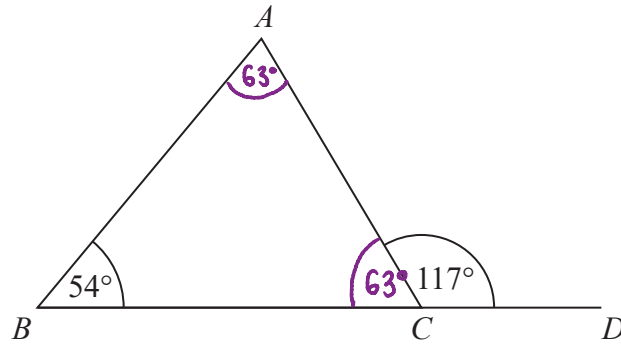


1.



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.

Isosceles triangle is a triangle with 2 equal angles and 2 equal side lengths

$$\begin{aligned}\angle ACB &= 180 - 117 \\ &= 63^\circ\end{aligned}$$

because angles on a straight line add to 180°

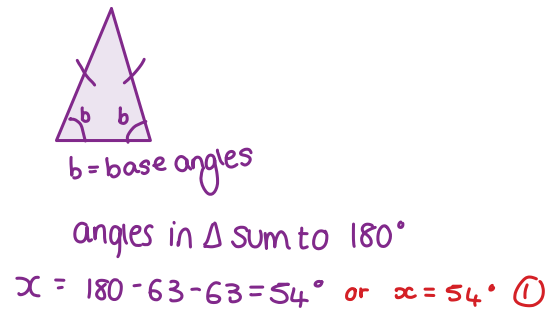
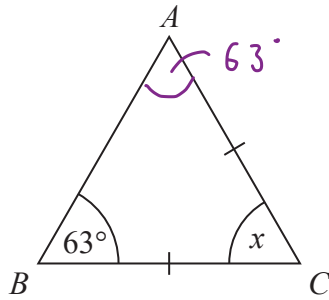
$$\begin{aligned}\angle BAC &= 180 - 63 - 54 \\ &= 63^\circ\end{aligned}$$

because all angles in a triangle add up to 180°

Triangle ABC is an isosceles triangle because two of the angles are equal in size

(Total for Question 1 is 4 marks)

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



She writes

$x = 63^\circ$ because **base angles of an isosceles triangle** are equal.

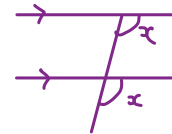
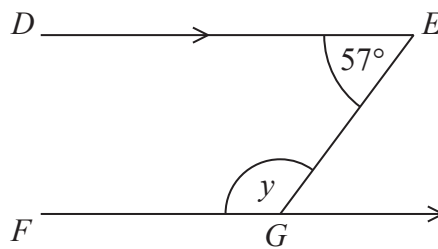
Mary is wrong. x lies between the two equal sides (AC and BC), so is not a base angle.

(a) Explain why.

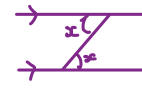
x is not a base angle. (1)

(1)

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



F = corresponding angles



Z = alternate angles

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°

The angles in the diagram are alternate, not corresponding.

One of William's reasons is **wrong**.

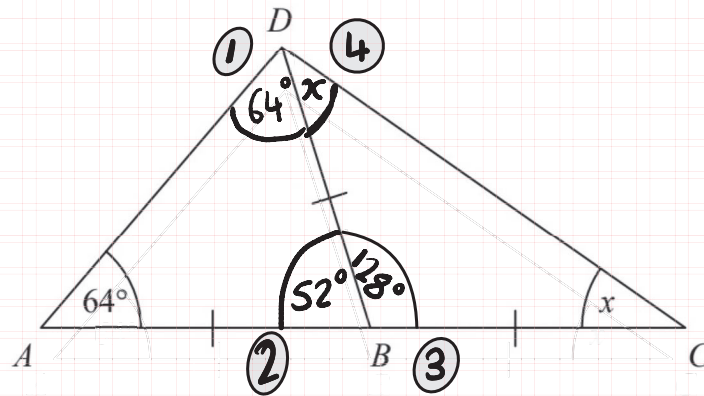
(b) Write down the **correct** reason.

alternate angles are equal.

(1)

(Total for Question is 2 marks)

3.



ABC is a straight line.

$AB = BC = BD$.

Angle $DAB = 64^\circ$

Work out the size of the angle marked x .

Give a reason for each stage of your working.

- ① base angles of isosceles triangle are equal (1)
- ② $180 - 64 - 64 = 52^\circ$ Since sum of angles in triangle = 180° (1)
- ③ $180 - 52 = 128^\circ$ Since sum of angles on straight line = 180° (1)
- ④ $x + x + 128 = 180$ Since base angles in isosceles triangle are equal and sum of angles in triangle = 180° (1)
 $2x + 128 = 180$
 $2x = 52$
 $x = 26^\circ$