# Name: SOLUTIONS

GCSE (1 - 9)

# Angles in Parallel Lines

Buy me a coffee

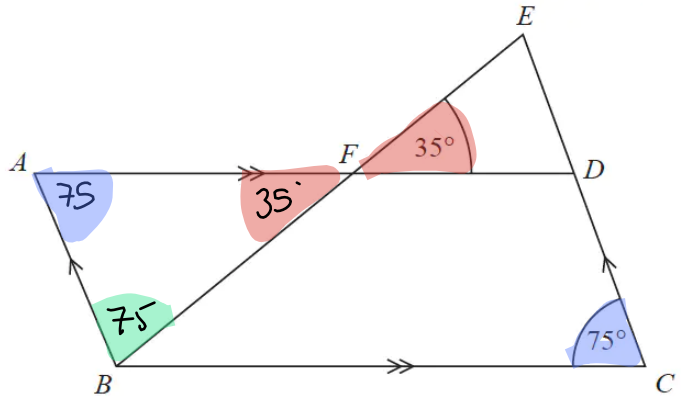
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These questions are compiled from *released* Pearson Edexcel GCSE maths exam papers
They contain exam questions from up until the ***Summer 2023*** exam series
More recent exam papers do exist but are withheld for mock exams
As new exam papers are released these worksheets will gradually be updated
The ***most current*** version of these worksheets will always be available at: kennethstafford.co.uk

| Question | Where the question appeared |
|---|---|
| 1 | Edexcel, GCSE, Autumn 2017, Paper 1F, Q25 |
| 2 | Edexcel, GCSE, Summer 2018, Paper 2F, Q15 |
| 3 | Edexcel, GCSE, Autumn 2018, Paper 2F, Q22 |
| 4 | Edexcel, GCSE, Summer 2019, Paper 1F, Q12 |
| 5 | Edexcel, GCSE, Autumn 2020, Paper 1F, Q25 |
| 6 | Edexcel, GCSE, Summer 2023, Paper 3F, Q22 |
| 7 | Edexcel, GCSE, Summer 2022, Paper 3F, Q20 |
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**Angles in Parallel Lines Questions from Past Papers**

**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°
Angle *DCB* = 75°

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

BAF = DCB = 75°
opposite angles in a parallelogram are equal.

EFD = AFB = 35°
vertically opposite angles are equal.

ABF = 70°
Angles in a triangle add up to 180°.

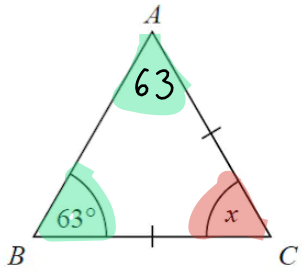
75 + 35 + 70 = 180°

**(Total for Question 25 is 4 marks)**

*[Edexcel, GCSE, Autumn 2017, Paper 1F, Q25]*

**2**

Mary needs to work out the size of angle $x$ in this diagram.




She writes

$x = 63°$ because base angles of an isosceles triangle are equal.

Mary is wrong.

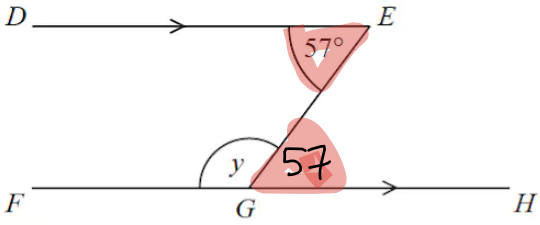
(a) Explain why.

CBA and BAC are the base angles. BAC = 63°

BCA = 54°

(1)

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




William writes

| Working | Reason |
|---|---|
| angle $EGH = 57°$ | because corresponding angles are equal |
| $y = 180° - 57°$<br>$y = 123°$ | because angles on a straight line add up to 180° |

One of William's reasons is wrong.

(b) Write down the correct reason.

because alternate angles are equal.

