

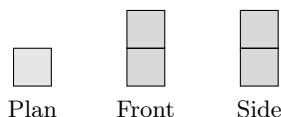
Foundation GCSE: Plans and Elevations

Name: _____

Class: _____

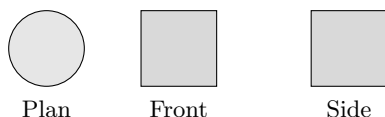
Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (10). Working out should be shown where appropriate.

1. The plan view, front elevation, and side elevation of a 3D block made of unit cubes are shown below.



Write down the total volume of the block in cubic units.

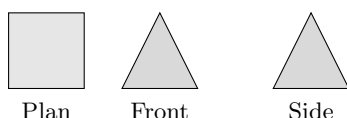
2. The orthogonal projections of a solid right cylinder are shown below.



What 3D shape do these projections represent?

3. A solid cuboid has a length of 4 cm, a width of 2 cm, and a height of 3 cm. Sketch the plan view of this cuboid, including the dimension measurements on your drawing.

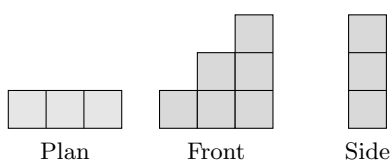
4. The projections of a solid 3D shape are shown below.



Describe the 3D shape represented by these views.

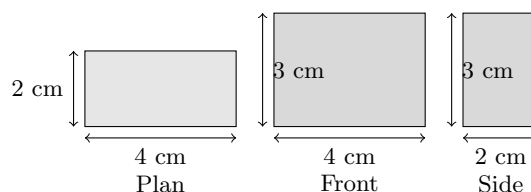
5. An L-shaped block is constructed from unit cubes. Its footprint spans 3 cm by 2 cm with one 2 cm by 1 cm corner section removed. Draw the plan view of this L-shaped block, labeling all outside edge lengths.

6. A staircase block made of unit cubes has the projections shown below.



Calculate the total area of its front elevation.

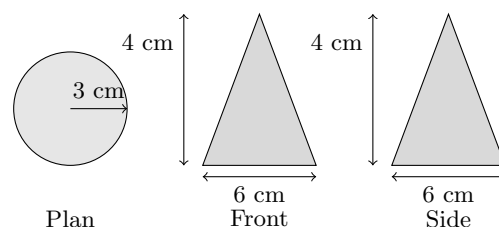
7. A solid cuboid has the orthogonal projections shown below.



Calculate the volume of the solid cuboid in cm^3 .

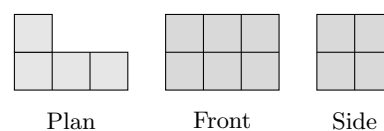
8. A solid right circular cylinder has a base radius of 3 cm and a height of 5 cm. Draw the plan view of this cylinder, clearly labeling the radius measurement.

9. A solid right circular cone has the orthogonal projections shown below.



Calculate the total surface area of the cone, giving your answer in terms of π .

10. A 3D block has an L-shaped plan view consisting of a 3 m by 1 m base with a 1 m by 2 m section attached on the left, and a uniform height of 2 m. Its projections are shown below.



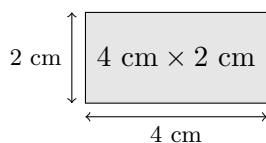
Calculate the total volume of the solid.

Answers & Worked Solutions

1. 2 units^3 : Height is 2 and base area is 1, so volume $= 1 \times 2 = 2$.

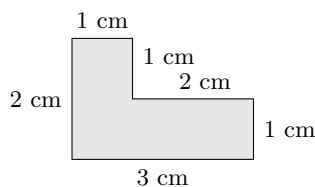
2. Cylinder : Circular plan view with rectangular side/front elevations form a cylinder.

3. Plan view is a 4 cm by 2 cm rectangle:



4. Square-based pyramid : Square plan with diagonal lines and triangular elevations indicate a pyramid.

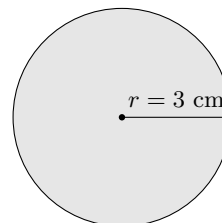
5. Plan view of the L-shaped block with dimensions:



6. 6 units^2 : Step heights are $1 + 2 + 3 = 6$ units of height with unit width 1.

7. 24 cm^3 : Dimensions are width 4, depth 2, height 3; Volume $= 4 \times 2 \times 3 = 24$.

8. Plan view of the cylinder with radius:



9. $24\pi \text{ cm}^2$: Slant height $l = \sqrt{3^2 + 4^2} = 5 \text{ cm}$; Base area $= \pi(3)^2 = 9\pi$; Curved area $= \pi(3)(5) = 15\pi$; Total $= 9\pi + 15\pi = 24\pi \text{ cm}^2$.

10. 8 m^3 : Plan area $= 3 \text{ m}^2 + 1 \text{ m}^2 = 4 \text{ m}^2$; Volume $= \text{Base area} \times \text{Height} = 4 \times 2 = 8 \text{ m}^3$.