


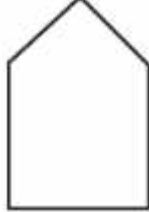
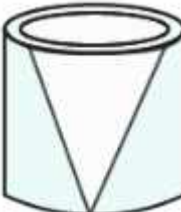





**EXERCISE 17.1**

1. Match the objects with their shapes:

	Picture (object)	Shape
(i) A tent		(a) A triangular field adjoining a square field.
(ii) A tin		(b) A hemispherical shell.
(iii) A bowl		(c) Two rectangular cross paths inside a rectangular park.
(iv) An agricultural field		(d) A hemisphere surmounted on a cone.
(v) A groove		(e) A circular path around a circular ground.

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(vi) A toy		(f) A cylindrical shell.
(vii) A circular park		(g) A cone surmounted on a cylinder.
(viii) A cross path		(h) A cone taken out of a cylinder.

**Solution:**

(i) A tent – (g)  
A cone surmounted on a cylinder.

(ii) A tin – (f)  
A cylindrical shell.

(iii) A bowl – (b)  
A hemispherical shell.

(iv) An agricultural field – (a)  
A triangular field adjoining a square field.

(v) A groove – (h)  
A cone taken out of a cylinder.

(vi) A toy – (d)  
A hemisphere surmounted on a cone.






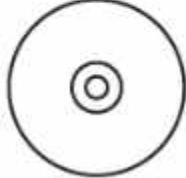

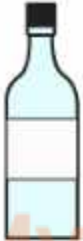

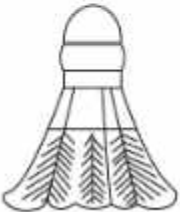
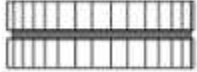





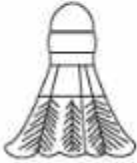

(vii) A circular park – (e)  
A circular path around a circular ground.

(viii) A cross path – (c)  
Two rectangular cross paths inside a rectangular park.

**2. For each of the given solid, the two views are given. Match for each solid the corresponding front and top views.**



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Object	Front view	Top view
(a) 	(i) 	(u) 
(b) 	(ii) 	(v) 
(c)  A flask	(iii) 	(w) 
(d)  A shuttle cock	(iv) 	(x) 
(e)  A Box	(v) 	(y) 
(f)  A weight	(vi) 	(z) 

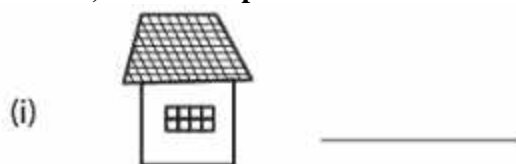
**Solution:**

Object	Front View	Top View
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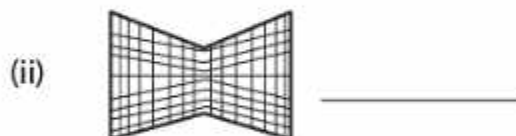
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(a) A bottle	(iii)	(y)
(b) A funnel	(i)	(v)
(c) A flash	(ii)	(u)
(d) A shuttle cock	(vi)	(x)
(e) A box	(iv)	(z)
(f) A weight	(v)	(w)

3. For the given solid, identify the front, side and top views and write it in the space provided.



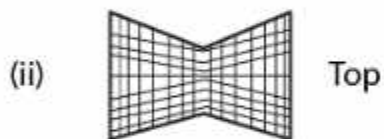
Solid



**Solution:**



Solid



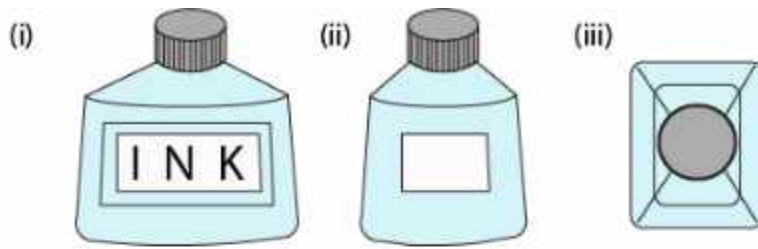
4. For each of the given solid, the three views are given. Identify for each solid the corresponding top, front

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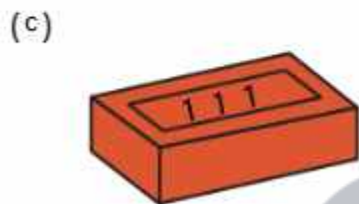
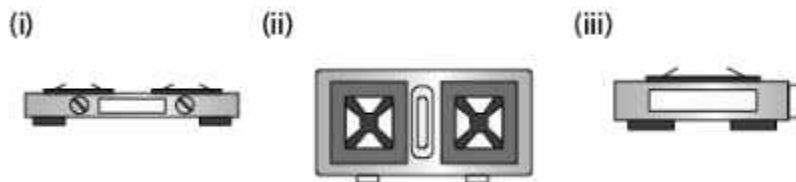
and side views.



