

Properties of Shape

Difficulty: Easy

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Properties of Shape
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 1

Time allowed: 20minutes

Score: /16

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

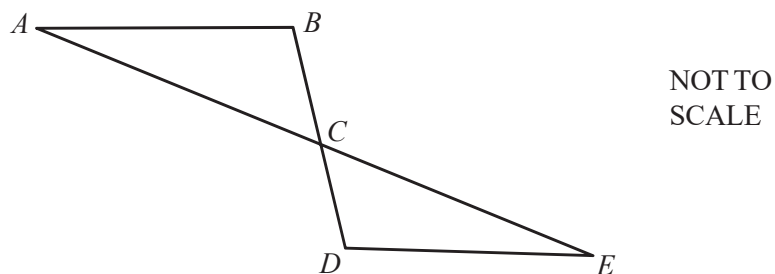
Question 1

A quadrilateral has rotational symmetry of order 2 and no lines of symmetry.

Write down the mathematical name of this quadrilateral.

[1]

Question 2



The diagram shows two straight lines, AE and BD , intersecting at C .

Angle $ABC = \text{angle } EDC$.

Triangles ABC and EDC are congruent.

Write down **two** properties of line segments AB and DE .

[2]

Question 3

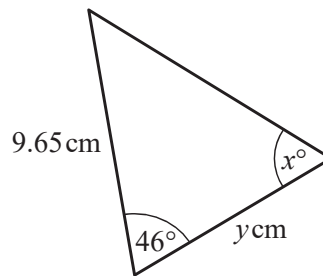
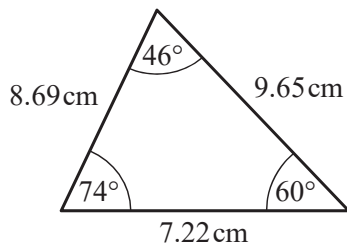
Z E B R A

Write down the letters in the word above that have

(a) exactly one line of symmetry, [1]

(b) rotational symmetry of order 2. [1]

Question 4



NOT TO
SCALE

These two triangles are congruent.
Write down the value of

(a) x ,

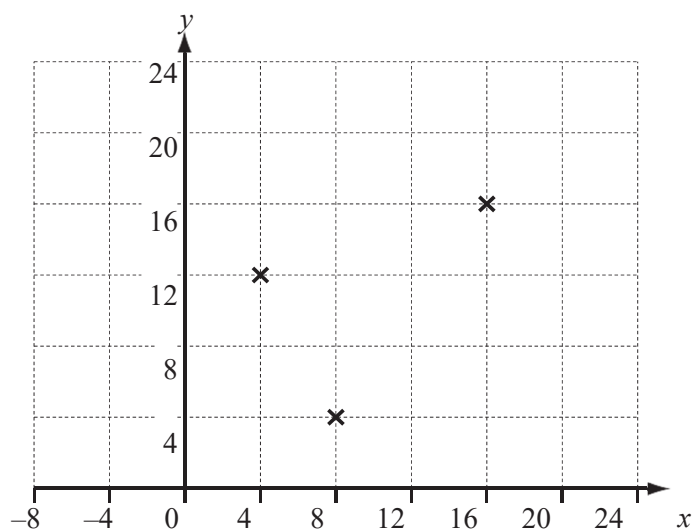
[1]

(b) y .

[1]

Question 5

Three of the vertices of a parallelogram are at $(4, 12)$, $(8, 4)$ and $(16, 16)$.



Write down the co-ordinates of two possible positions of the fourth vertex.

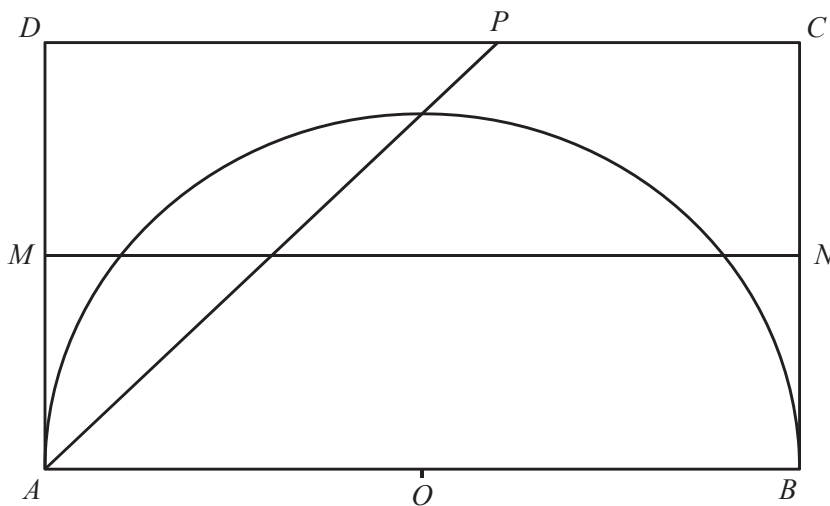
[2]

Question 6

$ABCD$ is a rectangle with $AB = 10$ cm and $BC = 6$ cm. MN is the perpendicular bisector of BC .

AP is the bisector of angle BAD .

O is the midpoint of AB and also the centre of the semicircle, radius 5 cm.

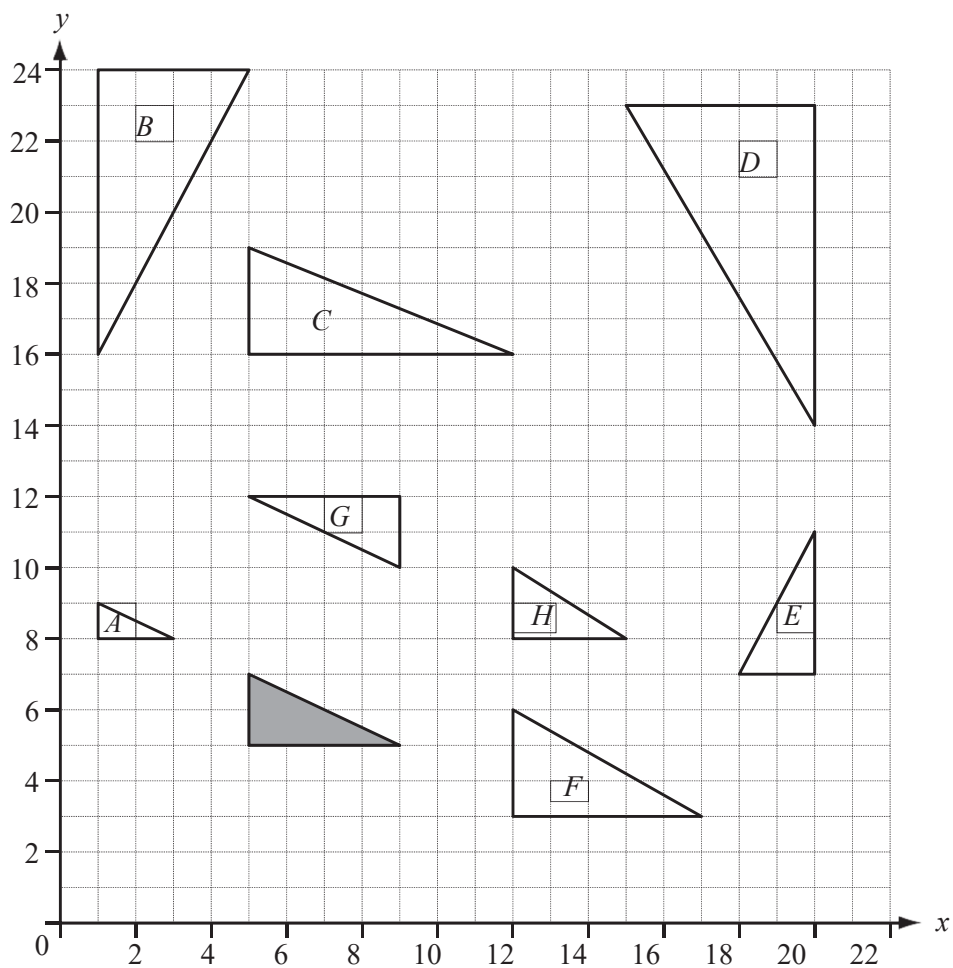


Write the letter R in the region which satisfies **all** three of the following conditions.

- nearer to AB than to AD
- nearer to C than to B
- less than 5 cm from O

[3]

Question 7



Write down the letters of all the triangles which are

(a) congruent to the shaded triangle,

[2]

(b) similar, but not congruent, to the shaded triangle.

[2]

Similarity

Difficulty: Easy

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Similarity
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 1

Time allowed: 31 minutes

Score: /24

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

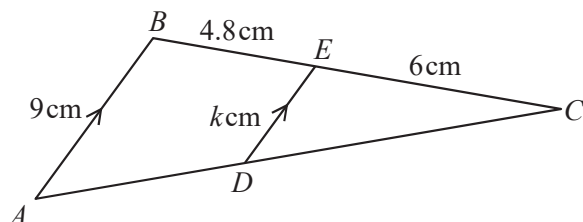
A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

(a)



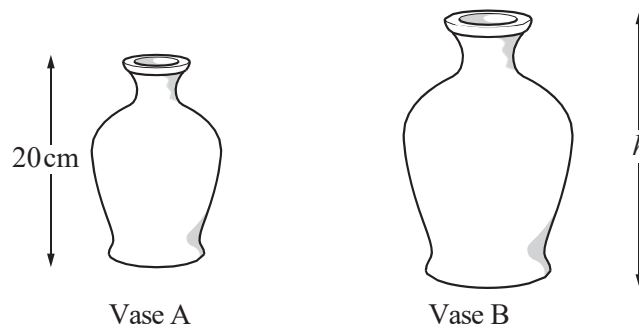
NOT TO
SCALE

Triangles CBA and CED are similar.
 AB is parallel to DE .
 $AB = 9\text{ cm}$, $BE = 4.8\text{ cm}$, $EC = 6\text{ cm}$ and $ED = k\text{ cm}$.

[2]

Work out the value of k .

(b)



NOT TO
SCALE

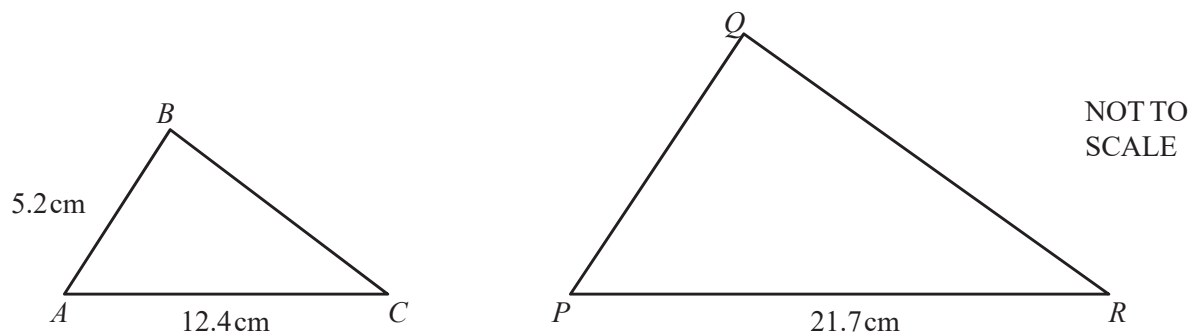
The diagram shows two mathematically similar vases.
Vase A has height 20 cm and volume 1500 cm^3 .
Vase B has volume 2592 cm^3 .

Calculate h , the height of vase B.

[3]

Question 2

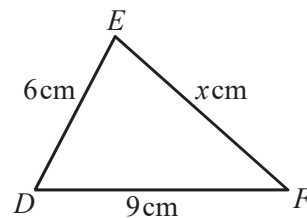
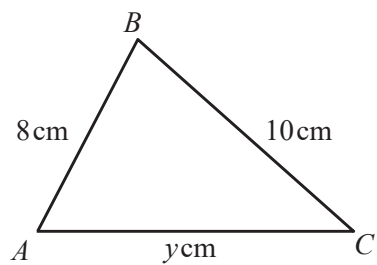
Triangle ABC is similar to triangle PQR .



Find PQ .

[2]

Question 3



NOT TO
SCALE

Triangle ABC is similar to triangle DEF .

Calculate the value of

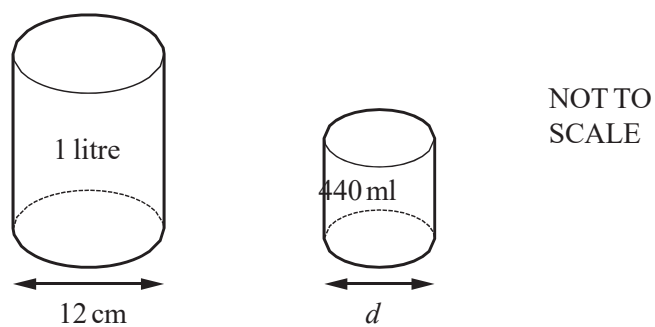
(a) x ,

[2]

(b) y .

