Questions

Q1.

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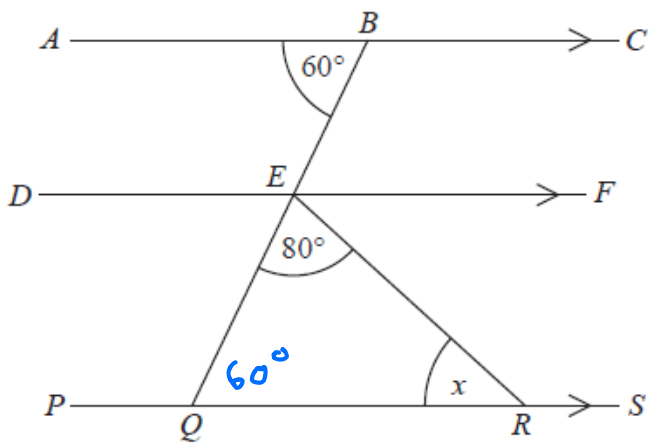


Diagram **NOT** accurately drawn

ABC, *DEF* and *PQRS* are parallel lines.
BEQ is a straight line.

Angle *ABE* = 60°
Angle *QER* = 80°

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

$\angle BQR = 60^\circ$ (alternate $\angle$s)

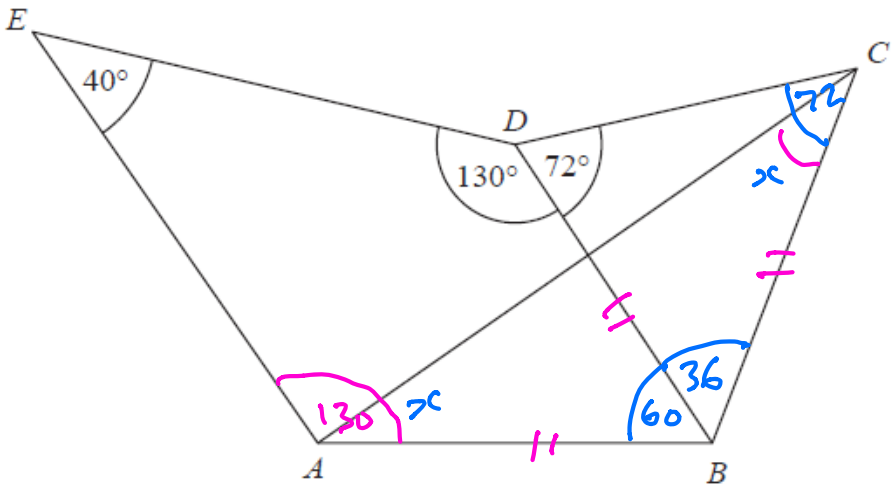
$x = 180 - (80+60)$
$= 180 - 140$
$= 40^\circ$ ($\angle$ sum of $\triangle$)

(Total for question = 4 marks)

Q2.

Here is a pentagon *ABCDE*.

Diagram **NOT** accurately drawn



$x = \frac{180 - 96}{2}$

$= \frac{84}{2}$

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

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

Work out the size of angle *ACB*.

42 ..... °

(Total for question = 3 marks)

Q3.

ABCDEFGHI is a regular 9-sided polygon.

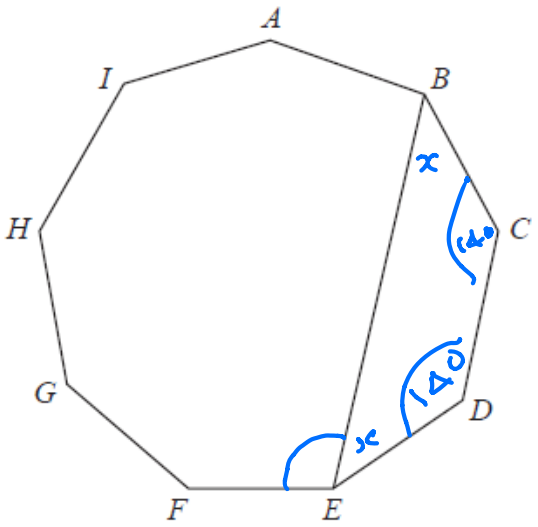


Diagram **NOT** accurately drawn

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.

..... °

(Total for question = 4 marks)

Q4.

