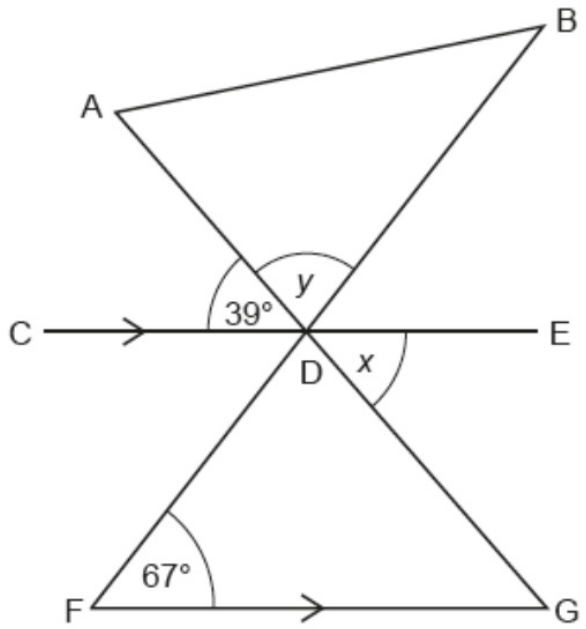
G7b...Angle Rules - Combination G4-G7a

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.

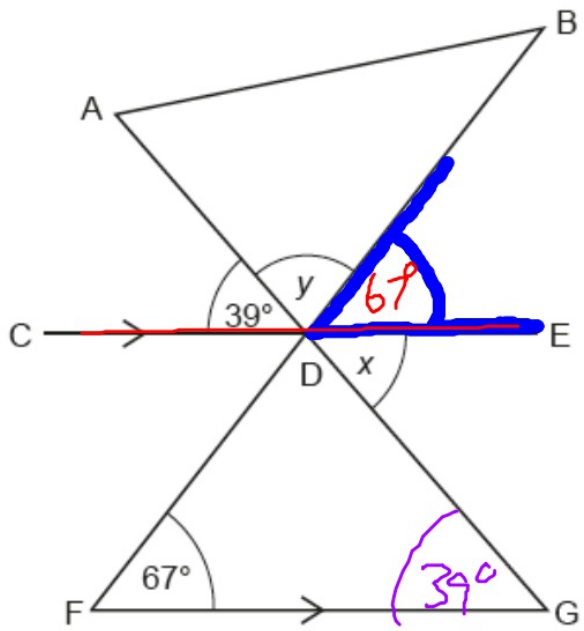
Angle $x = 39°$ because ..... **[1]**

(b) Work out angle y.

(b) .....° **[3]**

Created by W Neill

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



Not to scale

Angle BDE is 67° as it corresponds (f angle) with angle DFG

67
+ 39
106

Straight lines add to 180°

180° - 39° - 67°
= 74°

(a) Complete the sentence with a reason.

Angle $x = 39°$ because Vertically opposite angles are equal [1]

(b) Work out angle y.

(b) 74° [3]

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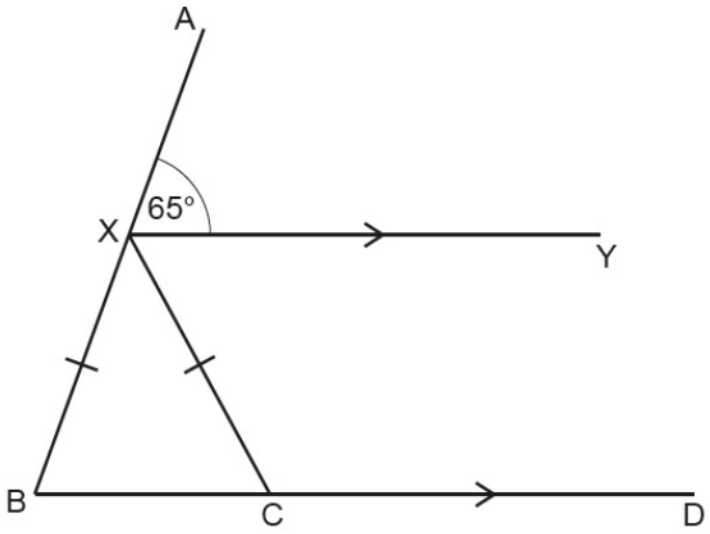
6 XY and BD are parallel lines.
X is a point on AB and C is a point on BD.
XB = XC.



(a) Complete this sentence.

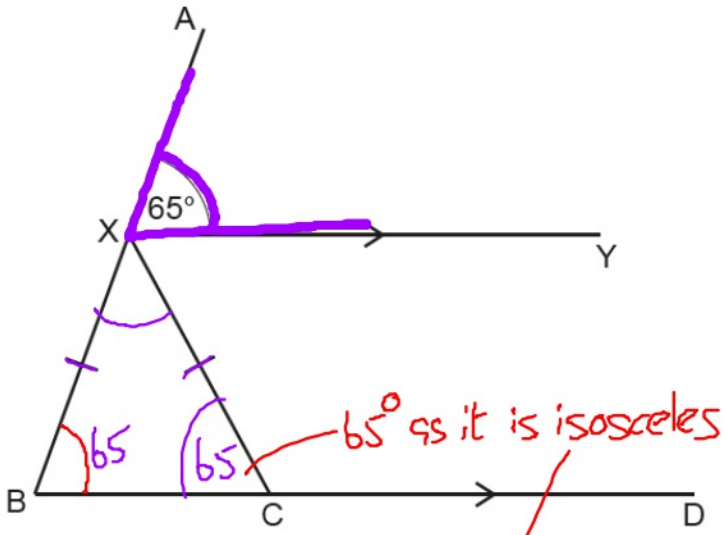
Angle XBC = 65° because .....

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

(b) ..... ° **[4]**

Video created by W Neill

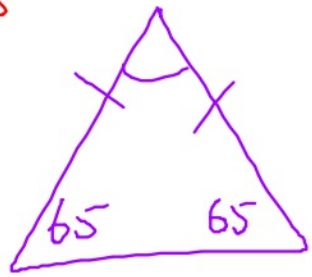
6 XY and BD are parallel lines.
X is a point on AB and C is a point on BD.
XB = XC.



(a) Complete this sentence.

Angle XBC = 65° because ..it corresponds with angle AXY..

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



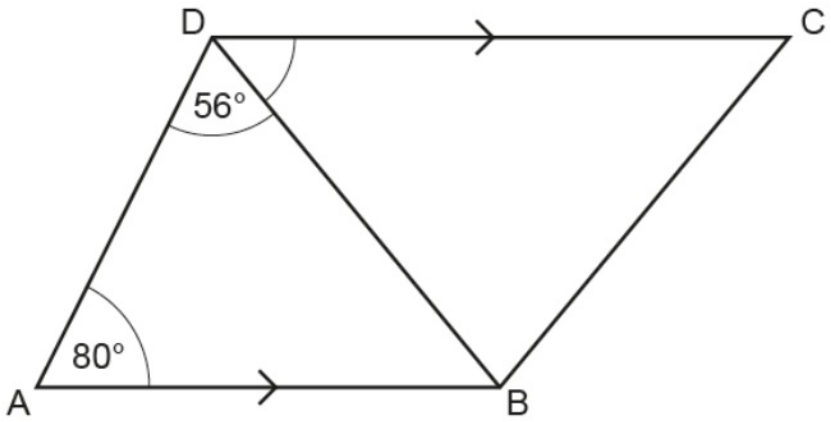
65 + 65 = 130°
180° − 130° = 50° ✓ because angles in a △ add up to 180°.