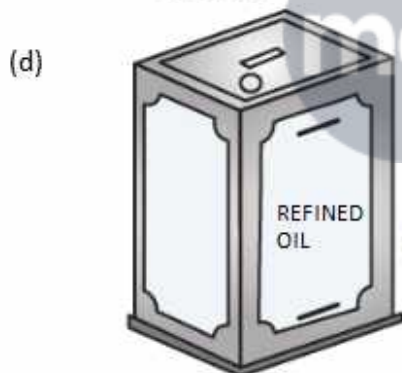
(An inkpot)



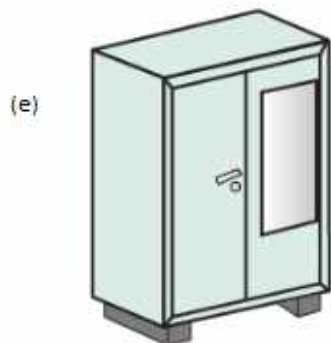
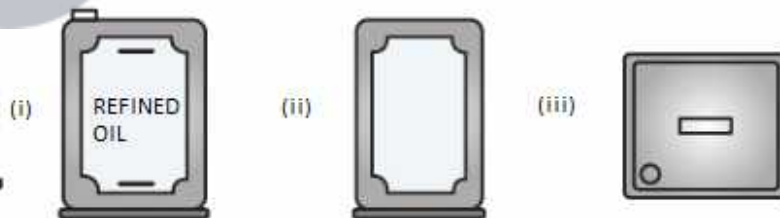
A gas stove



