ANGLES AND POLYGONS

Question 1

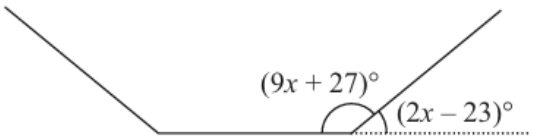


Diagram **NOT** accurately drawn

The diagram shows part of a regular n-sided polygon with

an interior angle of $(9x + 27)°$
an exterior angle of $(2x – 23)°$

Work out the value of n

$n =$ .....

(4)

Question 2

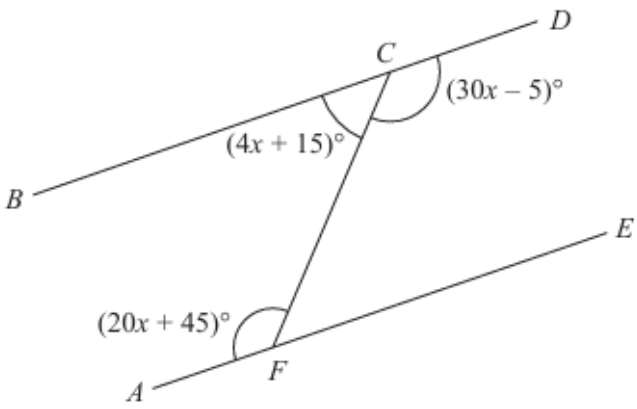


Diagram **NOT** accurately drawn

BCD and *AFE* are straight lines.

Show that *BCD* is parallel to *AFE*.
Give reasons for your working.

(5)

Question 3

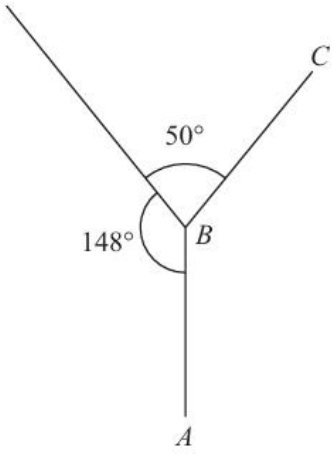


Diagram **NOT** accurately drawn

AB and *BC* are two sides of a regular polygon with *n* sides.

Work out the value of *n*
Show your working clearly.

.....(4)

Question 4

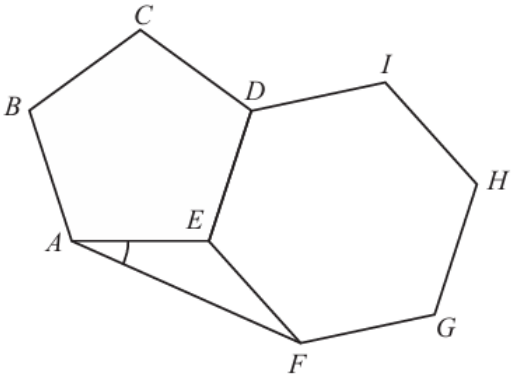


Diagram **NOT** accurately drawn

ABCDE is a regular pentagon.
DEFGHI is a regular hexagon.

AF is a straight line.

Work out the size of angle *EAF*

.....(5)

Question 5

In the diagram, *ABCDE* is a regular pentagon.

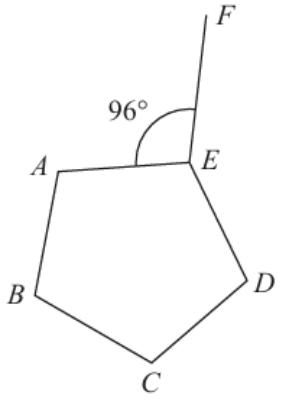


Diagram **NOT** accurately drawn

Angle *AEF* = 96°

Work out the size of the obtuse angle *FED*
Show your working clearly.

.....(4)

Question 6

A polygon has n sides, where $n > 5$

The interior angles of the polygon form an arithmetic sequence.

The smallest angle of the polygon is 84°
The common difference of the sequence is 4°

Work out the sum of the interior angles of the polygon.
Show clear algebraic working.

.....(6)

Question 7

$ABCD$ is a trapezium.

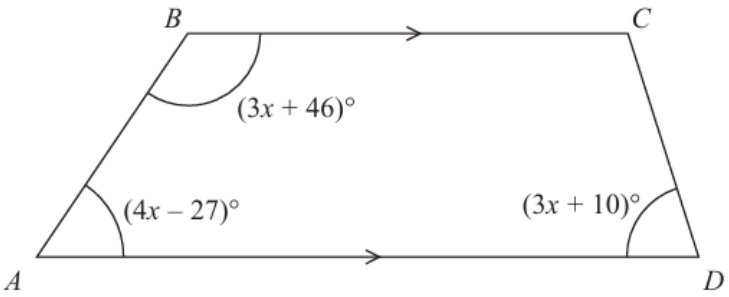


Diagram **NOT** accurately drawn

BC is parallel to AD

Find the size of the largest angle inside the trapezium.

