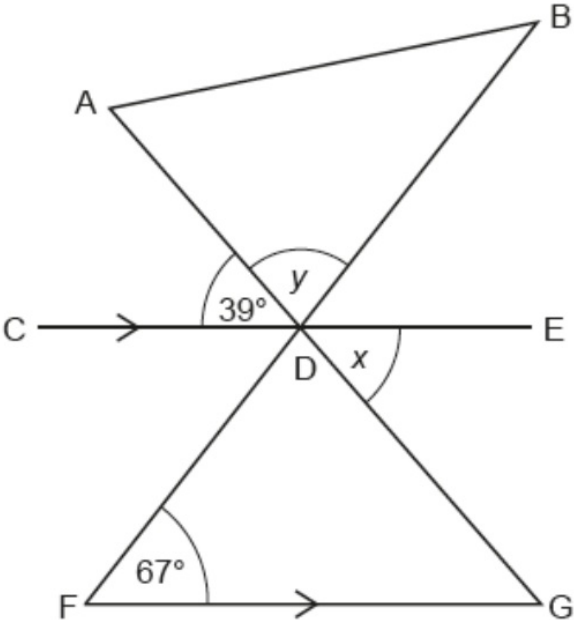


## *G7a... Angles - Parallel Lines*

OCR

6 In the diagram, CDE is parallel to FG.  
ADG and BDF are straight lines.



Not to scale

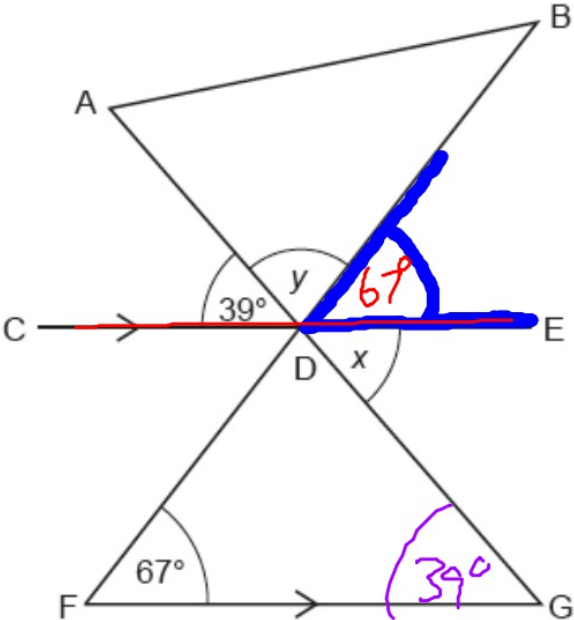
(a) Complete the sentence with a reason.

Angle  $x = 39^\circ$  because ..... [1]

(b) Work out angle  $y$ .

(b) ..... $^\circ$  [3]

6 In the diagram, CDE is parallel to FG.  
ADG and BDF are straight lines.



$$\begin{array}{r} 67 \\ + 39 \\ \hline 106 \end{array}$$

Angle BDE is  $67^\circ$   
as it corresponds (f angle)  
with angle DFG

Not to scale

Straight lines add to  $180^\circ$

$$180^\circ - 39^\circ - 67^\circ = 74^\circ$$

(a) Complete the sentence with a reason.

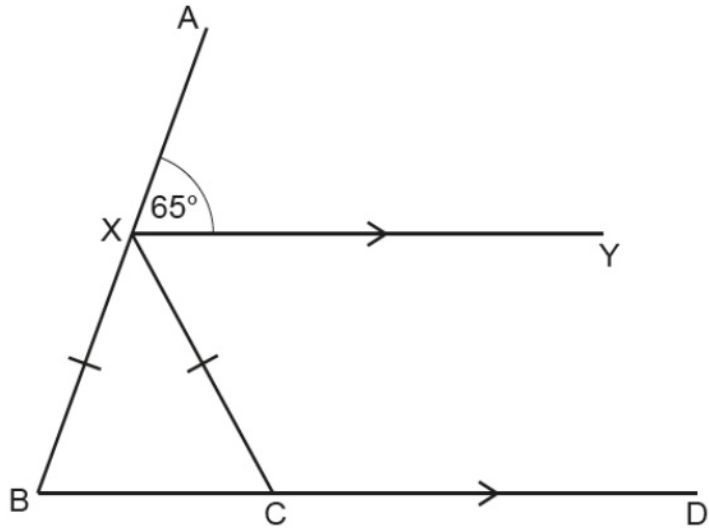
Angle  $x = 39^\circ$  because Vertically opposite angles are equal [1]

(b) Work out angle  $y$ .

