4.4 Angles: Lines, Points and Triangles: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 On a straight line three adjacent angles are x degrees, x + 20 degrees and 2x degrees. The three add to 180 degrees. Find x.

(2)

---

2 At a point a straight line and another line form four angles. Two adjacent angles are 70 degrees and 3x degrees and together they make a straight line. Find x.

(2)

---

3 A triangle has angles (2x) degrees, (3x - 10) degrees and (x + 20) degrees. Work out x.

(3)

---

4 Stretch question. A point has four angles around it made by two crossing lines. The four angles are a, b, c and d in order. Given that a = 2b, and that opposite angles are equal, find b and d.

(4)

© Revision Library | revisionlibrary.co.uk

5 In triangle ABC, angle A = 85° and angle B = 71°. The side AC is extended to D, beyond C. Work out the size of the exterior angle BCD.

(2)

---

6 At a point, three angles are 120 degrees, 90 degrees and x degrees. Work out x.

(1)

---

7 Two straight lines cross. One of the angles formed is 44°. Write down the size of the angle opposite it and give a reason.

(2)

---

8 Three angles of a quadrilateral are 112°, 117° and 82°. Work out the fourth angle and say whether the quadrilateral could be a parallelogram.

(3)

---

9 Triangle PQR is isosceles with PQ = PR. Angle QPR = 70°. Work out angle PQR.

(3)

© Revision Library | revisionlibrary.co.uk

10 Two straight lines cross. One angle is 37 degrees. State the vertically opposite angle.

(1)

11 The three interior angles of a triangle are x degrees, 2x degrees and 3x degrees. Find x.

(2)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 4.4 Angles: Lines, Points and Triangles: 30-minute Pack

Question 1

forms equation x + (x+20) + 2x = 180	M1
x = 40 cao	A1

Answer: **40**

Question 2

sets up 70 + 3x = 180 or equivalent	M1
x = 36.666... so x = 36 2/3 or x = 110/3 degrees cao	A1

Answer: **110/3**

Question 3

forms equation 2x + (3x-10) + (x+20) = 180 or equivalent	M1
simplifies to 6x + 10 = 180 and finds 6x = 170	M1
x = 170/6 = 85/3 cao	A1

Answer: **85/3**

Question 4

uses opposite angles equal to get a = c and b = d	M1
uses angles on a straight line (a linear pair) to get a + b = 180	M1
substitutes a = 2b to solve 2b + b = 180 to get b = 60	M1
b = 60 degrees and d = 60 degrees cao	A1

Answer: **b = 60 degrees, d = 60 degrees**

Question 5

85 + 71 or 180 - 24	M1
156° cao	A1

Answer: **156°**

Question 6

x = 150 degrees cao	B1

Answer: **150 degrees**

Question 7

44°	B1
vertically opposite angles are equal	B1

Answer: **44° (vertically opposite angles are equal)**

Question 8

360 - 311	M1
49°	A1
parallelogram needs opposite angles equal; check pairs	B1

Answer: **49°; it cannot be a parallelogram**

Question 9

180 - 70	M1
(110) ÷ 2	M1
55° cao	A1

Answer: **55°**

Question 10

37 degrees cao	B1

Answer: **37 degrees**

Question 11

uses x + 2x + 3x = 180 to form 6x = 180	M1
x = 30 cao	A1

Answer: **30**

© Revision Library | revisionlibrary.co.uk