[2]

Question 4

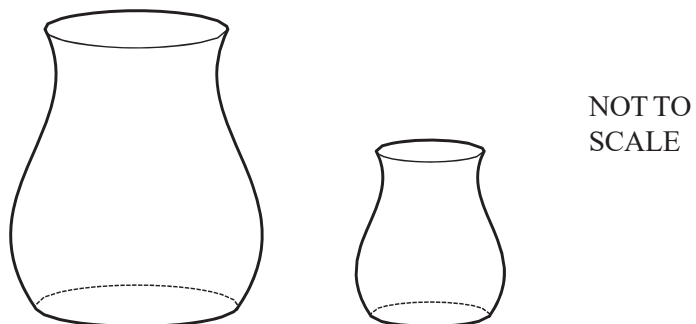


Two cylindrical cans are mathematically similar.
The larger can has a capacity of 1 litre and the smaller can has a capacity of 440ml.

Calculate the diameter, d , of the 440ml can.

[3]

Question 5



The two containers are mathematically similar in shape.

The larger container has a volume of 3456 cm^3 and a surface area of 1024 cm^2 .

The smaller container has a volume of 1458 cm^3 .

Calculate the surface area of the smaller container.

[4]

Question 6

The volumes of two similar cones are $36\pi \text{ cm}^3$ and $288\pi \text{ cm}^3$.
The base radius of the smaller cone is 3 cm.

Calculate the base radius of the larger cone.

[3]

Question 7



A company sells cereals in boxes which measure 10 cm by 25 cm by 35 cm.

They make a special edition box which is mathematically similar to the original box.

The volume of the special edition box is $15\,120\text{ cm}^3$.

[3]

Work out the dimensions of this box.

Similarity

Difficulty: Easy

Question Paper 2

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Similarity
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 2

Time allowed: 36 minutes

Score: /28

Percentage: /100

Grade Boundaries:

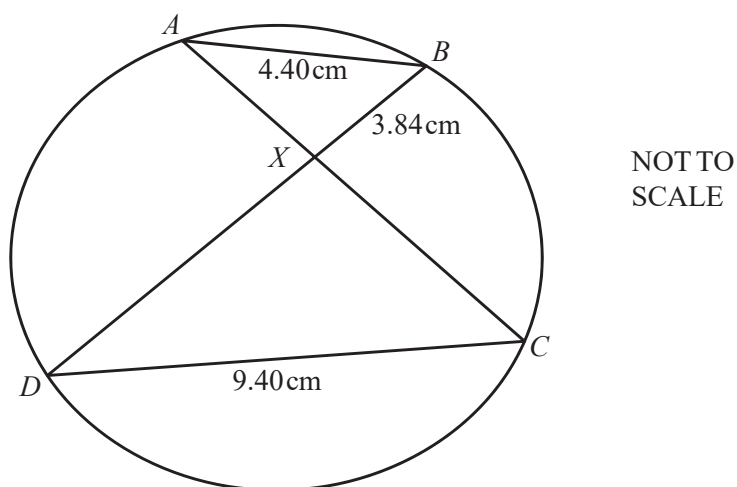
CIE IGCSE Maths (0580)

A*	A	B	C	D	E
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CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
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Question 1



A , B , C and D lie on a circle.
 AC and BD intersect at X .

(a) Give a reason why angle BAX is equal to angle CDX . [1]

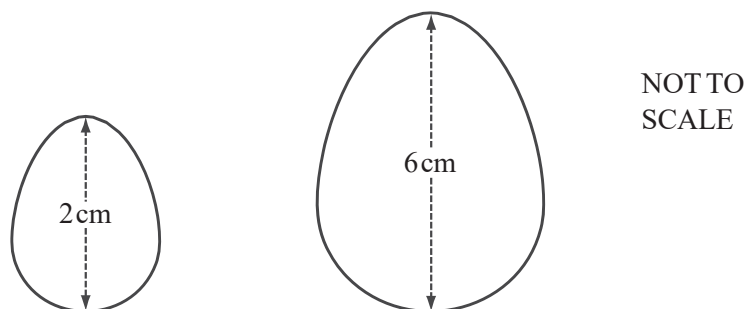
(b) $AB = 4.40$ cm, $CD = 9.40$ cm and $BX = 3.84$ cm.

(i) Calculate the length of CX . [2]

(ii) The area of triangle ABX is 5.41 cm^2 .

Calculate the area of triangle CDX . [2]

Question 2

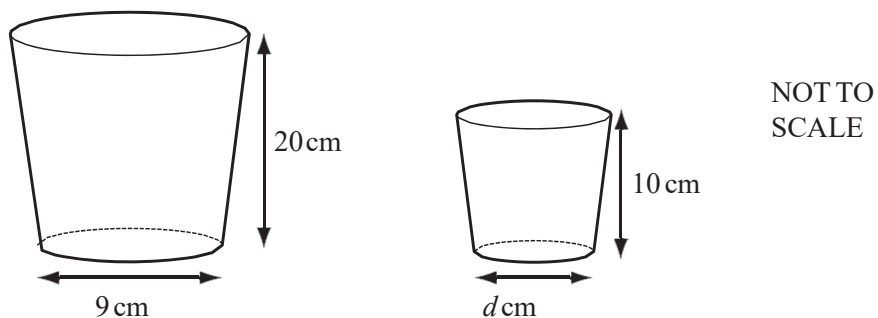


A company makes solid chocolate eggs and their shapes are mathematically similar.
The diagram shows eggs of height 2 cm and 6 cm.
The mass of the small egg is 4 g.

Calculate the mass of the large egg.

[2]

Question 3



The diagrams show two mathematically similar containers.

The larger container has a base with diameter 9 cm and a height 20 cm.

The smaller container has a base with diameter d cm and a height 10 cm.

(a) Find the value of d .

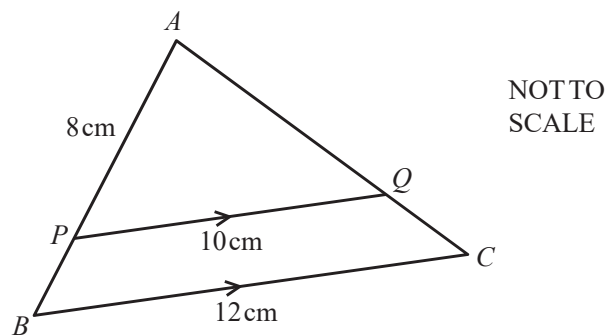
[1]

(b) The larger container has a capacity of 1600ml.

Calculate the capacity of the smaller container.

[2]

Question 4



APB and AQC are straight lines. PQ is parallel to BC .
 $AP = 8\text{ cm}$, $PQ = 10\text{ cm}$ and $BC = 12\text{ cm}$.
Calculate the length of AB .

[2]

Question 5

A cylindrical glass has a radius of 3 centimetres and a height of 7 centimetres.

A large cylindrical jar full of water is a similar shape to the glass.

The glass can be filled with water from the jar exactly 216 times.

Work out the radius and height of the jar.

[3]

Question 6

A car manufacturer sells a similar, scale model of one of its real cars.

- (a) The fuel tank of the real car has a volume of 64 litres and the fuel tank of the model has a volume of 0.125 litres.

Show that the length of the real car is 8 times the length of the model car.

[2]

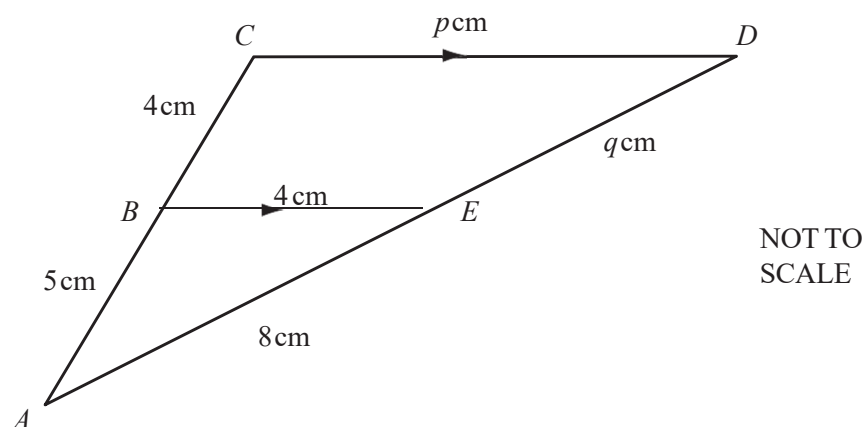
- (b) The area of the front window of the model is 0.0175 m^2 .

Find the area of the front window of the real car.

[2]

Question 7

(a)



In the diagram triangles ABE and ACD are similar.

BE is parallel to CD .

$AB = 5$ cm, $BC = 4$ cm, $BE = 4$ cm, $AE = 8$ cm, $CD = p$ cm and $DE = q$ cm.

Work out the values of p and q .

[4]

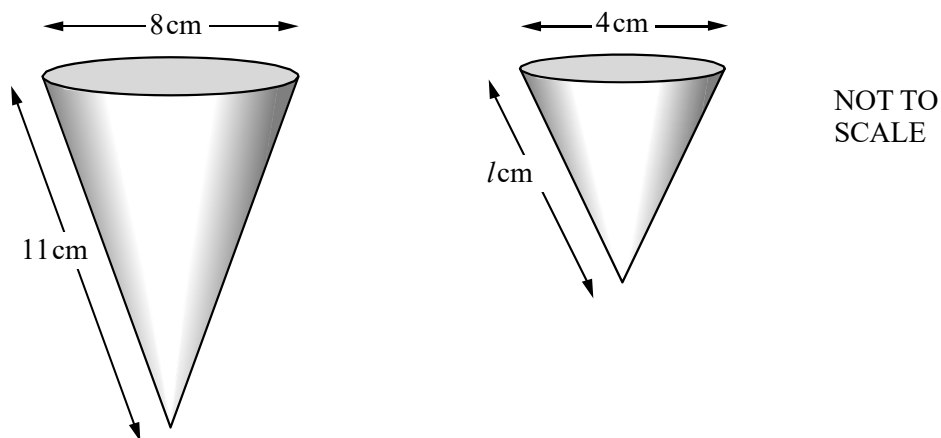
(b) A spherical balloon of radius 3 metres has a volume of 36π cubic metres.

It is further inflated until its radius is 12 m.

Calculate its new volume, leaving your answer in terms of π .

[2]

Question 8



The two cones are similar.

(a) Write down the value of l .

[1]

(b) When full, the larger cone contains 172 cm^3 of water.

How much water does the smaller cone contain when it is full?

[2]

Similarity

Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Similarity
Paper	Paper 2
Difficulty	Medium
Booklet	Question Paper 1

Time allowed: 26 minutes

Score: /20

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

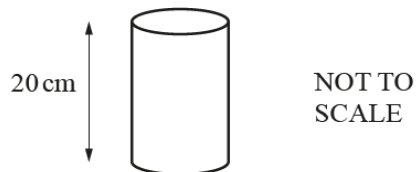
A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

(a)

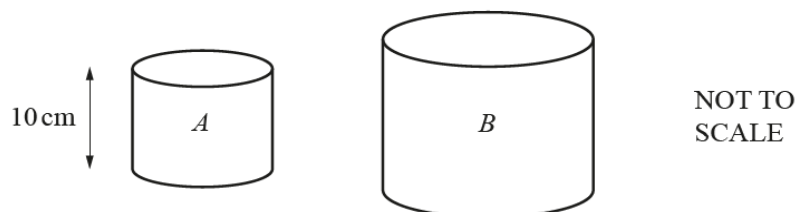


A cylinder has height 20 cm.
The area of the circular cross section is 74cm^2 .

Work out the volume of this cylinder.

[1]

(b) Cylinder A is mathematically similar to cylinder B .



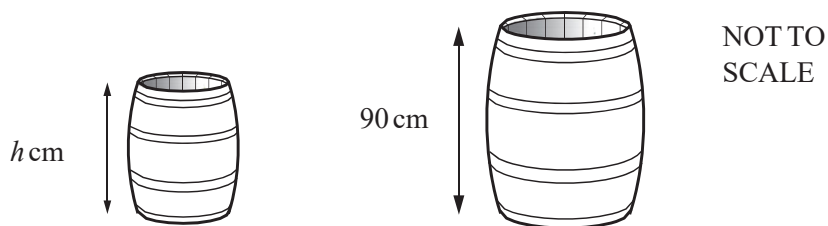
The height of cylinder A is 10 cm and its surface area is 440cm^2 .
The surface area of cylinder B is 3960cm^2 .

Calculate the height of cylinder B .

[3]

Question 2

The two barrels in the diagram are mathematically similar.

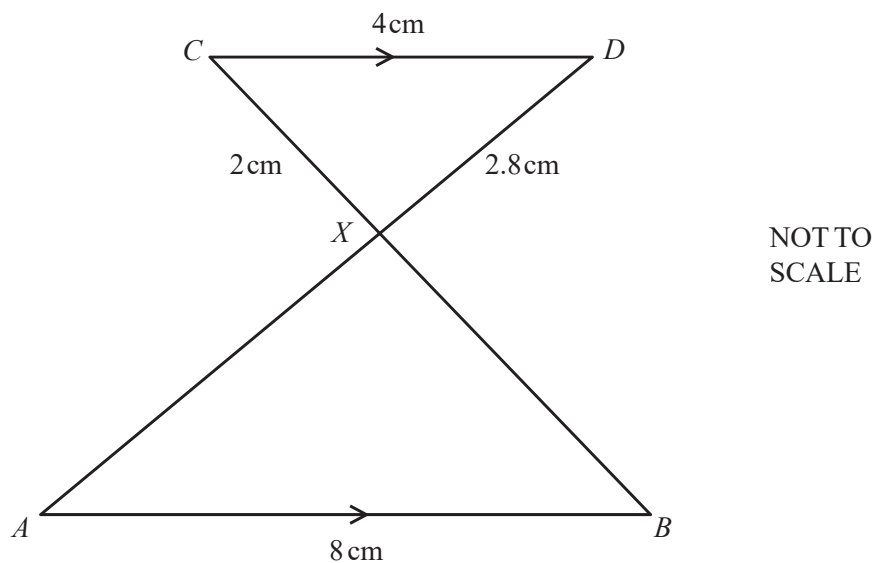


The smaller barrel has a height of h cm and a capacity of 100 litres.
The larger barrel has a height of 90 cm and a capacity of 160 litres.

