Name ANSWERS	Class

MATHS TEACHER HUB

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Angles in parallel lines

(9 – 1) Topic booklet

Foundation

These questions have been collated from previous years GCSE Mathematics papers.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.	Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**
- If the question is a **1F** question you are not allowed to use a calculator.
- If the question is a **2F** or a **3F** question, you may use a calculator to help you answer.

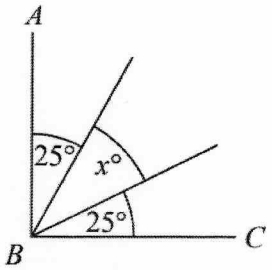
Information

- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

12 AB and BC are perpendicular lines.



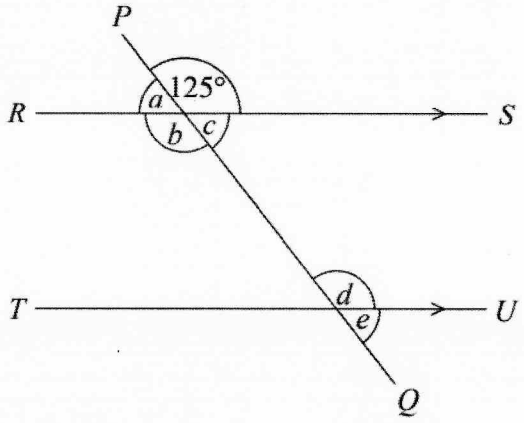
90
-50
40

(a) Find the value of x.

$x =$ 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 = 125° because vertically opposite angles are equal
d = 125° because corresponding angles are equal

(2)

(ii) Explain why $a + b + c = 235°$

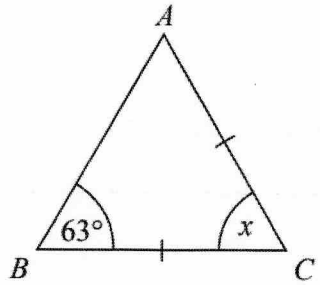
a = 55°
b = 125°
c = 55°

55 + 125 + 55 = 235

(1)

(Total for Question 12 is 5 marks)

15 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.

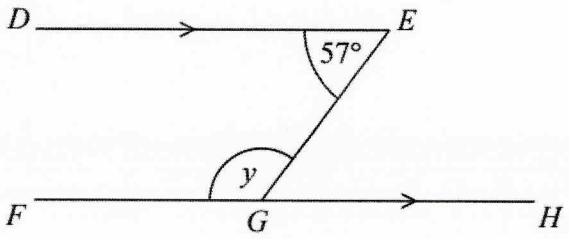
(a) Explain why.

BAC = 63° base angles of an isosceles triangle are equal

$x = 54°$

(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
$y = 180° - 57°$ $y = 123°$	because angles on a straight line add up to 180°

One of William's reasons is wrong.

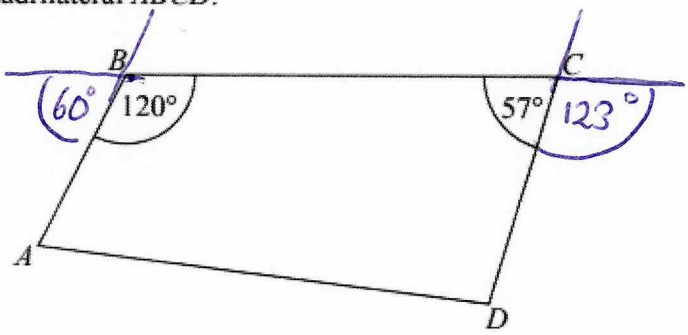
(b) Write down the correct reason.

EGH = 57° because alternate angles are equal

(1)

(Total for Question 15 is 2 marks)

16 The diagram shows a quadrilateral *ABCD*.

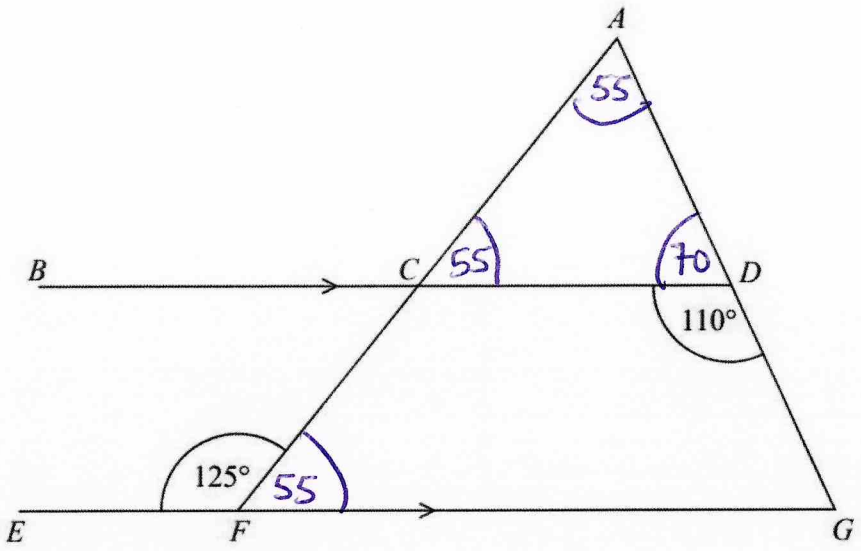


Is *AB* parallel to *DC*?
You must give your reasoning.

AB and DC are not parallel.

(Total for Question 16 is 3 marks)

22 *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.

