

Name

Class

MATHS TEACHER HUB

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Angle facts

(9 – 1) Topic booklet

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

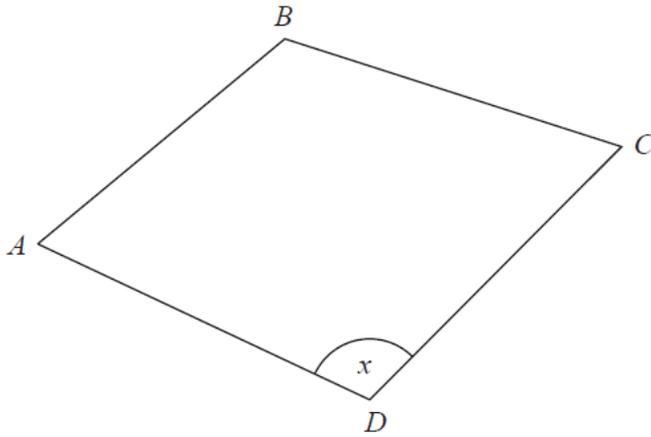
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

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.

6 Here is a quadrilateral $ABCD$.



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

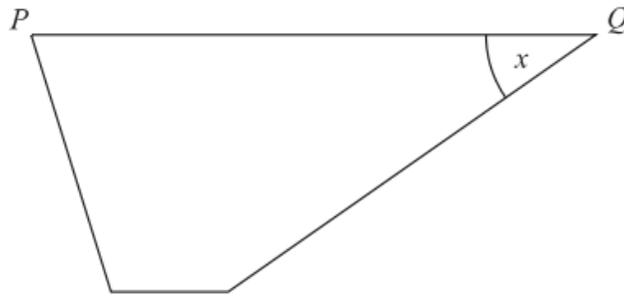
..... centimetres
(1)

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

.....
(1)

6 Here is a trapezium.

This diagram is accurately drawn.



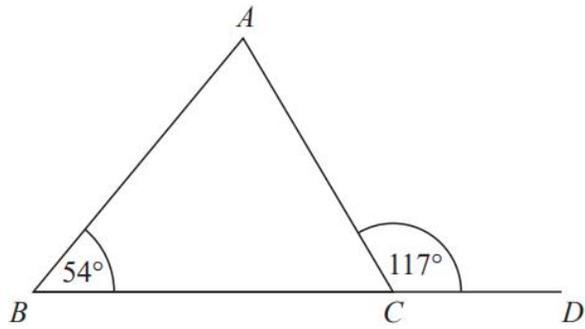
(a) Measure the length of the line PQ .

.....cm
(1)

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

.....°
(1)

7



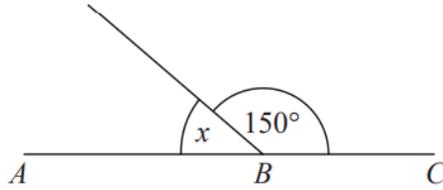
BCD is a straight line.

ABC is a triangle.

Show that triangle ABC is an isosceles triangle.

Give a reason for each stage of your working.

8



ABC is a straight line.

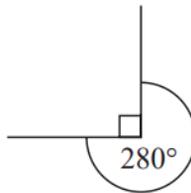
(a) (i) Work out the size of the angle marked x .

.....
(1)

(ii) Give a reason for your answer.

.....
.....
.....
(1)

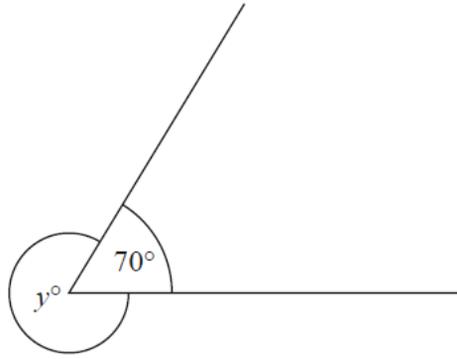
The diagram below is wrong.



(b) Explain why.

