WONDERLEARNERZ PRIMARY ACADEMY â€¢ PRACTICE & ASSESSMENT WORKSHEET

2D Shapes and 3D Objects: Worksheet 4

Grade 5 | Mathematics | Ch 12: 2D Shapes and 3D Objects | Total Marks: 19 | Time: 45 Minutes

Student Name: _____ **Roll / ID No:** _____

Grade / Section: _____ **Date:** _____ **Score:** _____ / 19

Instructions: Section A (Q1-Q4): Choose the correct option (A, B, C, or D). Section B (Q5-Q9): Write your exact one-word or numerical answer. Section C & D (Q10-Q15): Write your detailed answers, corrections, and show all working steps neatly in the space provided.

Q1. How many faces, edges, and vertices does a standard triangular prism have? **[1 Mark]**

( ) A. 5 faces, 9 edges, 6 vertices
( ) B. 6 faces, 12 edges, 8 vertices
( ) C. 5 faces, 8 edges, 5 vertices
( ) D. 4 faces, 6 edges, 4 vertices

Q2. Which 3D solid has exactly 1 circular base, 1 curved surface, and 1 apex? **[1 Mark]**

( ) A. Cone
( ) B. Cylinder
( ) C. Sphere
( ) D. Pyramid

Q3. How many sides does a regular octagon have? **[1 Mark]**

( ) A. 8 sides
( ) B. 6 sides
( ) C. 7 sides
( ) D. 10 sides

Q4. What 2D shapes form the net of a square-based pyramid? **[1 Mark]**

( ) A. 1 square and 4 triangles
( ) B. 2 squares and 4 rectangles
( ) C. 5 triangles
( ) D. 1 square and 3 triangles

Q5. At the Eco-Friendly Solar Park, an architect constructs a geometric installation containing 4 cubes and 3 triangular prisms. How many total flat faces exist across all 7 shapes? **[1 Mark]**

Q6. A shipping crate in the shape of a rectangular cuboid has dimensions 5 m long, 3 m wide, and 2 m high. What is the total surface area of all 6 faces? **[1 Mark]**

Q7. A student glues together two identical wooden cubes face-to-face to form a single cuboid. How many flat faces does the new cuboid have? **[1 Mark]**

Q8. Solid Shape Riddle: 'I have 6 identical flat square faces, 12 equal edges, and 8 corners.' What shape am I? **[1 Mark]**

Q9. Euler's formula for polyhedra is Faces + Vertices - Edges = [?]. **[1 Mark]**

Q10. Lucas says: 'A cylinder has 2 edges and 2 vertices.' Explain Lucas's error and state the correct number of vertices on a cylinder. **[1 Mark]**

Q11. A student draws a net for a cube with 5 connected squares. Why cannot this net fold into a cube? **[1 Mark]**

Q12. Explain why a sphere cannot be formed by folding a flat sheet of 2D paper without cutting, stretching, or wrinkling. **[2 Marks]**

Q13. Why are triangles considered the most rigid and structurally stable geometric shape in engineering bridge trusses? **[2 Marks]**

Q14. Verify Euler's formula (F + V - E = 2) for a pentagonal prism. List its number of faces, vertices, and edges. **[2 Marks]**

Q15. A wooden cube has a side length of 4 cm. It is painted red on all outer surfaces and then cut into 1 cm unit cubes. How many 1 cm cubes have exactly 2 red faces? **[2 Marks]**