(b) ..50.. ° **[4]**

Created by W Neill

7 In the diagram, AB is parallel to DC.

G5/6/7



Not to scale

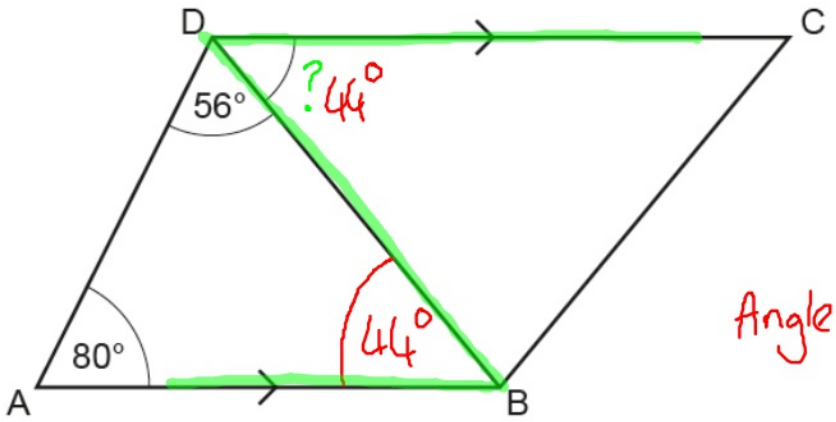
Work out angle BDC.
Give a reason for each angle you work out.

..... ° **[4]**

Created by W Neill

7 In the diagram, AB is parallel to DC.

GS/6/7



Not to scale

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

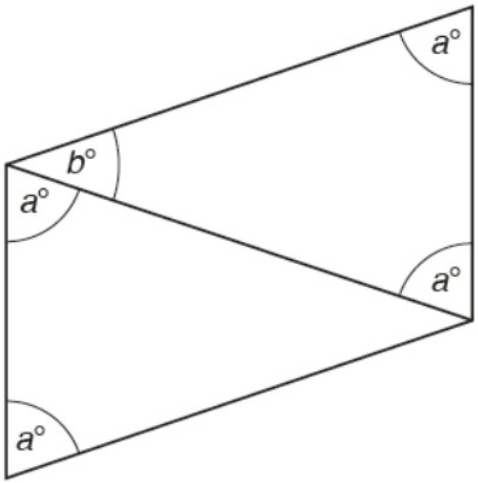
$180 - \begin{array}{r} 80 \\ +56 \\ \hline 136 \end{array} = 44^\circ$

Angle ABD = 44° ... angles in a triangle add to 180°

Angle BDC = 44° as it is alternate (Z) with ABD

..... 44 ..... ° **[4]**

19 Two congruent, isosceles triangles are joined, as shown, to form a parallelogram.
The largest angle of the **parallelogram** is 110°.



Not to scale

Write two equations.
Solve them to find the value of *a* and the value of *b*.

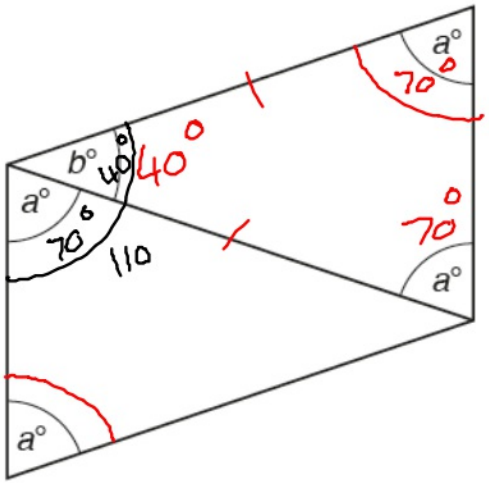
a = ...

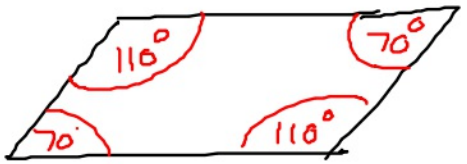
b = ... **[4]**

Created by W Neill

19 Two congruent, isosceles triangles are joined, as shown, to form a parallelogram.
The largest angle of the **parallelogram** is 110°.

$\triangle = 180^\circ$





Not to scale

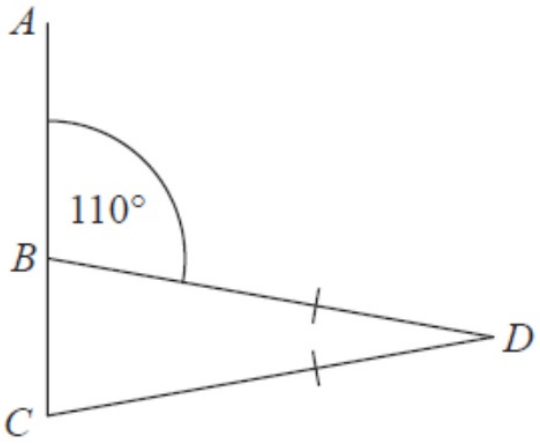
Write two equations.
Solve them to find the value of *a* and the value of *b*.

a = 70° .....

b = 40° ✓ ..... **[4]**

Edexcel

15



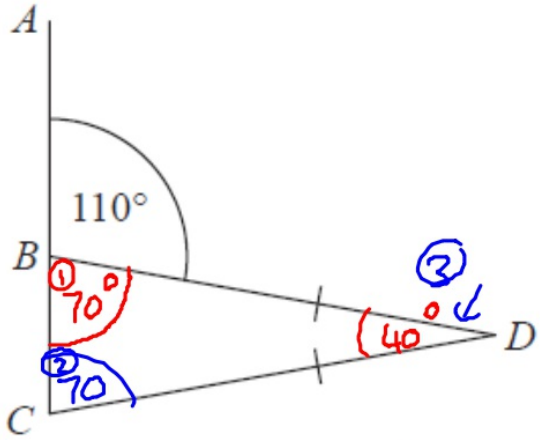
ABC is a straight line.
$BD = CD$
Angle $ABD = 110°$

Show that angle $BDC = 40°$

Give a reason for each stage of your working.

(Total for Question 15 is 4 marks)

15



ABC is a straight line.
BD = *CD*
Angle *ABD* = 110°

Show that angle *BDC* = 40°

Give a reason for each stage of your working.

