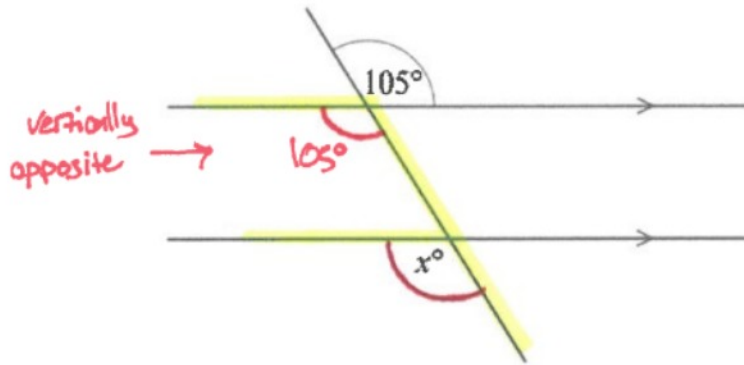


## A Angles in Parallel Lines

1



NOT TO  
SCALE

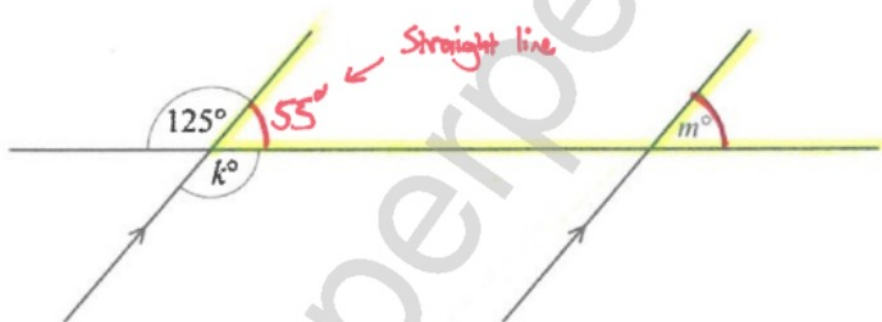
The diagram shows a straight line crossing two parallel lines.

Find the value of  $x$ .

$$x = 105^\circ \text{ (corresponding)}$$

$$x = 105^\circ \quad [1]$$

1



NOT TO  
SCALE

The diagram shows a straight line intersecting two parallel lines.

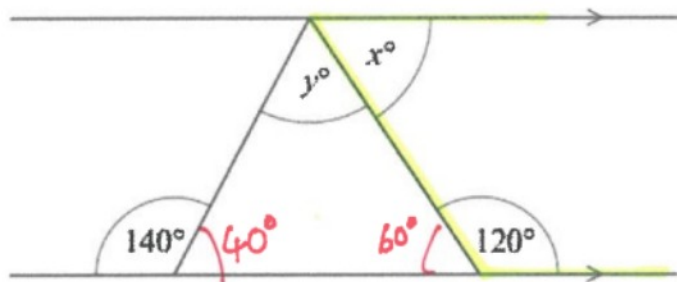
Find the value of  $k$  and the value of  $m$ .

$$k = 125^\circ \text{ (vertically opposite angles)}$$

$$m = 55^\circ \text{ (corresponding angles)}$$

$$k = 125^\circ$$

$$m = 55^\circ \quad [2]$$



NOT TO  
SCALE

The diagram shows a triangle drawn between a pair of parallel lines.

Find the value of  $x$  and the value of  $y$ .

