Angles in Polygons & Parallel Lines

Question Paper

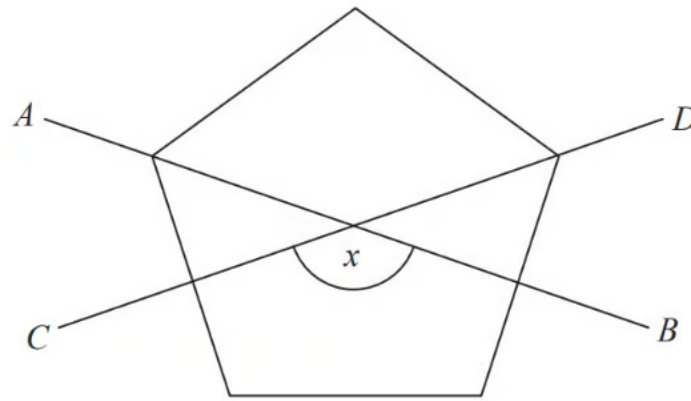| Course	Edexcel IGCSE Maths
Section	4. Geometry & Trigonometry
Topic	Angles in Polygons & Parallel Lines
Difficulty	Very Hard

Time allowed: 70

Score: /53

Percentage: /100

Question 1

The diagram shows a regular pentagon.
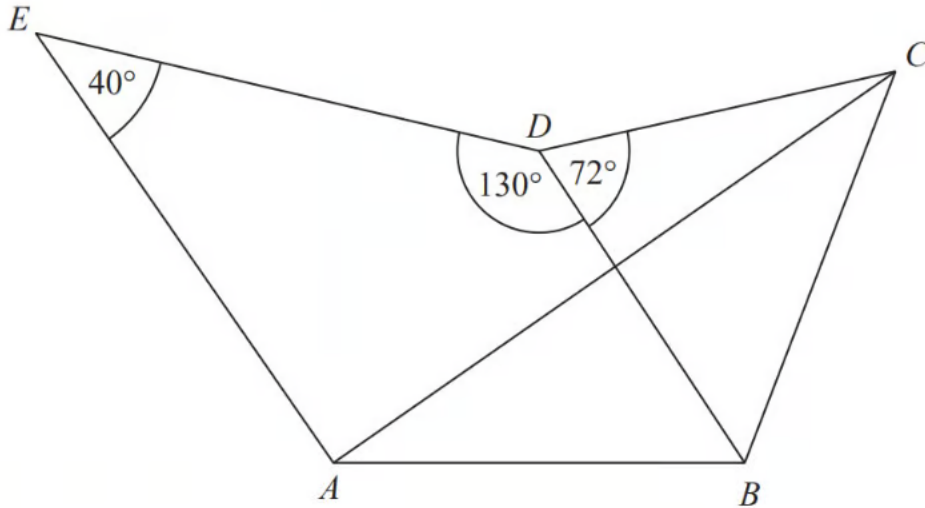AB and CD are two of the lines of symmetry of the pentagon.

Work out the size of the angle marked x.
You must show all your working.

[4 marks]

Question 2

Here is a pentagon $ABCDE$.

Diagram **NOT** accurately drawn

E

$40°$

C

D

$130°$ $72°$

A B

$AB = BC = BD$
$ABDE$ is a kite.

Angle $AED = 40°$
Angle $EDB = 130°$
Angle $BDC = 72°$

Work out the size of angle ACB.

[3 marks]

Question 3

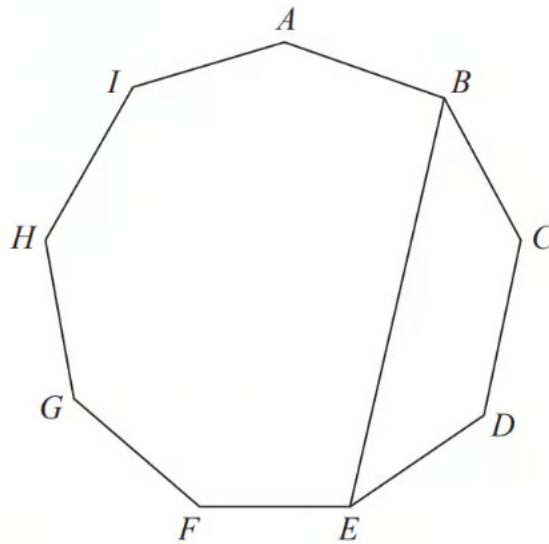*ABCDEFGHI* is a regular 9−sided polygon.