.....(4)

Question 8

Here is a 9-sided regular polygon *ABCDEFGHJ*, with centre *O*

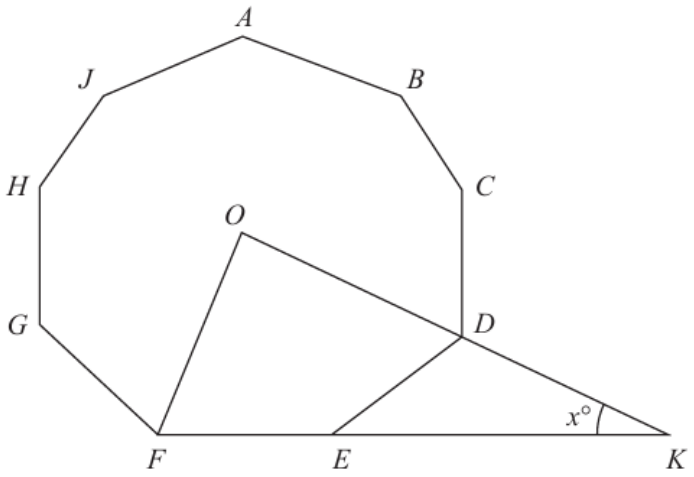


Diagram **NOT** accurately drawn

ODK and *FEK* are straight lines.

Work out the value of x

.....(3)

Question 9

The diagram shows a pentagon.

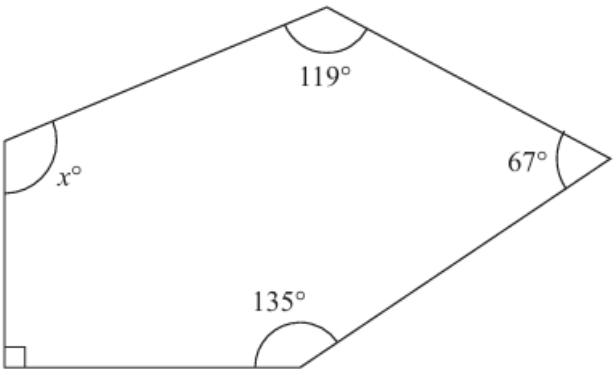


Diagram **NOT** accurately drawn

Work out the value of x

$x =$ .....

(3)

Question 10

The diagram shows parts of three regular polygons, **A**, **B** and **C**, meeting at a point.

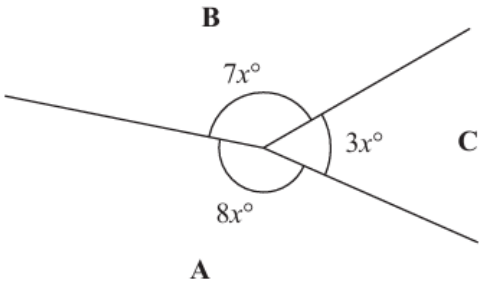


Diagram **NOT** accurately drawn

Polygon **B** has n sides.

Work out the value of n.

(4)

Question 11

A polygon has n sides, where $n > 5$

When arranged in order of size, starting with the largest number, the sizes of the interior angles of the polygon, in degrees, are the terms of an arithmetic sequence.

Here are the first five terms of this sequence.

177 175 173 171 169

Find the value of n
Show clear algebraic working.

.....(6)

Question 12

The diagram shows a regular octagon *ABCDHIJK* and a pentagon *DEFGH*.

