4.1 Geometry: Angles and Shapes: 30-minute Pack

Calculator allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 An isosceles triangle has an apex angle of 40 degrees. Work out the size of each base angle.

(2)

2 In a triangle, two of the interior angles are 48 degrees and 63 degrees. Work out the exterior angle at the third vertex.

(2)

3 A boat sails from harbour H to a buoy B on a bearing of 062 degrees. At B, the boat changes course and sails to a lighthouse L on a bearing of 155 degrees. Points H, B and L form a triangle.

(a) State the bearing of H from B. **(1)**

(b) Hence work out angle HBL, the interior angle of the triangle at B. **(2)**

(c) Given that angle BHL = 50 degrees, work out angle BLH. **(2)**

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4 In triangle XYZ, angle X = 52 degrees and angle Y = 61 degrees. Work out angle Z.

(1)

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5 Write down the sum of the interior angles of any quadrilateral.

(1)

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6 State whether each angle is acute, right angle, obtuse, straight or reflex.

(a) 35 degrees **(1)**

(b) 90 degrees **(1)**

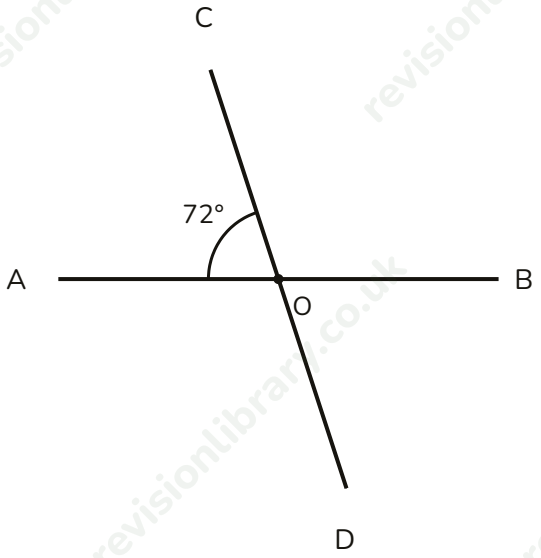
(c) 128 degrees **(1)**

(d) 200 degrees **(1)**

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7 Two straight lines AB and CD cross at point O. Angle AOC = 72 degrees.

Diagram NOT accurately drawn



(a) Write down the size of angle BOD, giving a reason for your answer. **(2)**

.....

(b) Work out the size of angle AOD, giving a reason for your answer. **(2)**

.....

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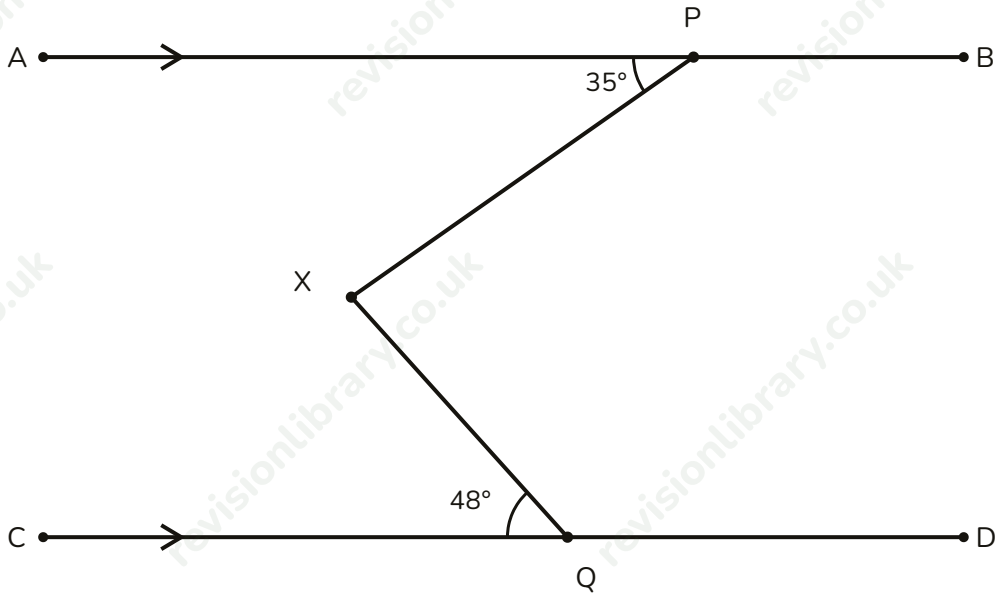
8 A quadrilateral has opposite sides equal and four right angles.
Write down the mathematical name of the quadrilateral.

(1)

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9 Lines AB and CD are parallel. A point X lies between the two lines. X is joined to a point P on line AB and to a point Q on line CD. Angle APX (between PA and PX, on the side facing X) is 35 degrees, and angle CQX (between QC and QX, on the side facing X) is 48 degrees.

Diagram NOT accurately drawn



(a) By drawing a line through X parallel to both AB and CD, show that angle PXQ = 83 degrees. **(4)**

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Mark scheme · 4.1 Geometry: Angles and Shapes: 30-minute Pack

Question 1

(180 - 40) / 2 or equivalent method **M1**

70 cao **A1**

Answer: **70 degrees**

Question 2

use the exterior angle theorem, exterior angle = sum of the other two interior angles **M1**

111 cao **A1**

Answer: **111 degrees**

Question 3

(a) 242 cao **B1**

(a) Answer: **242 degrees**

(b) find the difference between the bearing of H from B (242) and the bearing of L from B (155) **M1**

(b) 87 cao **A1**

(b) Answer: **87 degrees**

(c) 180 - 87 - 50 or equivalent method **M1**

(c) 43 cao **A1**

(c) Answer: **43 degrees**

Question 4

67 cao **B1**

Answer: **67 degrees**

Question 5

360 degrees cao **B1**

Answer: **360 degrees**

Question 6

(a) acute **B1**

(a) Answer: **Acute**

(b) right angle **B1**

(b) Answer: **Right angle**

(c) obtuse **B1**

(c) Answer: **Obtuse**

(d) reflex **B1**

(d) Answer: **Reflex**

Question 7

(a) angle BOD = 72 degrees **B1**

(a) correct reason given, e.g. vertically opposite angles are equal **B1**

(a) Answer: **Angle BOD = 72 degrees (vertically opposite to angle AOC)**

(b) angle AOD = 108 degrees **B1**

(b) correct reason given, e.g. angles on a straight line (CD) add up to 180 degrees, or vertically opposite to angle BOC **B1**

(b) Answer: **Angle AOD = 108 degrees**

Question 8

rectangle cao (accept square) **B1**

Answer: **rectangle**

Question 9

(a) a line through X parallel to AB and CD is constructed, splitting angle PXQ into two parts **M1**

(a) each part correctly identified as alternate to one of the given angles (35 and 48 degrees) using the parallel lines **M1**

(a) 35 + 48 used to combine the two parts **A1**

(a) cso: angle PXQ = 83 degrees, matching the given statement **A1**

(a) Answer: **Angle PXQ = 83 degrees (shown)**

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