(b)  $74^\circ$  [3]

- 6 XY and BD are parallel lines.  
 X is a point on AB and C is a point on BD.  
 $XB = XC$ .

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- (a) Complete this sentence.

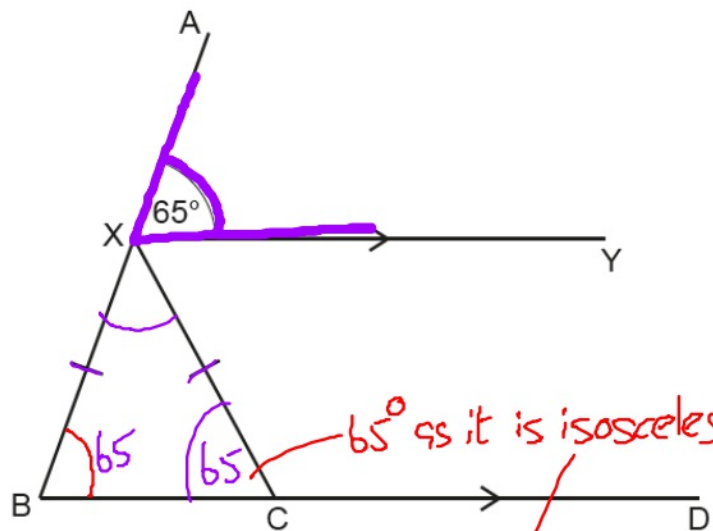
Angle XBC =  $65^\circ$  because .....

- (b) Work out angle BXC.  
 Give a reason for each angle you work out.

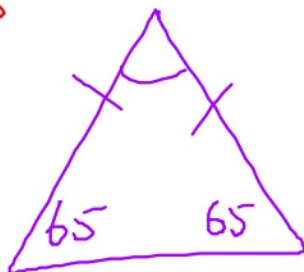
(b) .....  $^\circ$  [4]

- 6 XY and BD are parallel lines.  
 X is a point on AB and C is a point on BD.  
 $XB = XC$ .

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$65^\circ$  as it is isosceles  
 base angles are equal.



- (a) Complete this sentence.

Angle  $XBC = 65^\circ$  because *it corresponds with angle AXY*

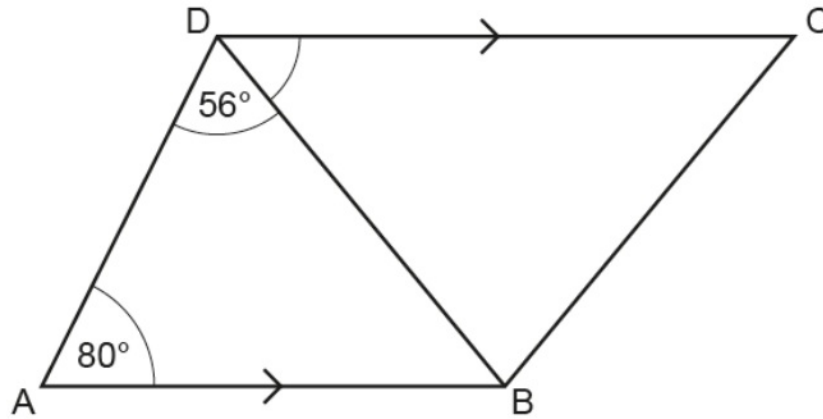
- (b) Work out angle  $BXC$ .  
 Give a reason for each angle you work out.

$65 + 65 = 130^\circ$   
 $180^\circ - 130^\circ = 50^\circ$  ✓ because angles in a  $\Delta$  add up to  $180^\circ$ .