Diagram **NOT**
accurately drawn

The vertices *B* and *E* are joined with a straight line.
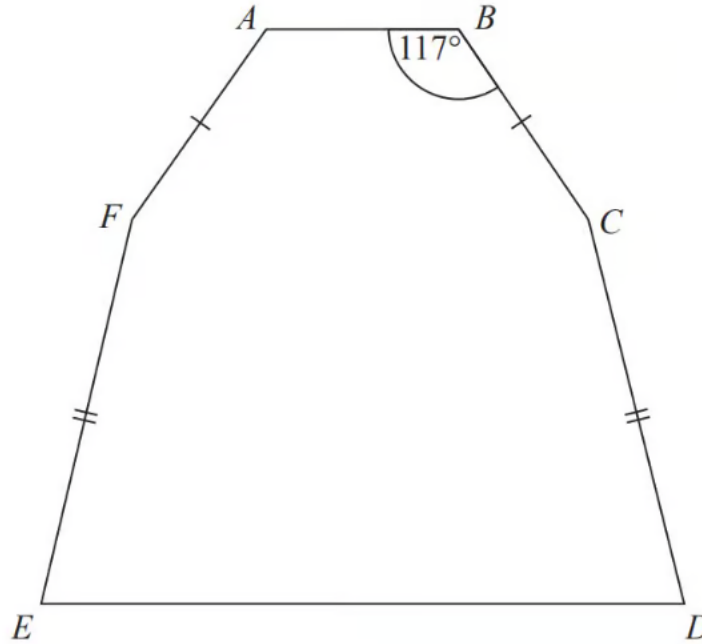
Work out the size of angle *BEF*.
You must show how you get your answer.

[4 marks]

Question 4

The diagram shows a hexagon.
The hexagon has one line of symmetry.

$FA = BC$
$EF = CD$
Angle $ABC = 117°$

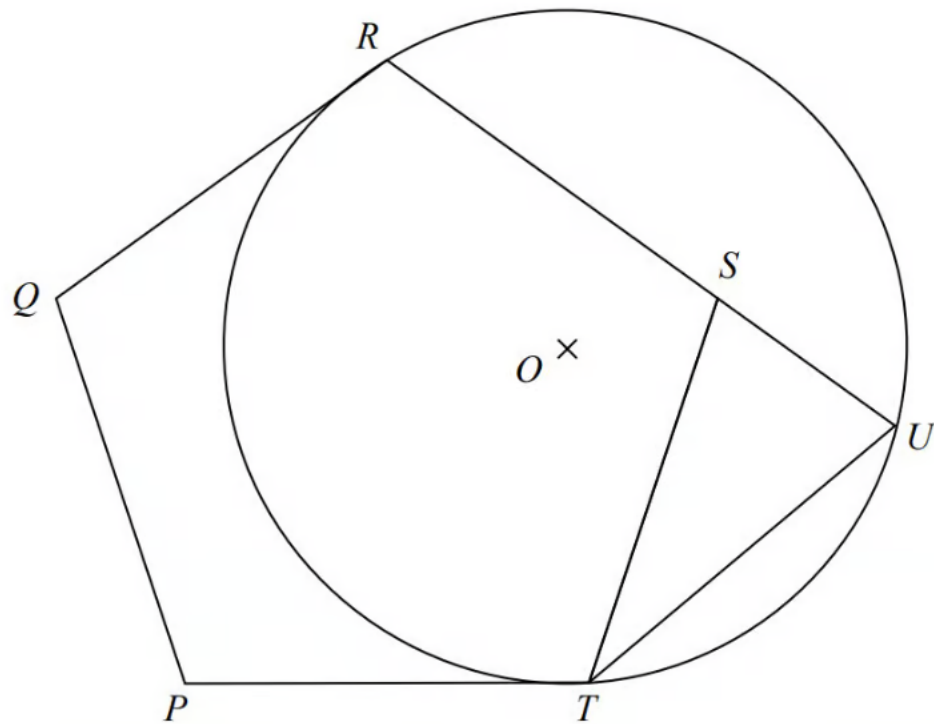Angle $BCD = 2 \times$ angle CDE.

Work out the size of angle AFE.
You must show all your working.

[4 marks]

Question 5

PQRST is a regular pentagon.
R, *U* and *T* are points on a circle, centre *O*.
QR and *PT* are tangents to the circle.
RSU is a straight line.