$$x = 180 - 120$$

$$= \underline{60^\circ} \text{ (co-interior angles)}$$

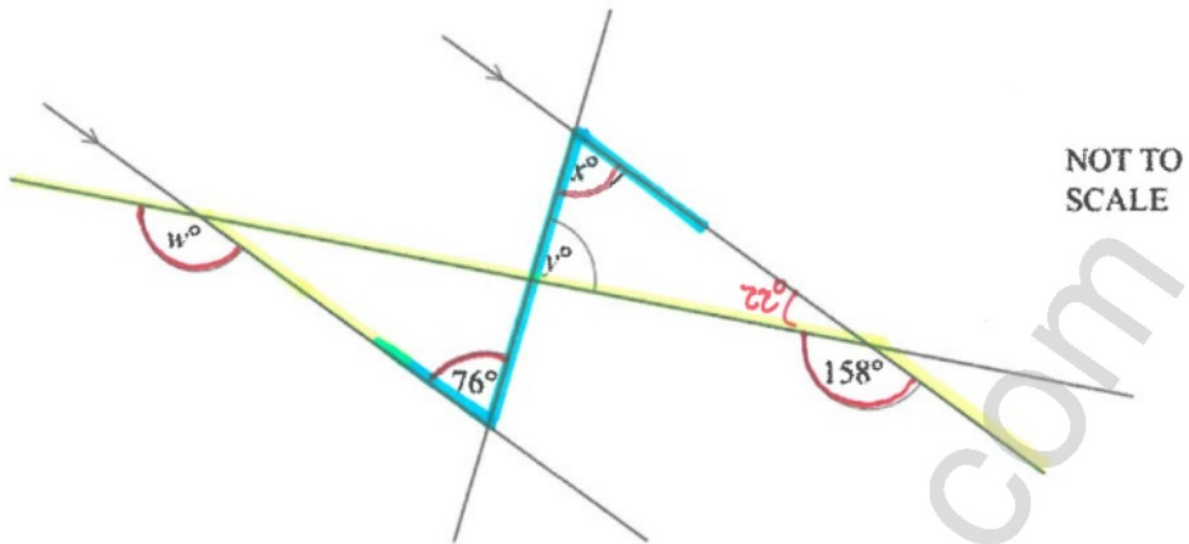
$$y = 180 - (40 + 60)$$

$$= 180 - 100$$

$$= \underline{80^\circ} \text{ (angles in a triangle)}$$

$$x = \underline{60^\circ}$$

$$y = \underline{80^\circ} \quad [3]$$



The diagram shows two parallel lines intersecting two straight lines.

Find the values of  $w$ ,  $x$  and  $y$ .

$$w = 158^\circ \text{ (corresponding angles)}$$

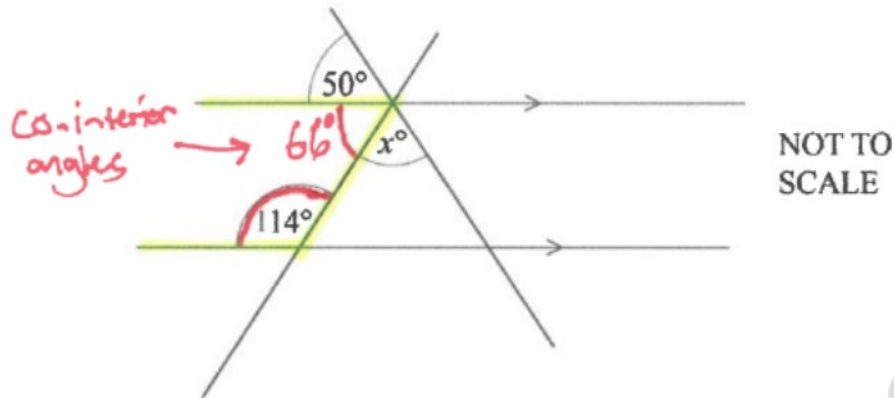
$$x = 76^\circ \text{ (alternate angles)}$$

$$\begin{aligned} y &= 180 - (76 + 22) \\ &= 180 - 98 \\ &= 82^\circ \text{ (angles in a triangle)} \end{aligned}$$

$$\begin{aligned} w &= 158^\circ \\ x &= 76^\circ \\ y &= 82^\circ \end{aligned}$$

[4]

5



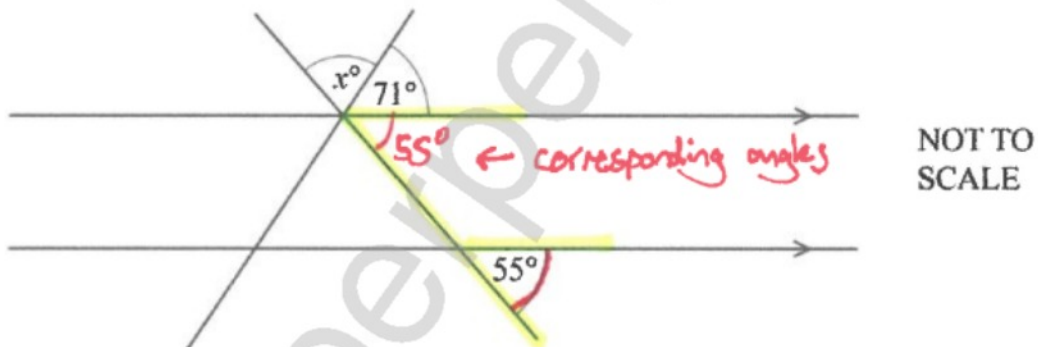
The diagram shows two intersecting straight lines crossing two parallel lines.