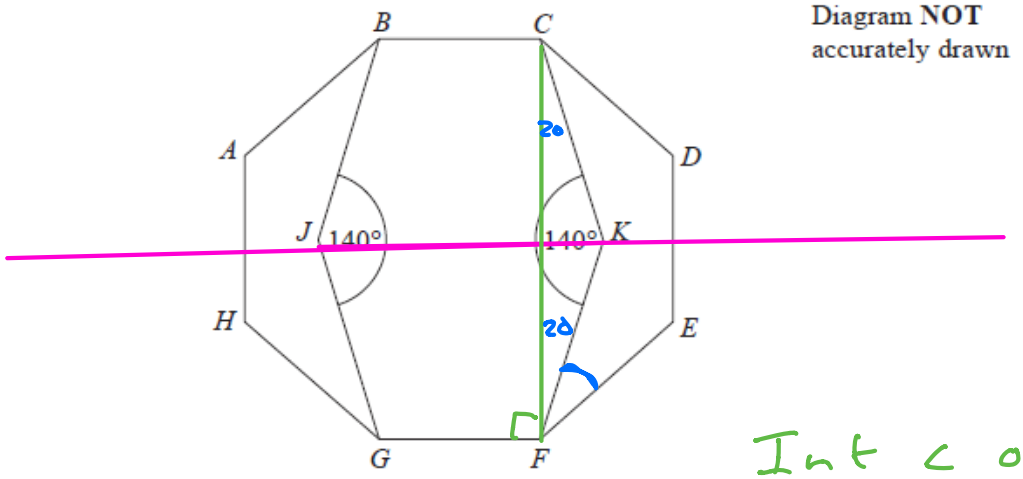


Diagram **NOT** accurately drawn

ABCDEFGH is a regular octagon.
BCKFGJ is a hexagon.

JK is a line of symmetry of the hexagon.
Angle *BJG* = angle *CKF* = 140°

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

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(Total for Question is 4 marks)

Q5.

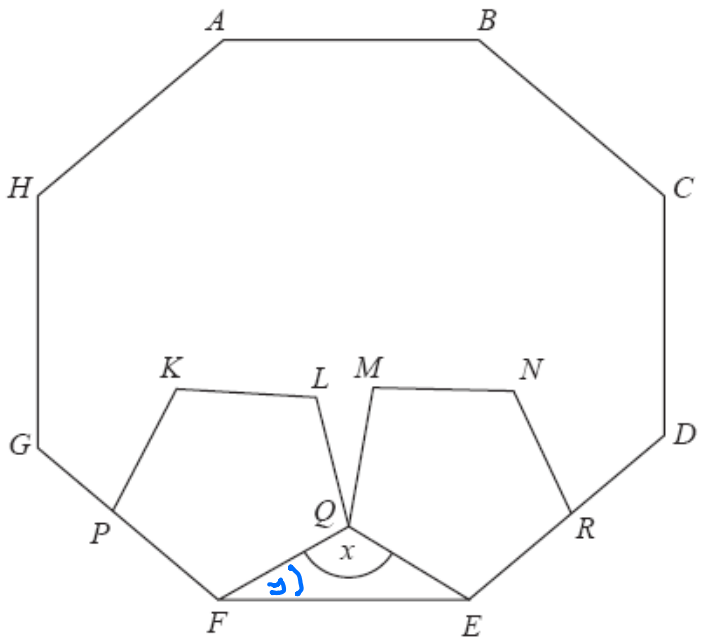

Diagram **NOT** accurately drawn

ABCDEFGH is a regular octagon.
KLQFP and *MNREQ* are two identical regular pentagons.

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

Reg Octagon
int ∠ = 135°

Reg Pentagon
int ∠ = 108°

y = 135 − 108
y = 27°

x = 180 − (27 + 27)
= 126°

..... °

(Total for question = 4 marks)

Q6.

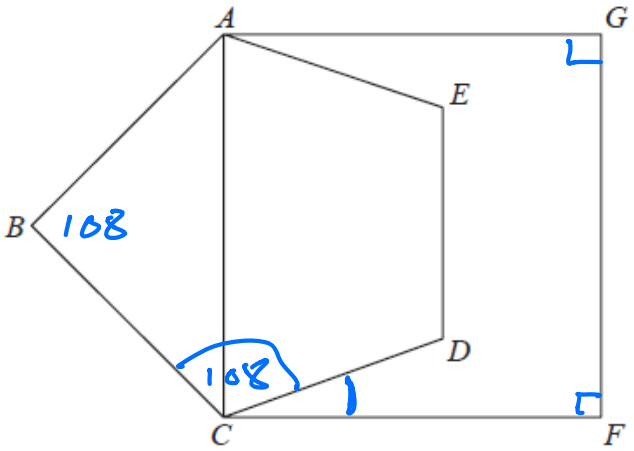

Diagram **NOT** accurately drawn

∠s of pentagon sum to 540°

$\angle BCF = \frac{540-(90+90+108)}{2}$

$\angle BCF = 126°$

$\angle DCF = 126 - 108$

$= 18°$

ABCDE is a regular pentagon.
ACFG is a square.