A brick



A Container



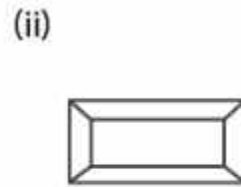
An almirah



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A matchbox



**Solution:**

Object Different Views

(a) An inkpot

(i) Front

(ii) Side

(iii) Top

(b) A gas stove

(i) Front

(ii) Top

(iii) Side

(c) A brick

(i) Top

(ii) Front

(iii) Side

(d) A container

(i) Front

(ii) Side

(iii) Top

(e) Almirah

(i) Side

(ii) Top

(iii) Front

(f) A matchbox

(i) Side

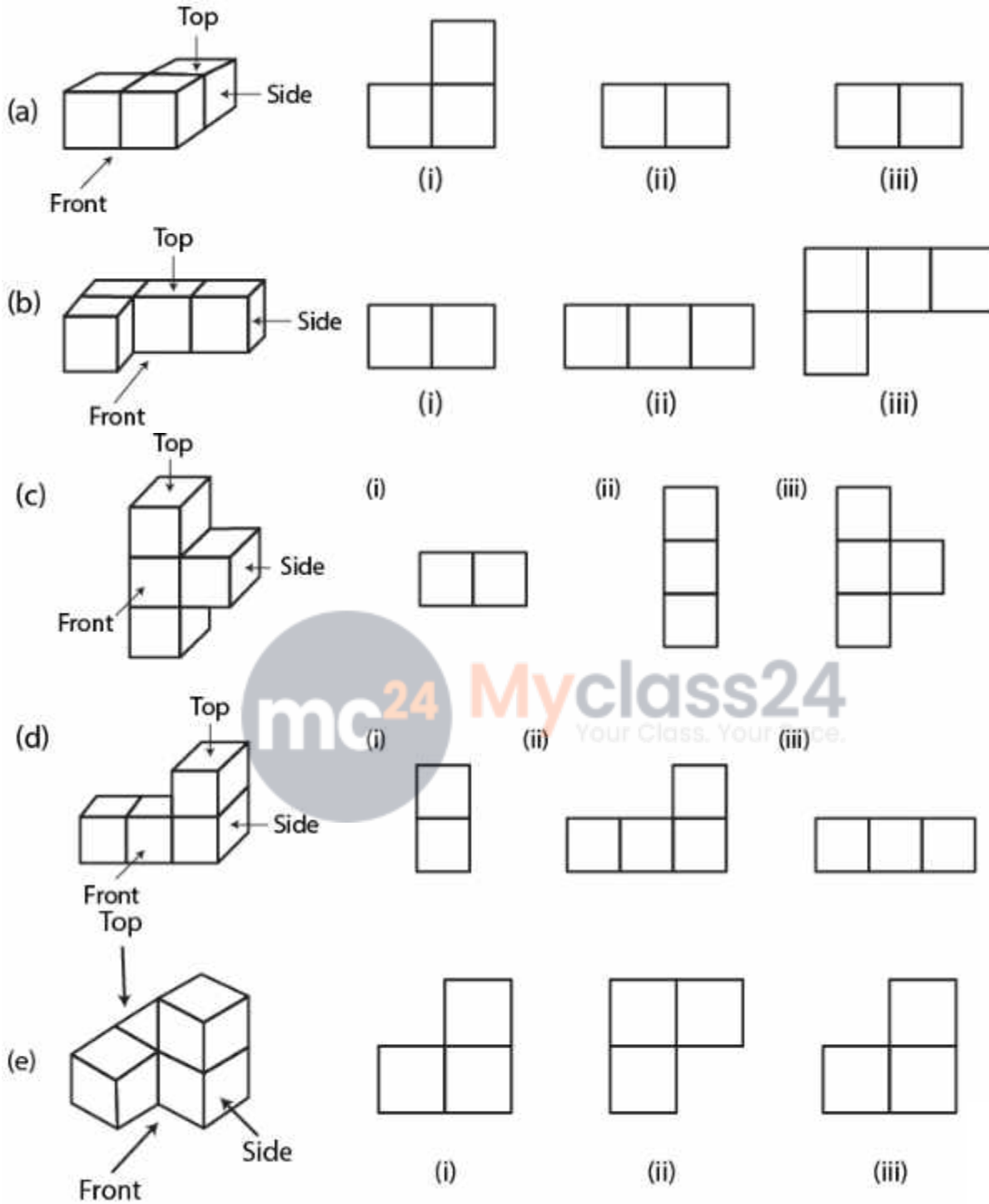
(ii) Front

(iii) Top



**5. For each given solid, identify the top view, front view and side view.**

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**Solution:**

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

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(b)

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

(c)

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

(d)

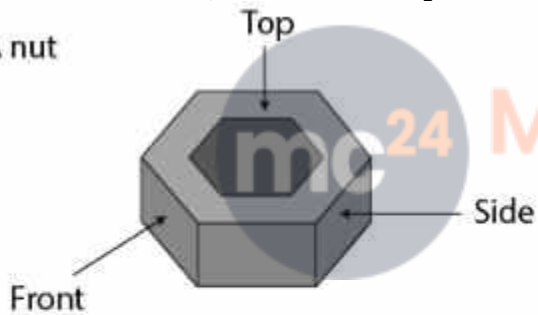
- (i) Side view
- (ii) Front view
- (iii) Top view

(e)

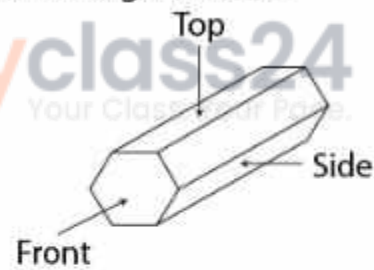
- (i) Front view
- (ii) Top view
- (iii) Side view

6. Draw the front view, side view and top view of the given objects:

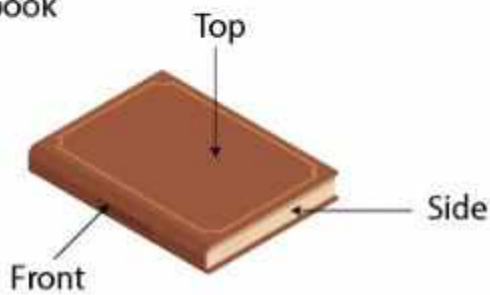
(a) A nut



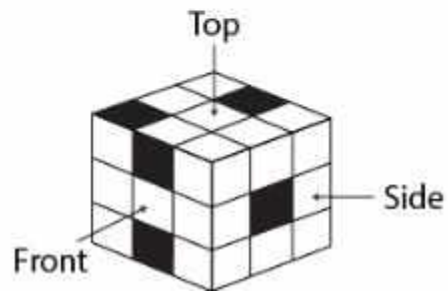
(b) A hexagonal block



(c) A book

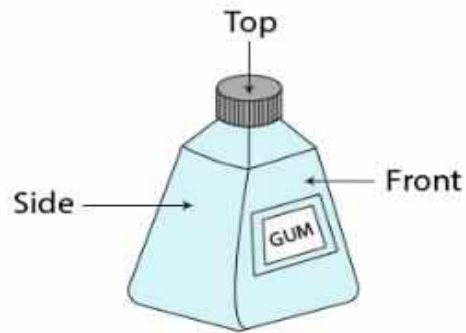


(d) A cube



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(e) A gum bottle

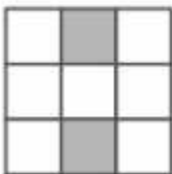
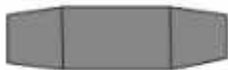


(f) A bat

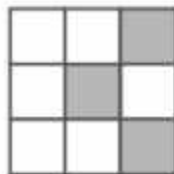


Solution:

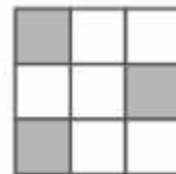
Front view



Side view

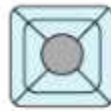


Top view



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### EXERCISE 17.2

1. Can a polyhedron have for its faces

(i) 3 triangles?