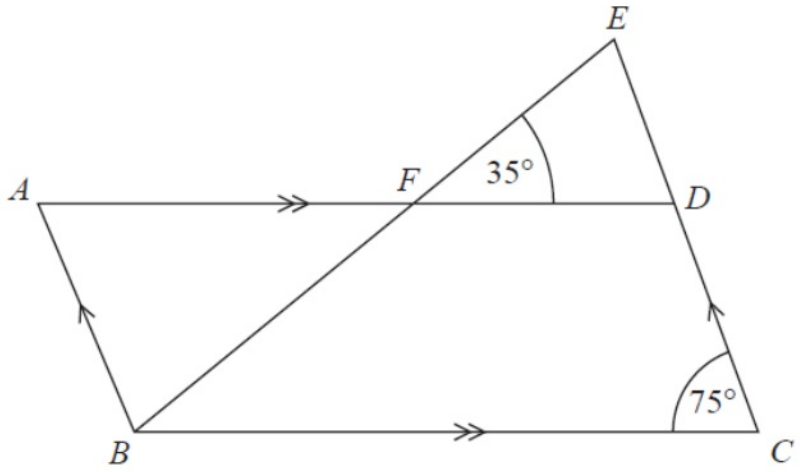
① → 70° because angles on a straight line add to 180°

② → 70° as triangle BCD is isosceles and both base angles are equal

③ Angle BDC = 40° as angles in a triangle add to 180°

(Total for Question 15 is 4 marks)

25



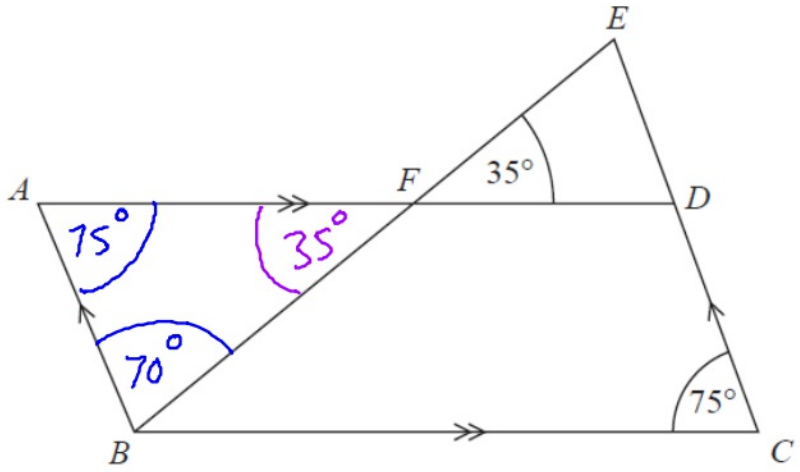
ABCD is a parallelogram.
EDC is a straight line.
F is the point on *AD* so that *BFE* is a straight line.

Angle *EFD* = 35°
Angle *DCB* = 75°

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

(Total for Question 25 is 4 marks)

25



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°
Angle *DCB* = 75°

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

Angle BAF = 75° as opposite angles are equal in a parallelogram

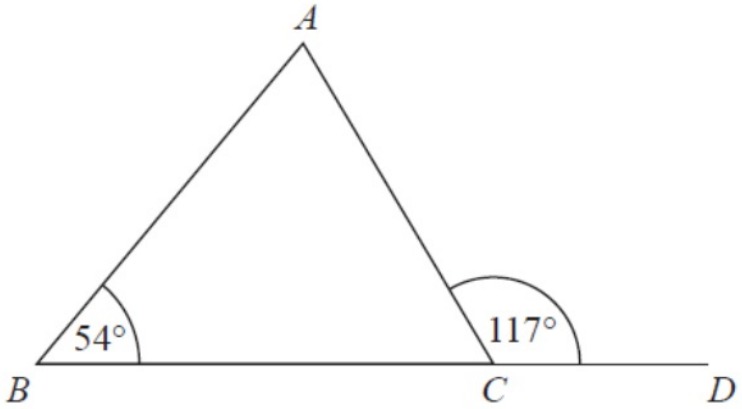
Angle AFB = 35° as vertically opposite angles are equal

Angle ABF = 70° as angles in a △ add up to 180°

75 + 70 + 35 = 180° ✓

(Total for Question 25 is 4 marks)

7



BCD is a straight line.
ABC is a triangle.

Show that triangle *ABC* is an isosceles triangle.
Give a reason for each stage of your working.

(Total for Question 7 is 4 marks)

7

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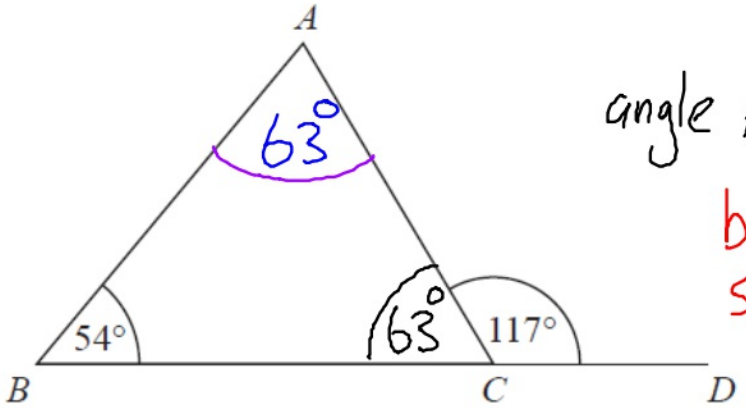

angle ACB = 63°

because angles on a straight line add to 180°

BCD is a straight line.
ABC is a triangle.

Show that triangle *ABC* is an isosceles triangle.
Give a reason for each stage of your working.

angle BAC = 63°

because angles in a △ add to 180°

This is an isosceles triangle as it has two angles that are equal.

(Total for Question 7 is 4 marks)

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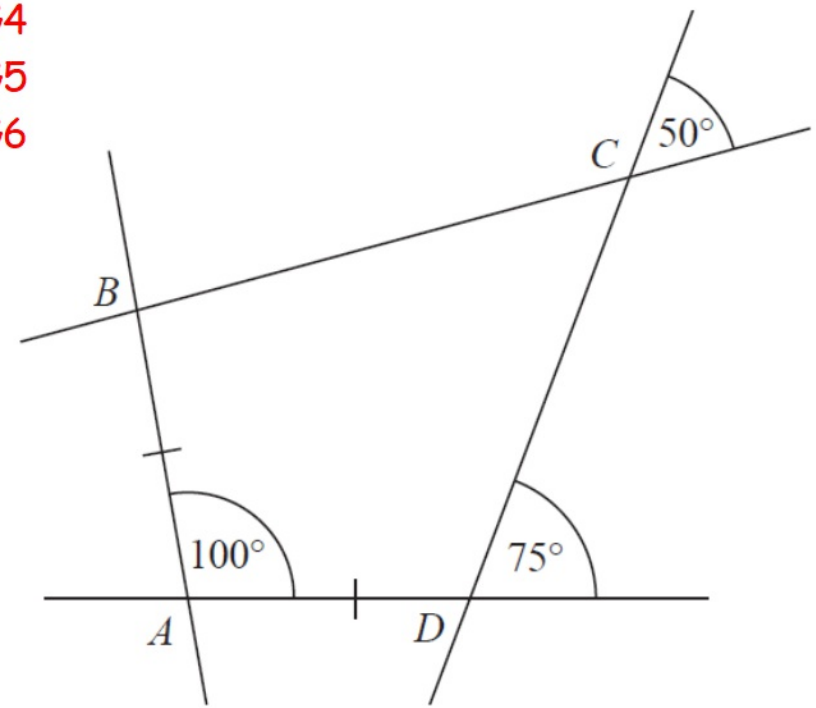
14 The diagram shows quadrilateral $ABCD$ with each of its sides extended.