Find the value of  $x$ .

$$\begin{aligned}
 x &= 180 - (50 + 66) \\
 &= 180 - 116 \\
 &= \underline{64^\circ} \text{ (straight line)}
 \end{aligned}$$

$x = \underline{64^\circ}$  [2]

5

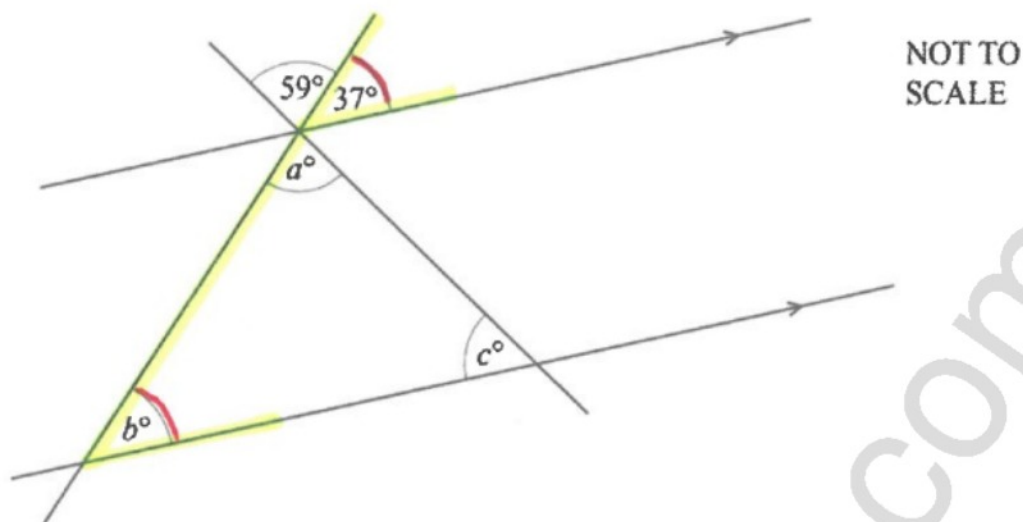


The diagram shows two straight lines intersecting two parallel lines.

Find the value of  $x$ .

$$\begin{aligned}
 x &= 180 - (71 + 55) \\
 &= 180 - 126 \\
 &= \underline{54^\circ} \text{ (straight line)}
 \end{aligned}$$

$x = \underline{54^\circ}$  [2]



The diagram shows two parallel lines intersected by two straight lines.

Find the values of  $a$ ,  $b$  and  $c$ .

$$a = 59^\circ \text{ (vertically opposite angles)}$$

$$b = 37^\circ \text{ (corresponding angles)}$$

$$c = 180 - (59 + 37) \\ = 180 - 96 = 84^\circ \text{ (angles in a triangle)}$$

$$\begin{array}{l} a = 59^\circ \\ b = 37^\circ \\ c = 84^\circ \end{array} \quad [3]$$

3 (a)



The diagram shows two straight lines intersecting two parallel lines.

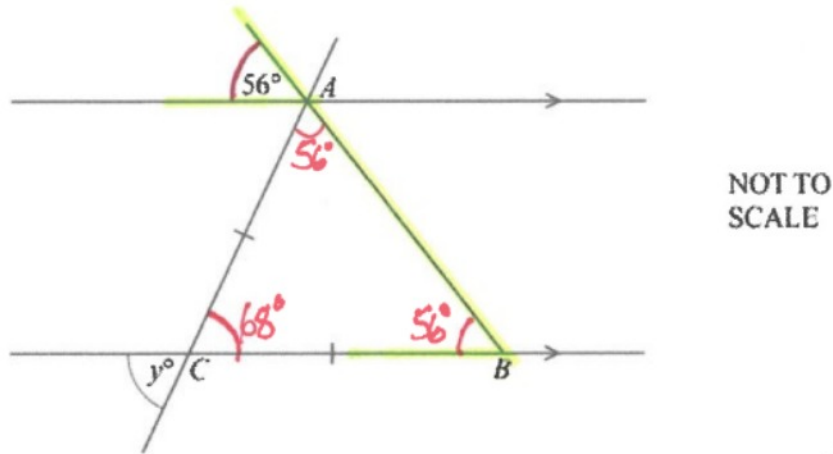
Find the values of  $a$ ,  $b$  and  $c$ .

