Geometry of 3-D Objects: Faces, Vertices, Edges & Nets

MEMORANDUM

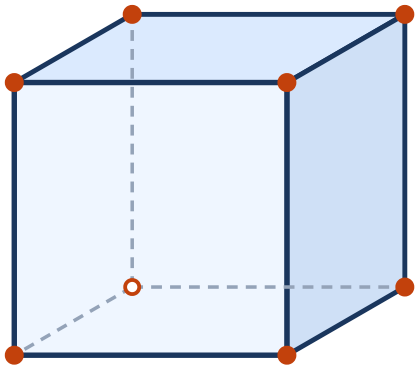
Name: ..... Class: .....

Date: .....

MARK ____ / 14

Answer all questions. Show all your working — marks are awarded for method as well as the final answer. **Teacher copy: accept any correct equivalent method.**

1 How many faces, vertices and edges does a cube have? (3)



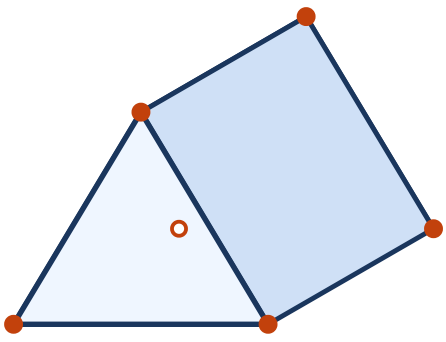
hidden edges are dashed

6 faces, 8 vertices, 12 edges ✓✓✓ (3)

2 State Euler's formula. (1)

F + V − E = 2 ✓ (1)

3 A solid has 5 faces and 6 vertices. How many edges? (2)



a triangular prism

5 + 6 − E = 2 → **E = 9** ✓✓ (2)

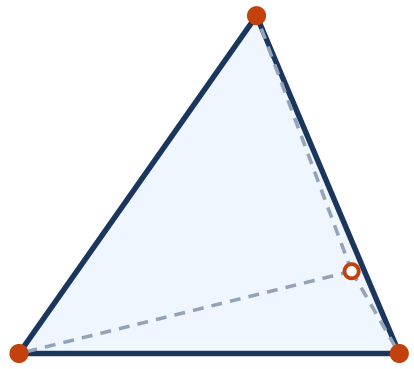
4 How many Platonic solids are there? (1)

> **Five** ✓ (1)

5 How many faces does an octahedron have, and what shape are they? (2)

> **8 triangular** faces ✓✓ (2)

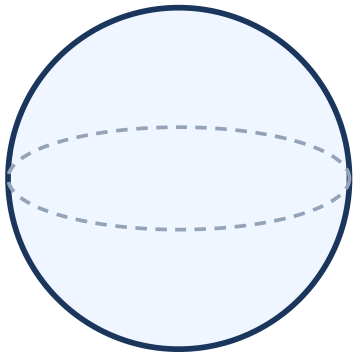
6 Check Euler's formula for a tetrahedron (4 faces, 4 vertices, 6 edges). (2)



a tetrahedron — 4 triangular faces

> F + V − E = 4 + 4 − 6 ✓ = **2**, so Euler's formula holds ✓ (2)

7 How many edges and vertices does a sphere have? (1)



no edges, no vertices

> **None** — a sphere has one curved surface only. ✓ (1)

8 How many squares are in the net of a cube? (1)

> **6**, one for each face ✓ (1)

9 A net has 2 circles and 1 rectangle. Which solid is it? (1)

> A **cylinder** ✓ (1)

TOTAL: 14 marks

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