G4
G5
G6



$AB = AD$

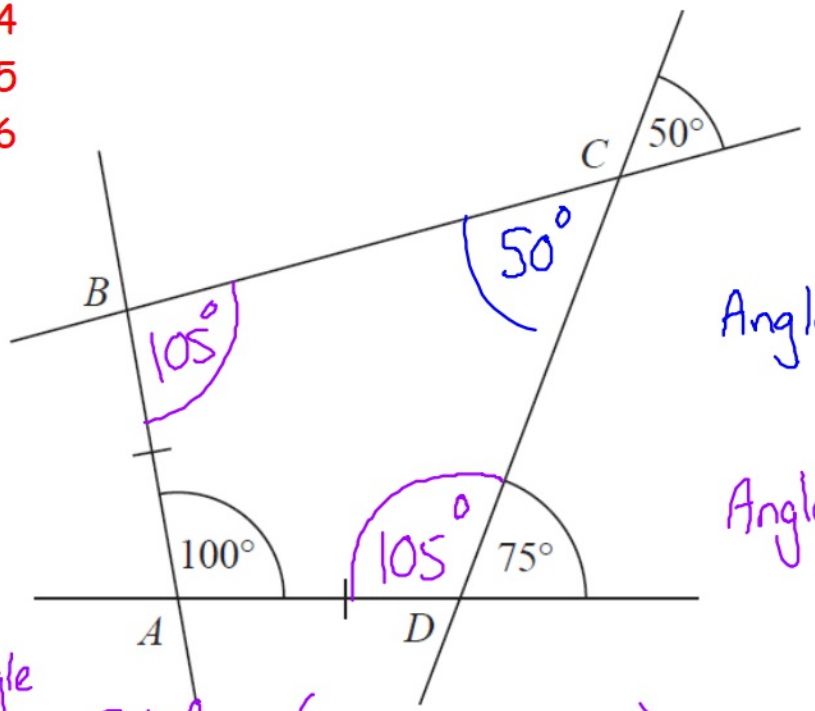
Show that $ABCD$ is a kite.
Give a reason for each stage of your working.

(Total for Question 14 is 4 marks)

Video Created by W Neill

14 The diagram shows quadrilateral $ABCD$ with each of its sides extended.

G4
G5
G6



$AB = AD$

Show that $ABCD$ is a kite.
Give a reason for each stage of your working.

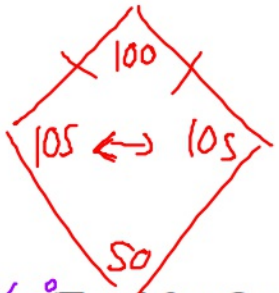
Angle BCD = 50°, because vertically opposite angles are equal.

Angle ADC = 105° as angles on a Straight line add to 180°

Angle ABC = $360° - (100 + 105 + 50)$

$360 - 255$

$= 105°$ ... angles in a quad add to 360°



... This is Kite with opposite angles both 105° ✓

(Total for Question 14 is 4 marks)

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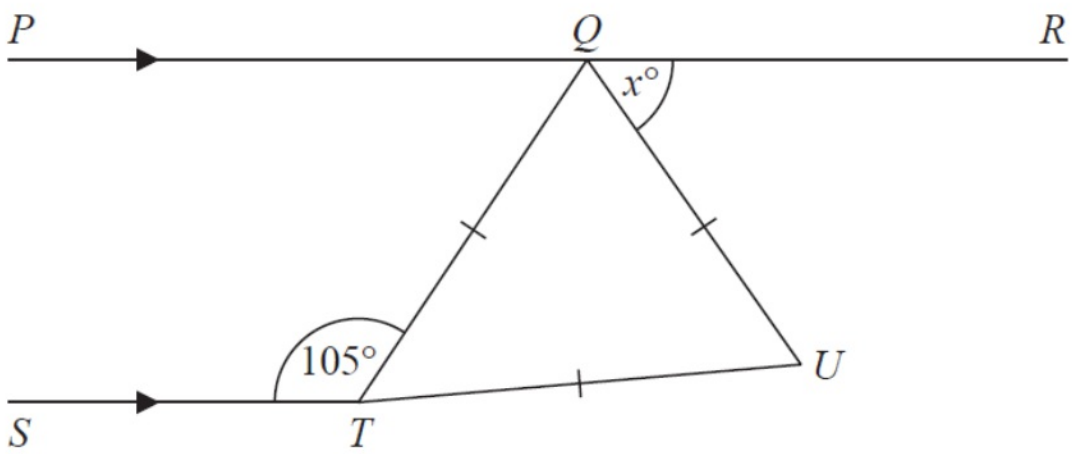
17

G5
G7



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

Angle *STQ* = 105°

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

.....

(Total for Question 17 is 4 marks)

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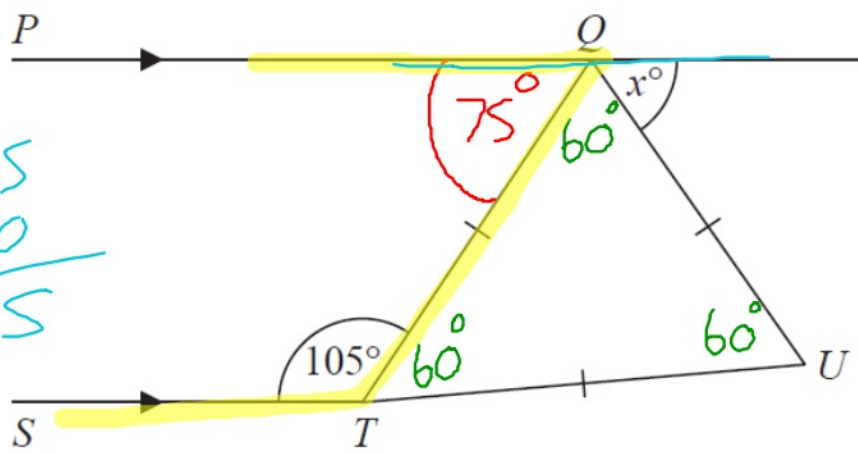
17

G5
G7



75 + 60 = 135

Equilateral triangle must have each angle at 60° ✓

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

Angle *STQ* = 105°

Angle PQT = 75° as co-interior angles add 180°

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

$x^\circ = 180^\circ - 135^\circ$

45°

angles on a straight line add to 180

(Total for Question 17 is 4 marks)