$$a = 126^\circ \text{ (vertically opposite angles)}$$

$$b = 54^\circ \text{ (corresponding angles)}$$

$$c = 180 - 63 \\ = 117^\circ \text{ (co-interior angles)}$$

$$\begin{array}{l} a = 126^\circ \\ b = 54^\circ \\ c = 117^\circ \end{array} \quad [3]$$



In the diagram,  $A$ ,  $B$  and  $C$  are points on parallel lines.  
 $AC = BC$ .

Work out the value of  $y$ .

$$\angle ABC = 56^\circ \text{ (corresponding angles)}$$

$$\angle BAC = 56^\circ \text{ (isosceles triangle)}$$

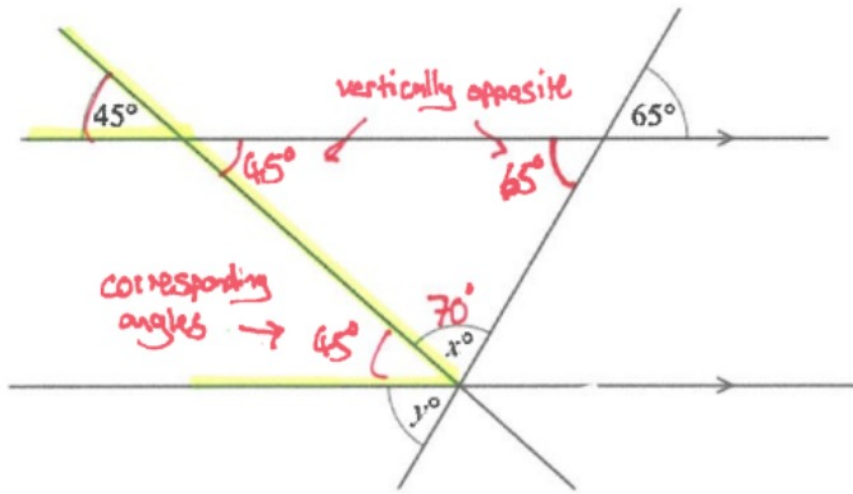
$$\angle ACB = 180 - (56 + 56)$$

$$= 180 - 112$$

$$= 68^\circ \text{ (angles in a triangle)}$$

$$y = 68^\circ \text{ (vertically opposite angles)}$$

$$y = 68^\circ \quad [3]$$



NOT TO  
SCALE

The diagram shows two straight lines intersecting two parallel lines.

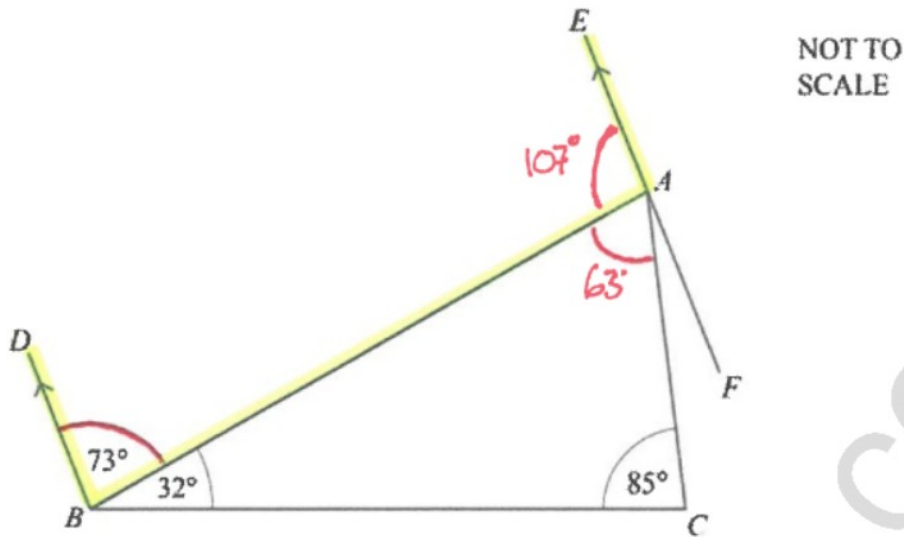
Find the value of  $x$  and the value of  $y$ .

