Plans Elevations Nets

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

How many faces, edges and vertices does a triangular prism have?

Step 1 · Faces: 2 triangular ends + 3 rectangles

F = 5

Step 2 · Edges: 3 on each triangle + 3 along the length

E = 9

Step 3 · Vertices: 3 on each triangular end

V = 6

Answer: 5 faces, 9 edges, 6 vertices

Check: Euler: F + V − E = 5 + 6 − 9 = 2 ✓

2. Now try one with the steps

Sketch a net of a cuboid measuring 4 cm × 3 cm × 2 cm

Step 1 · A cuboid has 3 pairs of identical faces

Step 2 · Draw a strip of four faces that wrap round

Step 3 · Attach the two ends to one of the strip's faces

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. How many faces does a cube have? [1]

2. How many edges does a square-based pyramid have? [1]

3. How many vertices does a triangular prism have? [1]

4. Which 3D shape has a net made of two circles and a rectangle? [1]

5. What does the 'plan' of a 3D shape show? [1]

6. What shape is the front elevation of a square-based pyramid? [1]

7. What shape is the plan view of a cone standing on its base? [1]

8. How many faces does a hexagonal prism have? [1]

9. How many edges does a hexagonal prism have? [1]

10. A solid with flat faces has 8 faces and 12 vertices. Use Euler's rule $F + V - E = 2$ to find the number of edges. [2]

11. Find the total area of the net of a cuboid measuring 4 cm × 3 cm × 2 cm. [2]

12. A plan of cube stacks shows heights 2 and 1 in the back row and 1 and 0 in the front row. How many cubes are there? [1]

13. How many faces, edges and vertices does a pentagonal pyramid have? [3]

14. Can a straight row of six squares be folded into a cube? [1]

15. A solid has a circle plan and a triangle front and side elevations. What is it? [1]

4. Before you hand it in

Saying a cube has 9 edges after counting only the ones you can see in a drawing
Count systematically: top face 4 edges, bottom face 4 edges, 4 vertical edges = 12. Hidden lines are often drawn dashed.

Drawing the front elevation when asked for the plan
Plan = from ABOVE (like a map). Elevation = from the front or side (like the side of a building).

Thinking any arrangement of six squares folds into a cube
Imagine folding each square up. A row of six, or a 2 by 3 block, will not work — there are exactly 11 nets of a cube.

Drawing elevations with sloping lines to show depth
Plans and elevations are flat 2D views. Show only what you would see looking straight at the shape, with no perspective.