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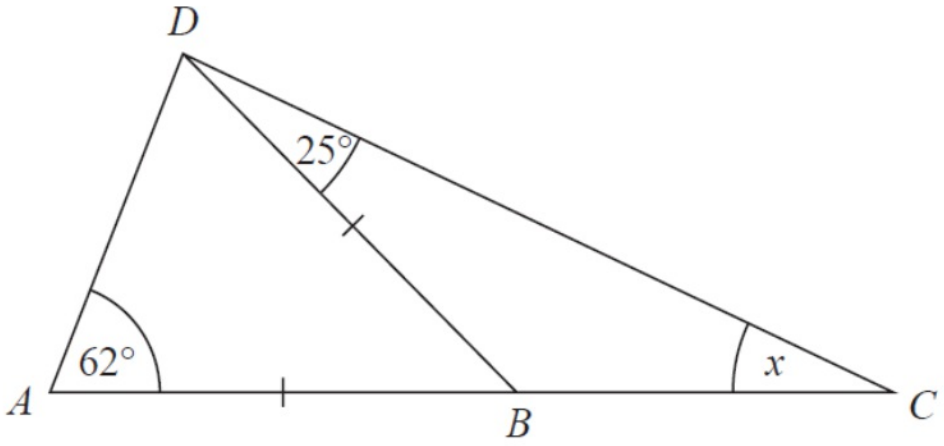
13

G5



In the diagram, ABC is a straight line.

Work out the size of the angle marked x.
You must give a reason for each stage of your working.

.....°

(Total for Question 13 is 4 marks)

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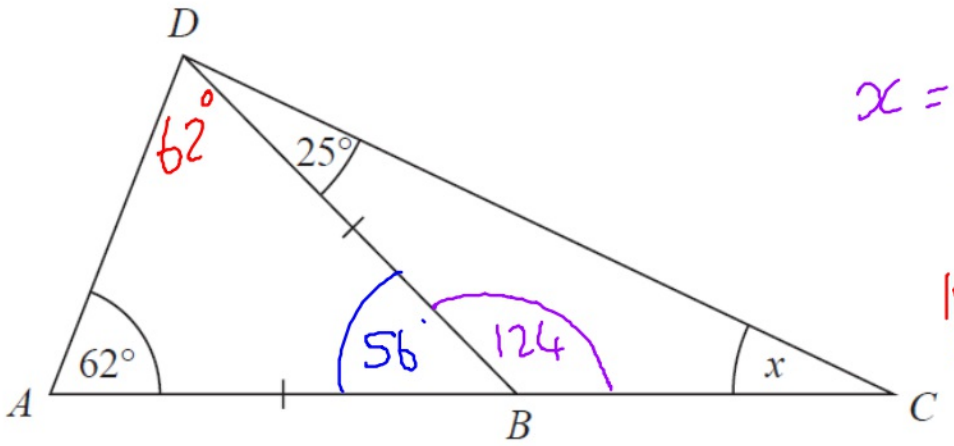
13

G5

62
62
124



$x = 124 + 25 = 149$

$180 - 149 = 31$
angles in a triangle add to 180°

In the diagram, *ABC* is a straight line.

Work out the size of the angle marked *x*.
You must give a reason for each stage of your working.

angle ADB as base angles in a triangle are equal.

angle CBD = 124° as angles on a straight line add to 180°

angle ABD = 56° as angles in a triangle add to 180°

31 °

(Total for Question 13 is 4 marks)

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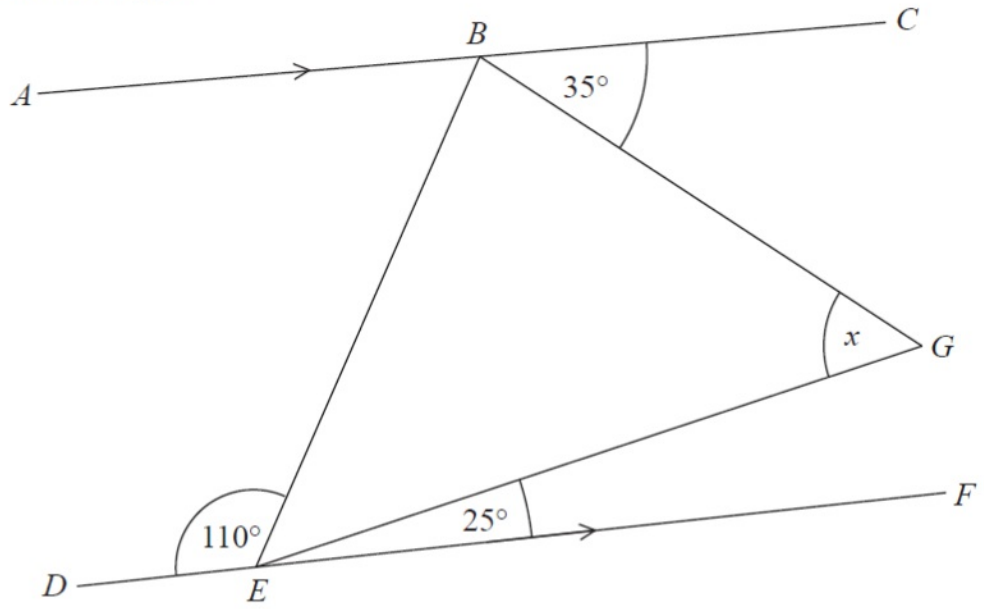
G7

22 *BEG* is a triangle.



ABC and *DEF* are parallel lines.

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

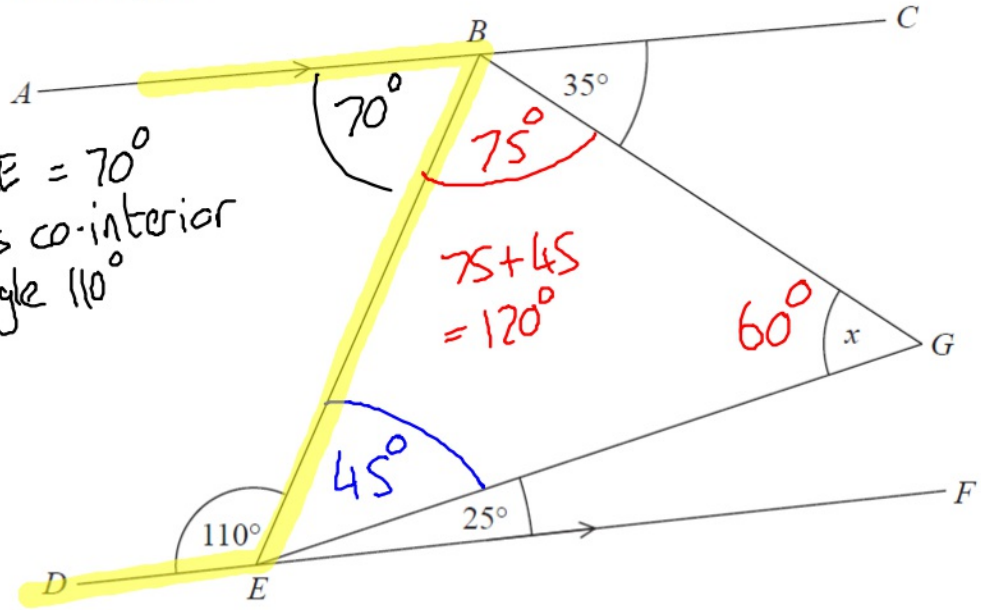
.....