(b) 50 .....  $^\circ$  [4]

7 In the diagram, AB is parallel to DC.

GS/6/7



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Not to scale

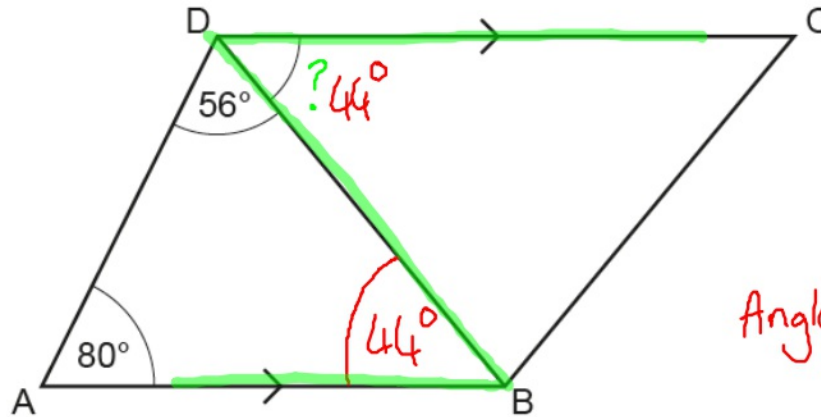
Work out angle BDC.  
Give a reason for each angle you work out.

.....° [4]

7 In the diagram, AB is parallel to DC.

Created by W Neill

GS/6/7



$$180 - \frac{80 + 56}{136} = 44^\circ$$

Not to scale

Angle ABD =  $44^\circ$  ... angles in a triangle add to  $180^\circ$

Angle BDC =  $44^\circ$  as it is alternate ( $\angle$ ) with ABD

Work out angle BDC.  
Give a reason for each angle you work out.

..... 44 .....  $^\circ$  [4]

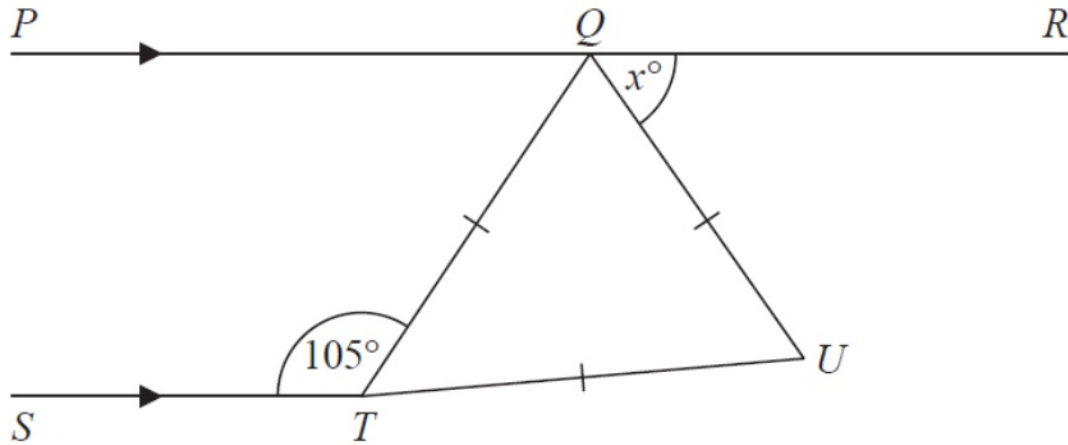


Edexcel

17

G5

G7



$PQR$  is a straight line parallel to  $ST$ .  
 $QUT$  is an equilateral triangle.

Angle  $STQ = 105^\circ$

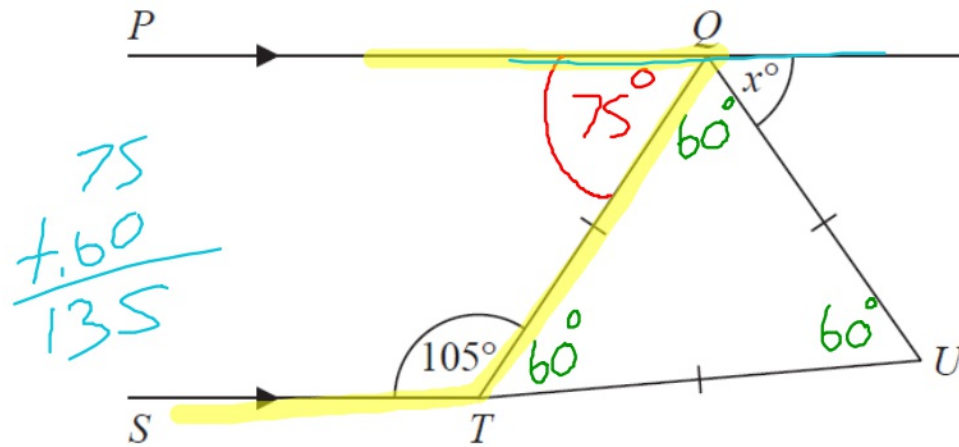
Work out the value of  $x$ .

