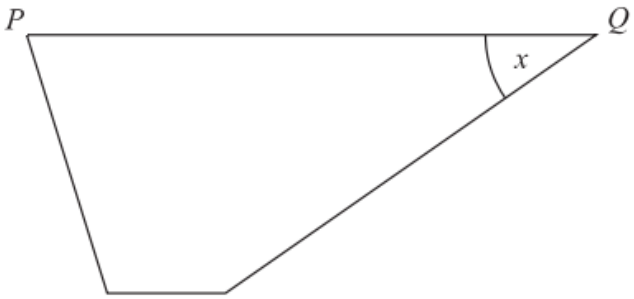
(b) Measure the size of the angle marked x.

..... °
(1)

November 2022 – 2F **(Total for Question 6 is 2 marks)**

6 Here is a trapezium.

This diagram is accurately drawn.



(a) Measure the length of the line PQ.

..... cm

(1)

(b) Measure the size of the angle marked x.

..... °

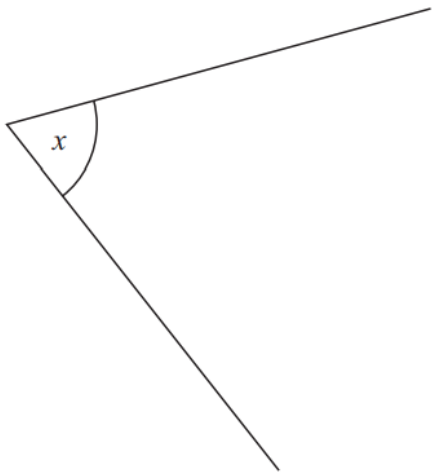
(1)

(Total for Question 6 is 2 marks)

7 (a) Measure the length of this line.
Give your answer in centimetres.

..... centimetres
(1)

(b) Measure the size of the angle marked x.



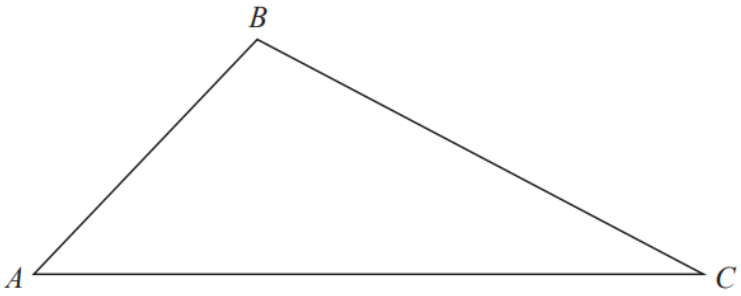
.....°
(1)

(c) In the space below, draw a hexagon.

(1)

(Total for Question 7 is 3 marks)

7 Here is a triangle.
The triangle is accurately drawn.



(a) Measure the length of AC.

..... cm

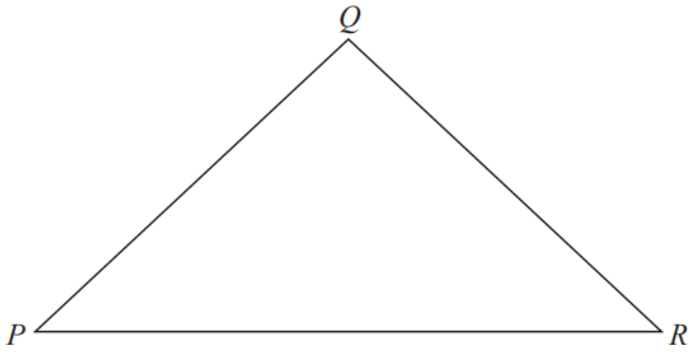
(1)

(b) Measure the size of angle B.

..... °

(1)

Here is a different triangle.



$QP = QR$

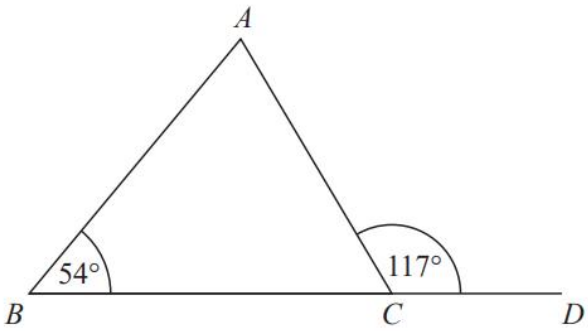
(c) Write down the mathematical name of this triangle.