Prove that $ST = UT$.

[5 marks]

Question 6

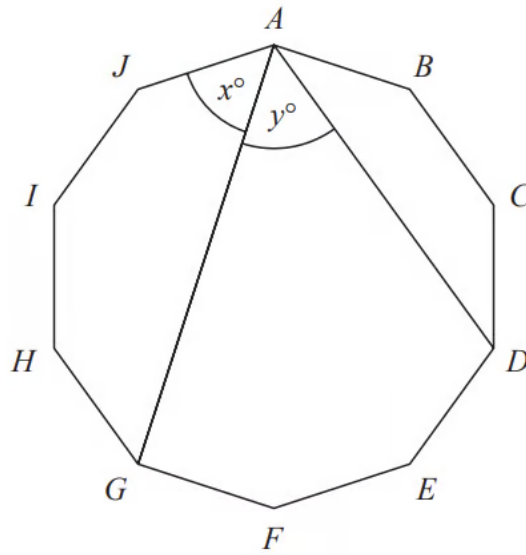The diagram shows a regular 10–sided polygon, $ABCDEFGHIJ$

Diagram **NOT**
accurately drawn

Show that $x = y$.

[4 marks]

Question 7

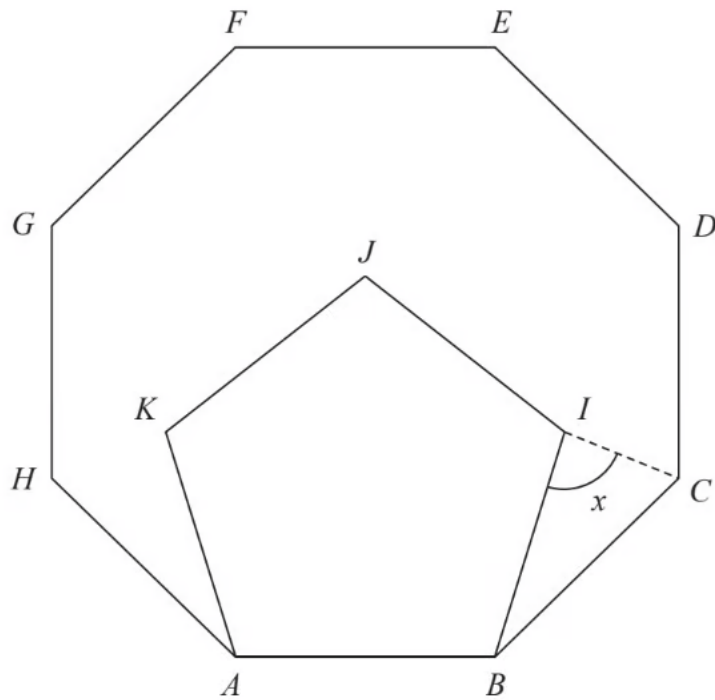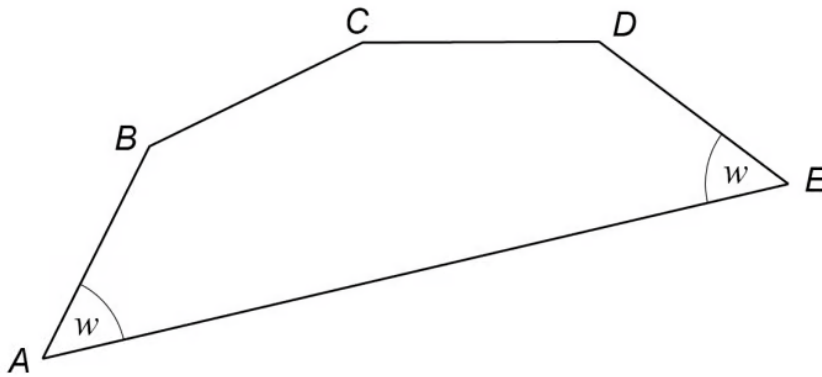The diagram shows a regular octagon $ABCDEFGH$ and a regular pentagon $ABIJK$

Diagram **NOT** accurately drawn

Work out the size of the angle x.

