GCSE Foundation (5 – 1)

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Mathematical Reasoning Questions

(Angles) – Set 1

Solutions

The questions are repeated here for your convenience

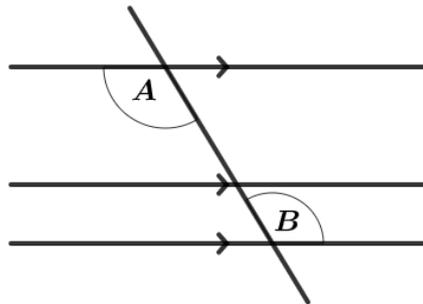|	
1	Here is a diagram showing angles Q and R Jessica says, 'Since angles Q and R are on a straight line, they must add up to 180°'. Comment on the accuracy of Jessica's statement. **<u>Solution</u>** Jessica is inaccurate because, the angles Q and R are not at the same point on the straight line. Therefore, $Q + R \neq 180°$ **[1mark]**

2	Here is a diagram
	
	 What is the relationship between angle A and angle B?
	   a) Alternate angles
	   b) Corresponding angles
	   c) Co-interior angles
	   d) Vertically opposite angles
	 Correct Answer: A **[1mark]**

3	Answer **True** or **False** to the following statements
	   a) Alternate angles add up to 180° **False**
	   b) Corresponding angle are equal **True**
	   c) Vertically opposite angles add up 360° **False**
	   d) Co – interior angles add up 180° **True**
	
	 [4marks]

| 4 | The diagram below shows three circles which touch at their circumferences. A, B and C are the centres of the circles. The circles with centres at B and C have the same radii
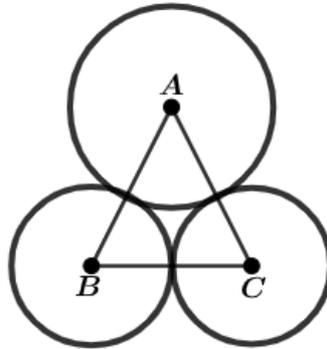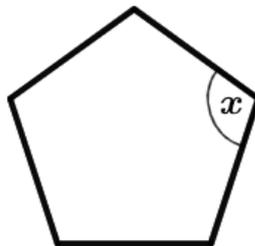

Which of the statements is **true** about triangle ABC? Choose one answer only
  a) It is Equilateral
  b) It is isosceles
  c) It is scalene
  d) It must be right angled
Correct Answer: B   **[1mark]** |
|---|---|
| 5 | Here is a regular pentagon. Calculate the size of angle x

Joanne's Answer

Since the shape is regular, all the angles will be equal.
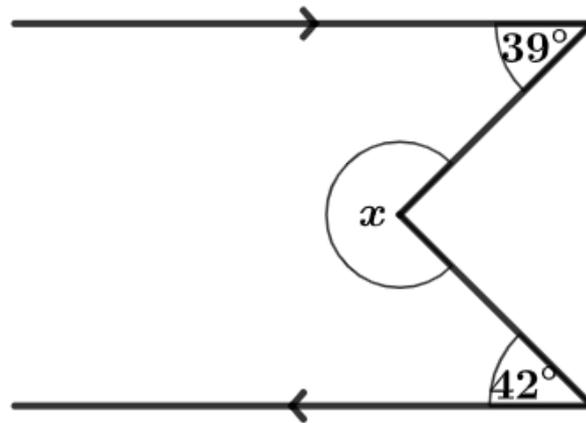
Therefore, $5x = 360$

So, $x = 360 \div 5 = 72$

What mistake did Joanne make?

Solution

Sum of angles in a pentagon is $540°$ and not $360°$ **[1mark]** |
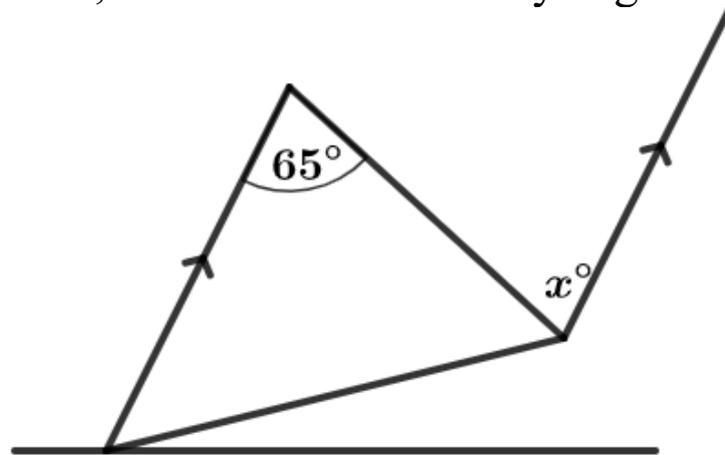
6	Calculate the size of angle *x* from the diagram below