Work out the value of h .

[3]

Question 3



In the diagram, AB and CD are parallel.
 AD and BC intersect at X .
 $AB = 8\text{ cm}$, $CD = 4\text{ cm}$, $CX = 2\text{ cm}$ and $DX = 2.8\text{ cm}$.

(a) Complete this mathematical statement.

[1]

Triangle ABX is to triangle DCX .

(b) Calculate AX .

[2]

(c) The area of triangle ABX is $y\text{ cm}^2$.

Find the area of triangle DCX in terms of y .

[1]

Question 4

Two bottles and their labels are mathematically similar.
The smaller bottle contains 0.512 litres of water and has a label with area 96 cm^2 .
The larger bottle contains 1 litre of water.

Calculate the area of the larger label.

[3]

Question 5

Two cups are mathematically similar.
The larger cup has capacity 0.5 litres and height 8 cm.
The smaller cup has capacity 0.25 litres.

Find the height of the smaller cup.

[3]

Question 6

The length of a backpack of capacity 30 litres is 53 cm.

Calculate the length of a mathematically similar backpack of capacity 20 litres.

[3]

Similarity

Difficulty: Hard

Question Paper 2

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Similarity
Paper	Paper 2
Difficulty	Hard
Booklet	Question Paper 2

Time allowed: 26 minutes

Score: /20

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
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Question 1

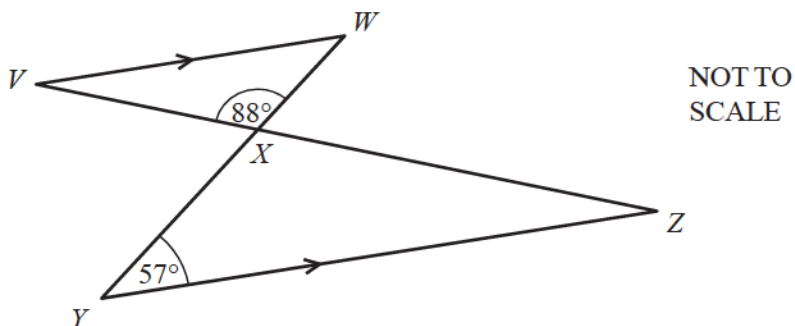
Two containers are mathematically similar.
Their volumes are 54 cm^3 and 128 cm^3 .
The height of the smaller container is 4.5 cm .

Calculate the height of the larger container.

[3]

Question 2

(a)

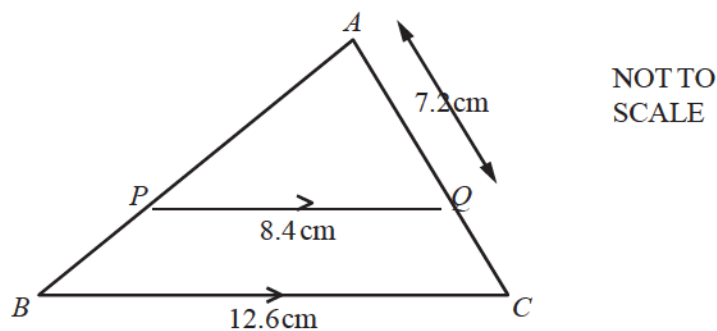


Two straight lines VZ and YW intersect at X .
 VW is parallel to YZ , angle $XYZ = 57^\circ$ and angle $VXW = 88^\circ$.

Find angle WXZ .

[2]

(b)



ABC is a triangle and PQ is parallel to BC .
 $BC = 12.6$ cm, $PQ = 8.4$ cm and $AQ = 7.2$ cm.

Find AC .

[2]

Question 3

A car, 4.4 metres long, has a fuel tank which holds 65 litres of fuel when full.
The fuel tank of a mathematically similar model of the car holds 0.05 litres of fuel when full.

Calculate the length of the model car in centimetres.

[3]

Question 4

Two similar vases have heights which are in the ratio 3 : 2.

- (a) The volume of the larger vase is 1080 cm^3 .
Calculate the volume of the smaller vase.

[2]

- (b) The surface area of the smaller vase is 252 cm^2 .
Calculate the surface area of the larger vase.

[2]

Question 5

A statue two metres high has a volume of five cubic metres.
A similar model of the statue has a height of four centimetres.

- (a) Calculate the volume of the model statue in cubic centimetres.

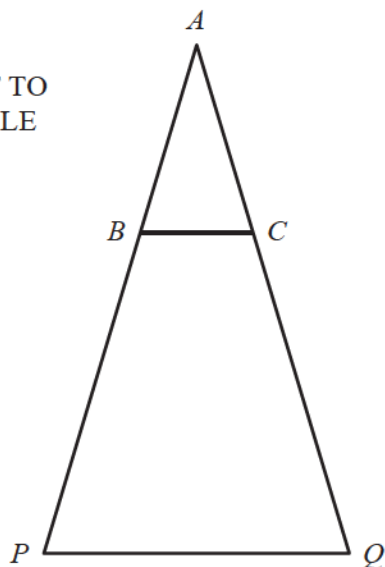
[2]

- (b) Write your answer to **part (a)** in cubic metres.

[1]

Question 6

NOT TO
SCALE



The area of triangle APQ is 99 cm^2 and the area of triangle ABC is 11 cm^2 . BC is parallel to PQ and the length of PQ is 12 cm .

Calculate the length of BC .

[3]

Symmetry

Difficulty: Easy

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Symmetry
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 1

Time allowed: 31 minutes

Score: /24

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

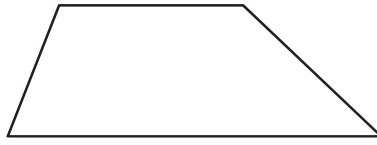
CIE IGCSE Maths (0980)

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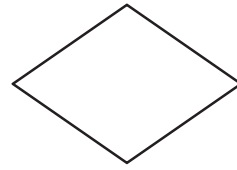
Question 1



Parallelogram



Trapezium



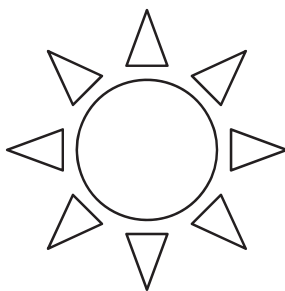
Rhombus

Write down which one of these shapes has

- rotational symmetry of order 2
- and**
- no line symmetry.

[1]

Question 2



Write down the order of rotational symmetry of this shape.

[1]

Question 3

(a) Add **one** line to the diagram so that it has two lines of symmetry.

[1]



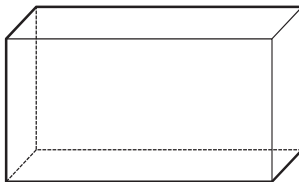
(b) Add **two** lines to the diagram so that it has rotational symmetry of order 2.

[1]



Question 4

- (a) The diagram shows a cuboid.



How many planes of symmetry does this cuboid have?

[1]

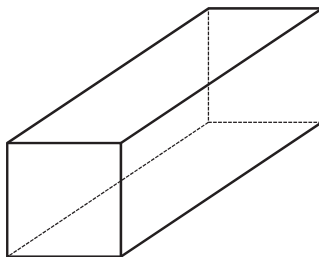
- (b) Write down the order of rotational symmetry for the following diagram.



[1]

Question 5

(a)

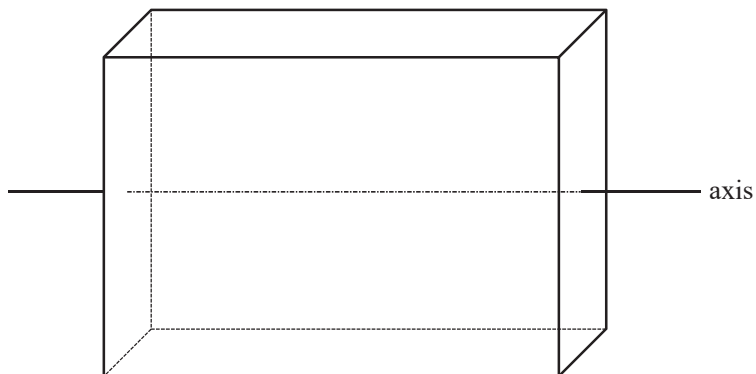


This cuboid has a **square** cross-section.

Write down the number of planes of symmetry.

[1]

(b)



This cuboid has a **rectangular** cross-section.

The axis shown passes through the centre of two opposite faces.

Write down the order of rotational symmetry of the cuboid about this axis.

[1]

Question 6



For the diagram, write down

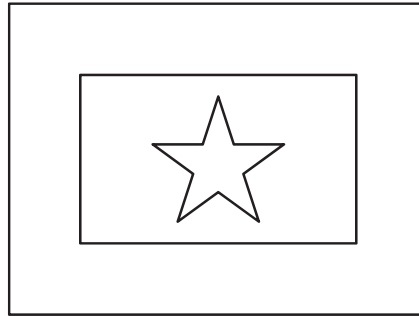
(a) the order of rotational symmetry,

[1]

(b) the number of lines of symmetry.

[1]

Question 7



For the **diagram**, write down

(a) the order of rotational symmetry,

[1]

(b) the number of lines of symmetry.

[1]

Question 8



For the diagram above write down

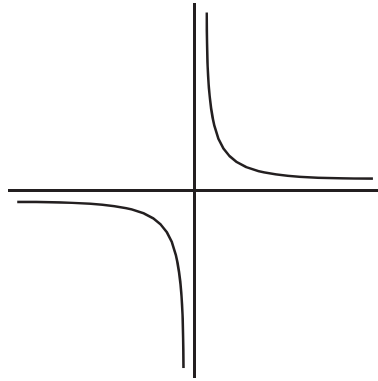
(a) the order of rotational symmetry,

[1]

(b) the number of lines of symmetry.

[1]

Question 9



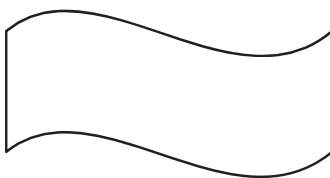
(a) Write down the order of rotational symmetry of the diagram.

[1]

(b) Draw all the lines of symmetry on the diagram.

[1]

Question 10



For this diagram, write down

(a) the order of rotational symmetry, [1]

(b) the number of lines of symmetry. [1]

Question 11

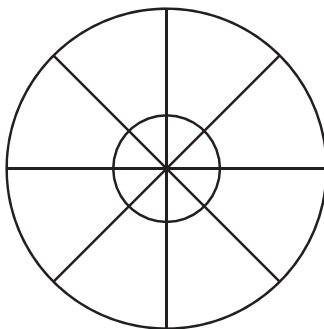


For the diagram, write down

(a) the order of rotational symmetry, [1]

(b) the number of lines of symmetry. [1]

Question 12

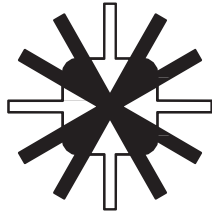


For the diagram above write down

(a) the order of rotational symmetry, [1]

(b) the number of lines of symmetry. [1]

Question 13



For the shape above, write down

(a) the number of lines of symmetry,

[1]

(b) the order of rotational symmetry.

[1]

Symmetry

Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Symmetry
Paper	Paper 2
Difficulty	Hard
Booklet	Question Paper 1

Time allowed: 26 minutes

Score: /20

Percentage: /100

Grade Boundaries:

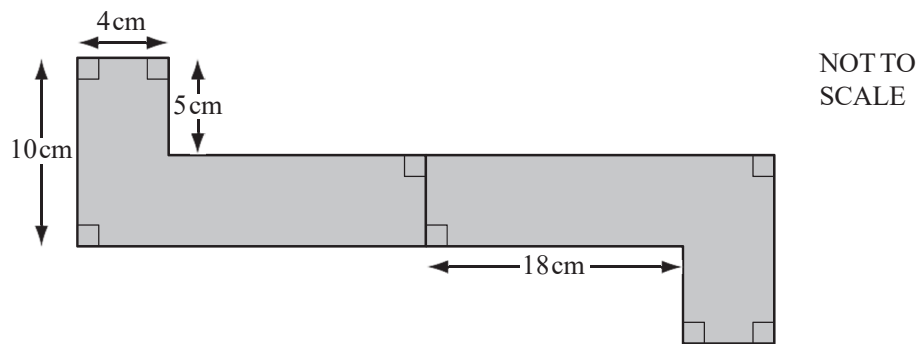
CIE IGCSE Maths (0580)

A*	A	B	C	D	E
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CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
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Question 1



The shaded shape has rotational symmetry of order 2.

Work out the shaded area.

