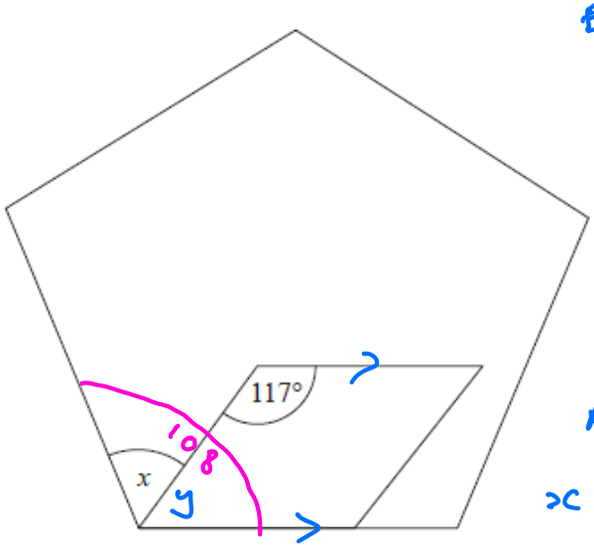
Q1.

The diagram shows a regular pentagon and a parallelogram.



Ext ∠ of pentagon
$= \frac{360}{5} = 72°$

Int ∠ of pentagon
$= 180 - 72 = 108°$

$y = 180 - 117 = 63°$
Allied ∠s

$x = 108 - 63$

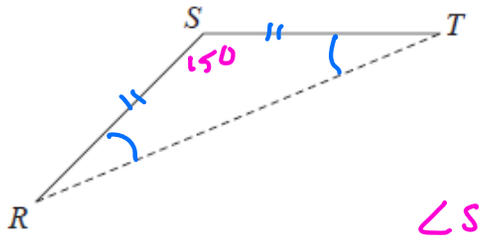
Work out the size of the angle marked *x*.
You must show all your working.

$x = 45°$

.....°

(Total for question = 4 marks)

Q2.



Ext ∠ of 12 sided regular polygon
$= \frac{360}{12} = 30$

Int ∠ $= 180 - 30$
$= 150°$

$\angle STR = \frac{180 - 150}{2}$
Base ∠s of isos △

RS and *ST* are 2 sides of a regular 12-sided polygon.
RT is a diagonal of the polygon.

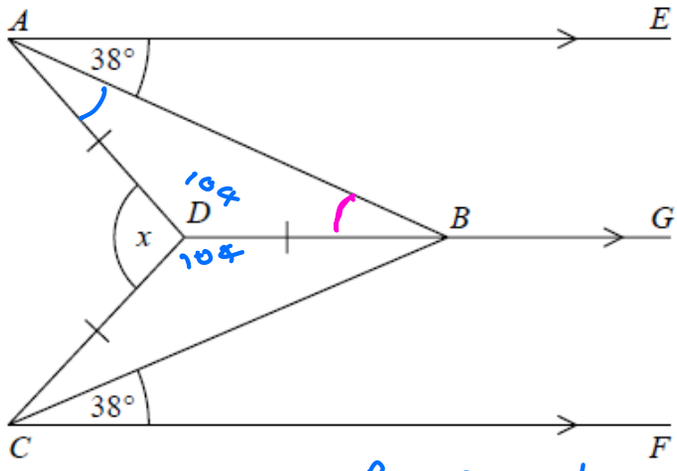
Work out the size of angle *STR*.
You must show your working.

$\angle STR = 15°$

.....°

(Total for question = 3 marks)

Q3.



$\angle DBA = 38°$
alternate $\angle$s
$\angle DAB = 38°$
base $\angle$s of isos $\triangle$
$\angle ADB = 180 - 38 - 38$
$= 104°$
$\angle$ sum of $\triangle$

By symmetry $\angle BDC = 104°$

$x = 360 - 104 - 104$
$\angle$s at a point

$x = 152°$

AE, *DBG* and *CF* are parallel.
DA = *DB* = *DC*.
Angle *EAB* = angle *BCF* = 38°