.....

(1)

(Total for Question 7 is 3 marks)

7

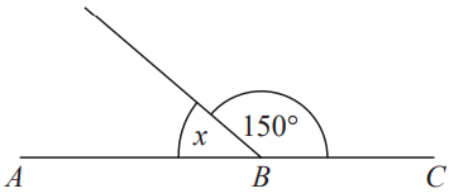


BCD is a straight line.
ABC is a triangle.

Show that triangle *ABC* is an isosceles triangle.
Give a reason for each stage of your working.

(Total for Question 7 is 4 marks)

8



ABC is a straight line.

(a) (i) Work out the size of the angle marked *x*.

.....°

(1)

(ii) Give a reason for your answer.

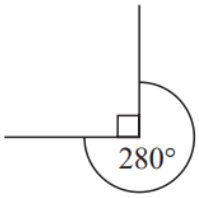
.....

.....

.....

(1)

The diagram below is wrong.



(b) Explain why.

.....

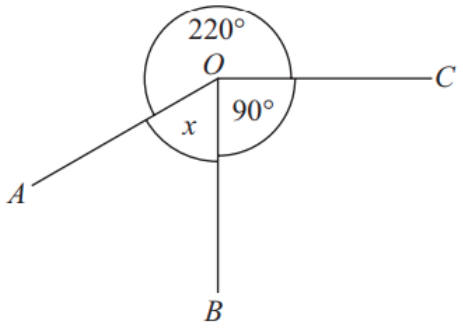
.....

.....

(1)

(Total for Question 8 is 3 marks)

8 OA, OB and OC are three straight lines.



(i) Work out the size of the angle marked x.

.....°

(2)

(ii) Give a reason for your answer.

.....

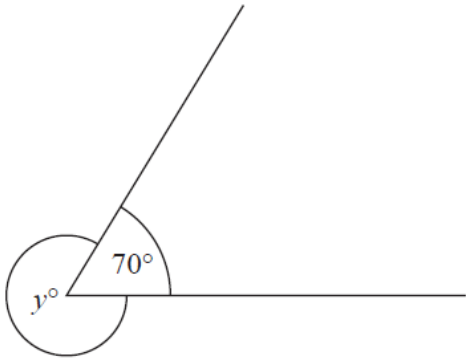
.....

.....

(1)

May 2024 – Paper 1F **(Total for Question 8 is 3 marks)**

9



(a) Find the value of y.

$y =$ .....

(1)

(b) Give a reason for your answer.

.....

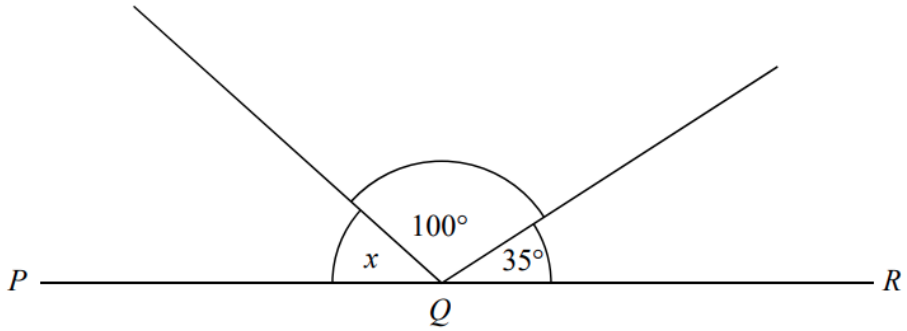
.....

.....

(1)

November 2022 – 1F **(Total for Question 9 is 2 marks)**

9 PQR is a straight line.

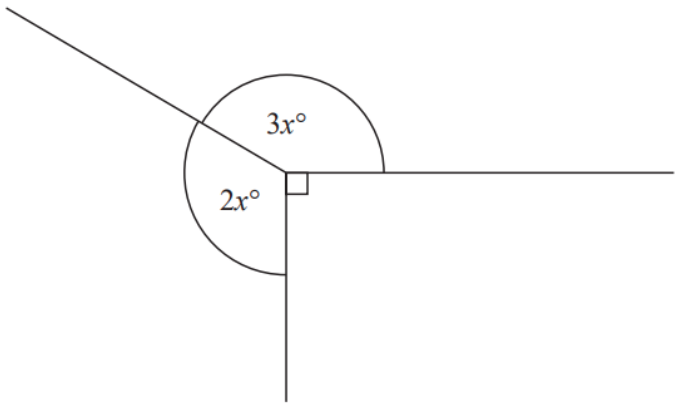


Work out the size of angle x.