[4 marks]

Question 8

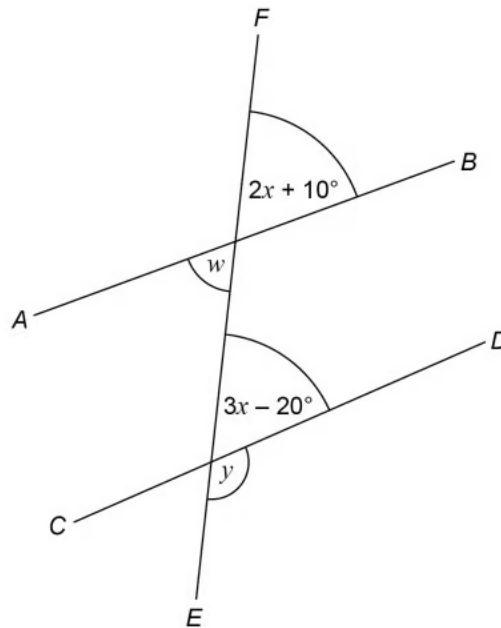AB, BC, CD and DE are four of the sides of a regular decagon.

Work out the size of angle w.

...............................degrees

[3 marks]

Question 9a

AB, *CD* and *EF* are straight lines.

Not drawn
accurately

Ava assumes that *AB* and *CD* are parallel.

What answer should she get for the size of angle *y*?

..............................degrees

[4 marks]

Question 9b

In fact,

AB and CD are not parallel
angle w is 60°

What effect does this have on the size of angle y?
Tick a box.

☐ y is bigger

☐ y is the same

☐ y is smaller
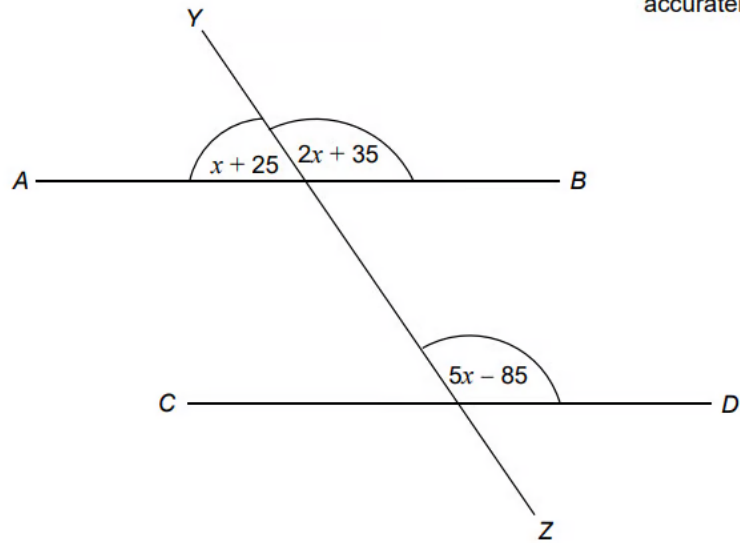
Show working to support your answer.

[3 marks]

Question 10

AB, CD and YZ are straight lines.

All angles are in degrees.
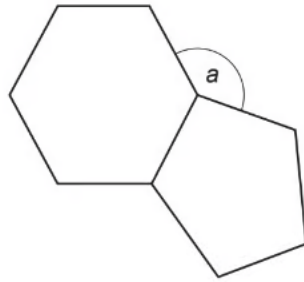
Not drawn accurately

Show that AB is parallel to CD.

[4 marks]

Question 11a

Imran joins two tiles together as shown below.
One tile is a regular hexagon and the other tile is a regular pentagon.

Not to scale

Show that angle **a** is 132°.

[3 marks]

Question 11b

Imran thinks that another tile in the shape of a regular polygon will fit **exactly** into angle a.
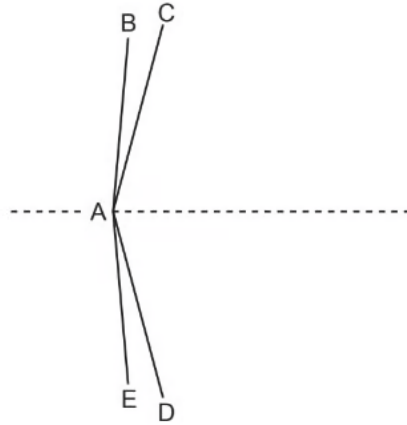
Is Imran correct?
Show your reasoning.

[3 marks]

Question 12

Angle BAE is part of a regular 18-sided polygon.
Angle CAD is part of a regular 10-sided polygon.
The dashed line through A is a line of symmetry of both polygons.

Not to scale

Work out angle BAC.

[5 marks]