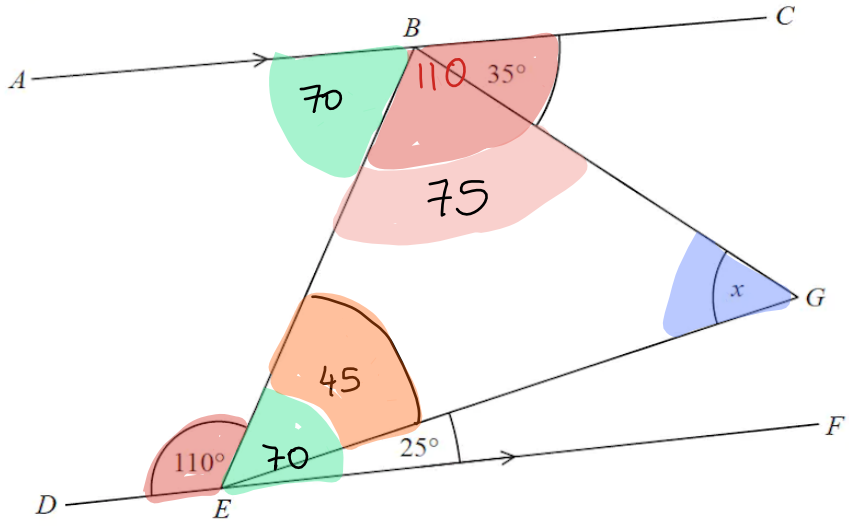
(1)

**(Total for Question 15 is 2 marks)**

*[Edexcel, GCSE, Summer 2018, Paper 2F, Q15]*

**3**

*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.

BEF = 70° angles on a straight line add up to 180°

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

ABE = 70° alternate angles are equal.

EBG = 75° angles on a straight line add up to 180°

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

45 + 75 + 60 = 180°

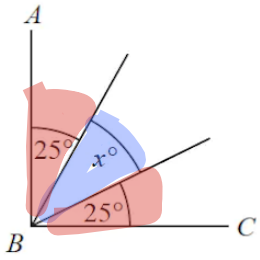
.....°

**(Total for Question 22 is 4 marks)**

*[Edexcel, GCSE, Autumn 2018, Paper 2F, Q22]*

**4**

*AB* and *BC* are perpendicular lines.



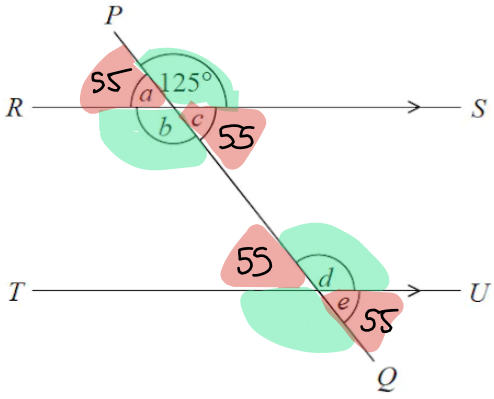

(a) Find the value of $x$.

$90 - 2(25) = 40$

$x =$ 40

**(2)**

*RS* and *TU* are parallel lines.
*PQ* is a straight line.




An angle of size 125° is shown on the diagram.

(b) (i) Write down the letter of one other angle of size 125°
Give a reason for your answer.

b → vertically opposite angles are equal.

or d → corresponding angles are equal.

**(2)**

(ii) Explain why $a + b + c = 235°$

$55 + 125 + 55 = 235$

or

$360 - 125 = 235$

angles around a point sum to 360°

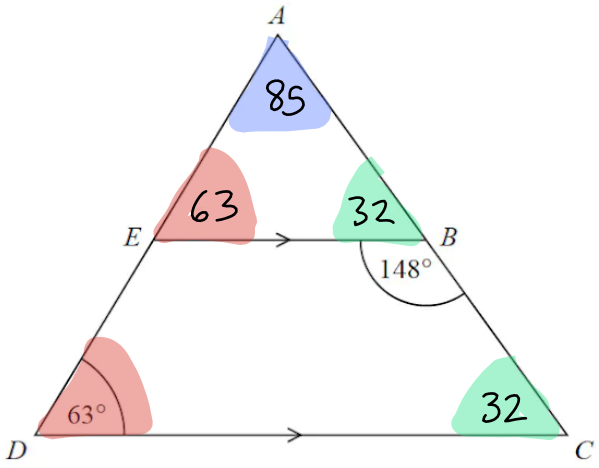
**(1)**

**(Total for Question 12 is 5 marks)**

*[Edexcel, GCSE, Summer 2019, Paper 1F, Q12]*

**5**

*ADC* is a triangle.




*AED* and *ABC* are straight lines.
*EB* is parallel to *DC*.

Angle *EBC* = 148°
Angle *ADC* = 63°

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

EDC = AEB = 63° corresponding angles are equal.