.....°

(Total for Question 9 is 2 marks)

9

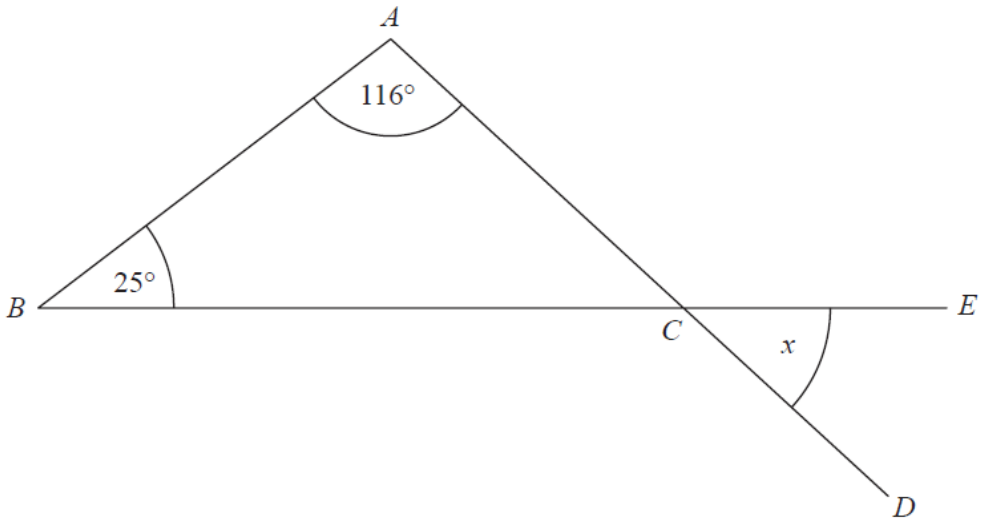


Find the value of x.

.....

(Total for Question 9 is 3 marks)

11 The diagram shows a triangle ABC.



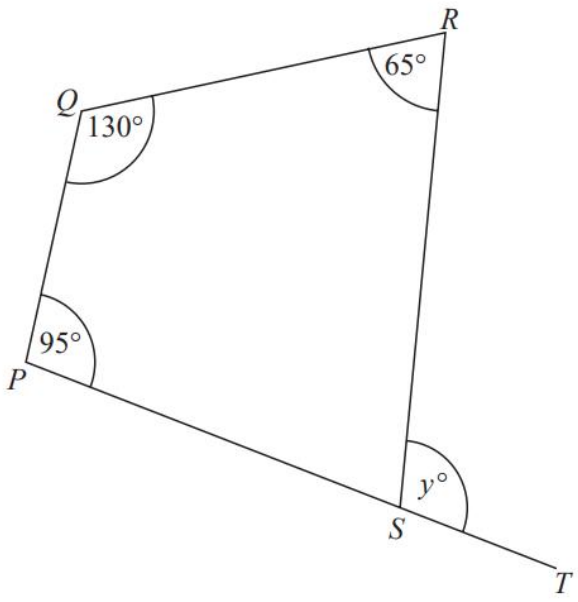
ACD and BCE are straight lines.

Work out the size of the angle marked x.
Give a reason for each stage of your working.

.....°

(Total for Question 11 is 3 marks)

11 *PQRS* is a quadrilateral.
PST is a straight line.



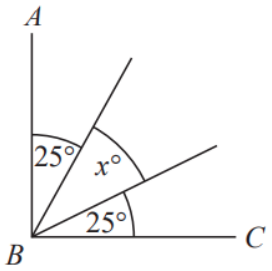
Find the value of y.

y = ...

May 2020 – Paper 3F

(Total for Question 11 is 3 marks)

12 AB and BC are perpendicular lines.

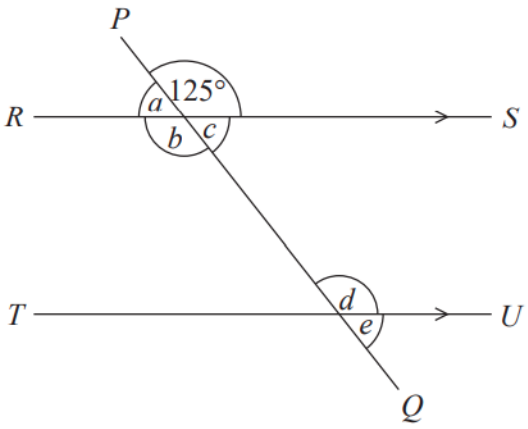


(a) Find the value of x.