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

CFG = 55° because angles on a straight line add up to 180°

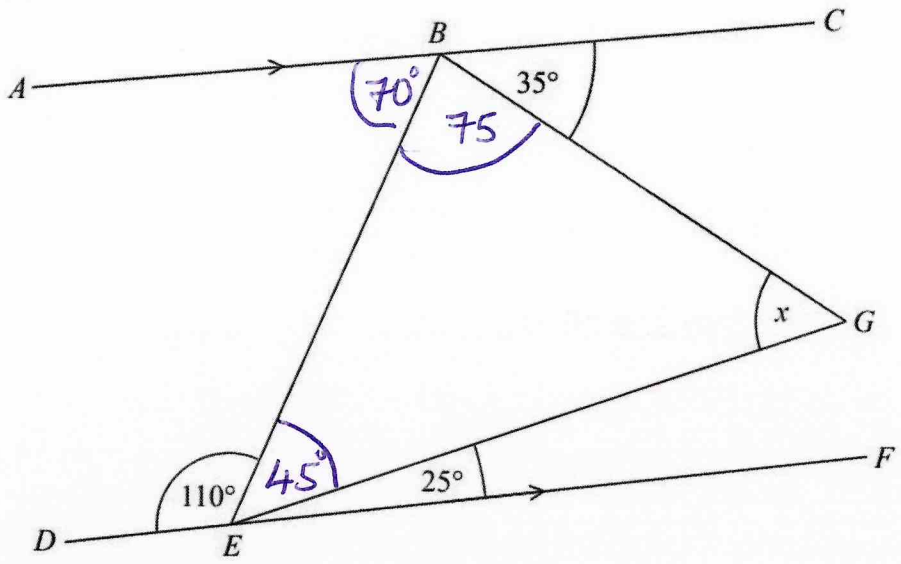
ACD = 55° because it is corresponding to CFG

CAD = 55° because angles in a triangle add to 180°

CAD is an isosceles triangle, as it has two identicle angles.

(Total for Question 22 is 5 marks)

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.

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

ABE = 70° because supplementary angles add up to 180° (Co-interior)

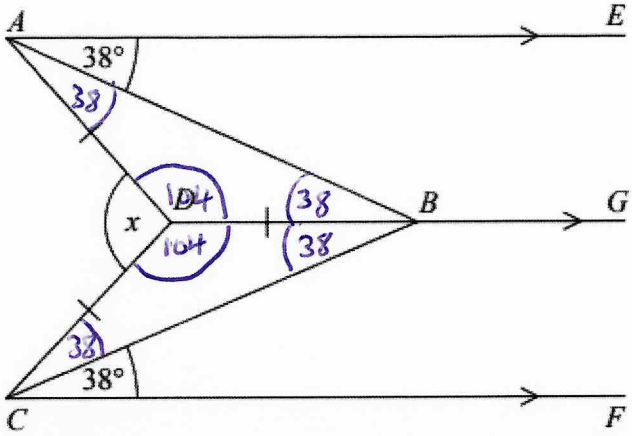
EBG = 75° because angles on a straight line add up to 180°

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

.....°

(Total for Question 22 is 4 marks)

23



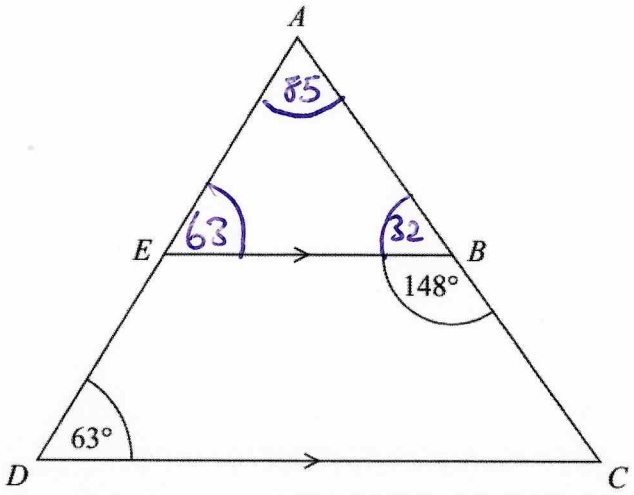
AE, *DBG* and *CF* are parallel.
DA = *DB* = *DC*.
Angle *EAB* = angle *BCF* = 38°

Work out the size of the angle marked *x*.
You must show your working.

$x = 152$ °

(Total for Question 23 is 3 marks)

25 *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.

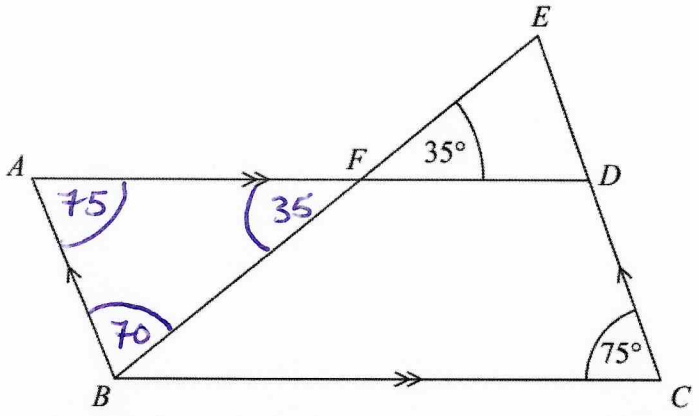
ABE = 32° because angles on a straight line add up to 180°

AEB = 63° because corresponding angles are equal

EAB = 85° because angles in a triangle add up to 180°

(Total for Question 25 is 5 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.

AFB = 35° because vertically opposite angles are equal.

BAF = 75° because opposite angles of a parallelogram are equal.

ABF = 70° because angles in a triangle add to 180°

(Total for Question 25 is 4 marks)