.....
.....
.....
(1)

9



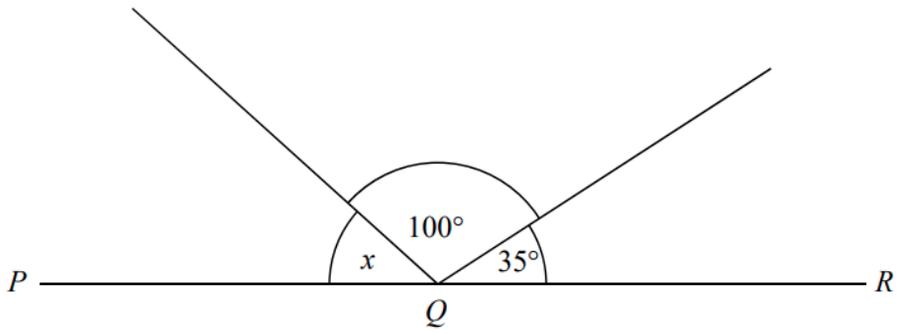
(a) Find the value of y .

$y = \dots\dots\dots$
(1)

(b) Give a reason for your answer.

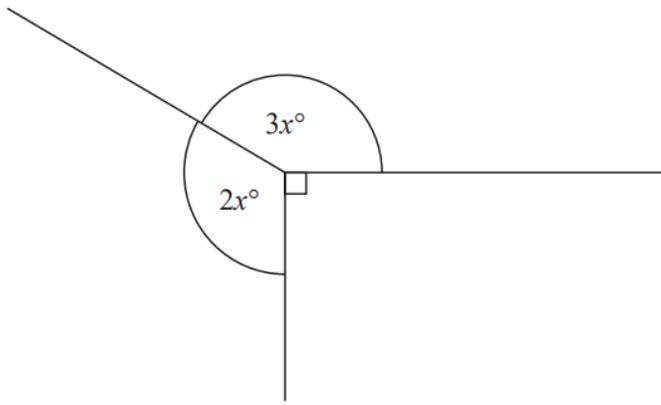
.....
.....
.....
(1)

9 PQR is a straight line.



Work out the size of angle x .

9

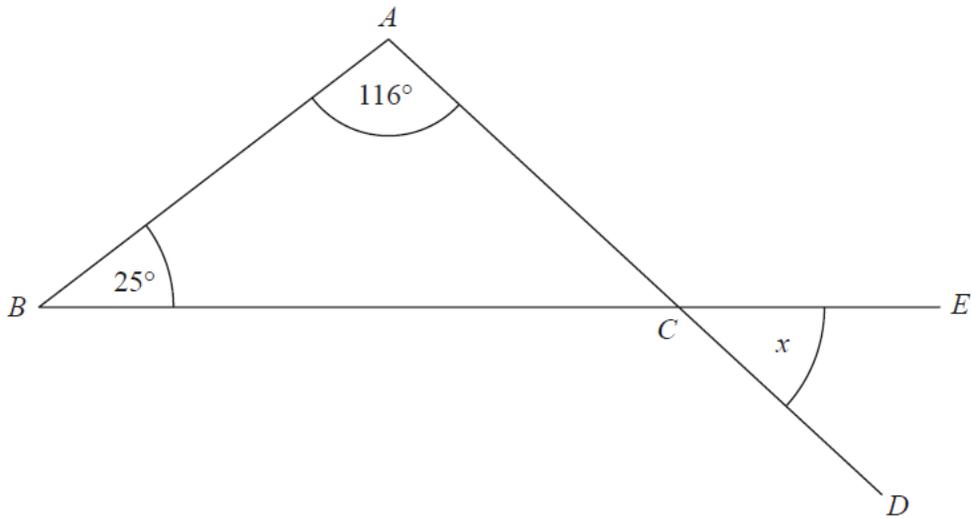


Find the value of x .