$$\begin{aligned} x &= 180 - (45 + 65) \\ &= 180 - 110 \\ &= \underline{70^\circ} \quad (\text{angles in a triangle}) \end{aligned}$$

$$\begin{aligned} y &= 180 - (45 + 70) \\ &= 180 - 115 \\ &= \underline{65^\circ} \quad (\text{straight line}) \end{aligned}$$

$$\begin{aligned} x &= \underline{70^\circ} \\ y &= \underline{65^\circ} \end{aligned}$$

[3]



$BD$  is parallel to  $FAE$ .

(a) Find angle  $BAE$ .

$$\begin{aligned} BAE &= 180 - 73 \\ &= 107^\circ \quad (\text{co-interior angles}) \end{aligned}$$

Angle  $BAE = 107^\circ$  [1]

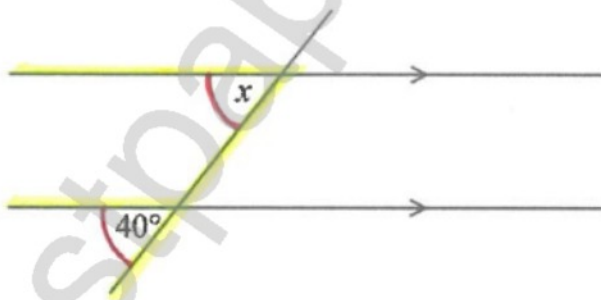
(b) Find angle  $FAC$ .

$$\begin{aligned} BAC &= 180 - (32 + 85) \\ &= 180 - 117 \\ &= 63^\circ \quad (\text{angles in a triangle}) \end{aligned}$$

$$\begin{aligned} FAC &= 180 - (107 + 63) \\ &= 180 - 170 \\ &= 10^\circ \quad (\text{angles on a straight line}) \end{aligned}$$

Angle  $FAC = 10^\circ$  [2]

3



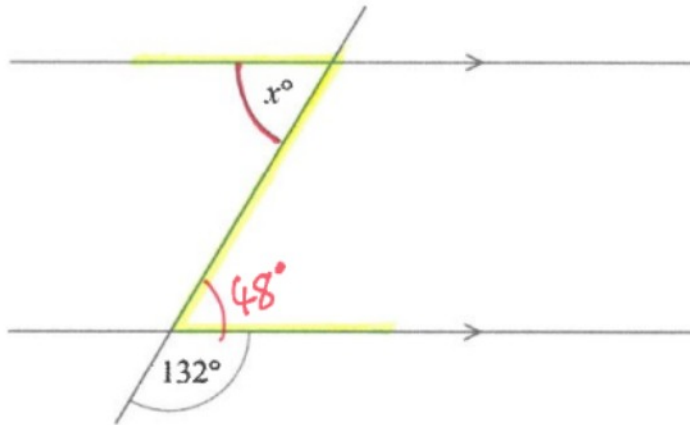
The diagram shows a pair of parallel lines and a straight line.

Complete the statement with the correct geometrical reason.

$x = 40^\circ$  because the angles are ..... corresponding .....

[1]

2

NOT TO  
SCALE

The diagram shows two parallel lines intersecting a straight line.