[3]

TRIGONOMETRY

From the above word, write down the letters which have

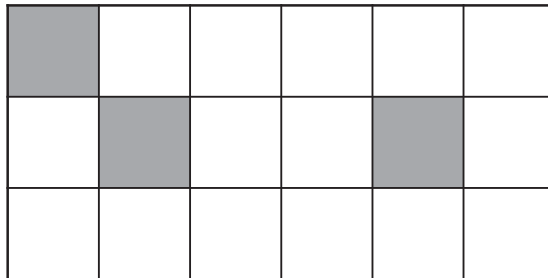
(a) exactly two lines of symmetry, [1]

(b) rotational symmetry of order 2. [1]

Question 3

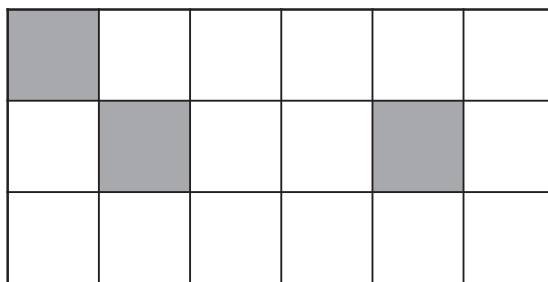
(a) Shade **one** square in each diagram so that there is

(i) one line of symmetry,



[1]

(ii) rotational symmetry of order 2.

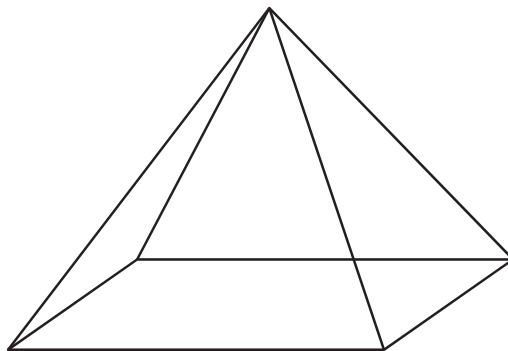


[1]

(b) The pyramid below has a rectangular base.

The vertex of the pyramid is vertically above the centre of the base.

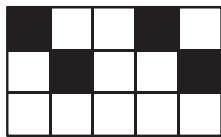
Write down the number of **planes** of symmetry for the pyramid.



[1]

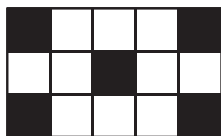
Question 4

- (a) Write down the number of lines of symmetry for the diagram below.



[1]

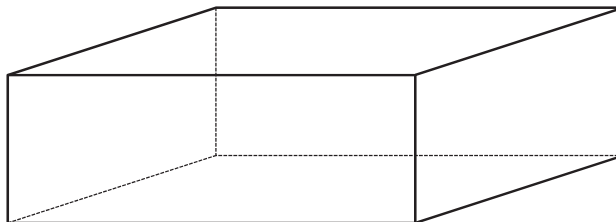
- (b) Write down the order of rotational symmetry for the diagram below.



[1]

- (c) The diagram shows a cuboid which has no square faces.

Draw one of the **planes** of symmetry of the cuboid on the diagram.



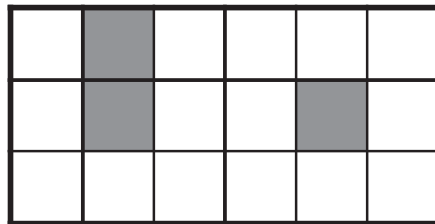
[1]

Question 5

(a) Shade one square in each diagram so that there is

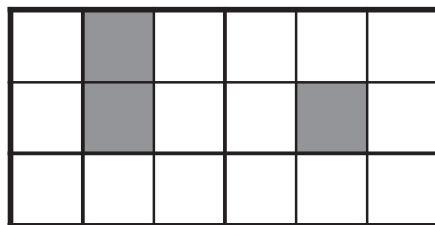
(i) one line of symmetry,

[1]



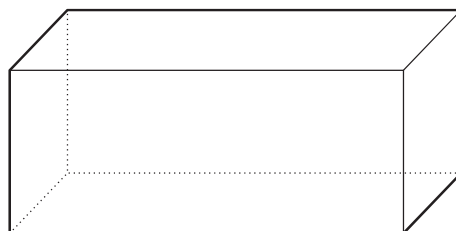
(ii) rotational symmetry of order 2.

[1]



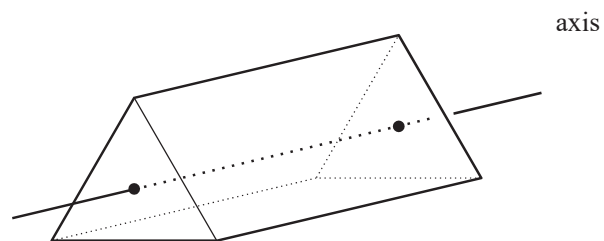
(b) On the diagram below, sketch one of the **planes** of symmetry of the cuboid.

[1]



(c) Write down the order of rotational symmetry of the equilateral triangular prism about the axis shown.

[1]



Question 6



(a) Write down the order of rotational symmetry of the diagram.

[1]

(b) Draw the lines of symmetry on the diagram.

[1]

Question 7

- (a) Draw a quadrilateral which has rotational symmetry of order 2 and whose diagonals are equal in length.

[2]

- (b) Write down the special name of this quadrilateral.

[1]

Angles in Polygons

Difficulty: Easy

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Angles in Polygons
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 1

Time allowed: 43 minutes

Score: /33

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1



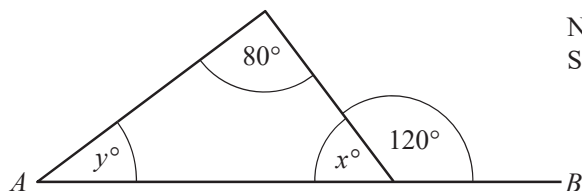
NOT TO
SCALE

The diagram shows a quadrilateral.

Find the value of x .

[1]

Question 2



NOT TO
SCALE

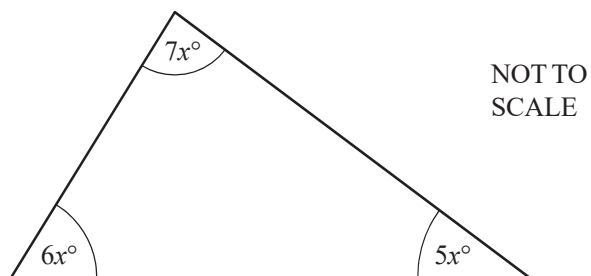
In the diagram, AB is a straight line.

Find the value of x and the value of y .

[2]

Question 3

The three angles in a triangle are $5x^\circ$, $6x^\circ$ and $7x^\circ$.



(a) Find the value of x . [2]

(b) Work out the size of the largest angle in the triangle. [1]

Question 4

Five angles of a hexagon are each 115° .

Calculate the size of the sixth angle. [3]

Question 5

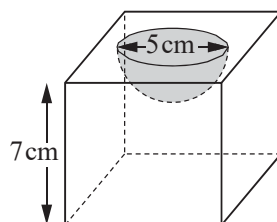
A regular polygon has an interior angle of 172° .

Find the number of sides of this polygon.

[3]

Question 6

A solid consists of a metal cube with a hemisphere cut out of it.



NOT TO
SCALE

The length of a side of the cube is 7 cm.

The diameter of the hemisphere is 5 cm.

Calculate the volume of this solid.

[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

[3]

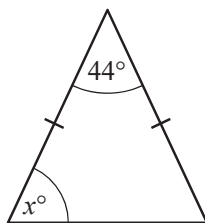
Question 7

Find the sum of the interior angles of a 25-sided polygon.

[2]

Question 8

(a)



NOT TO
SCALE

The diagram shows an isosceles triangle.

Find the value of x .

[1]

(b) The exterior angle of a regular polygon is 24° .

Find the number of sides of this regular polygon.

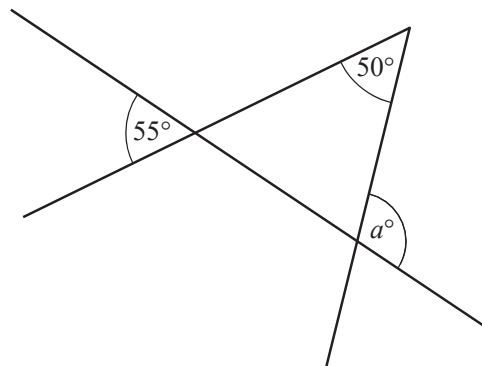
[2]

Question 9

Find the interior angle of a regular polygon with 18 sides.

[3]

Question 10

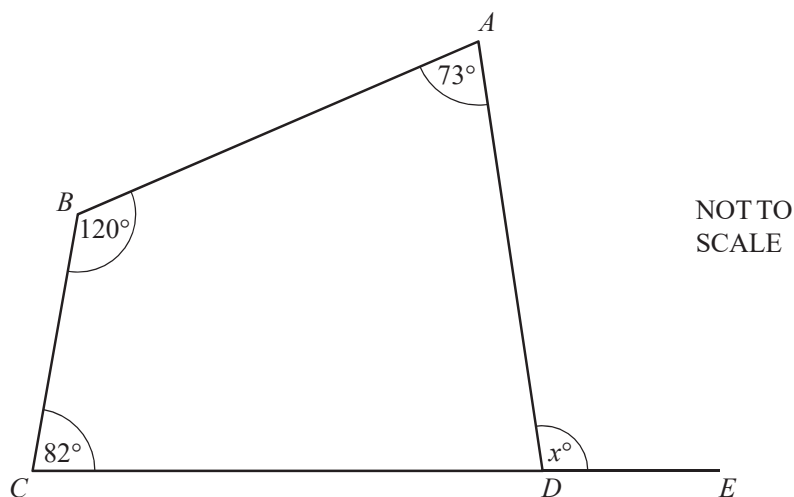


NOT TO
SCALE

Use the information in the diagram to find the value of a .

[2]

Question 11

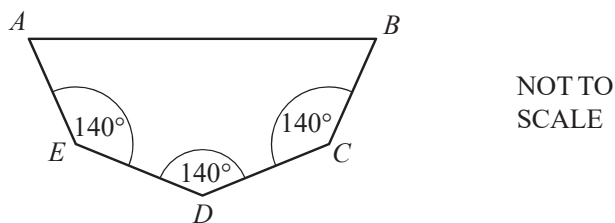


The diagram shows a quadrilateral $ABCD$.
 CDE is a straight line.

Calculate the value of x .

[2]

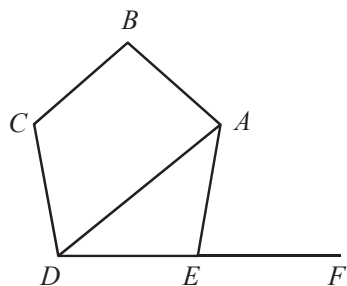
Question 12



The pentagon has three angles which are each 140° .
The other two interior angles are equal.
Calculate the size of one of these angles.

[3]

Question 13



NOT TO
SCALE

$ABCDE$ is a regular pentagon.
 DEF is a straight line.
Calculate

(a) angle AEF , [2]

(b) angle DAE . [1]

Angles in Polygons

Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Angles in Polygons
Paper	Paper 2
Difficulty	Hard
Booklet	Question Paper 1

Time allowed: 26 minutes

Score: /20

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

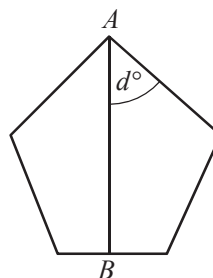
CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

The diagram shows a regular pentagon.
 AB is a line of symmetry.

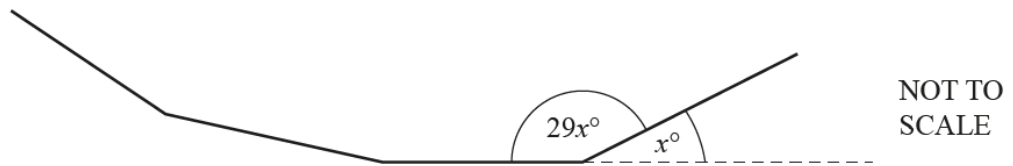
Work out the value of d .



NOT TO
SCALE

[3]

Question 2



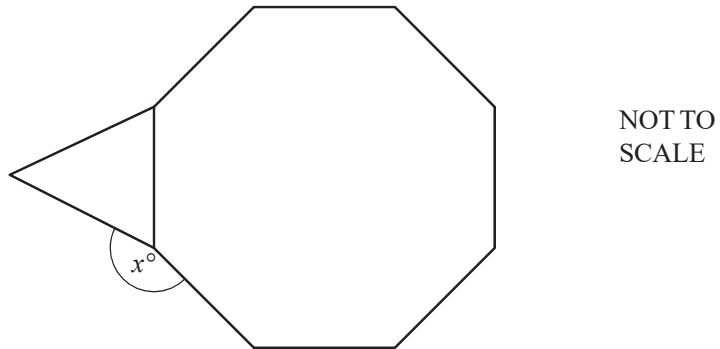
The diagram shows part of a regular polygon.
The exterior angle is x° .
The interior angle is $29x^\circ$.

Work out the number of sides of this polygon.

[3]

Question 3

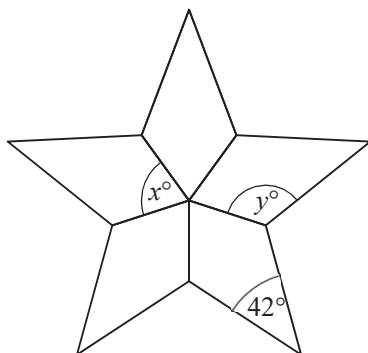
The diagram shows a regular octagon joined to an equilateral triangle.



