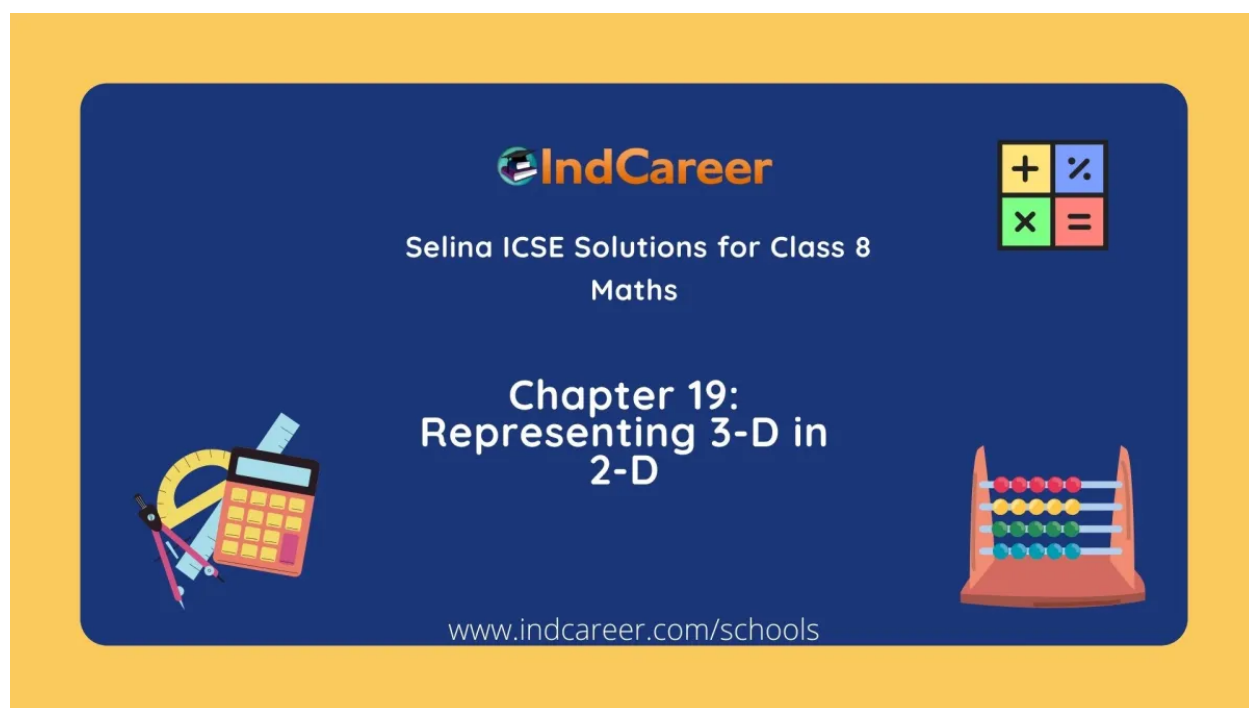


# Selina Class 8 ICSE Solutions Mathematics :

## Chapter 19- Representing 3-D in 2-D



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# Selina Class 8 ICSE Solutions Mathematics :

## Chapter 19- Representing 3-D in 2-D

Class 8: Maths Chapter 19 solutions. Complete Class 8 Maths Chapter 19 Notes.

### Selina Class 8 ICSE Solutions Mathematics : Chapter 19- Representing 3-D in 2-D

Selina 8th Maths Chapter 19, Class 8 Maths Chapter 19 solutions

#### Exercise 19

##### Question 1.

If a polyhedron has 8 faces and 8 vertices, find the number of edges in it.

**Solution:**

$$\text{Faces} = 8$$

$$\text{Vertices} = 8$$

using Eulers formula,

$$F + V - E = 2$$

$$8 + 8 - E = 2$$

$$-E = 2 - 16$$

$$E = 14$$

##### Question 2.

If a polyhedron has 10 vertices and 7 faces, find the number of edges in it.