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

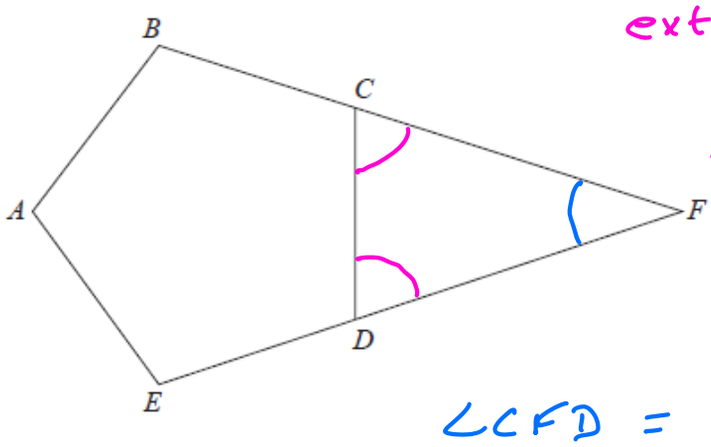
..... °

(Total for question = 3 marks)

Q4.

$\angle DCF = \frac{360}{5} = 72°$
ext $\angle$ of reg pentagon

$\angle CDF = 72°$
ext $\angle$ of reg pent



$\angle CFD = 180 - 72 - 72$

$\angle CFD = 36°$

$\angle$ sum of $\triangle$

ABCDE is a regular pentagon.
BCF and *EDF* are straight lines.

Work out the size of angle *CFD*.
You must show how you get your answer.

..... °

(Total for question = 3 marks)

Q5.

Method 1

Int ∠ of reg Octagon

$= 180 - \frac{360}{8}$

$= 180 - 45$

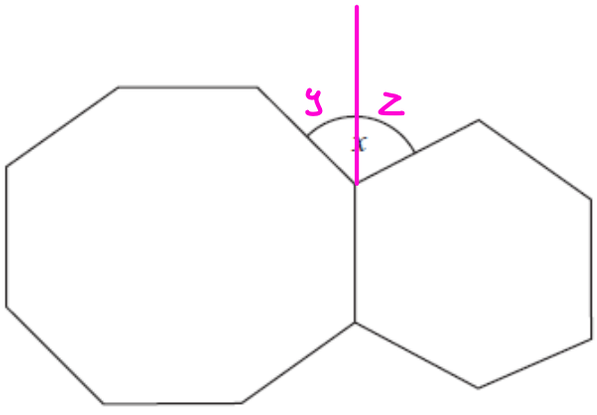
$= 135°$

Int ∠ of reg hexagon

$= 180 - \frac{360}{6}$

$= 180 - 60$

$= 120°$



Method 2

$x = y + z$

y = ext ∠ of octagon

$= \frac{360}{8} = 45°$

z = ext ∠ of hexagon

$= \frac{360}{6} = 60$

$x = 45 + 60$

$x = 105°$

The diagram shows a regular octagon and a regular hexagon.

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

$x = 360 - 135 - 120$

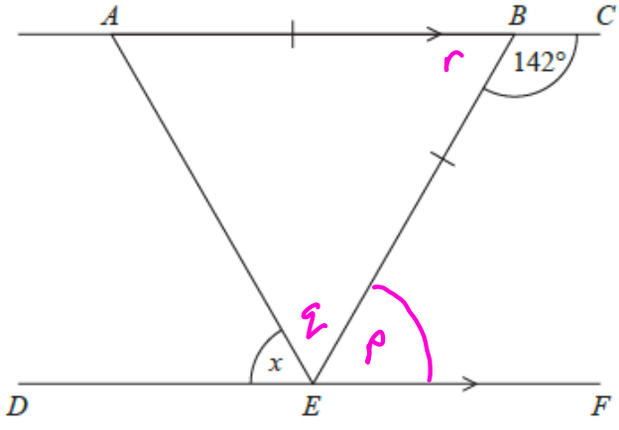
$x = 105$

∠s at a point

x = 105° °

(Total for question = 3 marks)

Q6.



ABC and *DEF* are parallel straight lines.
ABE is an isosceles triangle with *AB* = *BE*.
Angle *CBE* = 142°

