# 2.12-3 Angles and Shape: Practice Set 3: 30-minute Pack

GL ASSESSMENT GL · Calculators not allowed · about 30 minutes

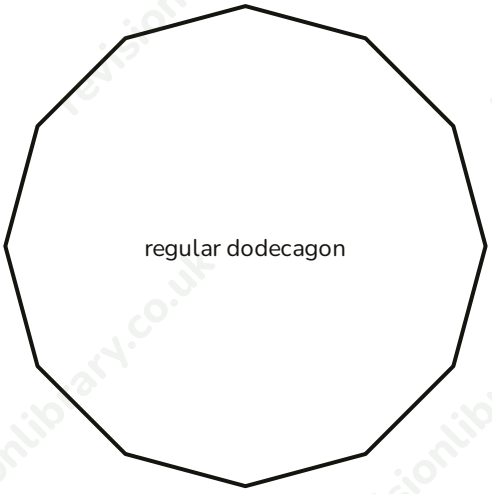
Total Marks

Name: _____ Date: ____ / ____ / _____

**Answer ALL questions. Show all your working.**

**1** A regular dodecagon has twelve equal sides and twelve equal angles.

Diagram NOT accurately drawn




(not to scale)

**(a)** Calculate the size of one exterior angle of the dodecagon. **(2)**

**(b)** Hence calculate the size of one interior angle of the dodecagon. **(2)**


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**2** Calculate the sum of the interior angles of a nonagon (a 9-sided polygon).

**(2)**


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**3** State the type of triangle described by each set of angles.

**(a)** 42 degrees, 68 degrees and 70 degrees. **(1)**

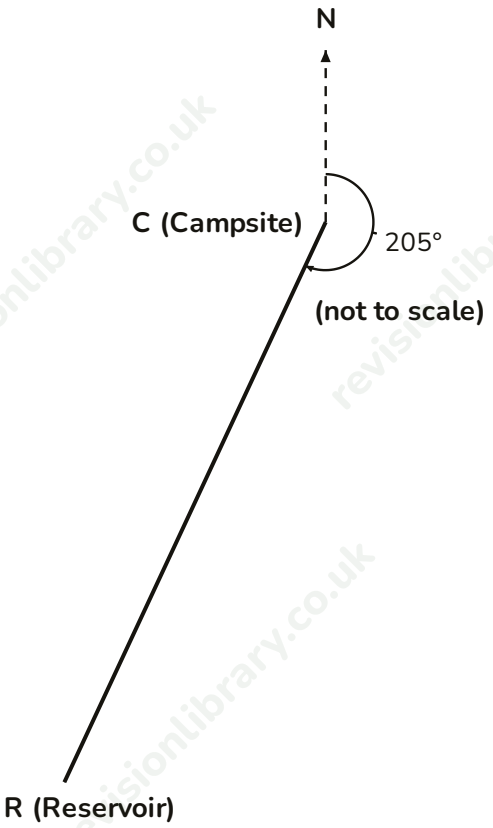
**(b)** 90 degrees, 63 degrees and 27 degrees. **(1)**

**(c)** 55 degrees, 55 degrees and 70 degrees. **(1)**

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**4** The bearing of a reservoir R from a campsite C is 205 degrees. Calculate the bearing of the campsite C from the reservoir R (the back bearing).

Diagram NOT accurately drawn




**(2)**


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**5** Complete the table by stating the number of lines of symmetry and the order of rotational symmetry for each shape.

**(a)** A regular hexagon: state the number of lines of symmetry and the order of rotational symmetry. **(2)**

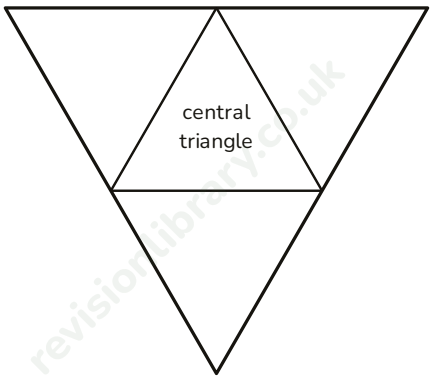
**(b)** A kite that is not a rhombus: state the number of lines of symmetry and the order of rotational symmetry. **(2)**

**(c)** A rhombus that is not a square: state the number of lines of symmetry and the order of rotational symmetry. **(2)**

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**6** The diagram shows a net made from four identical equilateral triangles, arranged with one central triangle and a further triangle attached to each of its three sides. Which 3D shape does this net fold up to make?

Diagram NOT accurately drawn



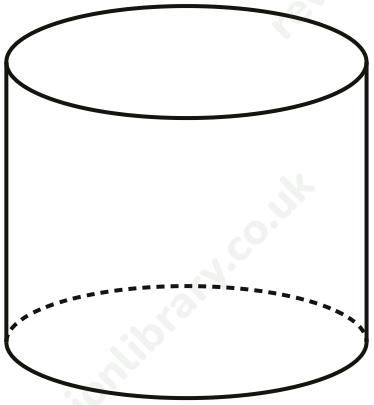

(not to scale)

- ☐ A) Square-based pyramid
- ☐ B) Triangular prism
- ☐ C) Tetrahedron (triangular-based pyramid)
- ☐ D) Octahedron


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**7** A cylinder has one curved surface and two flat circular faces (count the curved surface as one face in total).