Work out the value of x .

[3]

Question 4



NOT TO
SCALE

The diagram is made from 5 congruent kites.

Work out the value of

(a) x , [1]

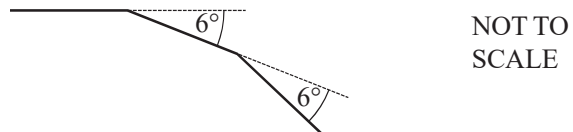
(b) y . [2]

Question 5

The exterior angle of a regular polygon is 36° .

What is the name of this polygon? [3]

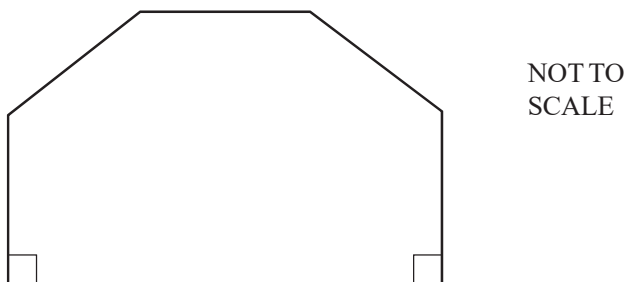
Question 6



The diagram shows two of the exterior angles of a regular polygon with n sides.
Calculate n .

[2]

Question 7



The front of a house is in the shape of a hexagon with two right angles.
The other four angles are all the same size.

Calculate the size of one of these angles.

[3]

Circle Theorems

Difficulty: Easy

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Circle Theorems
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 1

Time allowed: 27 minutes

Score: /21

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

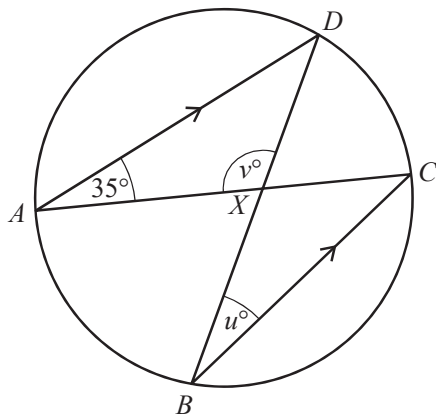
A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

(a)



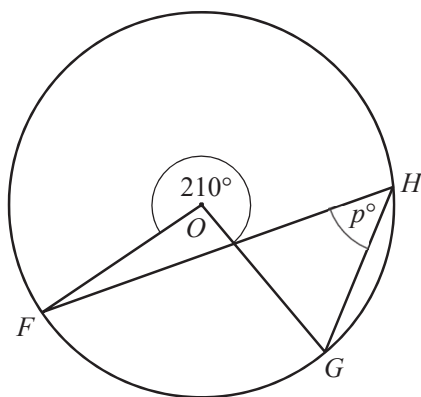
NOT TO
SCALE

A, B, C and D are points on the circle.
 AD is parallel to BC .
 The chords AC and BD intersect at X .

[3]

Find the value of u and the value of v .

(b)



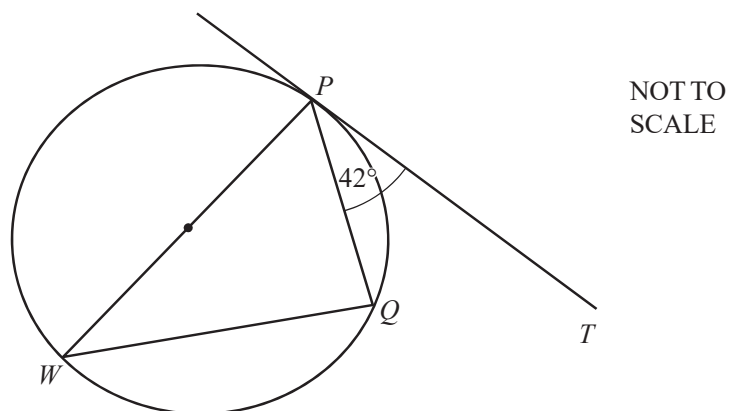
NOT TO
SCALE

F, G and H are points on the circle, centre O .

[2]

Find the value of p .

Question 2

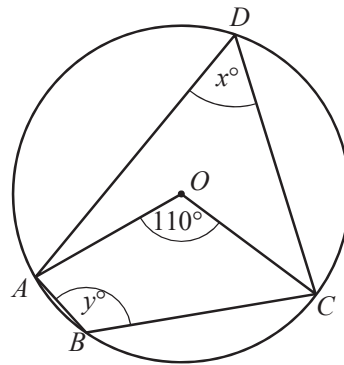


In the diagram, PT is a tangent to the circle at P .
 PW is a diameter and angle $TPQ = 42^\circ$.

[2]

Find angle PWQ .

Question 3



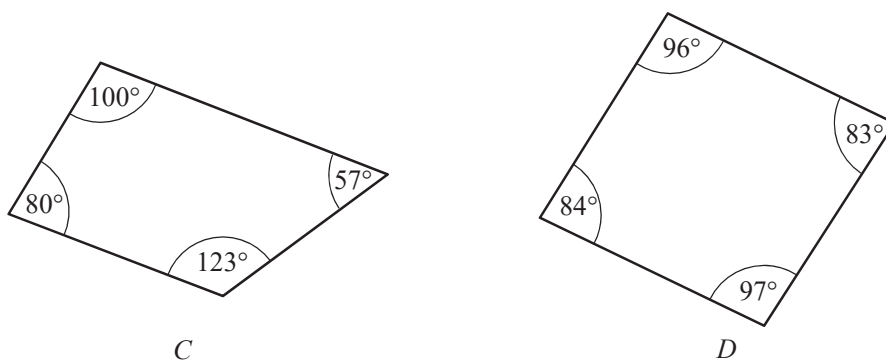
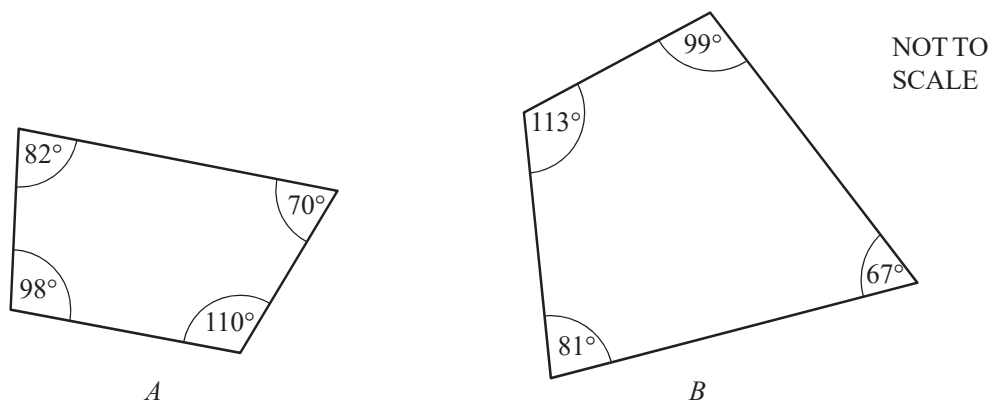
NOT TO
SCALE

A , B , C and D lie on the circle, centre O .

Find the value of x and the value of y .

[2]

Question 4

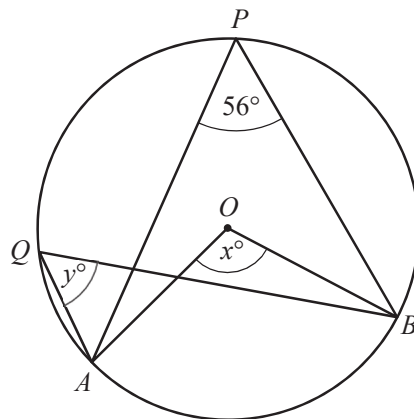


The diagram shows four quadrilaterals *A*, *B*, *C* and *D*.

Which one of these could be a cyclic quadrilateral?

[1]

Question 5



NOT TO
SCALE

A , B , P and Q lie on the circle, centre O .
Angle $APB = 56^\circ$.

Find the value of

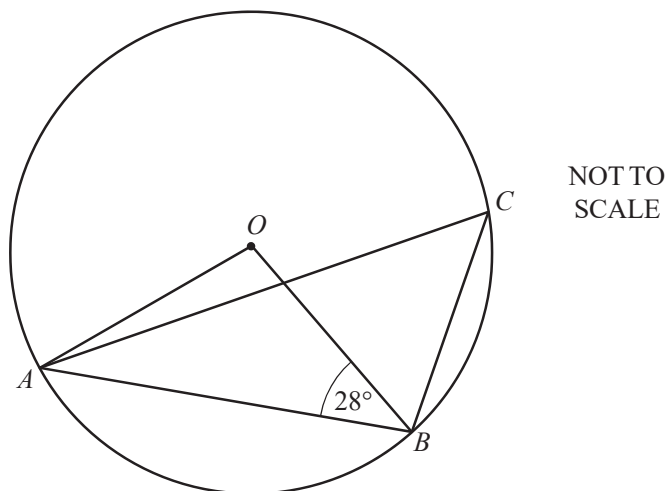
(a) x ,

[1]

(b) y .

[1]

Question 6



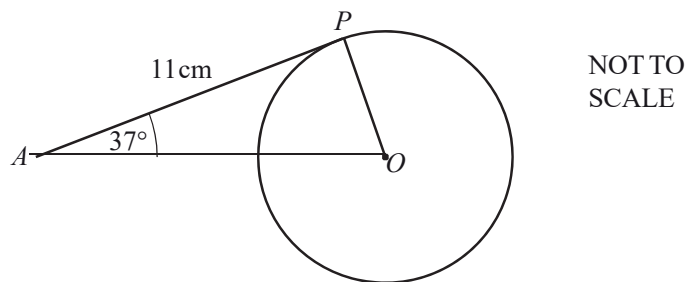
In the diagram, A , B and C lie on the circumference of a circle, centre O .

Work out the size of angle ACB .

Give a reason for each step of your working.

[4]

Question 7



In the diagram, AP is a tangent to the circle at P .
 O is the centre of the circle, angle $PAO = 37^\circ$ and $AP = 11$ cm.

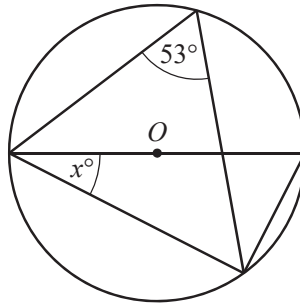
- (a) Write down the size of angle OPA .

[1]

- (b) Work out the radius of the circle.

[2]

Question 8



NOT TO
SCALE

The diagram shows a circle, centre O .

Find the value of x .

[2]

Circle Theorems

Difficulty: Easy

Question Paper 2

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Circle Theorems
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 2

Time allowed: 27 minutes

Score: /21

Percentage: /100

Grade Boundaries:

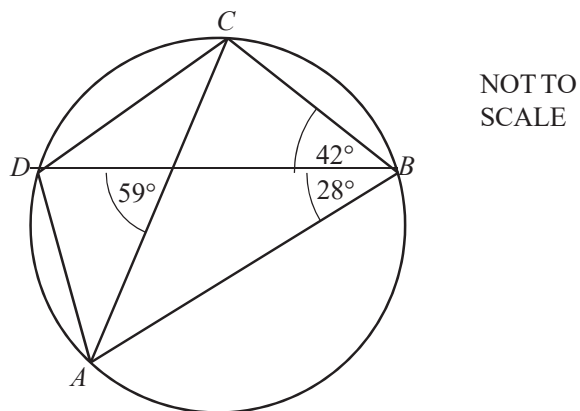
CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1



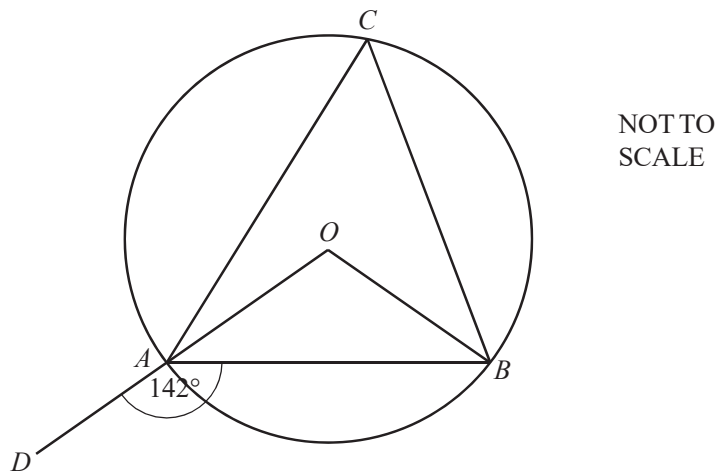
A , B , C and D lie on the circle.

