

Visualising Solid Shapes

Exercise 17.1

1.

- i) A tent \rightarrow (g) A cone surmounted on a cylinder
- ii) A tin \rightarrow (f) A cylindrical shell.
- iii) A bowl \rightarrow (b) A hemispherical shell.
- iv) An Agricultural field \rightarrow (a) A triangular field adjoining a square field
- v) A groove \rightarrow (h) A cone taken out of a cylinder
- vi) A toy \rightarrow (d) A hemispherical surmounted on a cone
- vii) A circular park \rightarrow (e) A circular path around a circular ground.
- viii) A cross path \rightarrow (c) Two rectangular cross-paths inside a rectangular park.

2.

- (a) \rightarrow (iii) \rightarrow (y)
- (b) \rightarrow (i) \rightarrow (z)
- (c) \rightarrow (ii) \rightarrow (u)
- (d) \rightarrow (vi) \rightarrow (x)
- (e) \rightarrow (iv) \rightarrow (z)
- (f) \rightarrow (v) \rightarrow (w)

3.

- (i) Side view
- (ii) Top view
- (iii) Front view

4.

- a) i) Front view (ii) Side view (iii) Top view
- b) i) Front view (ii) Top view (iii) Side view
- c) i) Top view (ii) Front view (iii) Side view
- d) i) Front view (ii) Side view (iii) Top view
- e) i) Side view (ii) Top view (iii) Front view
- f) i) Side view (ii) Front view (iii) Top view

~~g)~~5.

- a) i) Top view (ii) Side view (iii) Front view
- b) i) Side view (ii) Front view (iii) Top view
- c) i) Top view (ii) Side view (iii) Front view
- d) i) Side view (ii) Front view (iii) Top view
- e) i) Front view (ii) Top view (iii) Side view

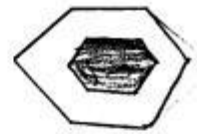
6.

Front View

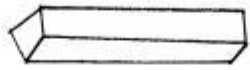
Side View

Top View

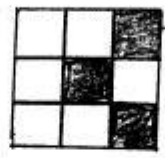
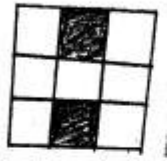
a)



b)



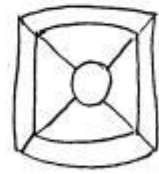
c)



d)



e)



f)



Exercise 17.2

4

1.

(i) No

(ii) Yes

(iii) Yes

2. only (ii), (iv) are prisms

3.

(i) Faces (F) = 7
Vertices (V) = 10
Edges (E) = 15

Euler's Formula

$$F + V = E + 2$$

$$7 + 10 = 15 + 2$$

$$17 = 17$$

\therefore Euler's formula is Verified.

(ii)

Faces (F) = 9
Vertices (V) = 9
Edges (E) = 16

Euler's formula

$$F + V = E + 2$$

$$9 + 9 = 16 + 2$$

$$18 = 18$$

\therefore Euler's formula is Verified.

(iii)

(i) Faces (F) = 7
 Vertices (V) = 7
 Edges (E) = 12

$$F + V = E + 2$$

$$7 + 7 = 12 + 2$$

$$14 = 14$$

∴ Euler's formula is verified

(iv)

Faces (F) = 9
 Vertices (V) = 9
 Edges (E) = 16

$$F + V = E + 2$$

$$9 + 9 = 16 + 2$$

$$18 = 18$$

∴ Euler's formula is verified.

4.

F = 15
 V = 20
 E = 30

∴ $F + V = 15 + 20 = 35$
 $E + 2 = 30 + 2 = 32$

$F + V \neq E + 2$

Violating Euler's formula

∴ Not possible

5.

$$F = 8$$

$$V = 8$$

Euler's formula

$$F + V = E + 2$$

$$8 + 8 = E + 2$$

$$16 = E + 2$$

$$E = 16 - 2$$

$$E = 14$$

$$\therefore \text{no. of edges} = 14$$

6

6.

$$F = 7$$

$$V = 10$$

Euler's formula

$$F + V = E + 2$$

$$7 + 10 = E + 2$$

$$17 = E + 2$$

$$E = 17 - 2$$

$$E = 15$$

$$\therefore \text{no. of edges} = 15$$

7.

(i) octahedral prism

$$\text{Faces (F)} = 10$$

$$\text{Vertices (V)} = 16$$

$$\text{Edges (E)} = 24$$

(i) Decagonal pyramid

7

$$\text{Faces (F)} = 11$$

$$\text{Vertices (V)} = 11$$

$$\text{Edges (E)} = 20$$

8.	Faces	Vertices	Edges
(i)	6	<u>8</u>	12
(ii)	<u>5</u>	5	8
(iii)	14	24	<u>36</u>
(iv)	<u>12</u>	16	30
(v)	16	<u>24</u>	42
(vi)	19	19	<u>36</u>