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

..... °

(Total for question = 4 marks)

Q7. The diagram shows a pattern using four identical rhombuses.

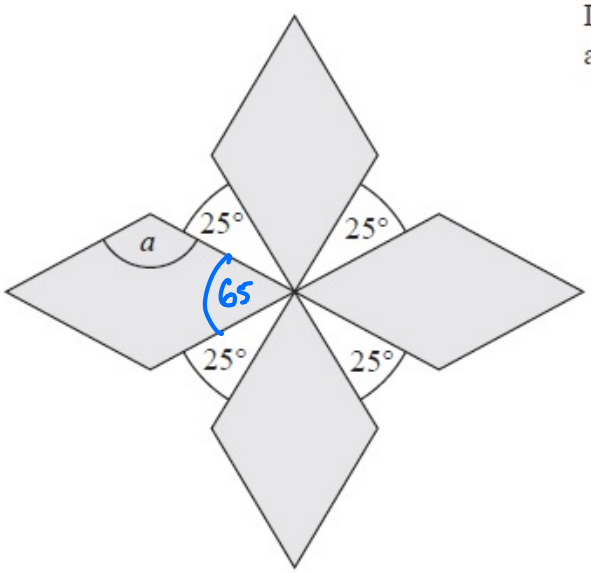

Diagram **NOT** accurately drawn

$a = 180 - 65$

$= 115°$

(allied ∠s)

Work out the size of the angle marked *a*.

You must show your working.

115°

..... °

(Total for Question is 4 marks)

Angles of regular hexagon = 720°

Q8.

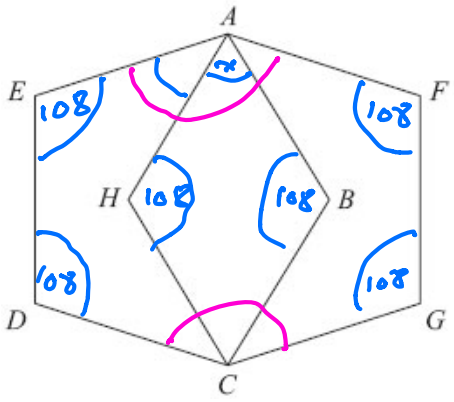

Diagram **NOT** accurately drawn

ABCDE and *AFGCH* are regular pentagons.
The two pentagons are the same size.

Work out the size of angle *EAH*.
You must show how you got your answer.

$\angle EAF = \frac{720 - 432}{2} = 144$

$x = \frac{360 - 216}{2} = 72°$

$\angle EAH = \frac{144 - 72}{2}$

$= 36°$

. . . . . °

(Total for Question is 4 marks)

Q9.

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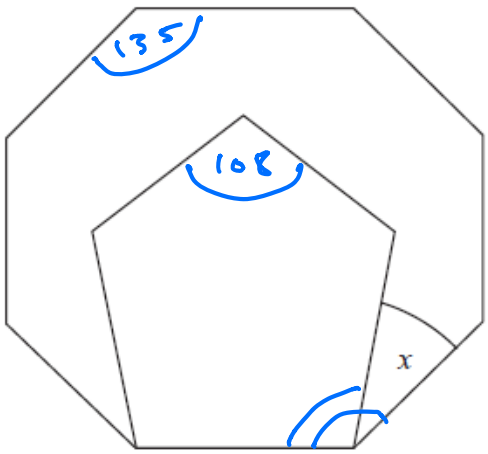


Diagram **NOT** accurately drawn

$x = 135 - 108$

$= 27°$

The diagram shows two regular polygons.

Find the size of the angle marked x.
Give reasons for your answer.

(Total for question = 4 marks)

Q10.

