

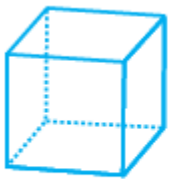
Chapter 6: Visualising Solid Shapes

NCERT Exemplar · Class 8 · Maths

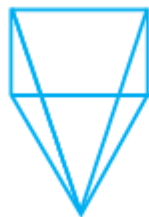
Questions

Question 1

Which of the following is not a polyhedron?



(a)



(b)



(c)



(d)

Solution

Solution:-

(c)

By definition, a polyhedron is regular if its faces are congruent regular polygons and the same number of faces meet at each vertex.

Question 2

Which of the following will not form a polyhedron?

(a) 3 triangles (b) 2 triangles and 3 parallelograms

(c) 8 triangles (d) 1 pentagon and 5 triangles

Solution

Solution:-

(a) 3 triangles

3 triangles will not form a polyhedron because it must have more than four faces. So, it is not possible in 3 triangles which have 3 faces only.

Question 3

Which of the following is a regular polyhedron?

- (a) Cuboid (b) Triangular prism
(c) Cube (d) Square prism

Solution

Solution:-

- (c) Cube

Because, a cube is a platonic solid because all six of its faces are congruent squares.

Question 4

Which of the following is a two Dimensional figure?

- (a) Rectangle (b) Rectangular Prism
(c) Square Pyramid (d) Square Prism

Solution

Solution:-

- (a) Rectangle

A rectangle is a two dimensional figure. It has length and breadth.

Question 5

Which of the following can be the base of a pyramid?

- (a) Line segment (b) Circle (c) Octagon (d) Oval

Solution

Solution:-

(c) Octagon

A pyramid is a polyhedron whose base is a polygon, and lateral faces are triangles.

Question 6

Which of the following 3D shapes does not have a vertex?

(a) Pyramid (b) Prism (c) Cone (d) Sphere

Solution

Solution:-

Sphere.

The faces meet at edges which are line segments, and the edges meet at a point called vertex. Since a sphere has no vertex and no edges.

Question 7

Solid having only line segments as its edges is a

(a) Polyhedron (b) Cone (c) Cylinder (d) Polygon

Solution

Solution:-

(a) Polyhedron

A polyhedron is formed by four or more polygons that intersect only at their edges. The faces of a regular polyhedron are all congruent regular polygons, and the same number of faces intersect at each vertex.

Question 8

In a solid if $F = V = 5$, then the number of edges in this shape is

(a) 6 (b) 4 (c) 8 (d) 2

Solution

Solution:-

(c) 8

We have,

Euler's formula for any polyhedron is, $F + V - E = 2$

Given, $F = V = 5$

Where, face (F) = 5, Vertex (V) = 5, Edge (E) = ?

Then,

$$5 + 5 - E = 2$$

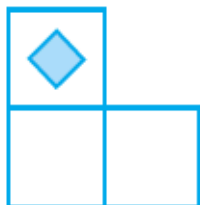
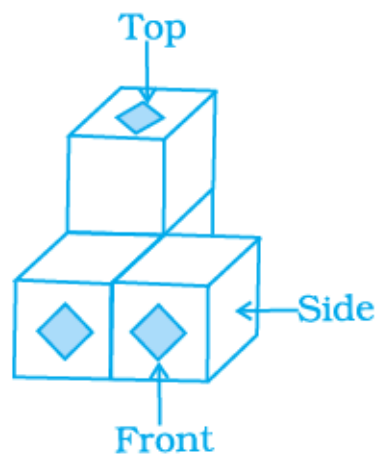
$$10 - E = 2$$

$$10 - 2 = E$$

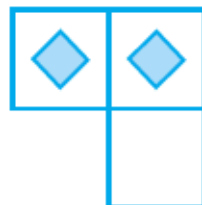
$$\text{Edges (E)} = 8$$

Question 9

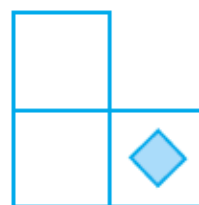
Which of the following is the top view of the given shape?



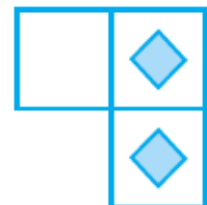
(a)



(b)



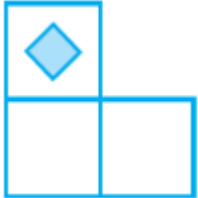
(c)



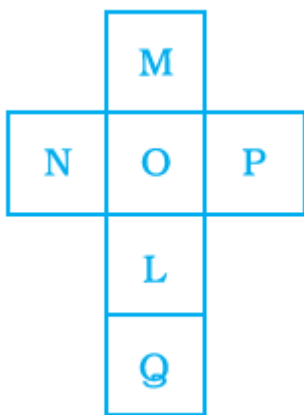
(d)

Solution**Solution:-**

(a)

**Question 10**

The net shown below can be folded into the shape of a cube. The face marked with the letter L is opposite to the face marked with which letter?



