

3D Shapes and Nets

Maths

Level 2

Exam-style practice · 8 questions · 24 marks · Calculator allowed

Remember

Faces are the flat surfaces, **edges** are where two faces meet, **vertices** are the corners.

Solid	Faces	Edges	Vertices
Cube / cuboid	6	12	8
Triangular prism	5	9	6
Square-based pyramid	5	8	5
Cylinder	3 (2 flat, 1 curved)	2	0

A **net** is the 2D shape that folds up into the solid. A cuboid's net has six rectangles; opposite faces are identical. A cylinder's net is a rectangle and two circles.

Net → surface area: add up the areas of every face in the net.

Section A – Properties

1. A shoebox is a cuboid. Write down its number of faces, edges and vertices. (3 marks)

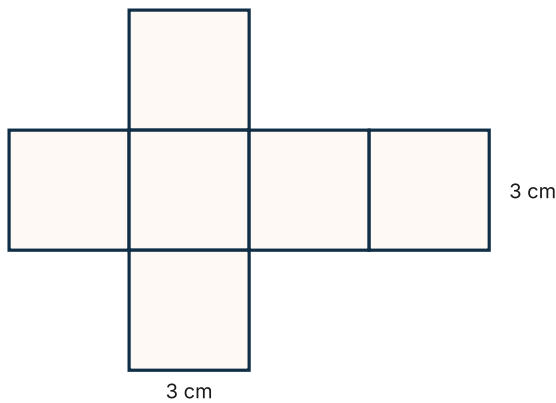
2. A Toblerone-style chocolate box is a triangular prism. How many faces does it have, and what shapes are they? (2 marks)

3. A tin of beans is a cylinder. Describe the shapes in its net. (2 marks)

4. Which of these solids has exactly 5 vertices: a cube, a triangular prism, a square-based pyramid, a cylinder? (1 mark)

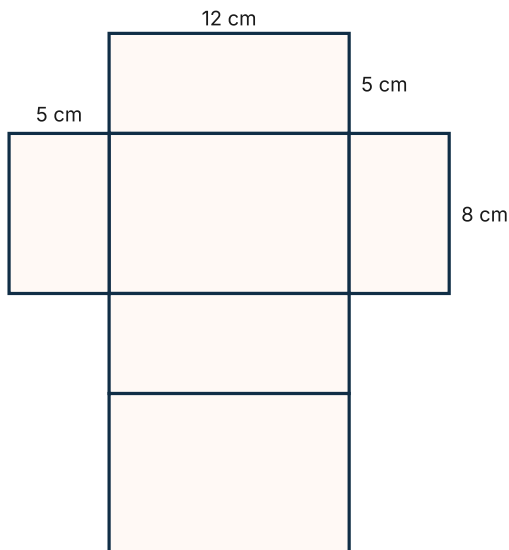
Section B – Nets

5. This is the net of a cube.



(a) What is the side length of the cube? (b) Find the total area of the net. (c) When folded, which face is opposite the top square? (4 marks)

6. This is the net of a cuboid box.



(a) Write down the dimensions of the box. (b) Find the total area of card needed. (c) The card is sold in A3 sheets of 42 cm by 29.7 cm. Does one sheet have enough card? Explain. (6 marks)

7. A cuboid is 10 cm by 6 cm by 4 cm. Sketch a net and label the dimensions of every face. (3 marks)

8. A cylinder has a radius of 4 cm and a height of 10 cm. What are the dimensions of the rectangle in its net? (3 marks)

3D Shapes and Nets – Answers

Level 2 · Working shown so you can check your method, not just the final number.

Want a tutor to mark your work? Functify Learning runs live 10-week Functional Skills Level 2 English and Maths courses (small groups, mock exam included) and a 5-day self-paced revision course. Start with our free mini mock test at functifylearning.co.uk.

Section A

1. **6 faces, 12 edges, 8 vertices.**
2. **5 faces:** 2 triangles (the ends) and 3 rectangles.
3. Two circles (top and bottom) and one rectangle (the curved surface unrolled).
4. **Square-based pyramid.**

Section B

5. (a) **3 cm.** (b) $6 \times 9 = \mathbf{54 \text{ cm}^2}$. (c) The square at the bottom of the vertical strip (two squares below it in the column).
6. (a) **$12 \text{ cm} \times 8 \text{ cm} \times 5 \text{ cm}$.** (b) Faces: $2 \times (12 \times 8) + 2 \times (12 \times 5) + 2 \times (8 \times 5) = 192 + 120 + 80 = \mathbf{392 \text{ cm}^2}$. (c) **Yes.** The net is 22 cm wide ($5 + 12 + 5$) and 26 cm tall ($5 + 8 + 5 + 8$), which fits inside $29.7 \text{ cm} \times 42 \text{ cm}$; its area (392 cm^2) is well under the sheet's $1,247 \text{ cm}^2$. Both the fit *and* the area should be checked for full marks.
7. Six rectangles: two 10×6 , two 10×4 , two 6×4 , arranged so that they fold (e.g. a 6×4 face at each end of a strip of four faces alternating 10×6 and 10×4).
8. Height 10 cm; width = circumference = $2 \times \pi \times 4 = \mathbf{25.1 \text{ cm}}$. So **$25.1 \text{ cm by } 10 \text{ cm}$.**

Where Level 2 students lose marks on this topic

- Counting a cuboid's faces from a picture (seeing 3) instead of knowing there are 6.
- Drawing a net with the right faces in a layout that cannot fold – opposite faces must not touch.
- Forgetting that the rectangle in a cylinder's net is as wide as the circumference, not the diameter.