Give a reason for each stage of your working.

.....  
(Total for Question 17 is 4 marks)

17

G5  
G7



Equilateral triangle  
must have each angle  
at  $60^\circ$  ✓

$PQR$  is a straight line parallel to  $ST$ .  
 $QUT$  is an equilateral triangle.

Angle  $STQ = 105^\circ$

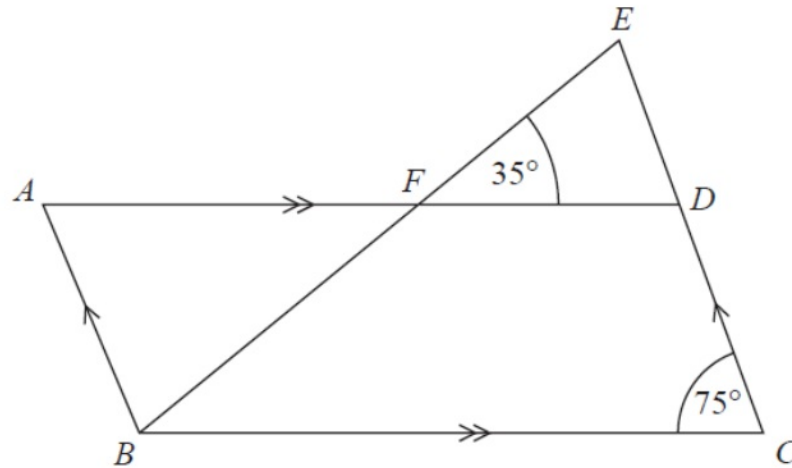
Work out the value of  $x$ .

Give a reason for each stage of your working.

Angle  $PQT = 75^\circ$  as co-interior  
angles add  $180^\circ$

$x^\circ = 180^\circ - 135^\circ$   
Angles on a straight line  
add to  $180^\circ$  .....  $45^\circ$

**(Total for Question 17 is 4 marks)**



$ABCD$  is a parallelogram.

$EDC$  is a straight line.

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

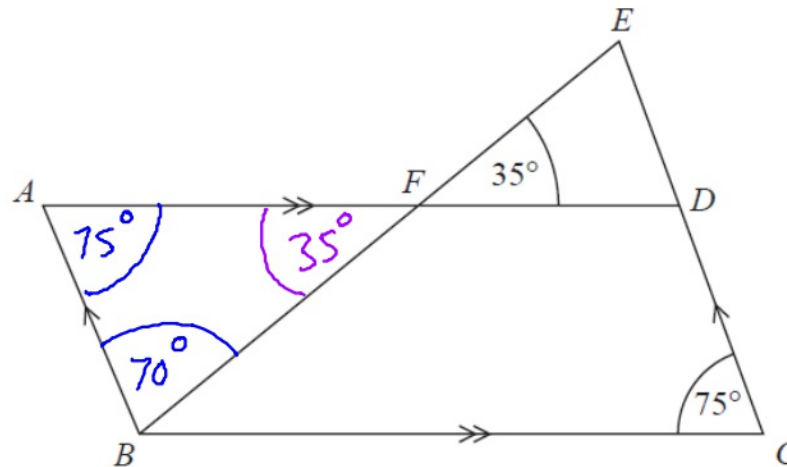
Angle  $EFD = 35^\circ$

Angle  $DCB = 75^\circ$

Show that angle  $ABF = 70^\circ$

Give a reason for each stage of your working.