(a) M (b) N (c) Q (d) O

Solution**Solution:-**

(a) M

**Question 11**

Which of the nets given below will generate a cone?



(a)



(b)



(c)



(d)

Solution

Solution:-

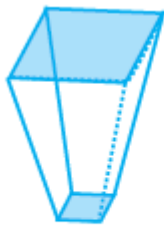
Option (a) has a circular base, which gives a cone.

Question 12

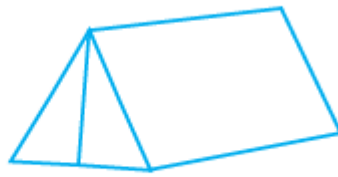
Which of the following is not a prism?



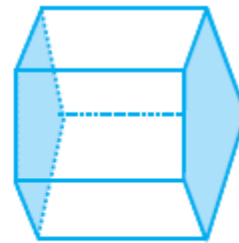
(a)



(b)



(c)



(d)

Solution

Solution:-

(b)

By observing option (b) figure, the bottom and top faces are not congruent polygons.

Question 13

We have 4 congruent equilateral triangles. What do we need more to make a pyramid?

(a) An equilateral triangle.

(b) A square with the same side length as of triangle.

(c) 2 equilateral triangles with side lengths the same as triangles.

(d) 2 squares with side lengths the same as triangles.

Solution

Solution:-

(b) A square with the same side length as of triangle.

We have to add a square with the same side length as of triangle to make a pyramid. As we know, a pyramid is a polyhedron whose base is a polygon and whose lateral faces are triangles.

Question 14

Side of a square garden is 30 m. If the scale used to draw its picture is 1cm: 5m, the perimeter of the square in the picture is

(a) 20 cm (b) 24 cm (c) 28 cm (d) 30 cm

Solution

Solution:-

(b) 24 cm

Given, side of a square garden = 30m

Scale to draw the garden picture is 1cm: 5m

So, the perimeter of the square garden is = 4×30

= 120m

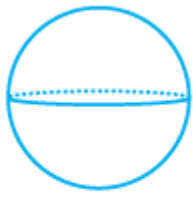
Then,

Perimeter to draw garden in picture = $120/5$

= 24 cm

Question 15

Which of the following shapes has a vertex?



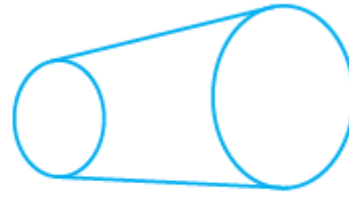
(a)



(b)



(c)



(d)

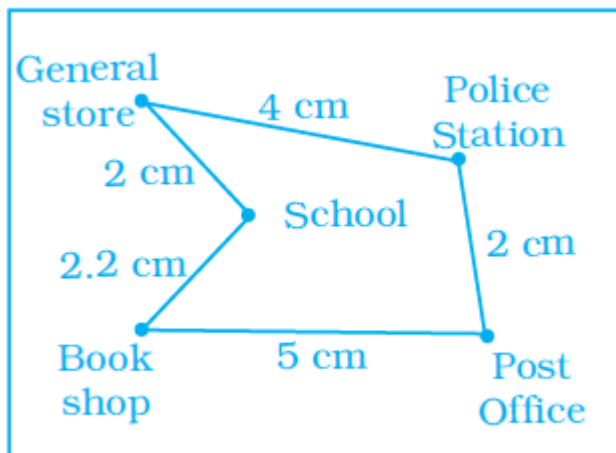
Solution**Solution:-**

(c)

The edges meet at a point called the vertex.

Question 16

In the given map, the distance between the places is shown using the scale 1 cm: 0.5 km. Then the actual distance (in km) between the school and the bookshop is



(a) 1.25 (b) 2.5 (c) 2 (d) 1.1

Solution**Solution:-**

Given, Scale = 1 cm: 0.5km

Then the actual distance between the school and the bookshop is = 2.2×0.5

$$= 1.1 \text{ cm}$$

Question 17

Which of the following cannot be true for a polyhedron?

