∑ DANEMATHICS
FREE CAPS MATHS RESOURCES

GRADE 9 · GEOMETRY OF 3D OBJECTS

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

EXAM-STYLE CLASS TEST

MARKS	DURATION	QUESTIONS
34	55 minutes	3

Name: _____ Class: _____

Date: _____

MARK ____ / 34

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 A net is made of 1 square and 4 identical triangles. When it is folded, it makes a ... (1)

A) triangular prism
B) square pyramid
C) tetrahedron
D) cube

1.2 A tetrahedron has 4 faces and 4 vertices. Its number of EDGES is ... (1)

A) 6
B) 8
C) 12
D) 4

1.3 A prism with a hexagonal cross-section has ... faces. (1)

A) 12
B) 6
C) 7
D) 8

1.4 The difference between a prism and a pyramid is that a pyramid has ... (1)

A) no vertices
B) ONE base and triangular faces meeting at an apex
C) only curved surfaces
D) two identical parallel bases

1.5 Which solid has NO vertices at all? (1)

A) square pyramid
B) cube
C) cone
D) sphere

1.6 A net of a cube consists of ... (1)

A) 6 rectangles
B) 8 squares
C) 6 squares
D) 4 squares

1.7 A cylinder has ... (1)

A) 2 flat faces, 1 curved surface and 2 curved edges
B) 3 flat faces and 2 edges
C) 1 curved surface and no edges
D) 2 flat faces and 4 vertices

1.8 An octahedron has 8 faces and 12 edges. Its number of VERTICES is ... (1)

A) 20
B) 4
C) 6
D) 8

1.9 Which one of the following is NOT a Platonic solid? (1)

A) octahedron
B) cube
C) square pyramid
D) tetrahedron

1.10 Every point on the surface of a sphere is the same distance from ... (1)

A) the top of the sphere
B) the centre of the sphere
C) the nearest edge
D) the lowest point

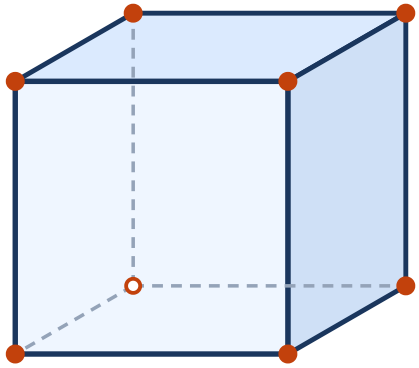
ANSWER GRID — CIRCLE YOUR ANSWERS FOR QUESTION 1

1.1	A	B	C	D
1.2	A	B	C	D
1.3	A	B	C	D
1.4	A	B	C	D
1.5	A	B	C	D
1.6	A	B	C	D
1.7	A	B	C	D
1.8	A	B	C	D
1.9	A	B	C	D
1.10	A	B	C	D

QUESTION 2

[12 MARKS]

The solid below is a cube.



a cube

2.1 Write down the number of faces, vertices and edges. (3)

2.2 Verify Euler's formula for this solid, and explain how the formula helps you to check a count. (3)

2.3 A different solid has 5 faces and 6 vertices. Use Euler's formula to find its number of edges, and name the solid. (3)

2.4 The net of a cylinder is 2 circles and 1 rectangle. The circles have a radius of 7 cm. Explain how long the long side of the rectangle must be, and calculate it. Use $\pi = \frac{22}{7}$. **(3)**

QUESTION 3 [12 MARKS]

Answer the questions below about 3-D objects. F is the number of faces, V the number of vertices and E the number of edges.

3.1 Name the Platonic solid whose faces are 12 regular pentagons, and write down its numbers of vertices and edges. **(3)**

3.2 An octahedron has 8 faces, 6 vertices and 12 edges. Verify Euler's formula for it, and then determine how many edges meet at each vertex. **(3)**

3.3 A prism has a hexagonal cross-section. Determine its number of faces, vertices and edges. **(4)**

3.4 Explain the difference between a prism and a pyramid. **(2)**

TOTAL: 34 marks

This question paper consists of 3 questions.

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