(Total for Question 25 is 4 marks)



$ABCD$  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  $BAF = 75^\circ$  as  
opposite angles are equal  
in a parallelogram



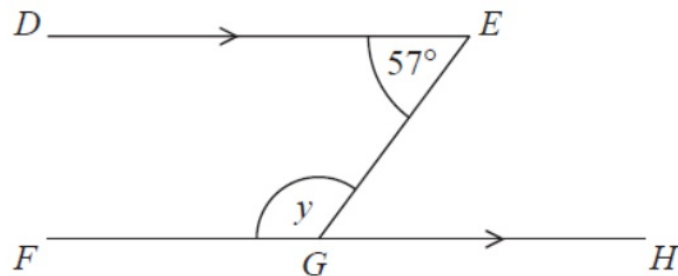
Angle  $AFB = 35^\circ$  as  
vertically opposite angles are  
equal

Angle  $ABF = 70^\circ$  as angles in a  $\triangle$  add up  
to  $180^\circ$   
 $75 + 70 + 35 = 180^\circ$  ✓

(Total for Question 25 is 4 marks)

William needs to work out the size of angle  $y$  in this diagram.

Video created by W Neill



William writes

Working	Reason
angle $EGH = 57^\circ$	because corresponding angles are equal
$y = 180^\circ - 57^\circ$ $y = 123^\circ$	because angles on a straight line add up to $180^\circ$

One of William's reasons is wrong.

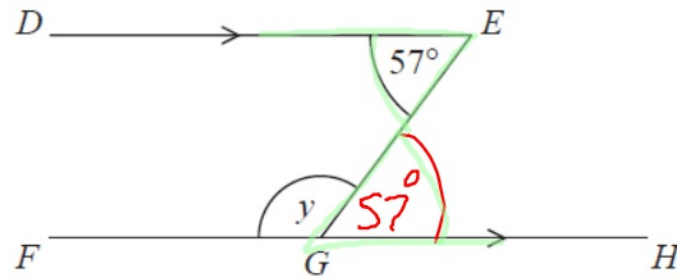
(b) Write down the correct reason.

G7

.....  
(1)

William needs to work out the size of angle  $y$  in this diagram.

Video created by W Neill



William writes

Working	Reason
$\rightarrow$ angle $EGH = 57^\circ$	because corresponding angles are equal
$y = 180^\circ - 57^\circ$ $y = 123^\circ$	because angles on a straight line add up to $180^\circ$

One of William's reasons is wrong.

(b) Write down the correct reason.

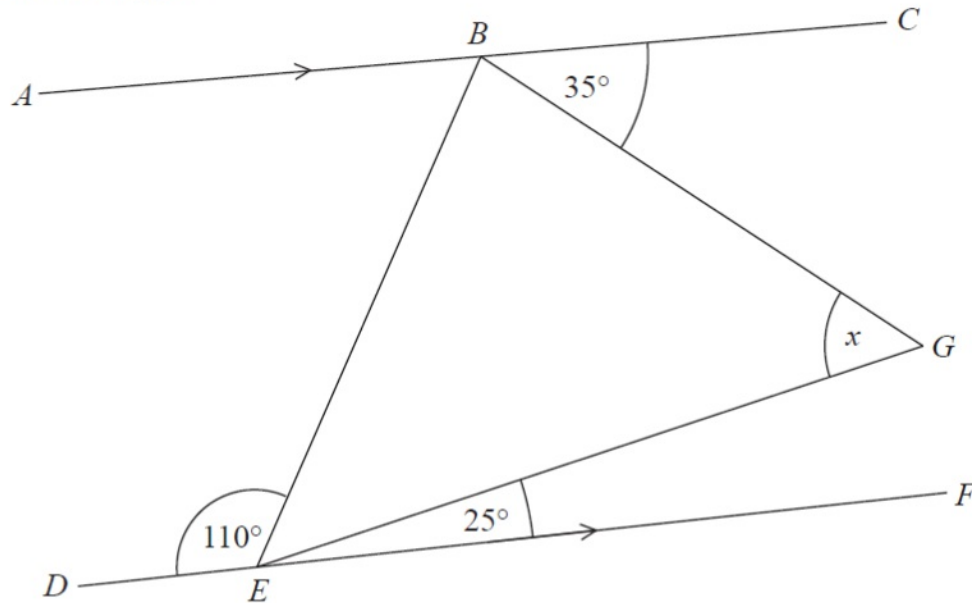
G7

angle  $EGH = 57^\circ$  ✓ because alternate angles are equal (1)

22  $BEG$  is a triangle.