°

(Total for Question 22 is 4 marks)

Video Created by W Neill

22 *BEG* is a triangle.



G7

Angle ABE = 70° as it is co-interior with angle 110°

75+45 = 120°

Angle BEG = 45° because angles on a straight line add up to 180°

Angle EBG is 75° as angles on SL add to 180°

$x = 60°$ as angles in a triangle add up to 180° ✓

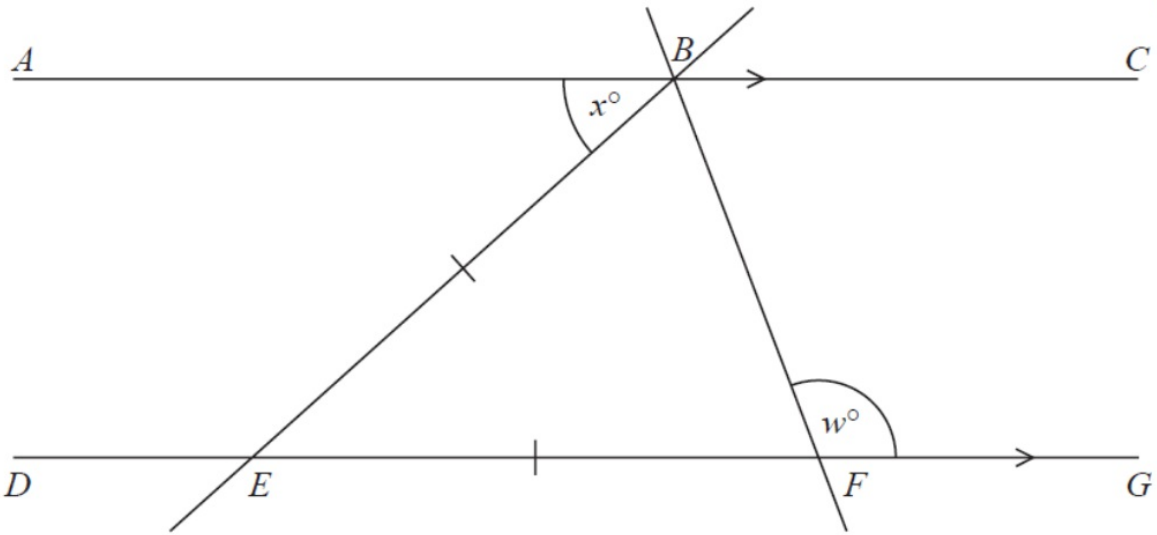
ABC and *DEF* are parallel lines.

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

60 °

(Total for Question is 4 marks)

9



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

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

Give a reason for each stage of your working.

(Total for Question 9 is 4 marks)

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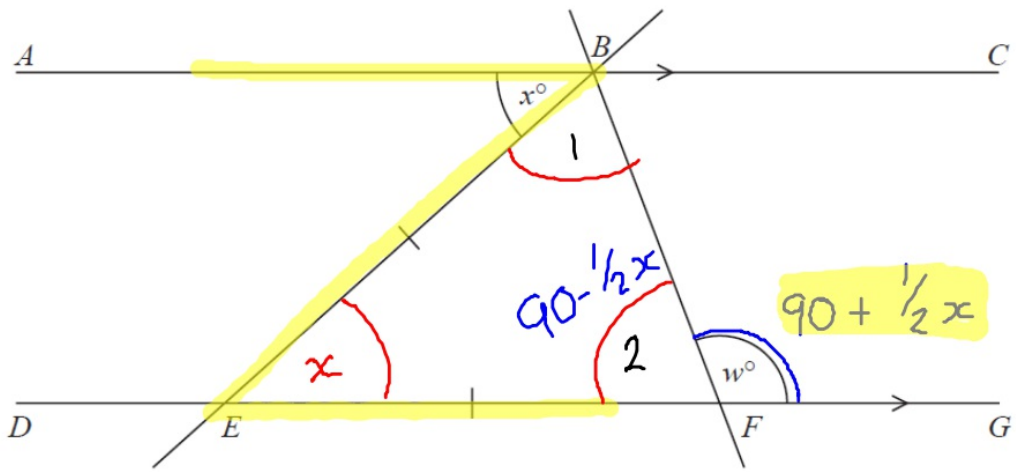
9



Angle BEF = x° as alternate angles are equal

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

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

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

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

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

Give a reason for each stage of your working.

Straight line adds to 180°

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

$180^\circ = 180^\circ$ ✓

(Total for Question 9 is 4 marks)

AQA

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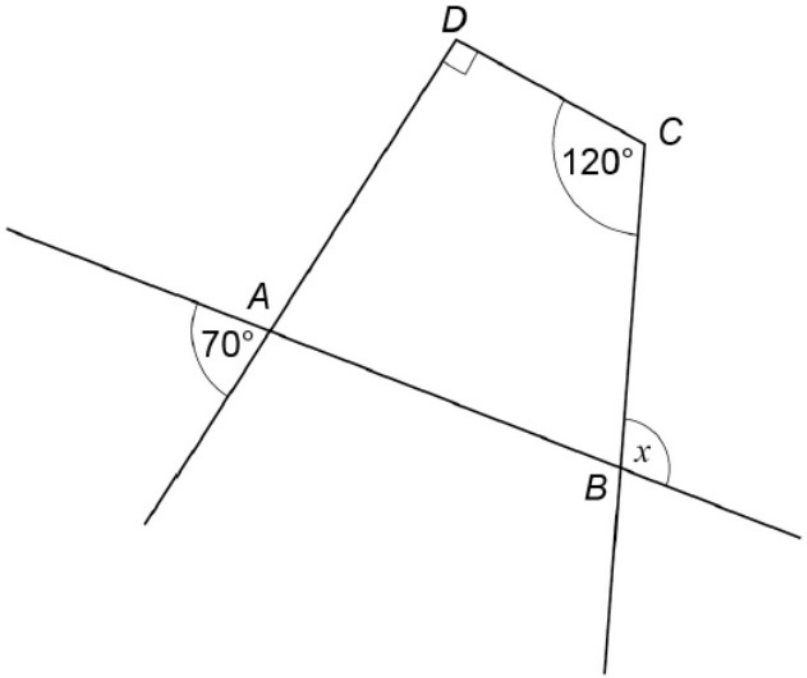
18 *ABCD* is a quadrilateral.

G4-5-6 Sides are extended as shown.