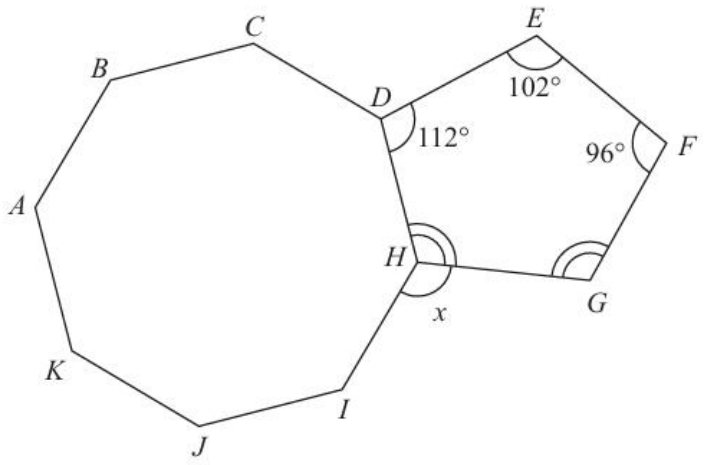


Diagram **NOT** accurately drawn

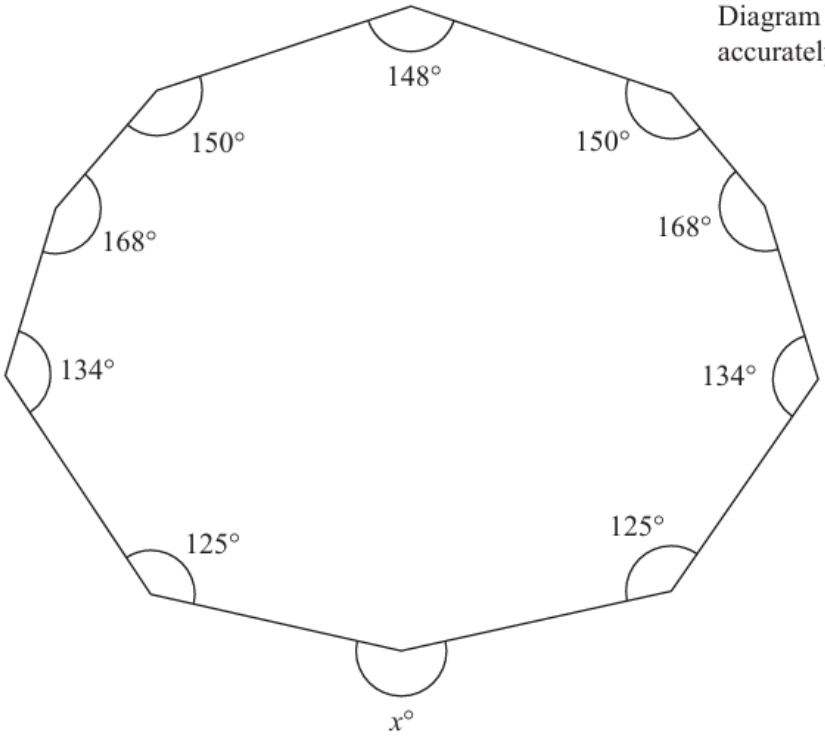
Angle *GHD* = angle *FGH*.

Work out the size of the angle marked *x*.
Show your working clearly.

.....(5)

Question 13

Here is a 10-sided polygon.



Work out the value of x.

.....(4)

Question 14

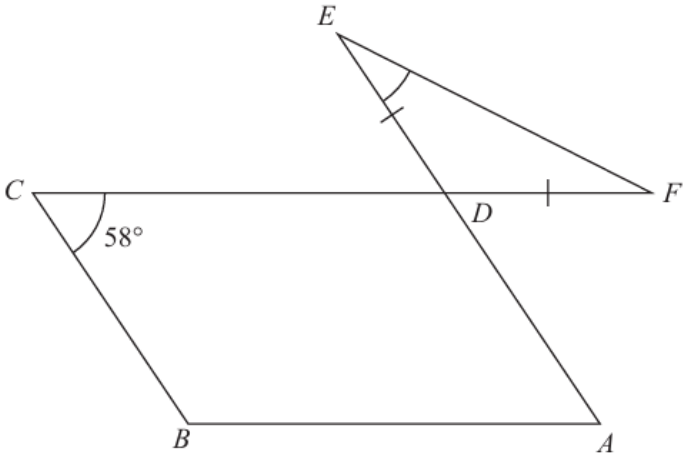


Diagram **NOT** accurately drawn

The diagram shows a parallelogram *ABCD* and an isosceles triangle *DEF* in which *DE* = *DF*

CDF and *ADE* are straight lines.
Angle *BCD* = 58°

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

.....(5)

Question 15

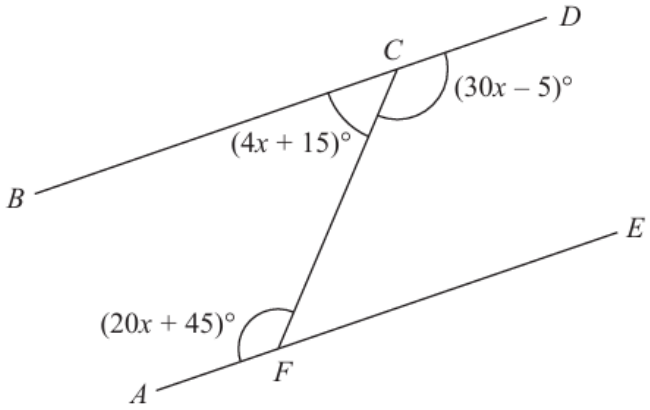


Diagram **NOT** accurately drawn

BCD and *AFE* are straight lines.

Show that *BCD* is parallel to *AFE*.
Give reasons for your working.

.....(5)