Video Created by W Neill

67



$ABC$  and  $DEF$  are parallel lines.

Work out the size of angle  $x$ .

Give a reason for each stage of your working.

○

(Total for Question 22 is 4 marks)

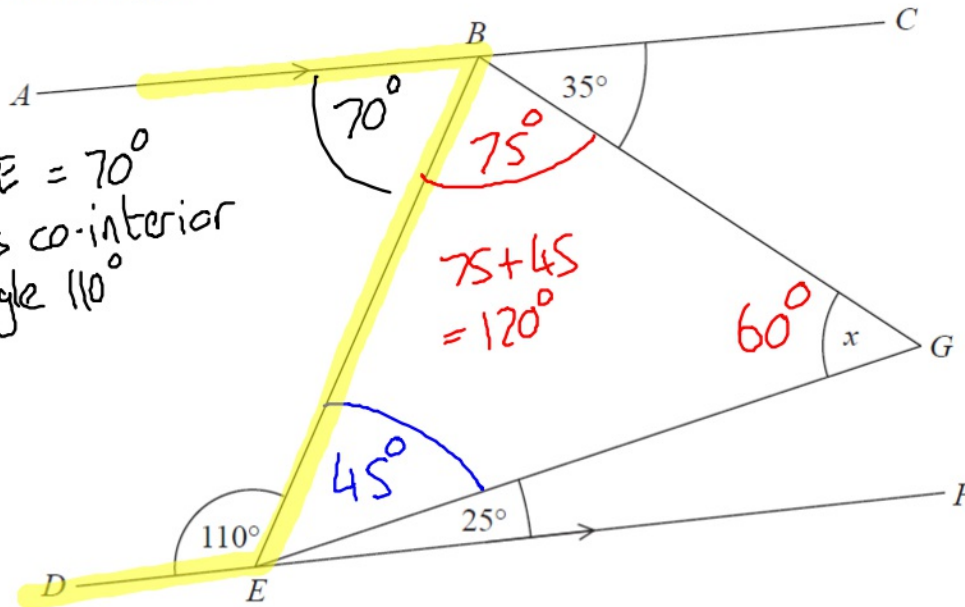


22  $BEG$  is a triangle.

Video Created by W Neill

67

Angle  $ABE = 70^\circ$   
as it is co-interior  
with angle  $110^\circ$



Angle  $BEG = 45^\circ$   
because angles on a  
straight line add up  
to  $180^\circ$

Angle  $EBG$  is  $75^\circ$  as  
angles on SL add to  $180^\circ$

$x = 60^\circ$  as angles in a triangle  
add up to  $180^\circ$

60

$ABC$  and  $DEF$  are parallel lines.

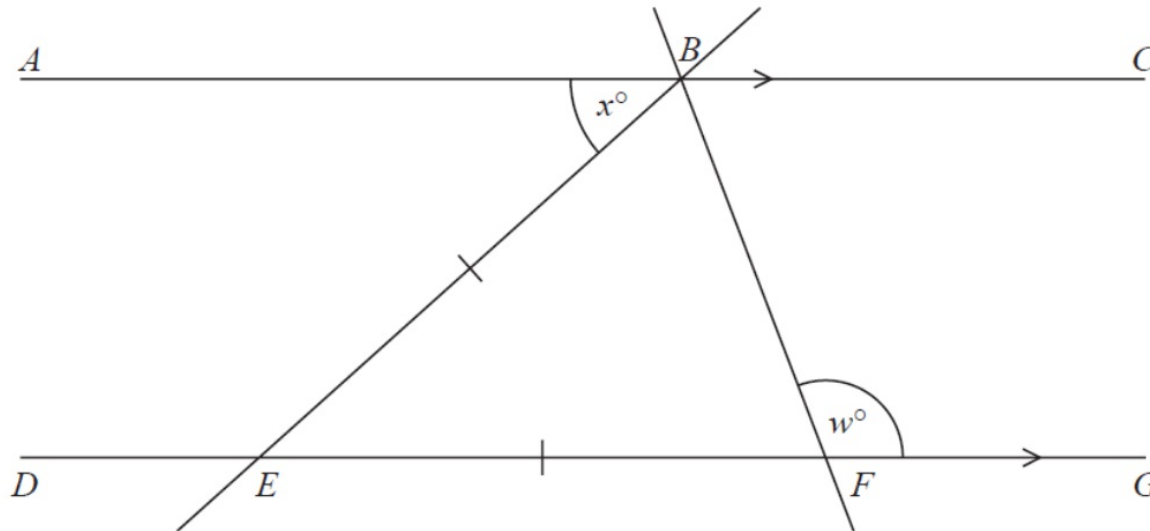
Work out the size of angle  $x$ .