Find

(a) angle ADC , [1]

(b) angle ADB . [2]

Question 2

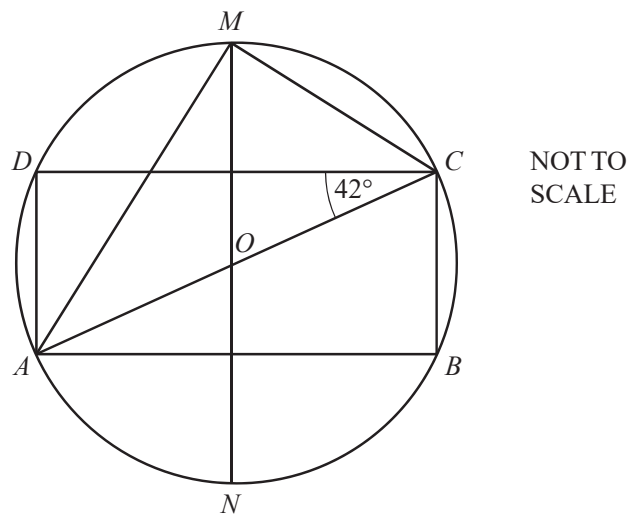


A , B and C are points on the circumference of a circle centre O .
 OAD is a straight line and angle $DAB = 142^\circ$.

Calculate the size of angle ACB .

[3]

Question 3



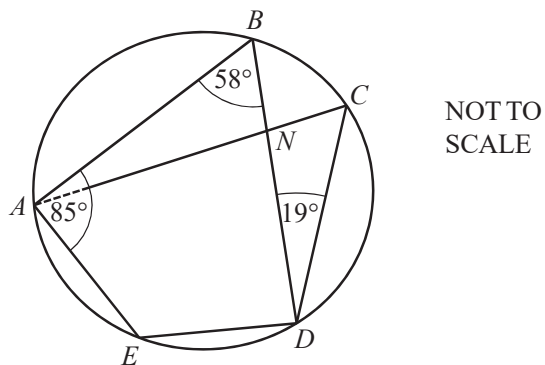
The vertices of the rectangle $ABCD$ lie on a circle centre O .
 MN is a line of symmetry of the rectangle.
 AC is a diameter of the circle and angle $ACD = 42^\circ$.

Calculate

(a) angle CAM , [2]

(b) angle DCM . [2]

Question 4



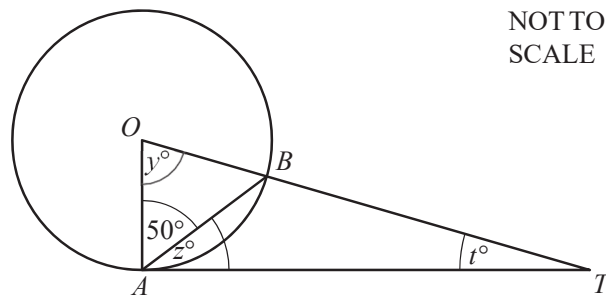
A, B, C, D and E are points on a circle.
Angle $ABD = 58^\circ$, angle $BAE = 85^\circ$ and angle $BDC = 19^\circ$.
 BD and CA intersect at N .

Calculate

(a) angle BDE , [1]

(b) angle AND . [2]

Question 5



TA is a tangent at A to the circle, centre O .
 Angle $OAB = 50^\circ$.

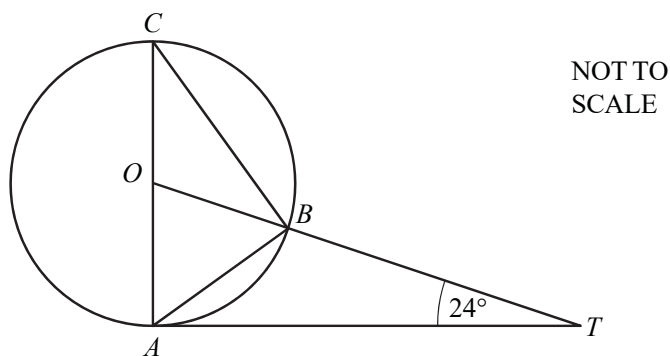
Find the value of

(a) y , [1]

(b) z , [1]

(c) t . [1]

Question 6



A , B and C are points on a circle, centre O .
 TA is a tangent to the circle at A and OBT is a straight line.
 AC is a diameter and angle $OTA = 24^\circ$.

Calculate

(a) angle AOT , [2]

(b) angle ACB , [1]

(c) angle ABT . [2]

Circle Theorems

Difficulty: Easy

Question Paper 3

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Circle Theorems
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 3

Time allowed: 26 minutes

Score: /20

Percentage: /100

Grade Boundaries:

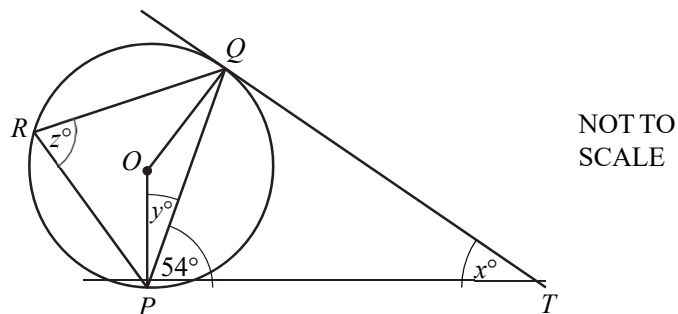
CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1



The points P , Q and R lie on a circle, centre O .
 TP and TQ are tangents to the circle.
 Angle $TPQ = 54^\circ$.

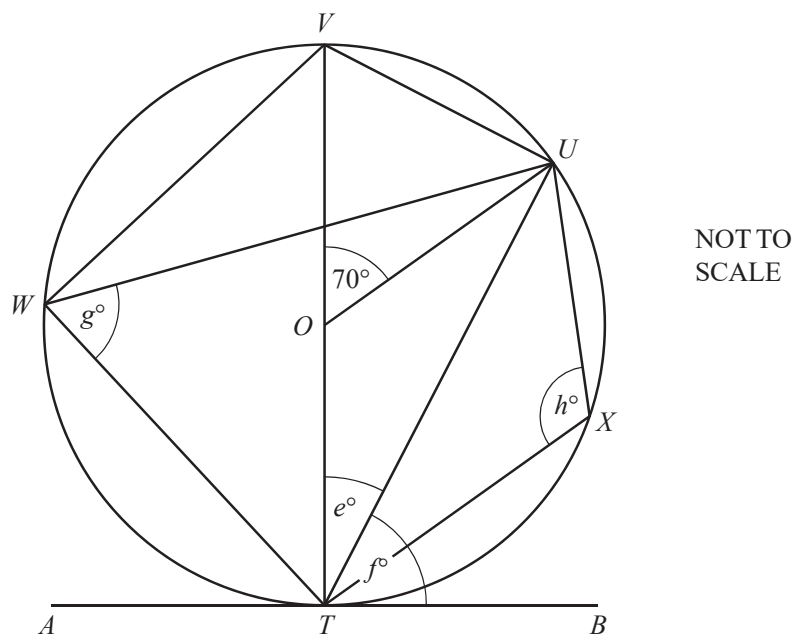
Calculate the value of

(a) x , [1]

(b) y , [1]

(c) z . [2]

Question 2

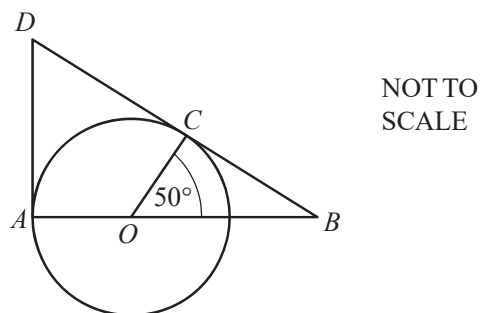


The diagram shows a circle, centre O .
 VT is a diameter and ATB is a tangent to the circle at T .
 U , V , W and X lie on the circle and angle $VOU = 70^\circ$.

Calculate the value of

- | | |
|-----------|-----|
| (a) e , | [1] |
| | |
| (b) f , | [1] |
| | |
| (c) g , | [1] |
| | |
| (d) h . | [1] |

Question 3



O is the centre of the circle.

DA is the tangent to the circle at A and DB is the tangent to the circle at C .

AOB is a straight line. Angle $COB = 50^\circ$.

Calculate

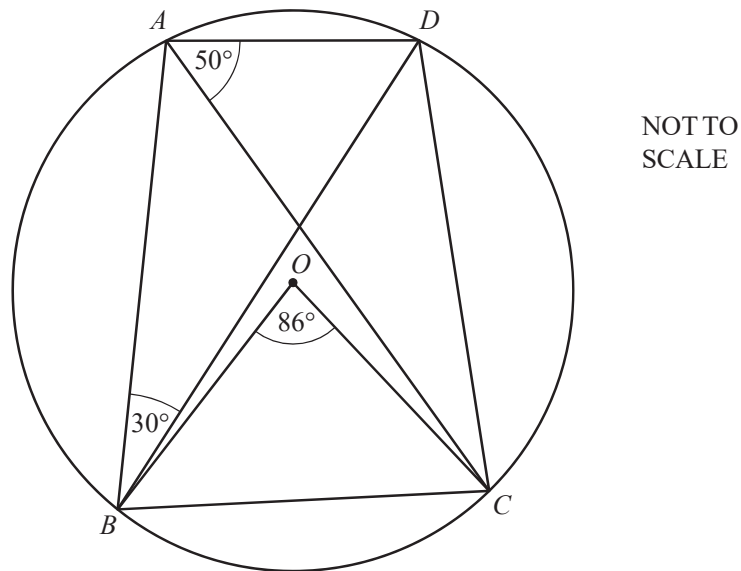
(a) angle CBO ,

[1]

(b) angle DOC .

[1]

Question 4



The points A, B, C and D lie on the circumference of the circle, centre O .

Angle $ABD = 30^\circ$, angle $CAD = 50^\circ$ and angle $BOC = 86^\circ$.

(a) Give the reason why angle $DBC = 50^\circ$.

[1]

(b) Find

(i) angle ADC ,

[1]

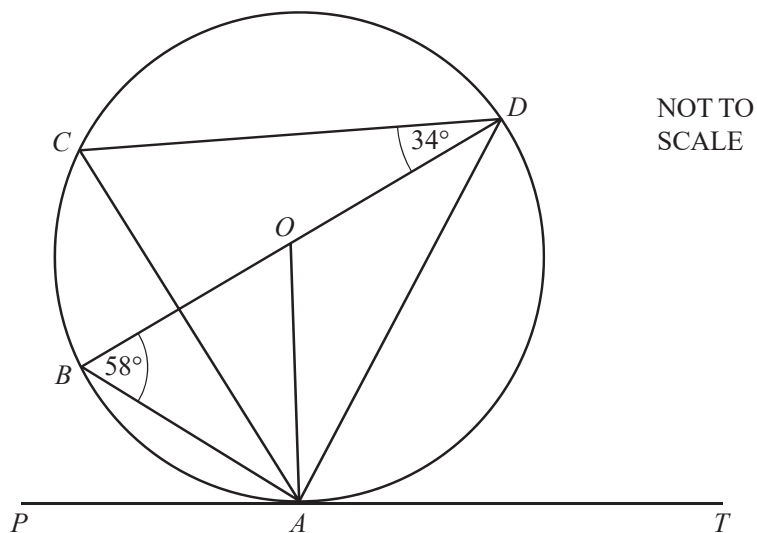
(ii) angle BDC ,

[1]

(iii) angle OBD .

[2]

Question 5



A , B , C and D lie on the circle, centre O .
 BD is a diameter and PAT is the tangent at A .
 Angle $ABD = 58^\circ$ and angle $CDB = 34^\circ$.

Find

(a) angle ACD ,

[1]

(b) angle ADB ,

[1]

(c) angle DAT ,

[1]

(d) angle CAO .

[2]

Circle Theorems

Difficulty: Easy

Question Paper 4

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Circle Theorems
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 4

Time allowed: 31 minutes

Score: /24

Percentage: /100

Grade Boundaries:

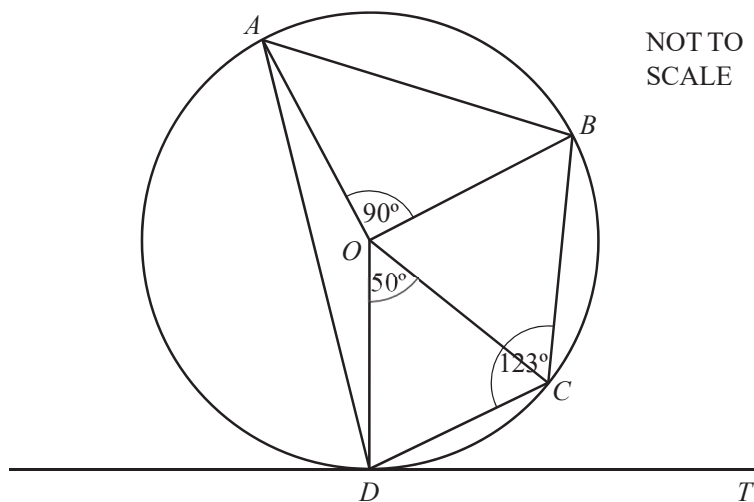
CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1



The points A, B, C and D lie on a circle centre O .
Angle $AOB = 90^\circ$, angle $COD = 50^\circ$ and angle $BCD = 123^\circ$.
The line DT is a tangent to the circle at D .