June 2017 – Paper 2F

(Total for Question 9 is 3 marks)

11 The diagram shows a triangle ABC .

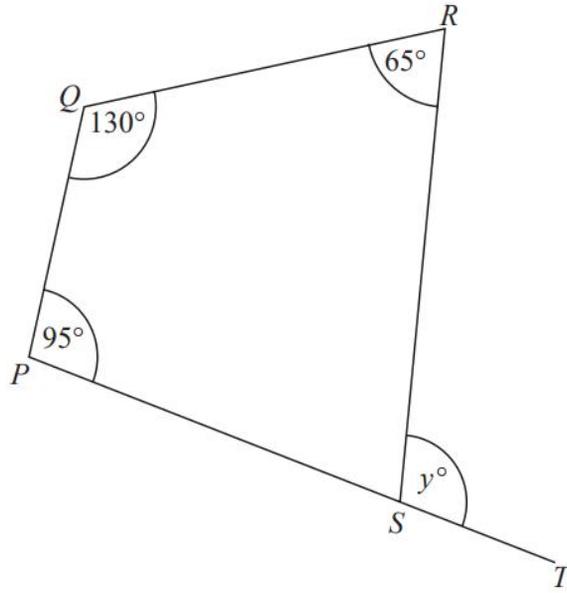


ACD and BCE are straight lines.

Work out the size of the angle marked x .

Give a reason for each stage of your working.

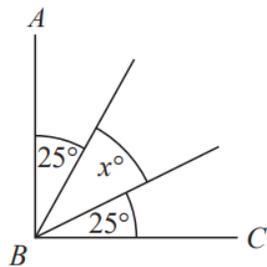
- 11 $PQRS$ is a quadrilateral.
 PST is a straight line.



Find the value of y .

$y = \dots\dots\dots$

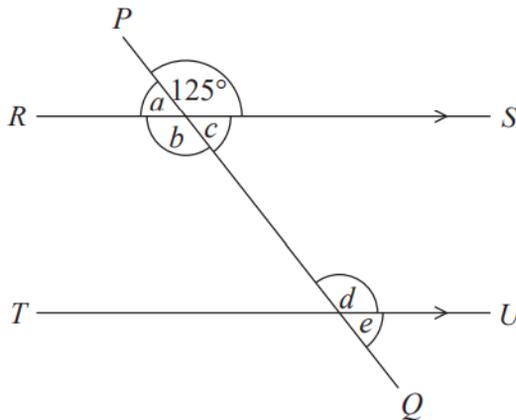
12 AB and BC are perpendicular lines.



(a) Find the value of x .

$x = \dots\dots\dots$
(2)

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



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

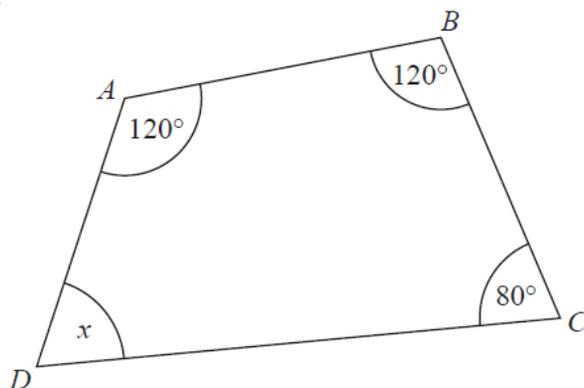
(b) (i) Write down the letter of one other angle of size 125°
Give a reason for your answer.

.....
.....
(2)

(ii) Explain why $a + b + c = 235^\circ$

.....
.....
(1)

13 $ABCD$ is a quadrilateral.



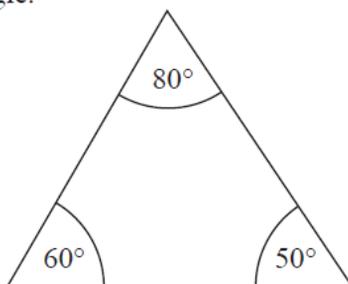
(a) (i) Work out the size of angle x .

.....
(1)

(ii) Give a reason for your answer.

.....
(1)

The diagram below shows a triangle.