Give a reason for each stage of your working.

(Total for Question is 4 marks)

9

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In the diagram  $ABC$  and  $DEFG$  are parallel lines.

Angle  $ABE = x^\circ$

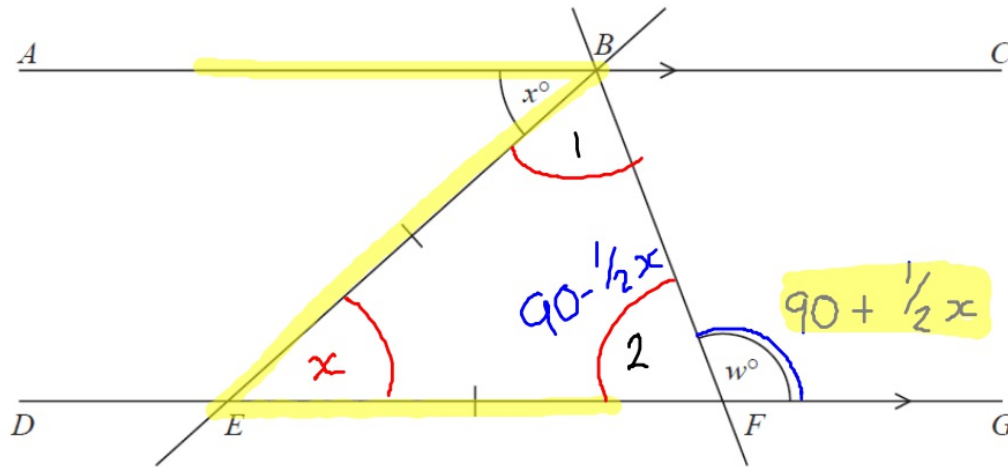
$EB = EF$

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

Give a reason for each stage of your working.

(Total for Question 9 is 4 marks)

9



Created by W Neill

Angle  $BEF = x^\circ$   
as alternate angles  
are equal

In the diagram  $ABC$  and  $DEFG$  are parallel lines.  
Angle  $ABE = x^\circ$   
 $EB = EF$

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

Give a reason for each stage of your working.

Straight line adds to  $180^\circ$

$$90^\circ - \cancel{\frac{1}{2}x} + 90^\circ + \cancel{\frac{1}{2}x} = 180^\circ$$

$$180^\circ = 180^\circ \checkmark$$

Angle 1 and 2 are equal as  
the triangle is isosceles.

$$\frac{180 - x}{2} = \frac{1}{2}(180 - x)$$

$$90 - \frac{1}{2}x$$

(Total for Question 9 is 4 marks)