$x =$ .....

(2)

RS and TU are parallel lines.
PQ is a straight line.



An angle of size 125° is shown on the diagram.

(b) (i) Write down the letter of one other angle of size 125°
Give a reason for your answer.

.....

.....

(2)

(ii) Explain why $a + b + c = 235°$

.....

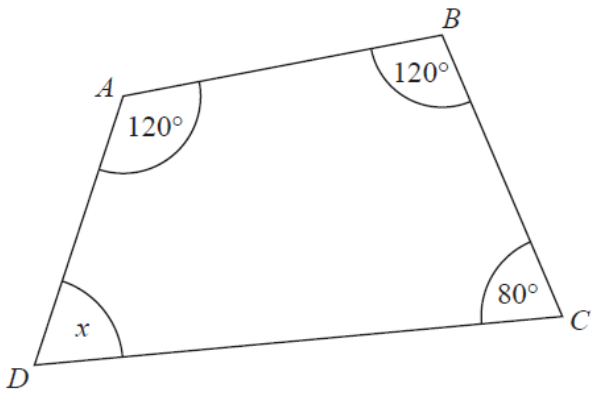
.....

.....

(1)

(Total for Question 12 is 5 marks)

13 *ABCD* is a quadrilateral.



(a) (i) Work out the size of angle x.

.....°

(1)

(ii) Give a reason for your answer.

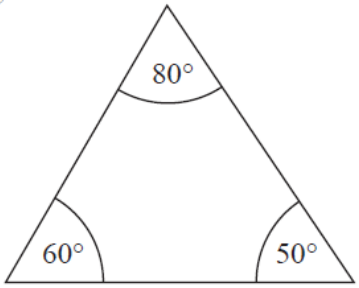
.....

.....

.....

(1)

The diagram below shows a triangle.



The diagram is wrong.

(b) Explain why.

.....

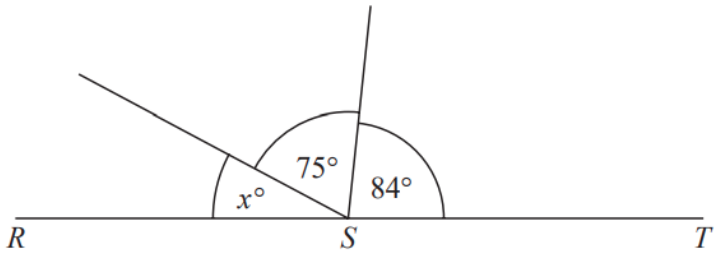
.....

.....

(1)

(Total for Question 13 is 3 marks)

13



RST is a straight line.

(i) Work out the value of x.

.....

(2)

(ii) Give a reason for your answer.

.....

.....

.....

(1)

November 2021 – Paper 1F **(Total for Question 13 is 3 marks)**

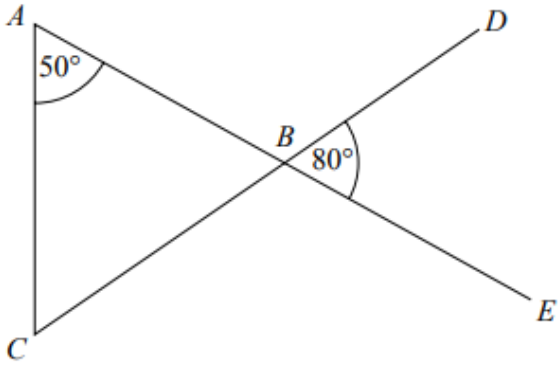
13 The size of the largest angle in a triangle is 4 times the size of the smallest angle.
The other angle is 27° less than the largest angle.

Work out, in degrees, the size of each angle in the triangle.
You must show your working.