**Solution:**

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Vertices = 10

Faces = 7

Using Eulers formula,

$$F + V - E = 2$$

$$7 + 10 - E = 2$$

$$-E = -15$$

$$E = 15$$

**Question 3.**

**State, the number of faces, number of vertices and number of edges of:**

**(i) a pentagonal pyramid**

**(ii) a hexagonal prism**

**Solution:**

**(i)** A pentagonal pyramid

Number of faces = 6

Number of vertices = 6

Number of edges = 10

**(ii)** A hexagonal prism

Number of faces = 8

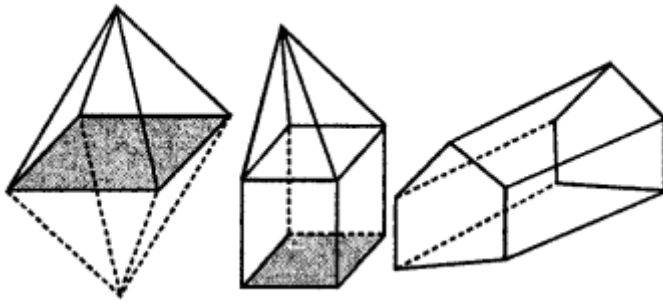
Number of vertices = 12

Number of edges = 18

**Question 4.**

**Verify Euler's formula for the following three dimensional figures:**

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**Solution:**

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(i) Number of vertices = 6

Number of faces = 8

Number of edges = 12

Using Euler formula,

$$F + V - E = 2$$

$$8 + 6 - 12 = 2$$

$$2 = 2 \text{ Hence proved.}$$

(ii) Number of vertices = 9

Number of faces = 8

Number of edges = 15

Using, Euler's formula,

$$F + V - E = 2$$

$$9 + 8 - 15 = 2$$

$$2 = 2 \text{ Hence proved.}$$

(iii) Number of vertices = 9

Number of faces = 5

Number of edges = 12

Using, Euler's formula,

$$F + V - E = 2$$

$$9 + 5 - 12 = 2$$

$$2 = 2 \text{ Hence proved.}$$

#### Question 5.

Can a polyhedron have 8 faces, 26 edges and 16 vertices?

**Solution:**

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Number of faces = 8

Number of vertices = 16

Number of edges = 26

Using Euler's formula

$$F + V - E$$

$$\Rightarrow 8 + 16 - 26 \neq -2$$

$$\Rightarrow -2 \neq 2$$

No, a polyhedron cannot have 8 faces, 26 edges and 16 vertices.

#### Question 6.

Can a polyhedron have:

(i) 3 triangles only ?

(ii) 4 triangles only ?

(iii) a square and four triangles ?

**Solution:**

(i) No.

(ii) Yes.

(iii) Yes.

#### Question 7.

Using Euler's formula, find the values of x, y, z.

|       | Faces | Vertices | Edges |
|-------|-------|----------|-------|
| (i)   | x     | 15       | 20    |
| (ii)  | 6     | y        | 8     |
| (iii) | 14    | 26       | z     |

**Solution:**

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$$(i) F + V - E = 2$$

$$\Rightarrow x + 15 - 20 = 2$$

$$\Rightarrow x - 5 = 2 \Rightarrow x = 2 + 5 = 7$$

$$(ii) F + V - E = 2$$

$$\Rightarrow 15 + y - 26 = 2$$

$$\Rightarrow y - 11 = 2$$

$$\Rightarrow y = 2 + 11 \Rightarrow y = 13$$

$$(iii) F + V - E = 2$$

$$\Rightarrow 14 + 26 - Z = 2$$

$$\Rightarrow -Z = 2 - 40 \Rightarrow Z = 38$$

**Question 8.**

**What is the least number of planes that can enclose a solid? What is the name of the solid.**

**Solution:**

The least number of planes that can enclose a solid is 4.

The name of the solid is Tetrahedron.