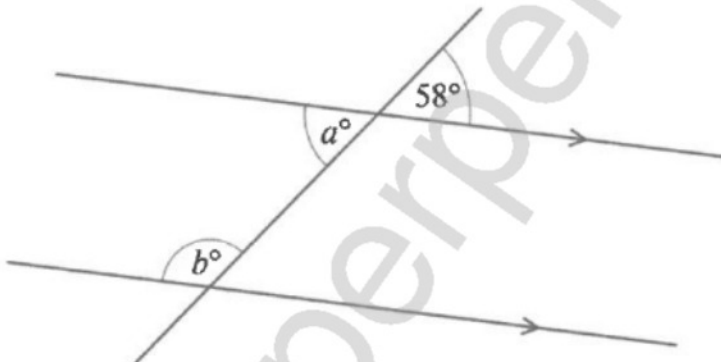
Find the value of  $x$ .

$$180 - 132 = \underline{48^\circ} \quad (\text{straight line})$$

$$\underline{x = 48^\circ} \quad (\text{alternate angles})$$

$$x = \underline{48^\circ} \quad [2]$$

3

NOT TO  
SCALE

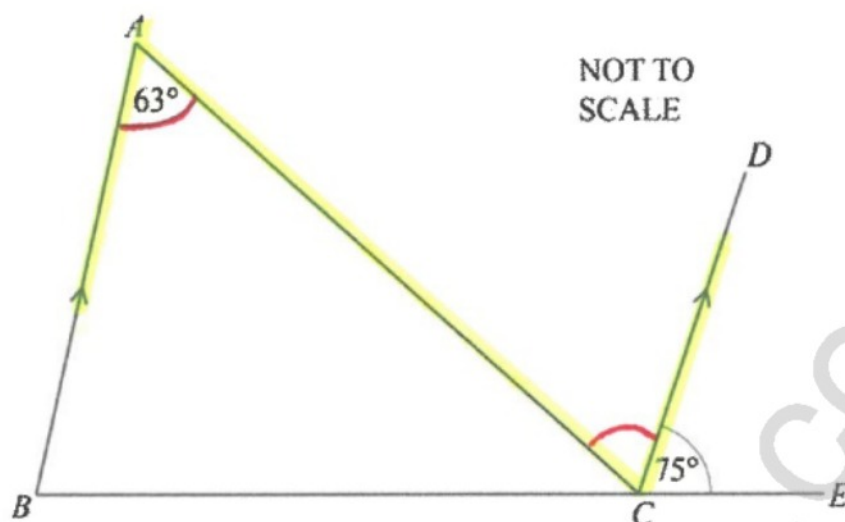
The diagram shows a straight line intersecting two parallel lines.

Find the value of  $a$  and the value of  $b$ , giving a geometrical reason for each answer.

$$a = \underline{58^\circ} \quad \text{because} \quad \underline{\text{vertically opposite angles are equal}}$$

$$b = \underline{122^\circ} \quad \text{because} \quad \underline{\text{co-interior angles sum to } 180^\circ} \quad [4]$$

6



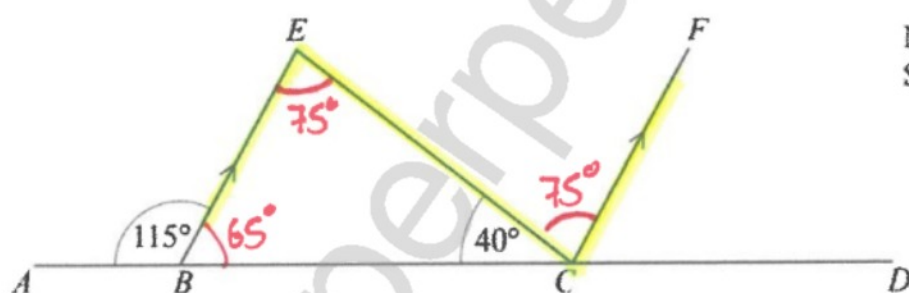
$AB$  is parallel to  $CD$ .

Find angle  $ACD$ .

$$ACD = 63^\circ \text{ (alternate angles)}$$

Angle  $ACD = 63^\circ$  [1]

5



$ABCD$  is a straight line and  $BE$  is parallel to  $CF$ .

Find angle  $ECF$ .

$$\begin{aligned} EBC &= 180 - 115 \\ &= 65^\circ \text{ (straight line)} \end{aligned}$$

$$\begin{aligned} BEC &= 180 - (65 + 40) \\ &= 180 - 105 \\ &= 75^\circ \text{ (triangle)} \end{aligned}$$

$$ECF = 75^\circ \text{ (alternate angles)}$$

Angle  $ECF = 75^\circ$  [2]