Find

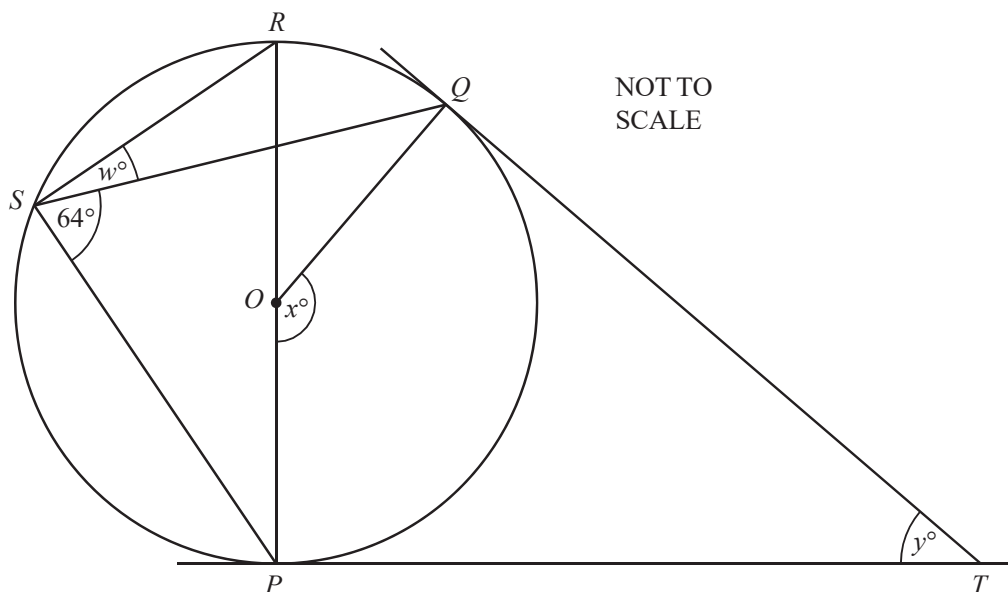
(a) angle OCD , [1]

(b) angle TDC , [1]

(c) angle ABC , [1]

(d) reflex angle AOC . [1]

Question 2



P , Q , R and S lie on a circle, centre O .
 TP and TQ are tangents to the circle.
 PR is a diameter and angle $PSQ = 64^\circ$.

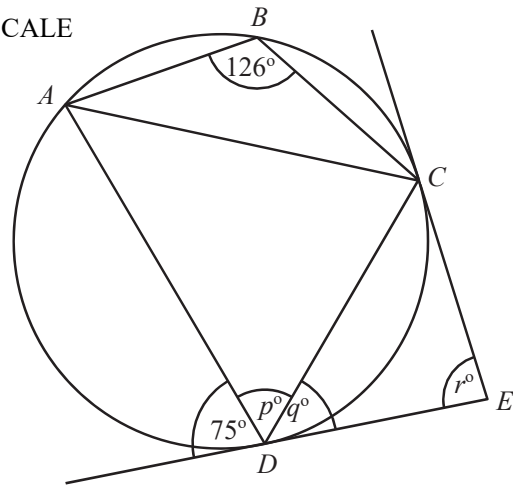
(a) Work out the values of w and x . [2]

(b) Showing all your working, find the value of y . [2]

Question 3

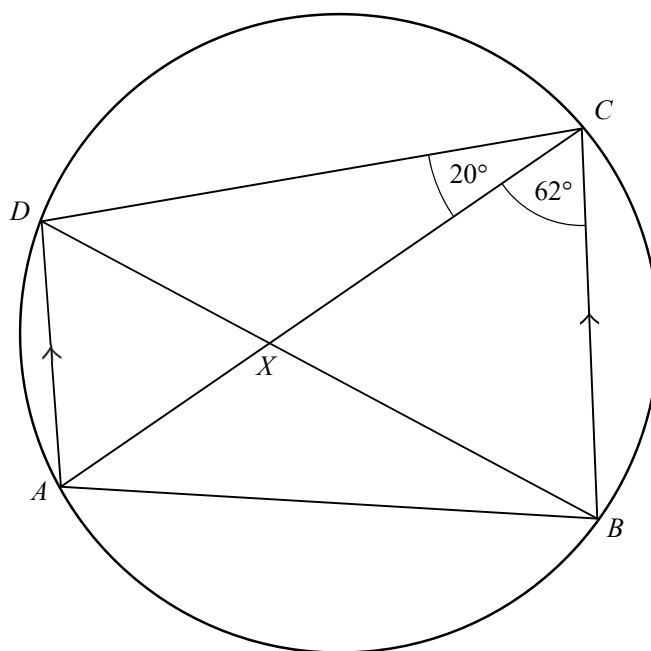
$ABCD$ is a cyclic quadrilateral.
The tangents at C and D meet at E .
Calculate the values of p , q and r .

NOT TO SCALE



[4]

Question 4

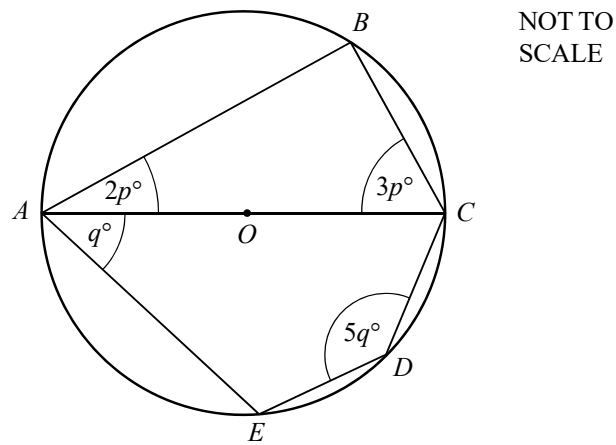


NOT TO
SCALE

$ABCD$ is a cyclic quadrilateral.
 AD is parallel to BC . The diagonals DB and AC meet at X .
 Angle $ACB = 62^\circ$ and angle $ACD = 20^\circ$.
 Calculate

- | | |
|-------------------|-----|
| (a) angle DBA , | [1] |
| (b) angle DAB , | [1] |
| (c) angle DAC , | [1] |
| (d) angle AXB , | [1] |
| (e) angle CDB . | [1] |

Question 5



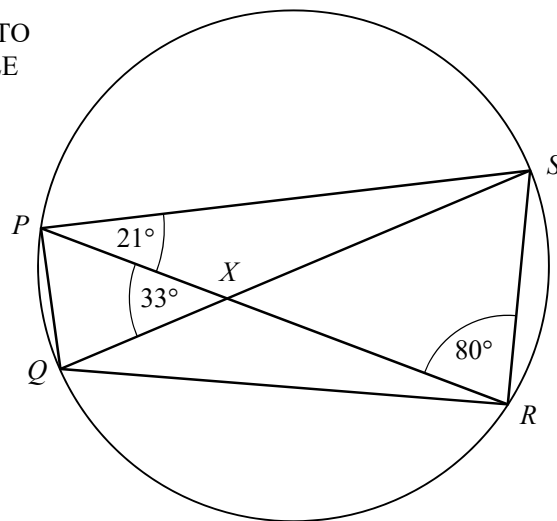
A , B , C , D and E lie on a circle, centre O . AOC is a diameter.
Find the value of

(a) p , [2]

(b) q . [2]

Question 6

NOT TO
SCALE



$PQRS$ is a cyclic quadrilateral. The diagonals PR and QS intersect at X .
Angle $SPR = 21^\circ$, angle $PRS = 80^\circ$ and angle $PXQ = 33^\circ$.
Calculate

(a) angle PQS ,

[1]

(b) angle QPR ,

[1]

(c) angle PSQ .

[1]

Circle Theorems

Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Circle Theorems
Paper	Paper 2
Difficulty	Hard
Booklet	Question Paper 1

Time allowed: 27 minutes

Score: /21

Percentage: /100

Grade Boundaries:

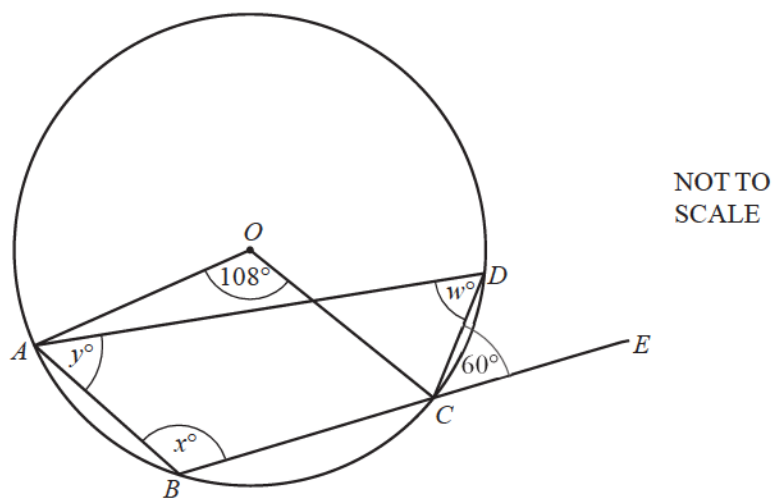
CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

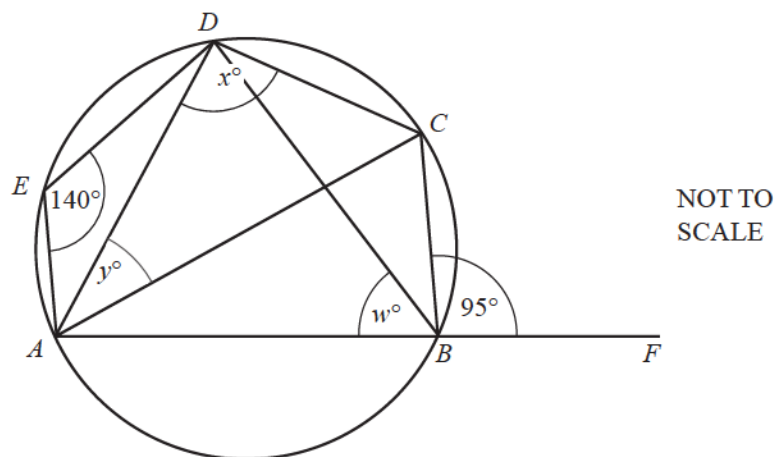


A, B, C and D are points on the circle, centre O .
 BCE is a straight line.
Angle $AOC = 108^\circ$ and angle $DCE = 60^\circ$.

Calculate the values of w, x and y .

[3]

Question 2



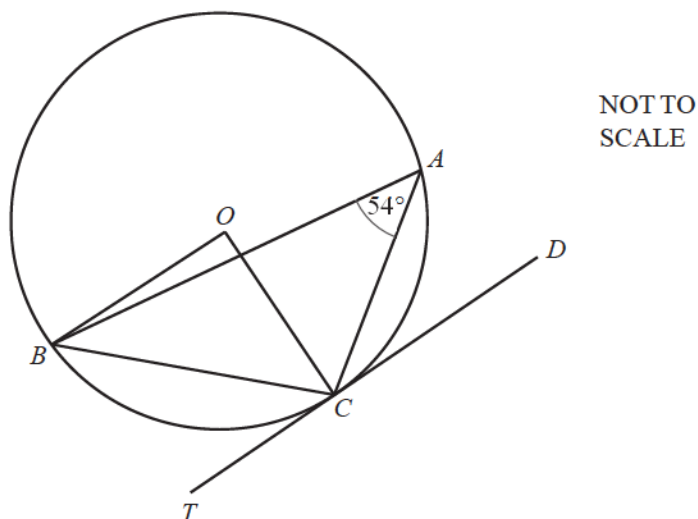
A, B, C, D and E lie on the circle.
 AB is extended to F .
 Angle $AED = 140^\circ$ and angle $CBF = 95^\circ$.

[5]

Find the values of w, x and y .

Question 3

A , B and C are points on a circle, centre O .
 TCD is a tangent to the circle.
 Angle $BAC = 54^\circ$.



(a) Find angle BOC , giving a reason for your answer. [2]

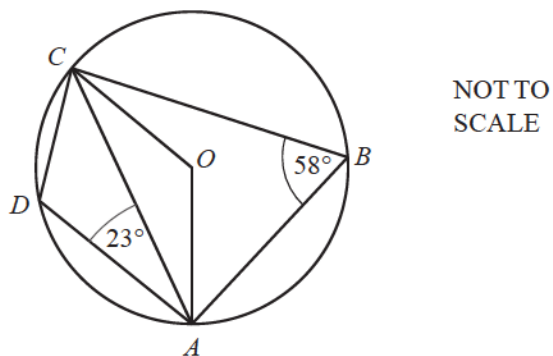
(b) When O is the origin, the position vector of point C is $\begin{pmatrix} 3 \\ -4 \end{pmatrix}$.

(i) Work out the gradient of the radius OC . [1]

(ii) D is the point $(7, k)$.

Find the value of k . [1]

Question 4



A, B, C and D lie on a circle centre O .
Angle $ABC = 58^\circ$ and angle $CAD = 23^\circ$.

Calculate

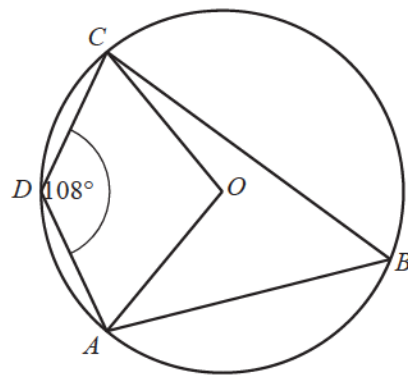
(a) angle OCA ,

[2]

(b) angle DCA .