- (a) $V = 4, F = 4, E = 6$ (b) $V = 6, F = 8, E = 12$
(c) $V = 20, F = 12, E = 30$ (d) $V = 4, F = 6, E = 6$

Solution

Solution:-

(d) $V = 4, F = 6, E = 6$

We have,

Euler's formula for any polyhedron is, $F + V - E = 2$

Where, face (F) = 6, Vertex (V) = 4, Edge (E) = 6

Then,

$$6 + 4 - 6 = 2$$

$$\text{LHS } 6 + 4 - 6$$

$$10 - 6$$

$$4$$

$$\text{RHS} = 2$$

By comparing LHS and RHS

$$\text{LHS} \neq \text{RHS}$$

Question 18

In a blueprint of a room, an architect has shown the height of the room as 33 cm. If the actual height of the room is 330 cm, then the scale used by her is

- (a) 1:11 (b) 1:10 (c) 1:100 (d) 1:3

Solution**Solution:-**

(b) 1: 10

From the question, it is given that,

An architect has shown the height of the room as 33 cm

The actual height of the room is 330 cm

Then, the scale used by an architect is = Drawn size/actual size

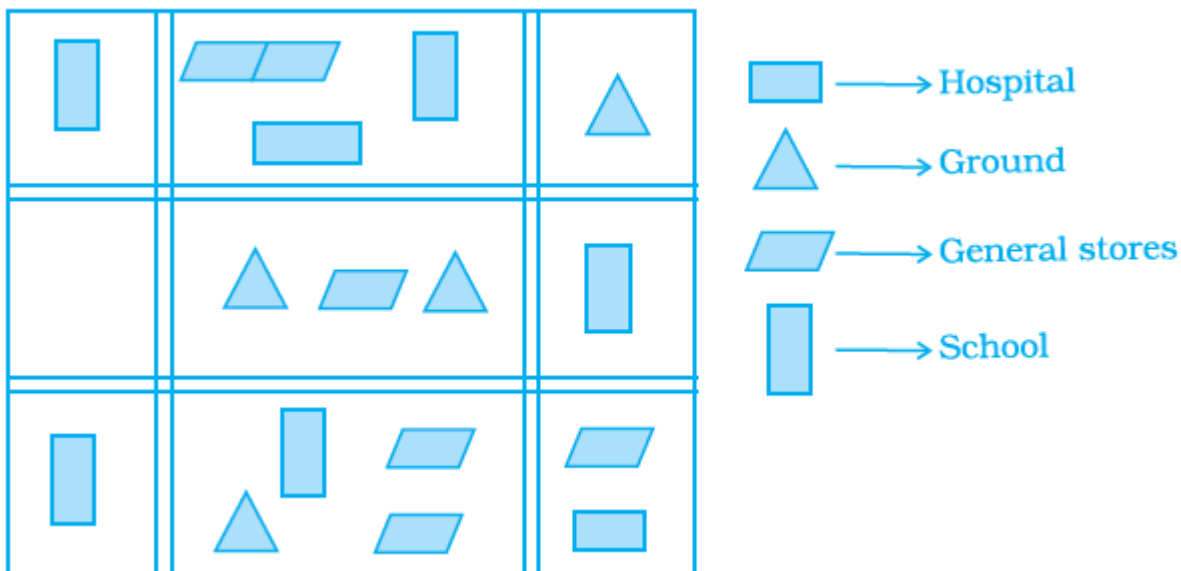
= $33/330$... [divide both by 33]

= $1/10$

= 1: 10

Question 19

The following is the map of a town. Based on it answer questions 19-21.



The number of hospitals in the town is

(a) 1 (b) 2 (c) 3 (d) 4

Solution**Solution:-**

(b) 2

Question 20

The ratio of the number of general stores and that of the ground is

(a) 1 : 2 (b) 2 : 1 (c) 2 : 3 (d) 3 : 2

Solution

Solution:-

(d) 3: 2

By observing the given map,

The number of general stores = 6

The number of ground = 4

Then,

The ratio of the number of general stores and that of the ground is = $\frac{6}{4}$

= $\frac{3}{2}$

= 3: 2

Question 21

According to the map, the number of schools in the town is

(a) 4 (b) 3 (c) 5 (d) 2

Solution

Solution:-

(c) 5

In questions 22 to 41, fill in the blanks to make the statements true.

Question 22

Square prism is also called a _____.

Solution**Solution:-**

A square prism is also called a cube.

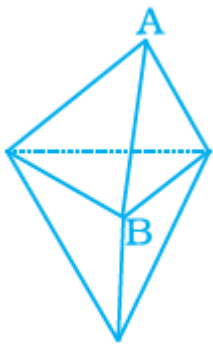
A cube is a platonic solid because all six of its faces are congruent squares.

Question 23

Rectangular prism is also called a _____.

Solution**Solution:-**

A rectangular prism is also called a Cuboid.