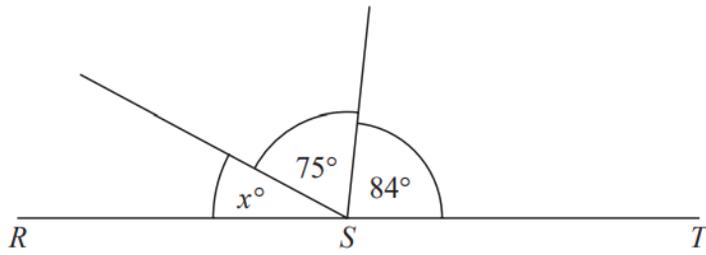


The diagram is wrong.

(b) Explain why.

.....
(1)

13



RST is a straight line.

(i) Work out the value of x .

.....
(2)

(ii) Give a reason for your answer.

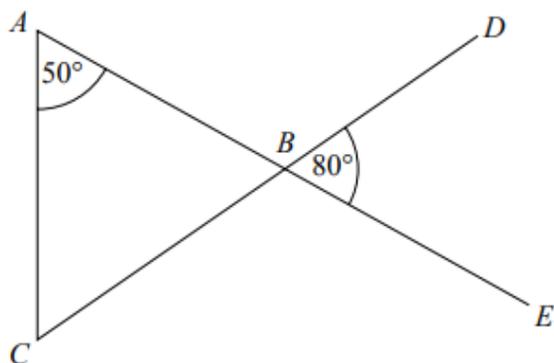
.....
.....
.....
(1)

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.

.....^o ,^o ,^o

13

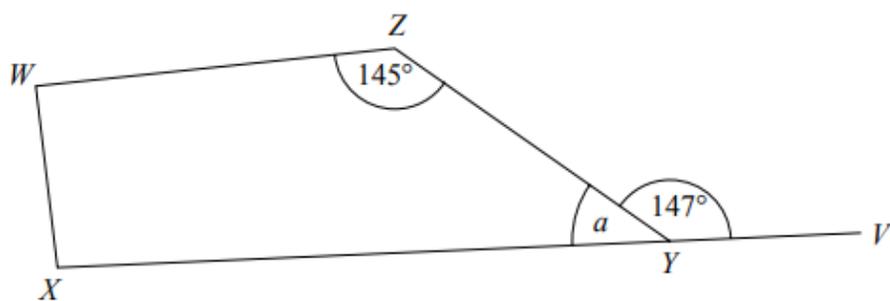


ABE and CBD are straight lines.

Show that triangle ABC is an isosceles triangle.

Give a reason for each stage of your working.

13



$WXYZ$ is a quadrilateral.
 XYV is a straight line.

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

o

(ii) Give a reason for your answer.

(2)

Angle $ZWX =$ angle WXY

(b) Work out the size of angle ZWX .

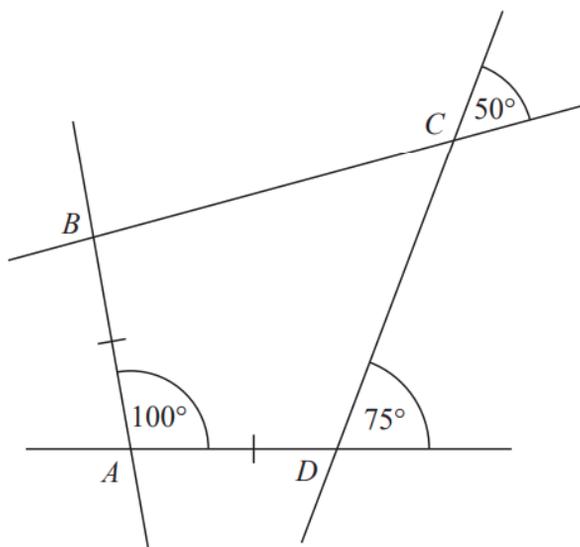
o

(2)

Sample 1 – Paper 3F

(Total for Question 13 is 4 marks)

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

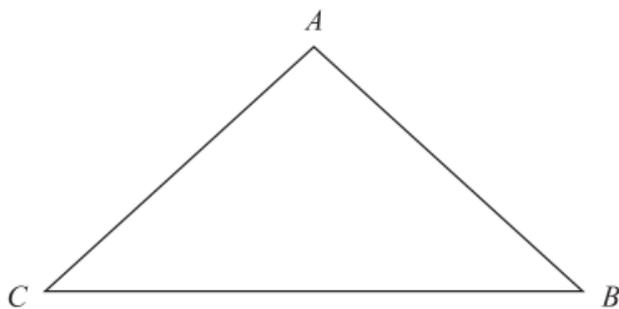


$$AB = AD$$

Show that $ABCD$ is a kite.