[2]

Question 5



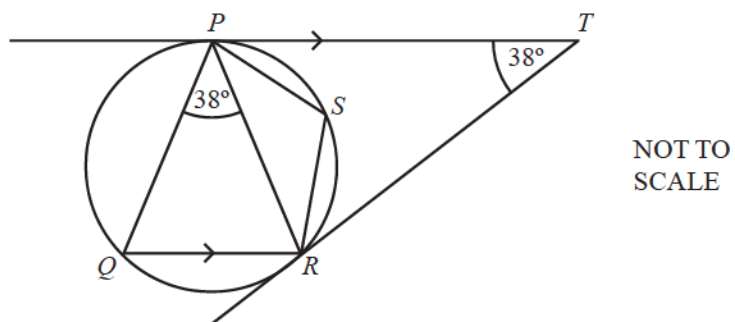
NOT TO
SCALE

A, B, C and D lie on a circle centre O . Angle $ADC = 108^\circ$.

Work out the obtuse angle AOC .

[2]

Question 6



In the diagram PT and QR are parallel. TP and TR are tangents to the circle $PQRS$.
 Angle $PTR = \text{angle } RPQ = 38^\circ$.

(a) What is the special name of triangle TPR . Give a reason for your answer.

[1]

(b) Calculate

(i) angle PQR ,

[1]

(ii) angle PSR .

[1]

Parallel Lines

Difficulty: Easy

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Parallel Lines
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 1

Time allowed: 14 minutes

Score: /11

Percentage: /100

Grade Boundaries:

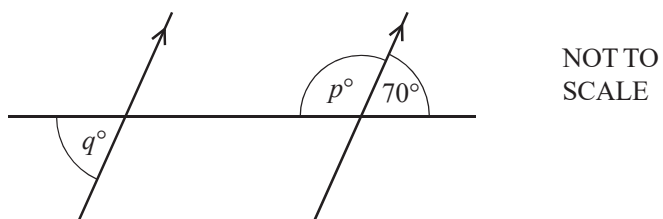
CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

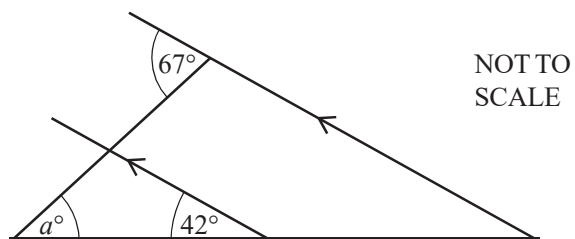


The diagram shows a straight line intersecting two parallel lines.

Find the value of p and the value of q .

[2]

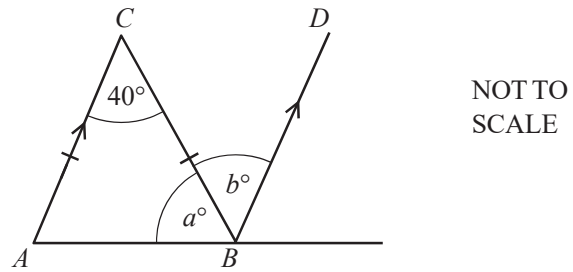
Question 2



Find the value of a .

[2]

Question 3

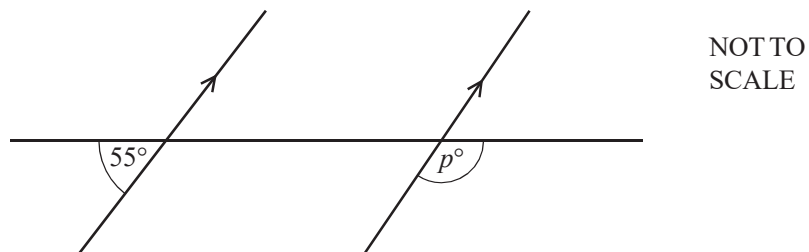


Triangle ABC is isosceles and AC is parallel to BD .

Find the value of a and the value of b .

[2]

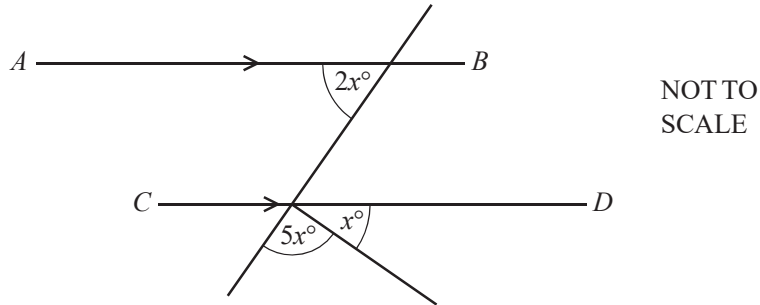
Question 4



Find the value of p .

[2]

Question 5



AB is parallel to CD .
Calculate the value of x .

[3]

Parallel Lines

Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Geometry
Sub-Topic	Parallel Lines
Paper	Paper 2
Difficulty	Hard
Booklet	Question Paper 1

Time allowed: 30 minutes

Score: /23

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

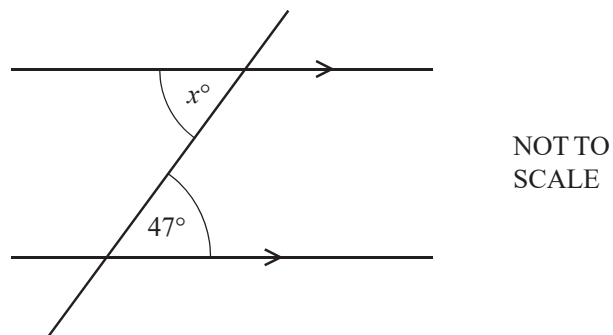
A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

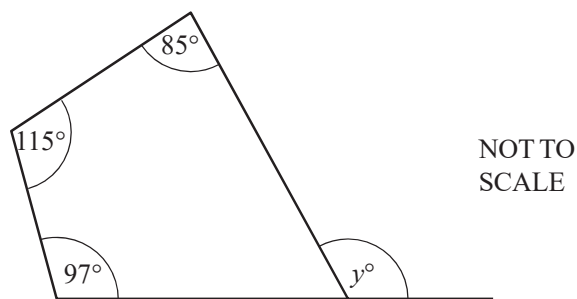
(a)



Find the value of x .

[1]

(b)

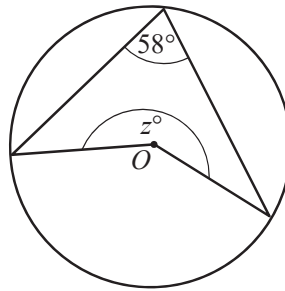


Find the value of y .

[2]

Question 1

(c)



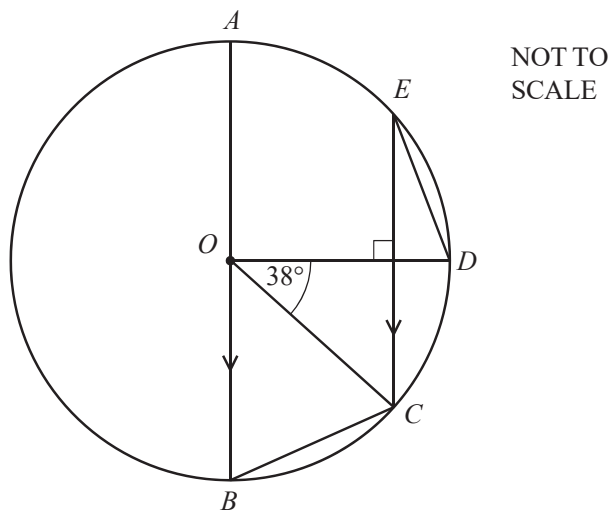
NOT TO
SCALE

The diagram shows a circle, centre O .

Find the value of z .

[2]

Question 2



AB is the diameter of a circle, centre O . C , D and E lie on the circle. EC is parallel to AB and perpendicular to OD . Angle DOC is 38° .

Work out

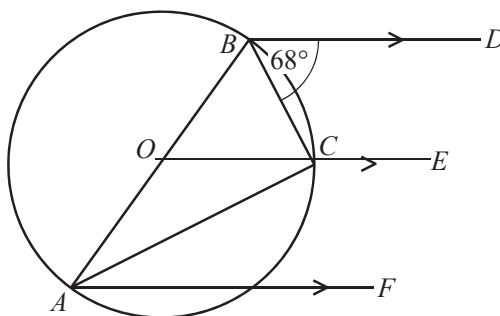
(a) angle BOC , [1]

(b) angle CBO , [1]

(c) angle EDO . [2]

Question 3

NOT TO
SCALE



Points A , B and C lie on a circle, centre O , with diameter AB .
 BD , OCE and AF are parallel lines.
Angle $CBD = 68^\circ$.

Calculate

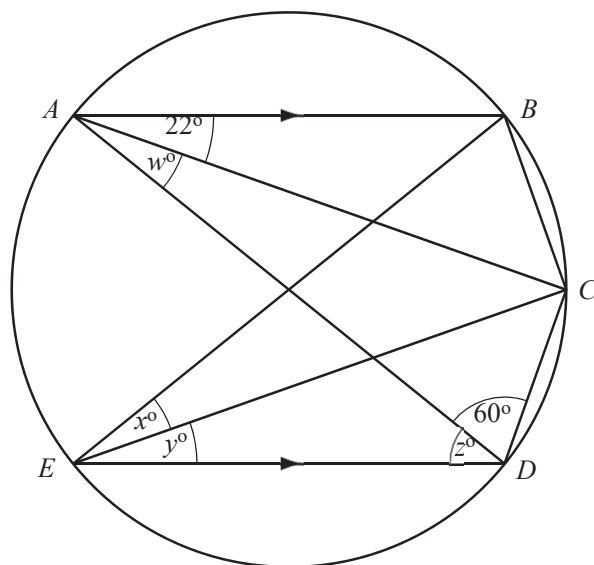
(a) angle BOC ,

[2]

(b) angle ACE .

[2]

Question 4

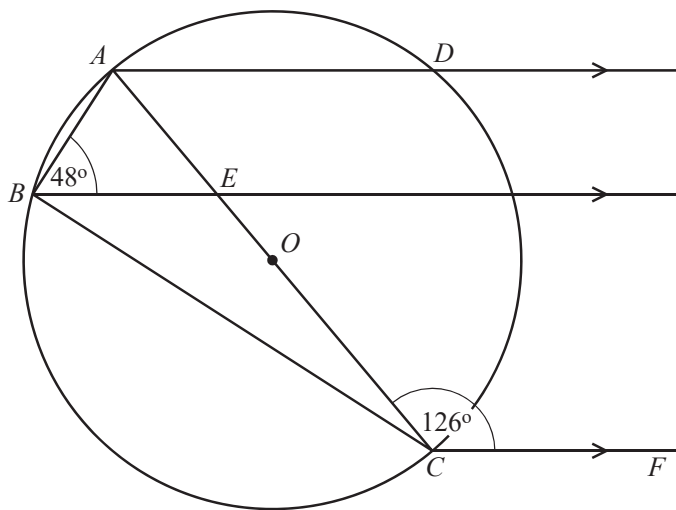


NOT TO
SCALE

AD is a diameter of the circle $ABCDE$.
 Angle $BAC = 22^\circ$ and angle $ADC = 60^\circ$.
 AB and ED are parallel lines.
 Find the values of w , x , y and z .

[4]

Question 5



NOT TO
SCALE

A , B , C and D lie on a circle centre O . AC is a diameter of the circle.
 AD , BE and CF are parallel lines. Angle $ABE = 48^\circ$ and angle $ACF = 126^\circ$.
 Find

(a) angle DAE ,

[1]

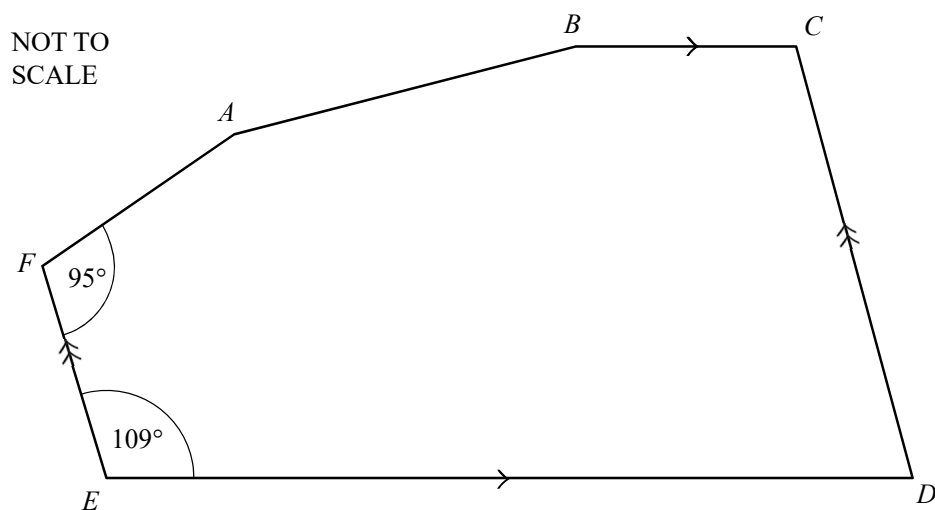
(b) angle EBC ,

[1]

(c) angle BAE .

[1]

Question 6



In the hexagon $ABCDEF$, BC is parallel to ED and DC is parallel to EF .
 Angle $DEF = 109^\circ$ and angle $EFA = 95^\circ$.
 Angle FAB is equal to angle ABC .
 Find the size of

(a) angle EDC ,

[1]

(b) angle FAB .

[2]