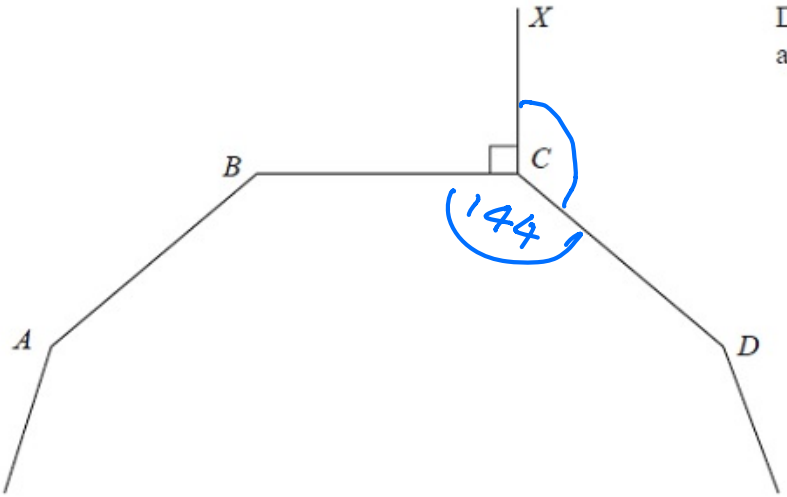


Diagram **NOT** accurately drawn

Reg Ext of Deagon

$= \frac{360}{10} = 36$

Int $\angle$ = 144

A, B, C and D are four vertices of a regular 10-sided polygon.

Angle BCX = 90°.

Work out the size of angle DCX.

$\angle DCX = 360 - (90 + 144)$

126

..... °

(Total for Question is 3 marks)

Q11.

$ABCDE$ and $PQRST$ are regular pentagons.

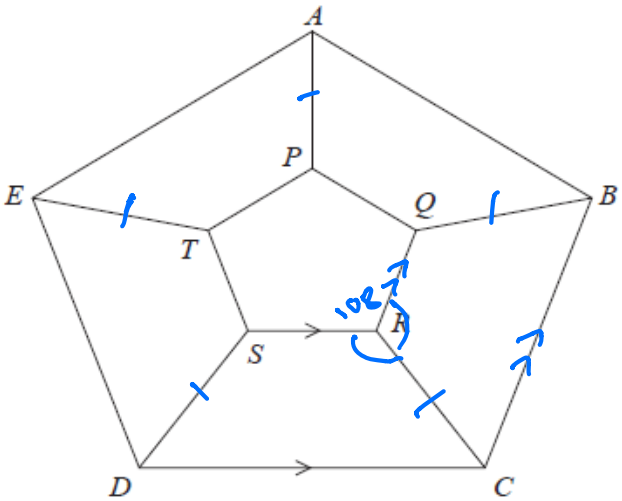


Diagram **NOT** accurately drawn

$\angle SRC = \frac{360 - 108}{2}$

SR is parallel to *DC*
AP = *BQ* = *CR* = *DS* = *ET*

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

126°

..... °

(Total for question = 3 marks)

Q12.

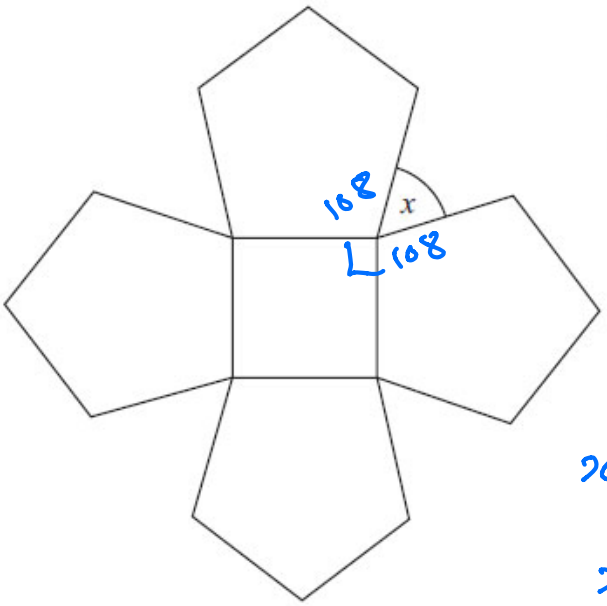


Diagram **NOT** accurately drawn

The diagram shows a square and 4 regular pentagons.

Work out the size of the angle marked *x*.

$x = 360 - (108 + 108 - 90)$

$x = 360 - 306$

$x = 54°$

Polygon Facts

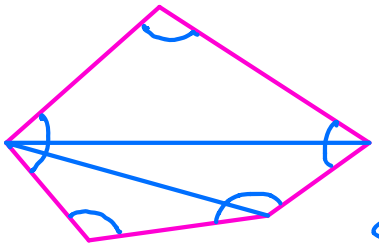
Exterior angle of regular n-sided polygon

$$= \frac{360^\circ}{n}$$

Interior angle = 180 − Exterior angle

Sum of interior angles of n-sided polygon

$$= (n-2) \times 180^\circ$$



eg Pentagon 3 triangles worth

$3 \times 180 = 540^\circ$

.....°

(Total for Question is 3 marks)