$p = 180 - 142$

$p = 38°$

Allied ∠s

$r = 180 - 142 = 38°$

∠s on a str line

$q = \frac{180 - 38}{2} = 71°$

base ∠s of isos △

$x = 180 - q - p = 180 - 71 - 38$

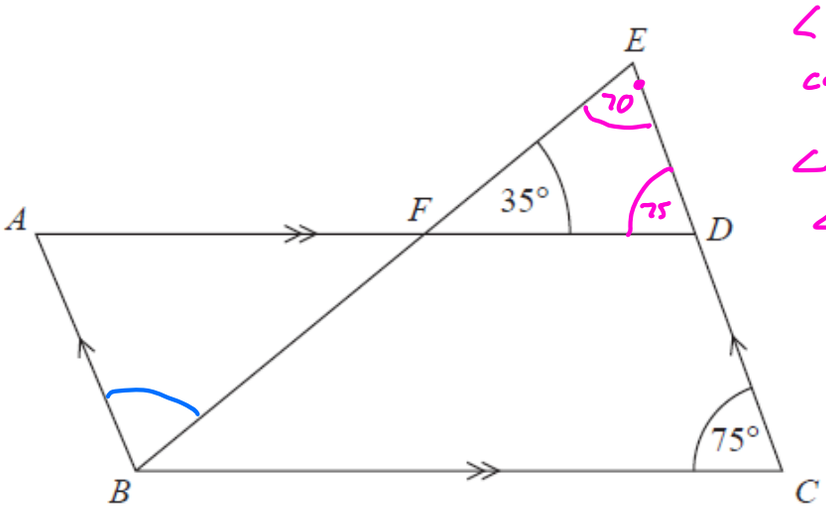
$x = 71°$ ∠s on a str line

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

..... °

(Total for question = 5 marks)

Q7.



∠EFD = 75°
corresponding ∠s

∠FED = 70°
∠ sum of △

ABCD is a parallelogram.
EDC is a straight line.
F is the point on *AD* so that *BFE* is a straight line.

∠ABF = 70°
alternate ∠s

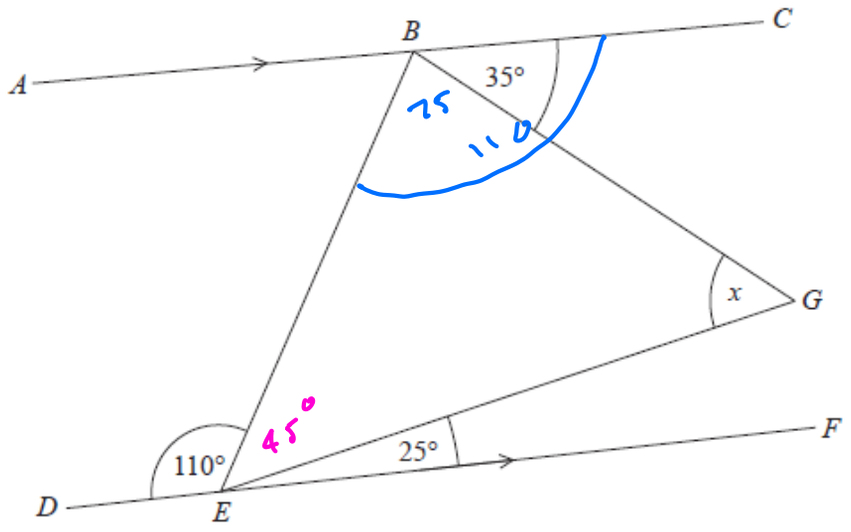
Angle *EFD* = 35°
Angle *DCB* = 75°

Show that angle *ABF* = 70°
Give a reason for each stage of your working.

(Total for question = 4 marks)

Q8.

BEG is a triangle.



$\angle GEB = 45°$
(∠s on a straight line)

$\angle EBC = 110°$
(alternate ∠s)

$\angle EBG = 75$ (110 − 35)

$x = 180 - 45 - 75$
(∠ sum of △)

ABC and *DEF* are parallel lines.