(ii) 4 triangles?

(iii) a square and four triangles?

Solution:

(i) No

(ii) Yes

(iii) Yes

2. Which are prisms among the following?

(i)



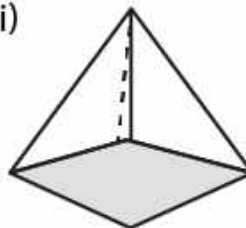
A nail

(ii)



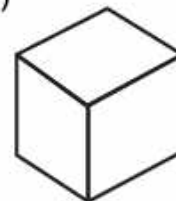
Unsharpened pencil

(iii)



A table weight

(iv)

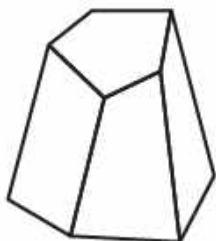


A box

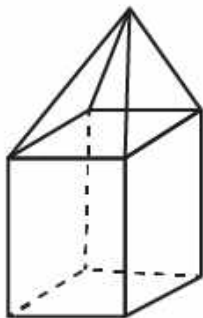
Solution:

(i) and (iv) are the only prisms.

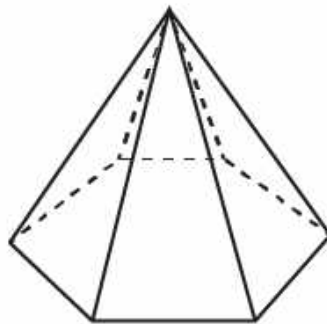
3. Verify Euler's formula for these solids:



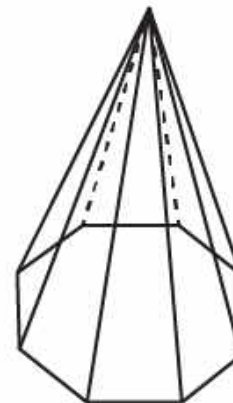
(i)



(ii)



(iii)



(iv)

Solution:

	Faces	Vertices	Edges	$F + V = E + 2$
(i)	7	10	15	$7 + 10 = 15 + 2$ $17 = 17$
(ii)	9	5	12	$9 + 5 = 12 + 2$

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				$14 = 14$
(iii)	7	7	12	$7 + 7 = 12 + 2$ $14 = 14$
(iv)	9	9	16	$9 + 9 = 16 + 2$ $18 = 18$

**4. Can a polyhedron have 15 faces, 30 edges and 20 vertices?**

**Solution:**

We know that

$$F + V = E + 2$$

Substituting the values

$$15 + 20 = 35 \text{ and } 30 + 2 = 32$$

Here

$$35 \neq 32$$

Therefore, a polyhedron cannot have 15 faces, 30 edges and 20 vertices.

**5. If a polyhedron has 8 faces and 8 vertices, find the number of edges.**

**Solution:**

We know that

A polyhedron has 8 faces and 8 vertices.

Here

$$\text{No. of edges} = F + V - 2$$

Substituting the values

$$= 8 + 8 - 2$$

$$= 14$$



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

**Solution:**

We know that

A polyhedron has 7 faces and 10 vertices

Here

$$\text{No. of edges} = F + V - 2$$

Substituting the values

$$= 7 + 10 - 2$$

$$= 15$$

**7. Write the number of faces, vertices and edges in**

**(i) an octagonal prism**

**(ii) decagonal pyramid.**

**Solution:**

	No. of faces	No. of vertices	No. of edges
(i) an octagonal prism	10	16	24
(ii) decagonal pyramid	11	11	20

**8. Using Euler's formula, complete the following table:**

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

**Solution:**

	<b>Faces</b>	<b>Vertices</b>	<b>Edges</b>	<b>F + V = E + 2</b>
(i)	6	8	12	$12 + 2 = 14$ $6 + 8 = 14$
(ii)	5	5	8	$8 + 2 = 10$ $5 + 5 = 10$
(iii)	14	24	36	$14 + 24 = 38$ $38 - 2 = 36$
(iv)	16	16	30	$30 + 2 = 32$ $16 + 16 = 32$
(v)	16	28	42	$42 + 2 = 44$ $16 + 28 = 44$
(vi)	19	19	36	$19 + 19 = 38$ $2 + 36 = 38$