**Question 9.**

**Is a square prism same as a cube?**

**Solution:**

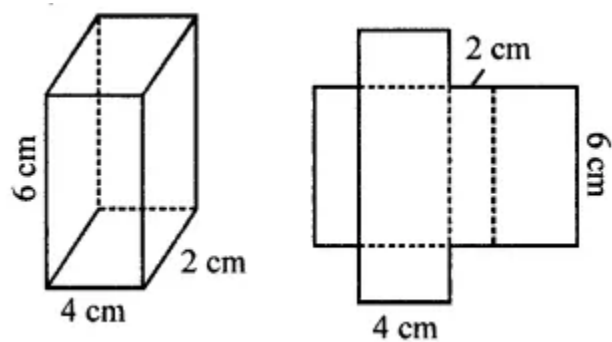
Yes, a square prism is same as a cube.

**Question 10.**

**A cubical box is 6 cm x 4 cm x 2 cm. Draw two different nets of it.**

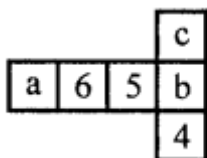
**Solution:**

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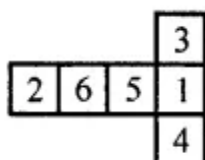


**Question 11.**

Dice are cubes where the sum of the numbers on the opposite faces is 7. Find the missing numbers a, b and c.



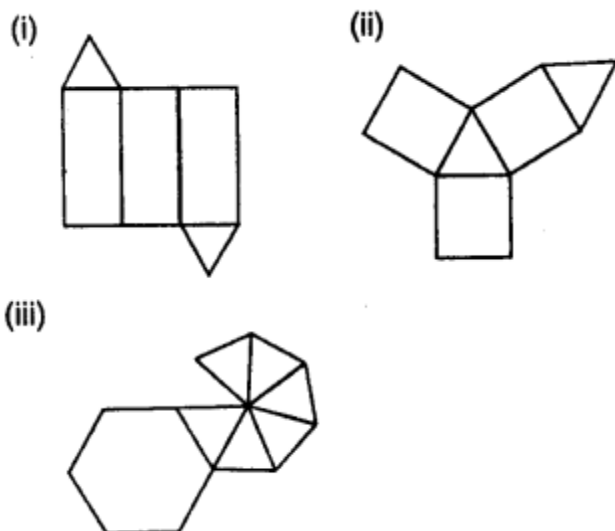
**Solution:**



**Question 12.**

Name the polyhedron that can be made by folding each of the following nets:

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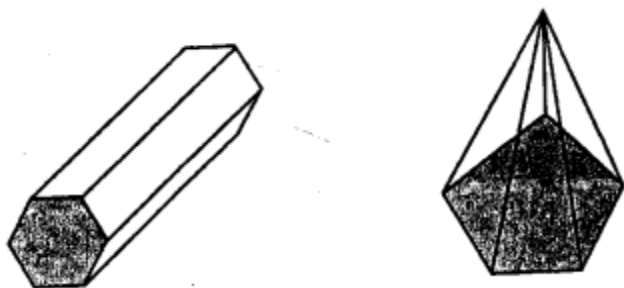


**Solution:**

- (i) Triangular prism. It has 3 rectangles and 2 triangles.
- (ii) Triangular prism. It has 3 rectangles and 2 triangles.
- (iii) Hexagonal pyramid as it has a hexagonal base and 6 triangles.

**Question 13.**

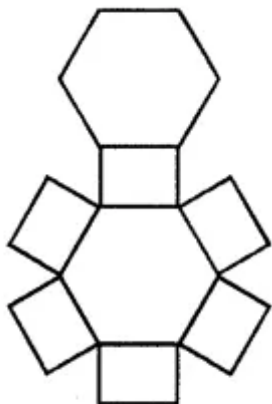
**Draw nets for the following polyhedrons:**



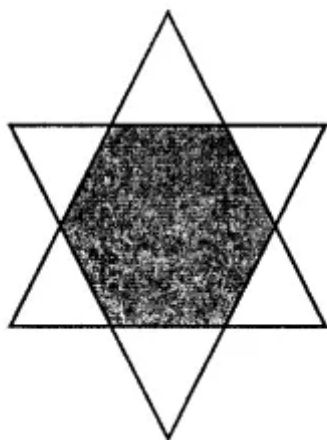
**Solution:**

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Net of hexagonal prism:



Net of pentagonal pyramid:



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