..... °, ... °, ... °

(Total for Question 13 is 5 marks)

13

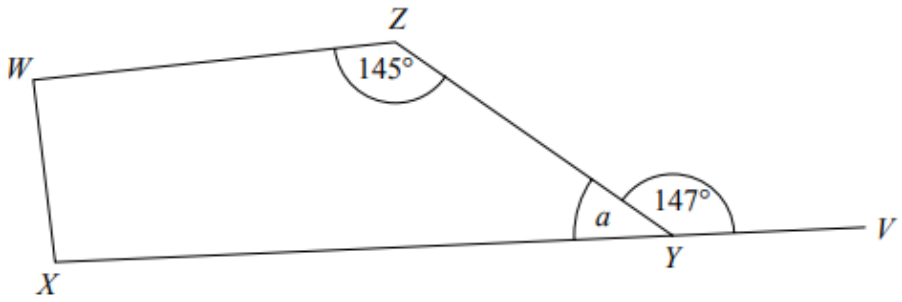


ABE and *CBD* are straight lines.

Show that triangle *ABC* is an isosceles triangle.
Give a reason for each stage of your working.

(Total for Question 13 is 4 marks)

13



WXYZ is a quadrilateral.
XYV is a straight line.

(a) (i) Find the size of the angle marked *a*.

.....°

(ii) Give a reason for your answer.

.....

(2)

Angle *ZWX* = angle *WXY*

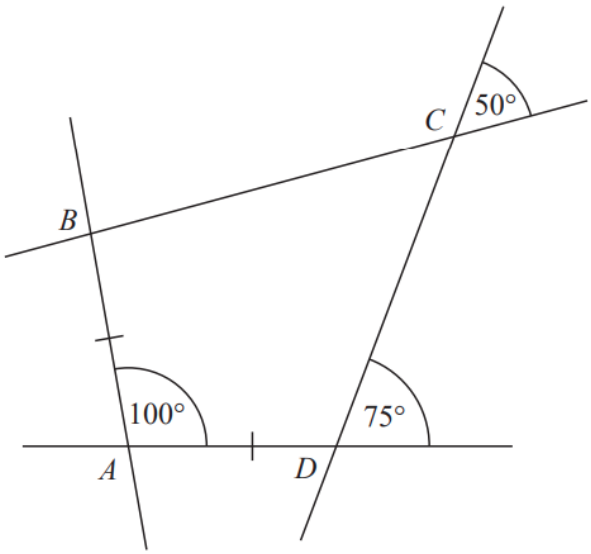
(b) Work out the size of angle *ZWX*.

.....°

(2)

(Total for Question 13 is 4 marks)

14 The diagram shows quadrilateral $ABCD$ with each of its sides extended.

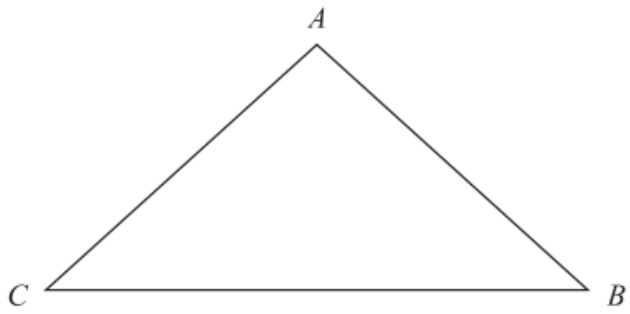


$AB = AD$

Show that $ABCD$ is a kite.
Give a reason for each stage of your working.

(Total for Question 14 is 4 marks)

14 Here is a triangle ABC.



Mark, with the letter y, the angle CBA.

(1)

Specimen 1 – Paper 3F **(Total for Question 14 is 1 mark)**

15 Jenna measures all the angles around a point.

Her results are 23°, 145°, 23° and 69°

Explain why these results cannot be true.

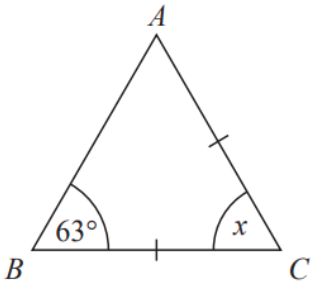
.....

.....

.....

November 2021 – Paper 3F **(Total for Question 15 is 1 mark)**

15 Mary needs to work out the size of angle x in this diagram.



She writes

$x = 63°$ because base angles of an isosceles triangle are equal.

Mary is wrong.

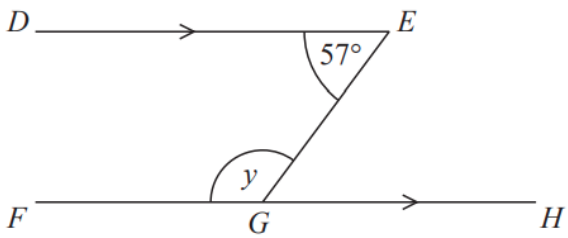
(a) Explain why.