Give a reason for each stage of your working.

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.

.....

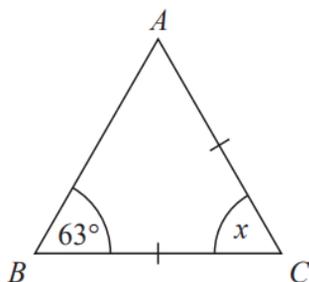
.....

.....

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

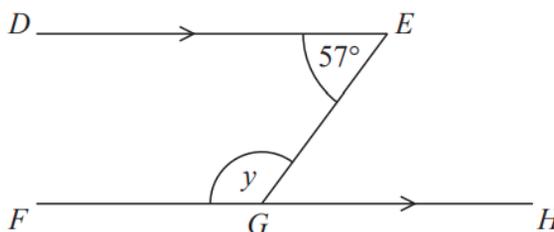
$x = 63^\circ$ because base angles of an isosceles triangle are equal.

Mary is wrong.

(a) Explain why.

(1)

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



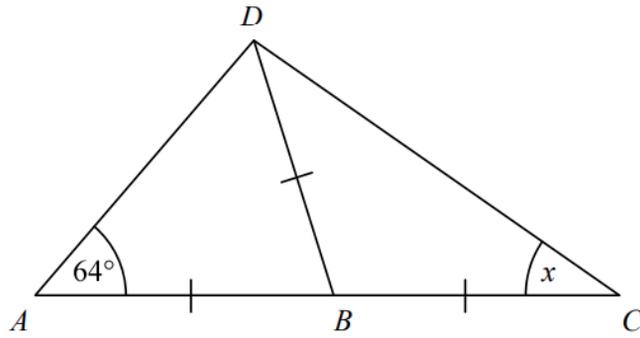
William writes

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

One of William's reasons is wrong.

(b) Write down the correct reason.

(1)



ABC is a straight line.

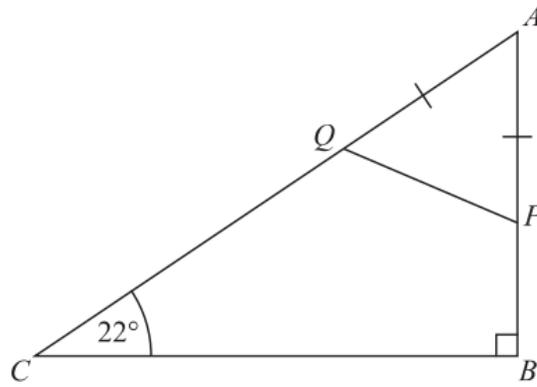
$AB = BC = BD$.

Angle $DAB = 64^\circ$

Work out the size of the angle marked x .

Give a reason for each stage of your working.

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.

17 ABC is an isosceles triangle.

When angle $A = 70^\circ$, there are 3 possible sizes of angle B .

(a) What are they?

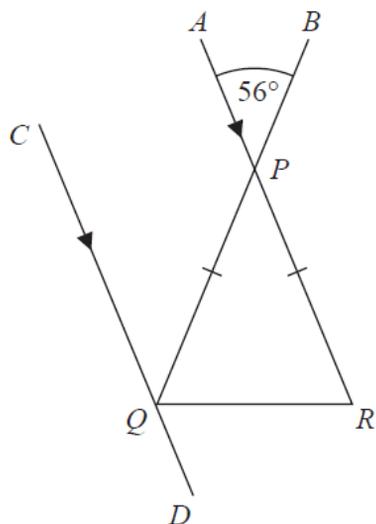
.....^o ;^o ;^o
(3)

When angle $A = 120^\circ$, there is only one possible size of angle B .

