2D and 3D shapes

Name: _____ **Date:** _____



Mr Boston says: Euler's rule: faces + vertices − edges = 2 for these solids. Cube: 6 + 8 − 12 = 2.

A. 3D shapes

Check with Euler: faces + vertices − edges = 2 (not for curved shapes).

1 How many faces, edges and vertices does a cube have?

Answer: _____

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

Answer: _____

3 How many faces, edges and vertices does a square-based pyramid have?

Answer: _____

4 How many faces, edges and vertices does a cylinder have?

Answer: _____

B. 2D shapes and symmetry

5 How many lines of symmetry does a regular pentagon have?

Answer: _____

6 What is the order of rotational symmetry of a square?

Answer: _____

7 Name a quadrilateral with exactly one pair of parallel sides.

Answer: _____

8 Name a quadrilateral with four equal sides and no right angles.

Answer: _____

9 What do we call a triangle with no equal sides?

Answer: _____

10 How many sides does a heptagon have?

Answer: _____

11 Sketch a net of a cube. How many squares does it have?

Answer: _____

12 Is a square a rectangle? Explain.

Answer: _____

Answers for grown-ups

2D and 3D shapes

1. How many faces, edges and vertices does a cube have? → **6 faces, 12 edges, 8 vertices**
2. How many faces, edges and vertices does a triangular prism have? → **5 faces, 9 edges, 6 vertices**
3. How many faces, edges and vertices does a square-based pyramid have? → **5 faces, 8 edges, 5 vertices**
4. How many faces, edges and vertices does a cylinder have? → **3 faces, 2 edges, 0 vertices**
5. How many lines of symmetry does a regular pentagon have? → **5**
6. What is the order of rotational symmetry of a square? → **4**
7. Name a quadrilateral with exactly one pair of parallel sides. → **trapezium**
8. Name a quadrilateral with four equal sides and no right angles. → **rhombus**
9. What do we call a triangle with no equal sides? → **scalene**
10. How many sides does a heptagon have? → **7**
11. Sketch a net of a cube. How many squares does it have? → **6**
12. Is a square a rectangle? Explain. → **Yes: it has four right angles and opposite sides equal**