AQA

24

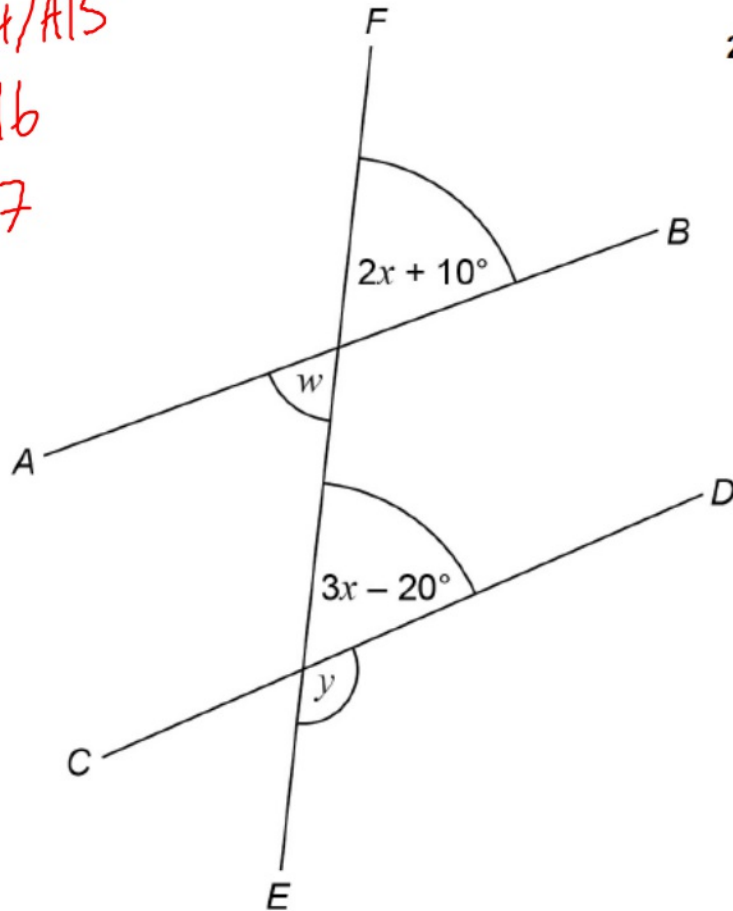
$AB$ ,  $CD$  and  $EF$  are straight lines.

Video created by W Neill

A14/A15

A16

G7



24 (a)

Ava assumes that  $AB$  and  $CD$  are parallel.

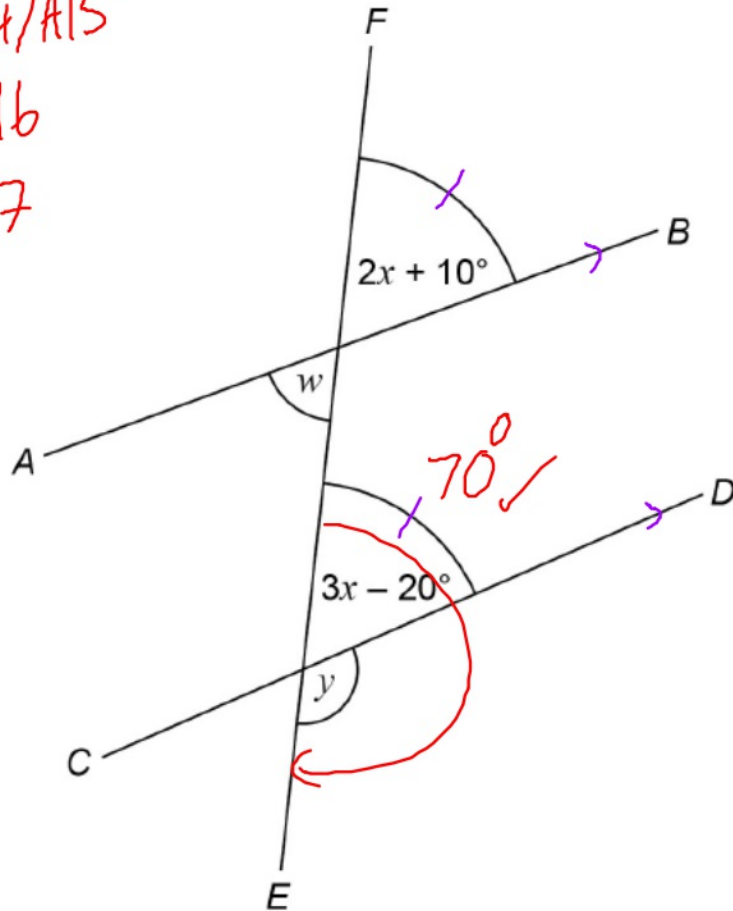
What answer should she get for the size of angle  $y$ ? [4 marks]

Answer \_\_\_\_\_ degrees

AB, CD and EF are straight lines.

Video created by W Neill

A14/A15  
A16  
G7



(a) Ava assumes that AB and CD are parallel.

What answer should she get for the size of angle  $y$ ? [4 marks]

$$2x + 10 = 3x - 20$$

$$10 + 20 = 3x - 2x$$

$$30 = 1x$$

$$30 = x$$

$$x = 30$$
$$3x - 20$$
$$90 - 20$$
$$= 70^\circ$$

$$180^\circ - 70^\circ =$$

Answer 110 degrees