.....

.....

(1)

William needs to work out the size of angle y in this diagram.



William writes

Working	**Reason**
angle $EGH = 57°$	because corresponding angles are equal
$y = 180° - 57°$ $y = 123°$	because angles on a straight line add up to 180°

One of William's reasons is wrong.

(b) Write down the correct reason.

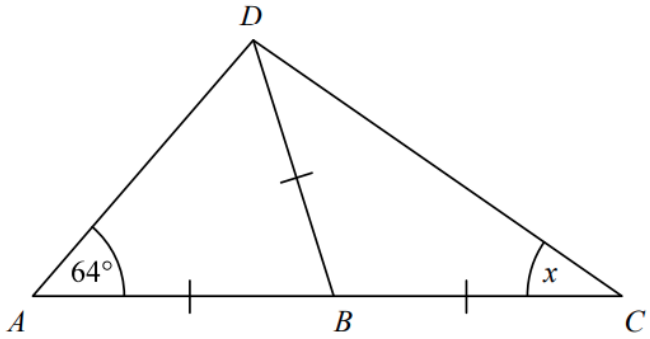
.....

.....

(1)

(Total for Question 15 is 2 marks)

17

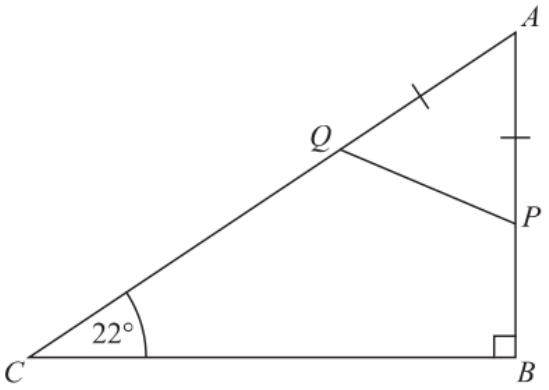


ABC is a straight line.
AB = *BC* = *BD*.
Angle *DAB* = 64°

Work out the size of the angle marked *x*.
Give a reason for each stage of your working.

(Total for Question 17 is 4 marks)

17 *ABC* is a right-angled triangle.



P is a point on *AB*.
Q is a point on *AC*.
AP = *AQ*.

Work out the size of angle *AQP*.
You must give a reason for each stage of your working.

(Total for Question 17 is 4 marks)

17 *ABC* is an isosceles triangle.
When angle $A = 70°$, there are 3 possible sizes of angle *B*.

(a) What are they?

..... °, ... °, ... °

(3)

When angle $A = 120°$, there is only one possible size of angle *B*.

(b) Explain why.

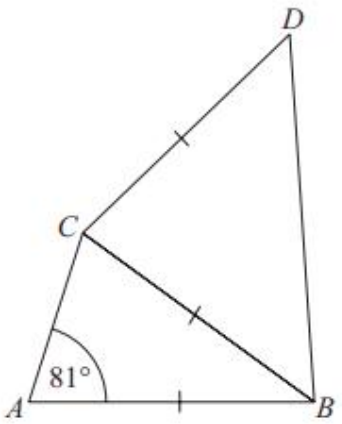
.....

.....

(1)

(Total for Question 17 is 4 marks)

20 ABC and BCD are isosceles triangles.



$AB = BC = CD$
Angle $CAB = 81°$

Angle $BCD = 4 \times$ angle ABC

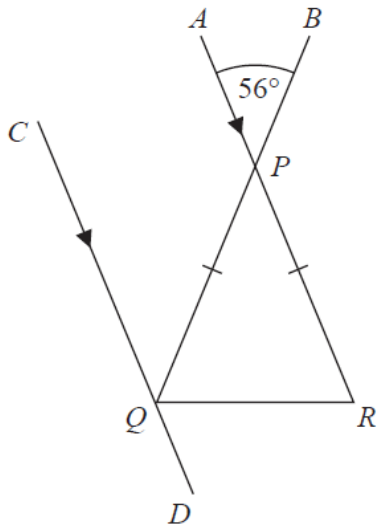
Find

the size of angle ABC : the size of angle CBD

Give your answer in the form $1 : n$
You must show all your working.