**Question 24**

In the figure, the number of faces meeting at B is _____.

Solution**Solution:-**

The number of faces meeting at B is 4.

Question 25

A pyramid on an n sided polygon has _____ faces.

Solution

Solution:-

A pyramid on an n sided polygon has $n+1$ faces.

Question 26

If a solid shape has 12 faces and 20 vertices, then the number of edges in this solid is _____.

Solution

Solution:-

If a solid shape has 12 faces and 20 vertices, then the number of edges in this solid is 30.

We have,

Euler's formula for any polyhedron is, $F + V - E = 2$

Given, $F = 12$, $V = 20$

Where, face (F) = 12, Vertex (V) = 20, Edge (E) = ?

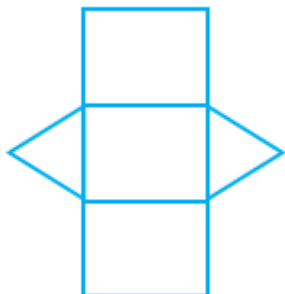
Then,

$$12 + 20 - E = 2$$

$$32 - E = 2$$

$$32 - 2 = E$$

$$\text{Edges (E)} = 30$$

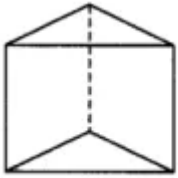


Question 27

The given net can be folded to make a _____.

Solution**Solution:-**

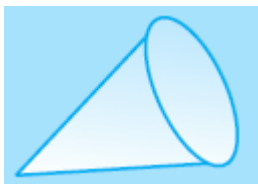
The given net can be folded to make a prism.

**Question 28**

A solid figure with only 1 vertex is a _____.

Solution**Solution:-**

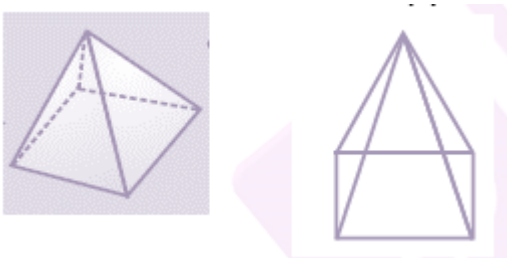
A solid figure with only 1 vertex is a cone.

**Question 29**

Total number of faces in a pyramid which has eight edges is _____.

Solution**Solution:-**

The total number of faces in a pyramid which has eight edges is 5.



Question 30

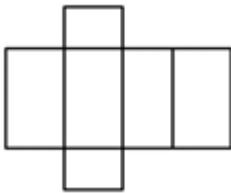
The net of a rectangular prism has _____ rectangles.

(Hint: Every square is a rectangle, but every rectangle is not a square.)

Solution

Solution:-

The net of a rectangular prism has six rectangles.

**Question 31**

In a three-dimensional shape, diagonal is a line segment that joins two vertices that do not lie on the _____ face.

Solution

Solution:-

In a three-dimensional shape, diagonal is a line segment that joins two vertices that do not lie on the same face.

Question 32

If 4 km on a map is represented by 1 cm, then 16 km is represented by _____ cm.

Solution

Solution:-

If 4 km on a map is represented by 1 cm, then 16 km is represented by 4 cm.

$$= 16/4$$

$$= 4 \text{ cm}$$

Question 33

If the actual distance between two places A and B is 110 km and it is represented on a map by 25 mm. Then the scale used is _____.

Solution**Solution:-**

If the actual distance between two places A and B is 110 km and it is represented on a map by 25 mm. Then the scale used is 1: 4400000

From the question, it is given that,

Actual distance between two places A and B is = 110km

Distance is represented on a map by = 25 mm

So, the scale used is = Size drawn on map/ actual distance

= 25 mm/110 km

We know that, 1km = 1000m

1m = 100cm

1cm = 10mm

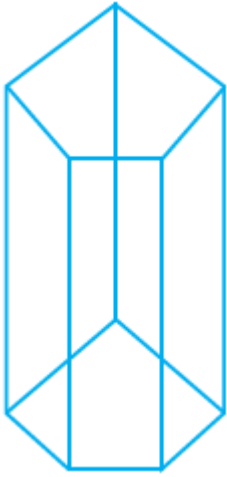
1 km = 10,00,000

So, 110km = 11,00,00,000 mm

Therefore = 25/11,00,00,000

= 1/4400000

= 1: 4400000

**Question 34**

A pentagonal prism has _____ faces.

Solution

Solution:-

A pentagonal prism has 7 faces.

Question 35

If a pyramid has a hexagonal base, then the number of vertices is _____.

Solution

Solution:-

If a pyramid has a hexagonal base, then the number of vertices is 7.