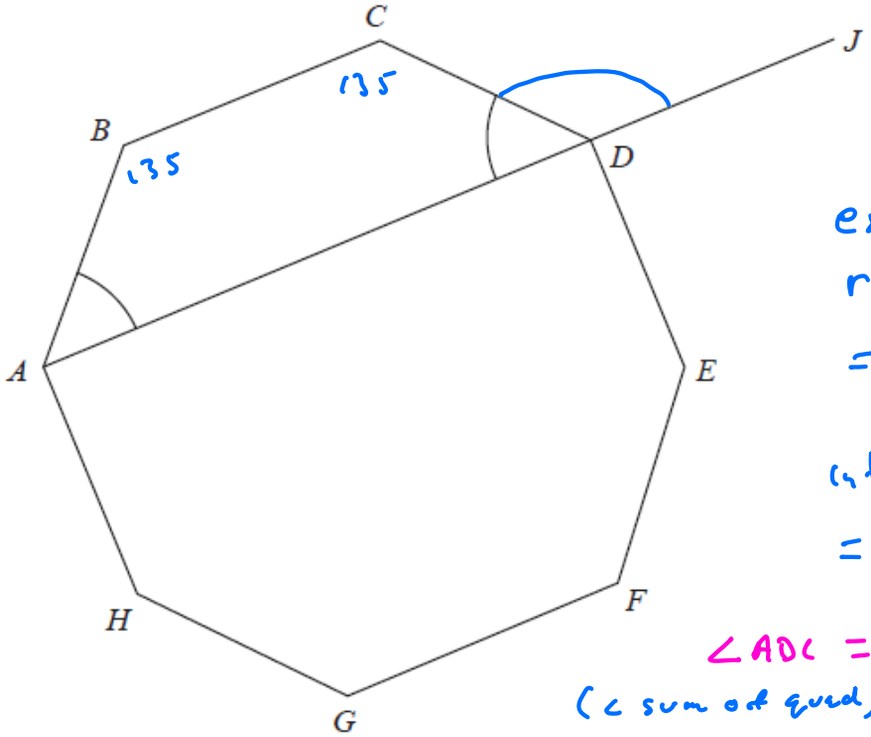
Work out the size of angle *x*.
Give a reason for each stage of your working.

$x = 60°$

..... °

(Total for question = 4 marks)

Q9.



ext ∠ of regular octagon
$= \frac{360}{8} = 45°$

interior ∠
$= 180 - 45 = 135$

$\angle ADC = \frac{360 - 135 - 135}{2}$
(∠ sum of quad)

$\angle ADC = 45°$

ABCDEFGH is a regular octagon.
ADJ is a straight line.

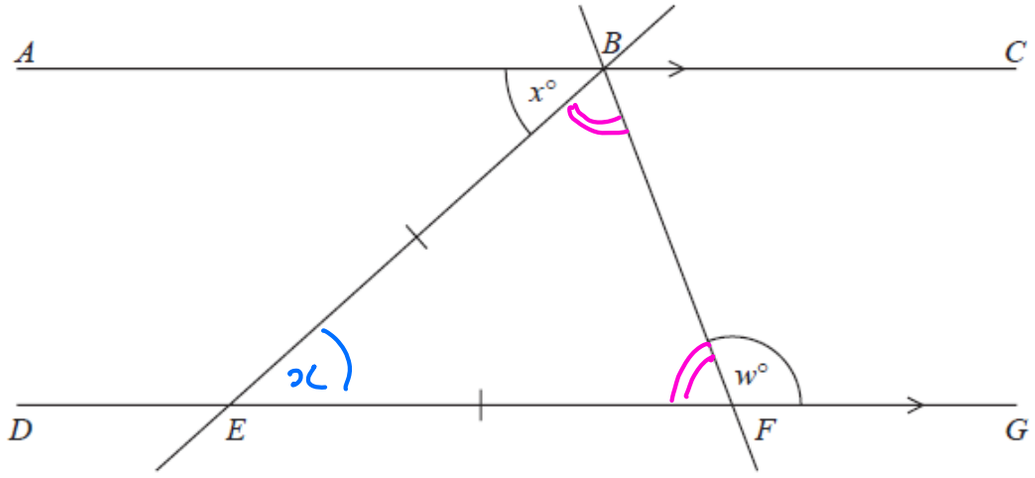
$\therefore \angle CDJ = 180 - 45 = 135°$
(∠s on a str line)

angle *BAD* = angle *CDA*

Show that angle *CDJ* = 135°

(Total for question = 4 marks)

Q10.



In the diagram *ABC* and *DEFG* are parallel lines.
Angle *ABE* = *x*°
EB = *EF*

Show that $w = 90 + \frac{1}{2}x$

$\angle BEF = x^\circ$
(alternate $\angle$s)

$\angle EFB = \frac{180 - x}{2}$

Give a reason for each stage of your working.

$w = 180 - \left(\frac{180 - x}{2}\right)$ ($\angle$s on a str line)

$w = 180 - \left(90 - \frac{x}{2}\right)$

$w = 180 - 90 + \frac{x}{2}$

$w = 90 + \frac{1}{2}x$

(Total for question = 4 marks)

Mark Scheme

Q1.