Not drawn accurately

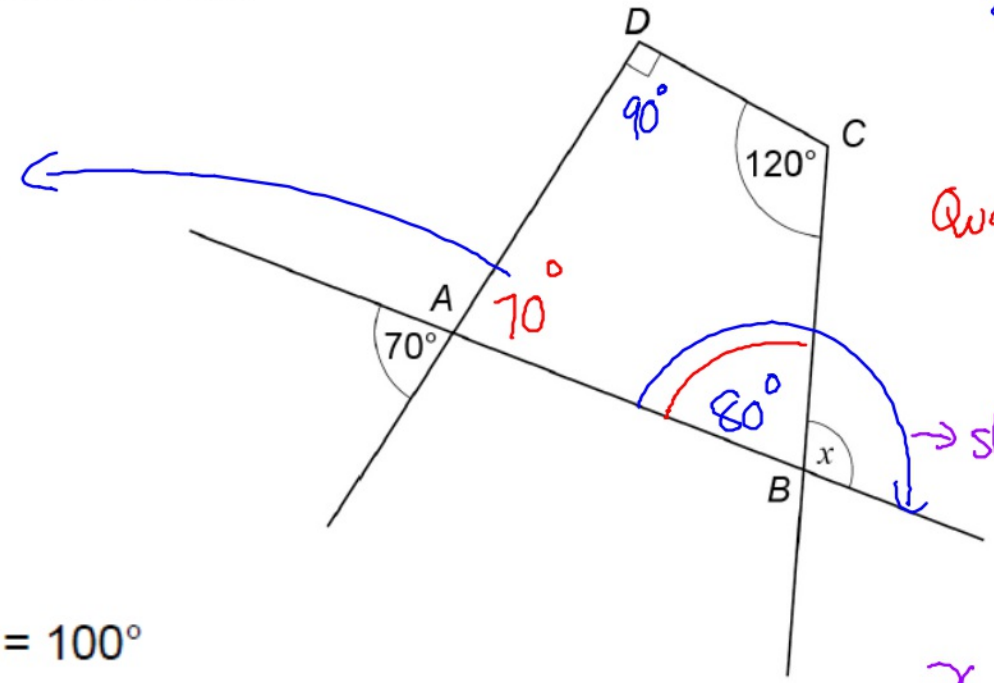
Show that $x = 100°$

[3 marks]

Video created by W Neill

18 *ABCD* is a quadrilateral.

G4-5-6 Sides are extended as shown.



Not drawn accurately

120 + 90 + 70

280

Quad = 360°

− 280

vertically opposite angles are equal

→ straight line

180° − 80°

x = 100° ✓

✓

Show that $x = 100°$

[3 marks]

Video created by W Neill

16 (a) *BCD* is a straight line.

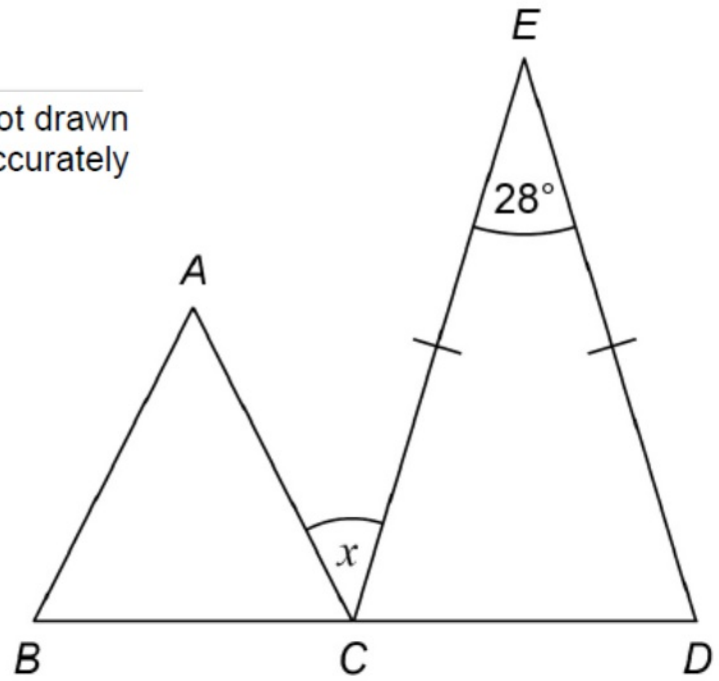
Triangle *ABC* is equilateral.

CE = *DE*

G4
G5

Work out the size of angle x. **[4 marks]**

Not drawn accurately



Answer _____ degrees

Video created by W Neill

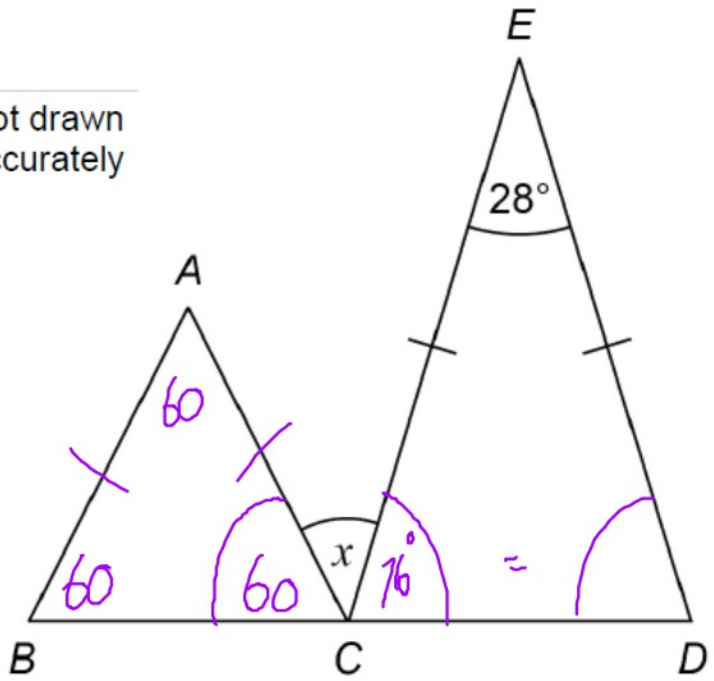
16 (a) *BCD* is a straight line.

Triangle *ABC* is equilateral.

CE = *DE*

G4
G5

Work out the size of angle x. **[4 marks]**



Not drawn accurately

$x^\circ = 180^\circ - 76^\circ - 60^\circ$

$=$

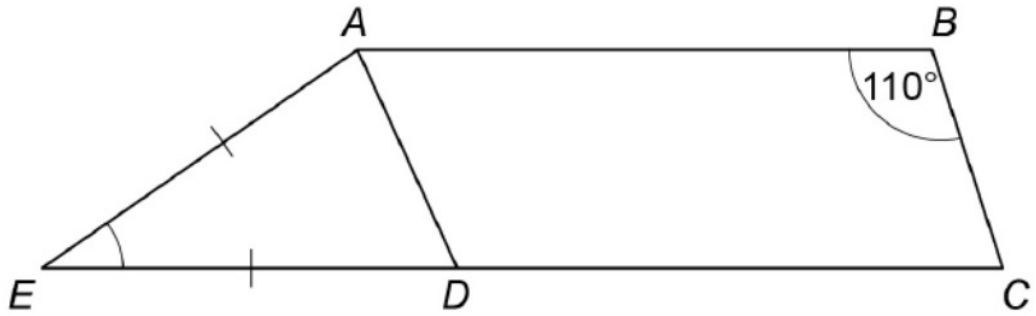
Answer 44 ✓ degrees

Video created by W Neill

15 Trapezium *ABCE* is made from parallelogram *ABCD* and isosceles triangle *ADE*.

AE = *DE*

G4
G5
G6



Not drawn accurately

Work out the size of angle *AED*.