Diagram NOT accurately drawn



(not to scale)

**(a)** State the total number of faces of a cylinder. **(1)**

**(b)** State the number of vertices of a cylinder. **(1)**

**(c)** State the number of edges of a cylinder. **(1)**


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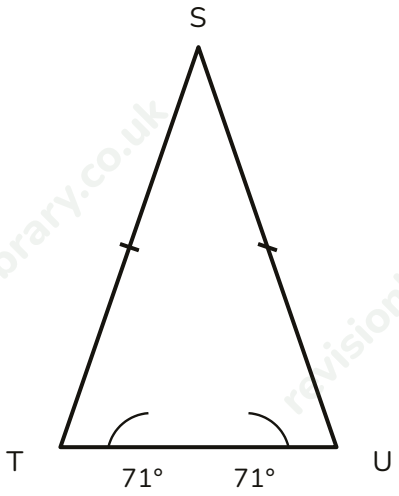
**8** Points A and B have coordinates A(2, 7) and B(8, -3).

**(a)** Calculate the coordinates of the midpoint of the line segment AB. **(2)**

**(b)** Point C has coordinates (-3, 4). It is translated 5 units right and 7 units down. Write down the coordinates of the image of C after this translation. **(2)**

**9** Triangle STU is isosceles with ST = SU. Each base angle, angle STU and angle SUT, is 71 degrees. Calculate the size of the apex angle, angle TSU.

Diagram NOT accurately drawn



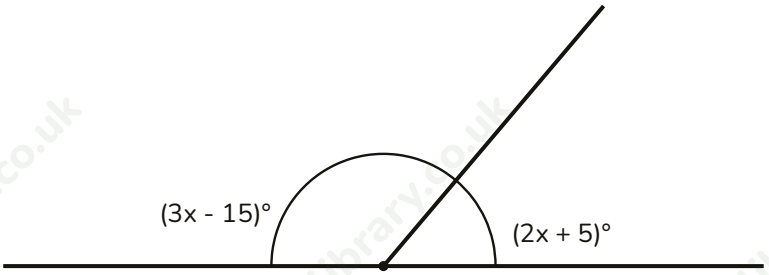

(not to scale)

**(3)**


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**10** A straight line meets another straight line, making two angles on that line: (2x + 5) degrees and (3x - 15) degrees, as shown in the diagram.

Diagram NOT accurately drawn




Not to scale

**(a)** Form an equation using the fact that angles on a straight line sum to 180 degrees, and solve it to find the value of x. **(2)**

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**(b)** Hence calculate the size of each of the two angles. **(2)**

.....


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# Mark scheme · 2.12-3 Angles and Shape: Practice Set 3: 30-minute Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

## Question 1

(a) 360 / 12 seen **M1**
(a) 30 degrees cao **A1**
**(a) Answer: 30 degrees**
(b) 180 - their (a) seen (ft) **M1**
(b) 150 degrees cao (ft) **A1**
**(b) Answer: 150 degrees**

## Question 2

(9 - 2) x 180 seen **M1**
1260 degrees cao **A1**
**Answer: 1260 degrees**

## Question 3

(a) scalene cao **B1**
**(a) Answer: scalene**
(b) right-angled scalene cao (accept right-angled) **B1**
**(b) Answer: right-angled scalene**
(c) isosceles cao **B1**
**(c) Answer: isosceles**

## Question 4

205 - 180 seen **M1**
025 degrees cao (accept 25 degrees) **A1**
**Answer: 025 degrees**

## Question 5

(a) 6 lines of symmetry cao **B1**
(a) order of rotational symmetry 6 cao **B1**
**(a) Answer: 6 lines of symmetry, order 6 rotational symmetry**
(b) 1 line of symmetry cao **B1**
(b) order of rotational symmetry 1 cao **B1**
**(b) Answer: 1 line of symmetry, order 1 rotational symmetry**
(c) 2 lines of symmetry cao **B1**
(c) order of rotational symmetry 2 cao **B1**
**(c) Answer: 2 lines of symmetry, order 2 rotational symmetry**

## Question 6

C cao **B1**
**Answer: C) Tetrahedron (triangular-based pyramid)**

## Question 7

(a) 3 cao **B1**
**(a) Answer: 3**
(b) 0 cao **B1**
**(b) Answer: 0**
(c) 2 cao **B1**
**(c) Answer: 2**

## Question 8

(a) ((2 + 8) / 2, (7 + (-3)) / 2) seen **M1**
(a) (5, 2) cao **A1**
**(a) Answer: (5, 2)**
(b) (-3 + 5, 4 - 7) seen **M1**
(b) (2, -3) cao **A1**
**(b) Answer: (2, -3)**

## Question 9

71 + 71 = 142 seen **M1**
180 - 142 seen **M1**
38 degrees cao **A1**
**Answer: angle TSU = 38 degrees**

## Question 10

(a) 2x + 5 + 3x - 15 = 180 seen, i.e. 5x - 10 = 180 **M1**
(a) x = 38 cao **A1**
**(a) Answer: x = 38**
(b) 81 degrees cao (ft) **B1**
(b) 99 degrees cao (ft) **B1**
**(b) Answer: 81 degrees and 99 degrees**


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