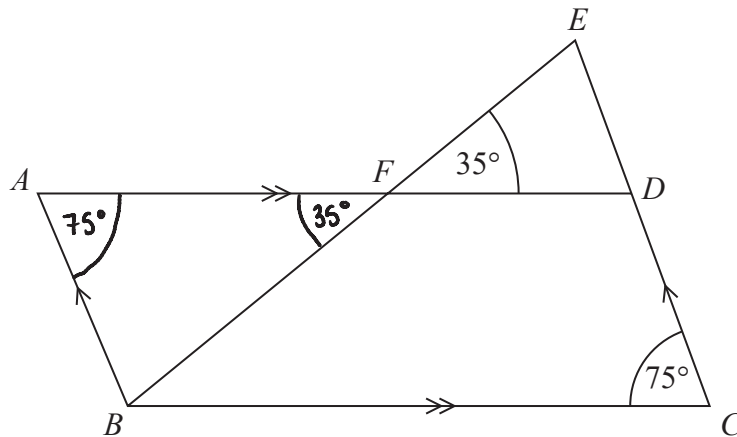


1.



$ABCD$  is a parallelogram.

$EDC$  is a straight line.

$F$  is the point on  $AD$  so that  $BFE$  is a straight line.

Angle  $EFD = 35^\circ$

Angle  $DCB = 75^\circ$

Show that angle  $ABF = 70^\circ$

Give a reason for each stage of your working.

Angle  $BAD = 75^\circ$  because opposite angles in a parallelogram are equal ✓

Angle  $AFD = 35^\circ$  because vertically opposite angles are equal ✓

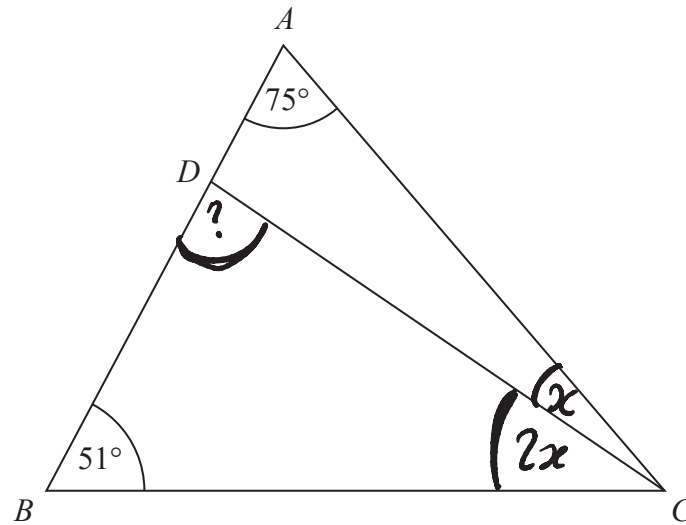
$$75 + 35 = 110$$

$$180 - 110 = 70 \quad \checkmark$$

Therefore angle  $ABF = 70^\circ \quad \checkmark$

(Total for Question is 4 marks)

2. The diagram shows triangle  $ABC$ .

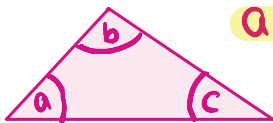


$ADB$  is a straight line.

the size of angle  $DCB$  : the size of angle  $ACD = 2 : 1$  ✓

Work out the size of angle  $BDC$ .

All interior angles of a triangle add to  $180^\circ$



$$a + b + c = 180$$

$$75 + 51 + 2x + x = 180 \quad \leftarrow \text{For Triangle ABC}$$

$$3x = 180 - 75 - 51$$

$$3x = 54 \quad \textcircled{1}$$

$$x = \frac{54}{3}$$

$$x = 18 \quad \textcircled{1}$$

For Triangle BCD

$$51 + 2x + ? = 180$$

$$\text{Since } x = 18 \quad \textcircled{1}$$

$$51 + 2(18) + ? = 180$$

$$? = 180 - 51 - 2(18)$$

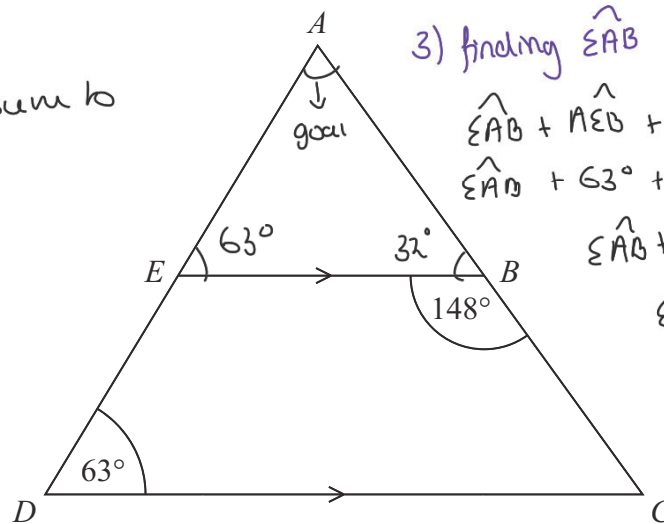
$$= 180 - 51 - 36$$

$$= 93$$

$\textcircled{1}$  93

3.  $ADC$  is a triangle.

Angles in a triangle sum to  $180^\circ$ . ✓<sub>5</sub>



3) finding  $\hat{\angle} EAB$

$$\hat{\angle} EAB + \hat{\angle} AEB + \hat{\angle} ABE = 180^\circ$$

$$\hat{\angle} EAB + 63^\circ + 32^\circ = 180^\circ \quad \checkmark_2$$

$$\hat{\angle} EAB + 95^\circ = 180^\circ$$

$$\begin{aligned} \hat{\angle} EAB &= 180^\circ - 95^\circ \\ &= 85^\circ \end{aligned}$$

$AED$  and  $ABC$  are straight lines.

$EB$  is parallel to  $DC$ .

Angle  $EBC = 148^\circ$

Angle  $ADC = 63^\circ$

Work out the size of angle  $EAB$ .

You must give a reason for each stage of your working.

1) finding angle  $\hat{\angle} AEB$ .

$\hat{\angle} AEB$  and  $\hat{\angle} ADC$  are corresponding angles ( $AE$  is on the line  $AED$  and  $EB$  and  $DC$  are parallel).

$$\hookrightarrow \hat{\angle} AEB = \hat{\angle} ADC \rightarrow \hat{\angle} AEB = 63^\circ \quad \checkmark_1$$

2) finding angle  $\hat{\angle} ABE$ .

Line  $ABC$  is a straight line, and angles on a line sum to  $180^\circ$  ✓<sub>4</sub>

$$\hat{\angle} ABE + \hat{\angle} EBC = 180^\circ$$

$$148^\circ \downarrow \hat{\angle} ABE + 148^\circ = 180^\circ$$

$$\hat{\angle} ABE = 180^\circ - 148^\circ$$

$$\hat{\angle} ABE = 32^\circ \quad \checkmark_2$$

$$\therefore \hat{\angle} EAB = 85^\circ \quad \checkmark_3$$