EBA = 32° angles on a straight line sum to 180°

EAB = 85° angles in a triangle sum to 180°

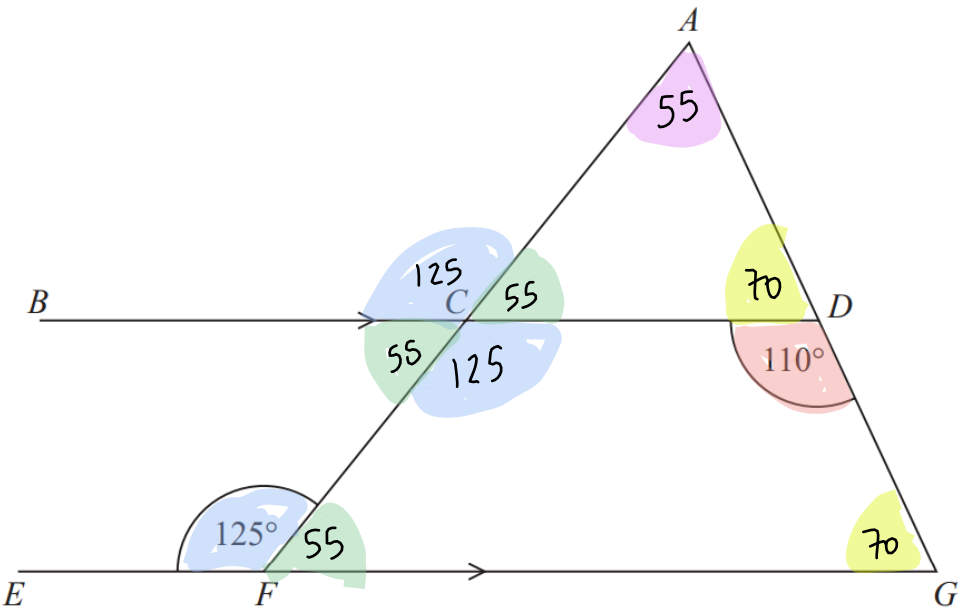
$63 + 32 + 85 = 180^\circ$

**(Total for Question 25 is 5 marks)**

*[Edexcel, GCSE, Autumn 2020, Paper 1F, Q25]*

**6**

*ACF* and *ADG* are straight lines.
*BCD* and *EFG* are parallel lines.




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

CFG = 55° [angles on a straight line sum to 180°]

ADC = 70° [angles on a straight line sum to 180°]

ACD = CFG = 55° [corresponding angles are equal]

CAD = 55° [angles in a triangle sum to 180°]

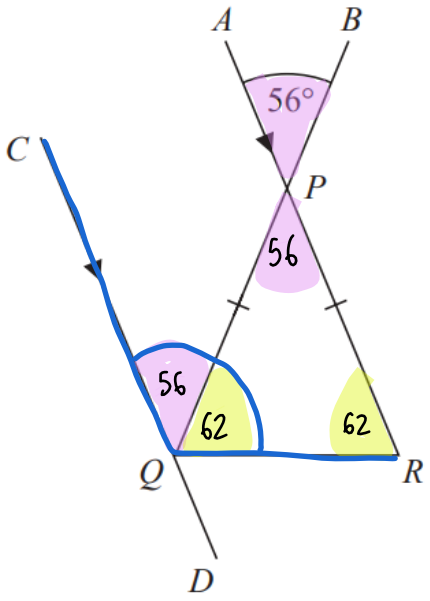
Triangle CAD is isosceles as DCA = CAD = 55° [base angles are equal]

**(Total for Question 22 is 5 marks)**

*[Edexcel, GCSE, Summer 2023, Paper 3F, Q22]*

**7**

In the diagram, $PQR$ is an isosceles triangle with $PQ = PR$.




$180 - 56 = 124$

$124 \div 2 = 62°$

$APR$ and $CQD$ are parallel lines.
$BPQ$ is a straight line.

Angle $APB = 56°$

Work out the size of angle $CQR$.
Give a reason for each stage of your working.

$CQR = 56 + 62 = 118°$

$QPR = APB = 56°$ [vertically opposite angles are equal]

$PQR = PRQ = 62°$ [base angles in an isosceles are equal]

$CQP = ABP = 56°$ [corresponding angles are equal]

**(Total for Question 20 is 5 marks)**

*[Edexcel, GCSE, Summer 2022, Paper 3F, Q20]*