(Total for Question 20 is 5 marks)

20 In the diagram, PQR is an isosceles triangle with $PQ = PR$.



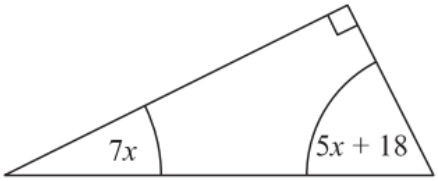
APR and CQD are parallel lines.
BPQ is a straight line.

Angle $APB = 56°$

Work out the size of angle CQR.
Give a reason for each stage of your working.

(Total for Question 20 is 5 marks)

20 The diagram shows a right-angled triangle.



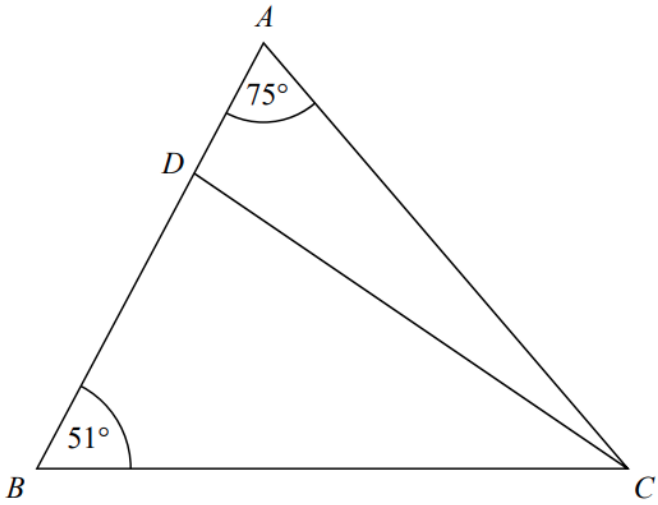
All the angles are in degrees.

Work out the size of the smallest angle of the triangle.

.....°

(Total for Question 20 is 3 marks)

24 The diagram shows triangle *ABC*.



ADB is a straight line.

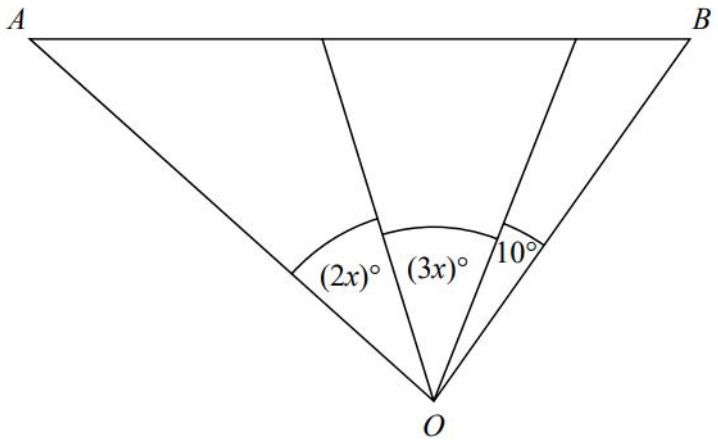
the size of angle *DCB* : the size of angle *ACD* = 2 : 1

Work out the size of angle *BDC*.

.....°

(Total for Question 24 is 4 marks)

28 The diagram shows triangle AOB.



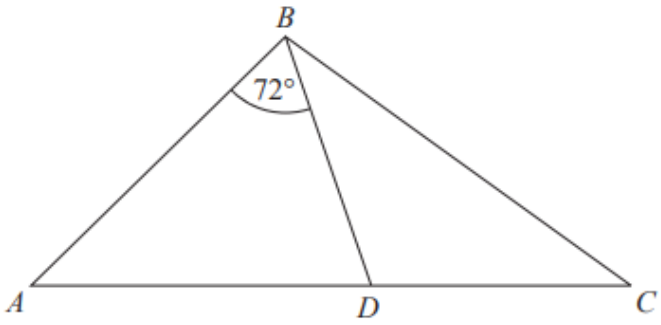
Angle AOB is **not** an obtuse angle.

Find the greatest value of x.
You must show all your working.

.....

November 2019 – Paper 1F **(Total for Question 28 is 3 marks)**

29



ABC is an isosceles triangle with $BA = BC$.

D lies on *AC*.
ABD is an isosceles triangle with $AB = AD$.

Angle $ABD = 72°$

Show that the triangle *BCD* is isosceles.
You must give a reason for each stage of your working.

(Total for Question 29 is 5 marks)