(b) Explain why.

.....
.....
(1)

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

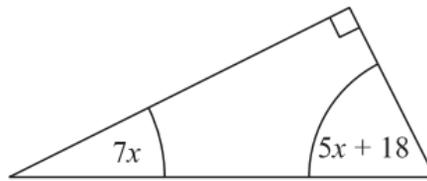


APR and CQD are parallel lines.
 BPQ is a straight line.

Angle $APB = 56^\circ$

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

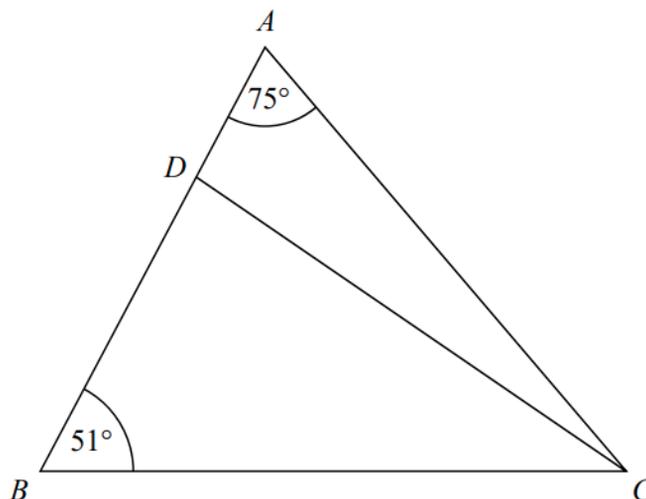
20 The diagram shows a right-angled triangle.



All the angles are in degrees.

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

24 The diagram shows triangle ABC .

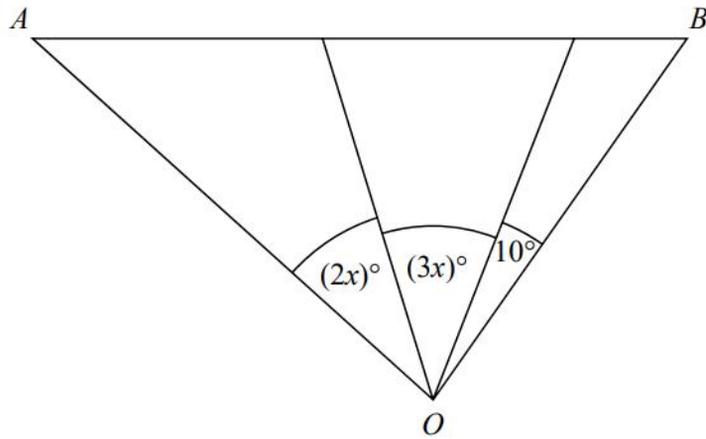


ADB is a straight line.

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

Work out the size of angle BDC .

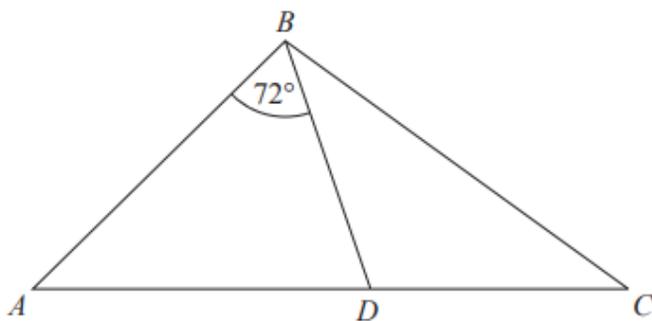
28 The diagram shows triangle AOB .



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

Find the greatest value of x .

You must show all your working.



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

D lies on AC .

ABD is an isosceles triangle with $AB = AD$.

Angle $ABD = 72^\circ$

Show that the triangle BCD is isosceles.

You must give a reason for each stage of your working.