[3 marks]

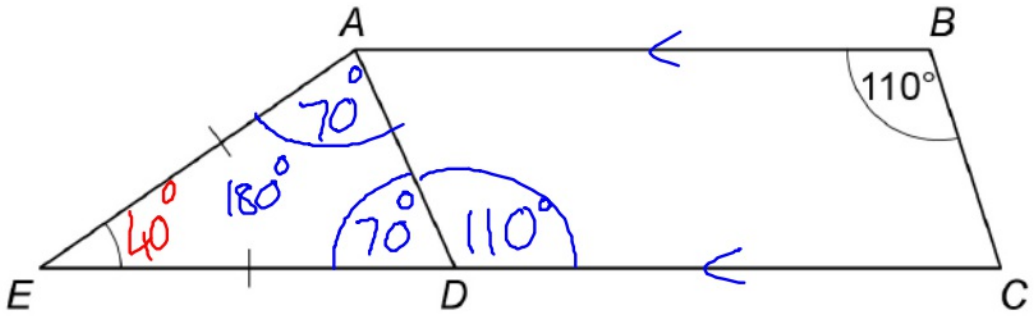
Answer _____ degrees

Video created by W Neill

15 Trapezium *ABCE* is made from parallelogram *ABCD* and isosceles triangle *ADE*.

AE = *DE*

G4
G5
G6



Not drawn accurately

Work out the size of angle *AED*.

[3 marks]

$180^\circ - 70 - 70 = 40^\circ$

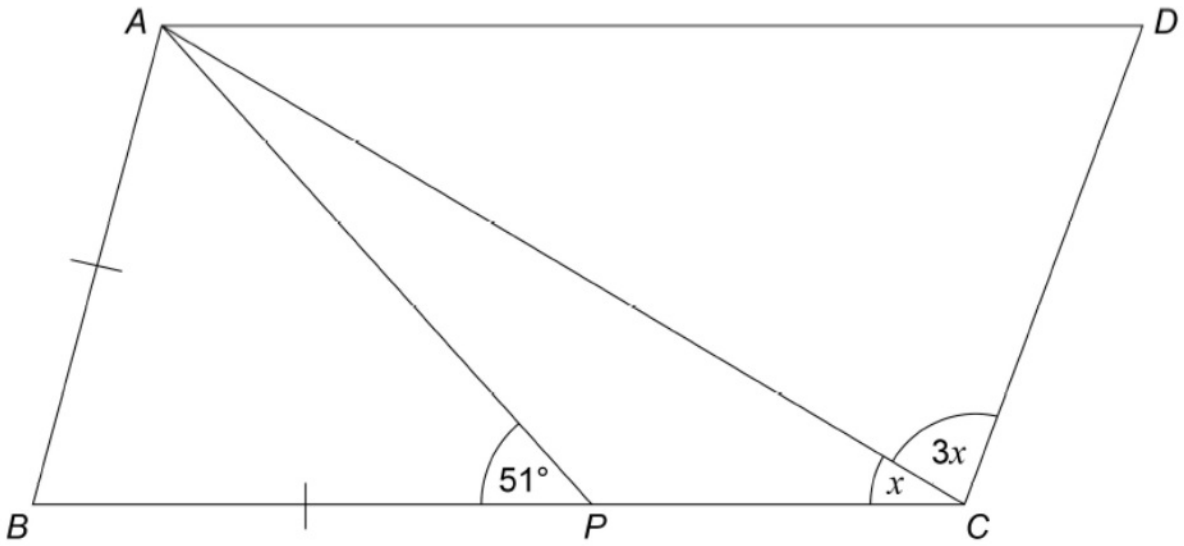
Answer 40 degrees

22 *ABCD* is a parallelogram.

Video created by W Neill

AB = *BP*

A16
G5
G6



Work out the size of angle x. **[4 marks]**

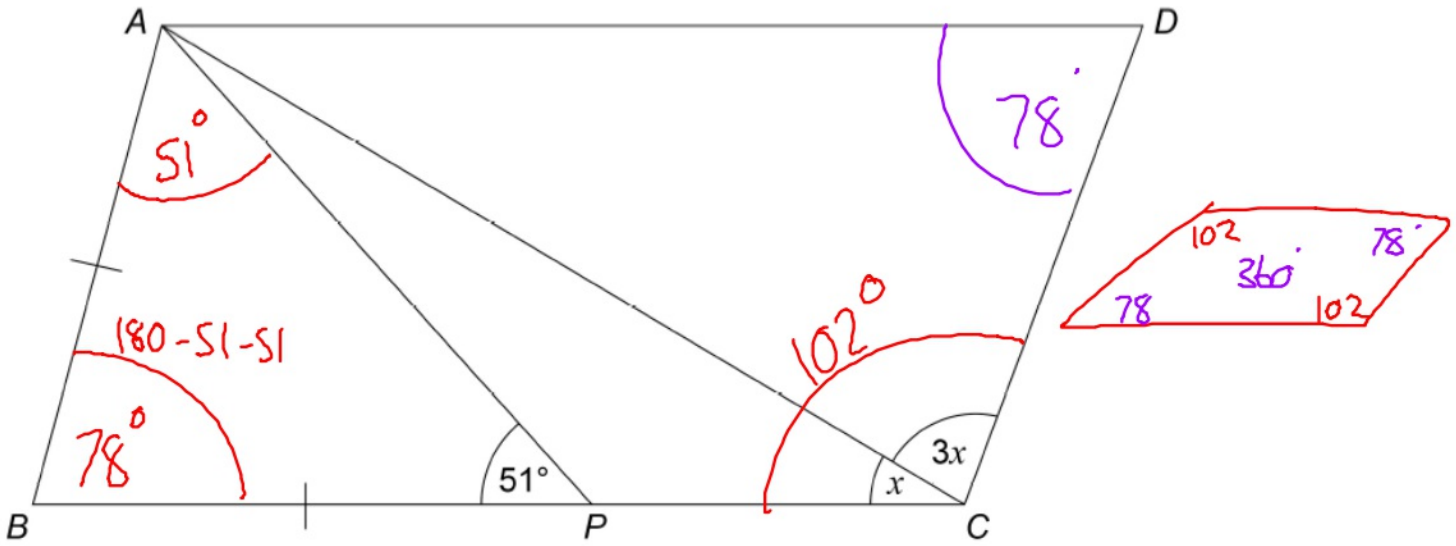
Answer _____ degrees

22 *ABCD* is a parallelogram.

Video created by W Neill

AB = *BP*

A16
G5
G6



Work out the size of angle x. **[4 marks]**

$4x = 102^\circ$

$x = \frac{102^\circ}{4} =$

Answer 25.5° ✓ degrees