   a) $80°$
   b) $279°$
   c) $321°$
   d) $318°$
Correct answer: B   **[1mark]**

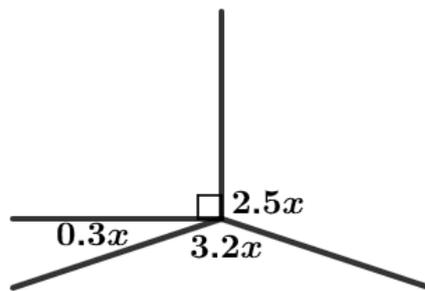|	
7	In the diagram below, choose the reason why angle *x* is $65°$

Choose one answer
   a) Corresponding Angles
   b) Co – interior angles
   c) Alternate angles
   d) Angles in a triangle

Correct Answer: C   **[1mark]**

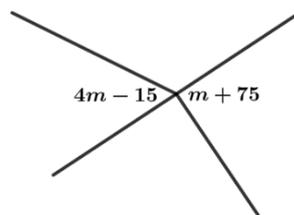|	

8	Calculate the size of the largest angle in the diagram below
	
	Choose one answer
	   a) 185°
	   b) 140°
	   c) 144°
	   d) 192°
	Solution
	$0.3x + 3.2x + 2.5x + 90 = 360$
	$6x = 270$ Therefore, $x = 45$
	Largest angle will be $45 \times 3.2 = 144$
	Correct Answer: C **[2marks]**

9	Calculate the value of m from the diagram below **Alfie's Answer** $4m - 15 = m + 75$ {Vertically opposite angles are equal} $3m = 90$ $m = 30°$ Alfie is wrong. Explain why **Solution** The angles expressed in terms of m are not vertically opposite angles and therefore are not equal. Even though the angles share the same vertex, the lines forming the angles are not straight at the point where the angle is formed. **[1mark]**

10 The diagram below shows two triangles joined at point D
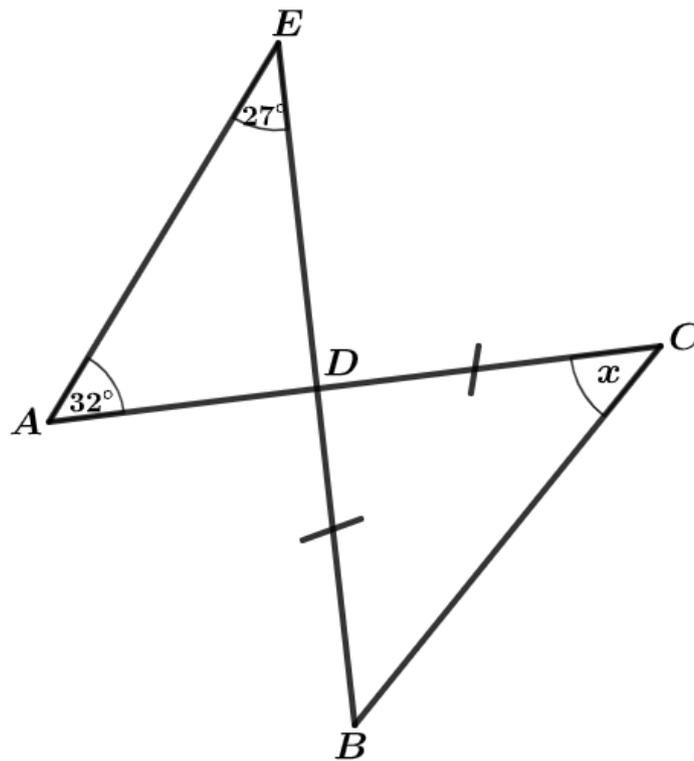
Give the reasons why angle $x = 29.5°$

Solution

Angle ADE = $180 - 32 - 27 = 121$ {Angles in a triangle}

Therefore, Angle BDC = 121°   {Vertically opposite angles}

So, $180 - 121 = 59$

Hence, $x = 59 \div 2 = 29.5$ {Angles in an isosceles triangle}

[2marks]