EXERCISE 19A PAGE NO: 215

1. Write down the number of faces of each of the following figures:

(i) Cuboid

(ii) Cube

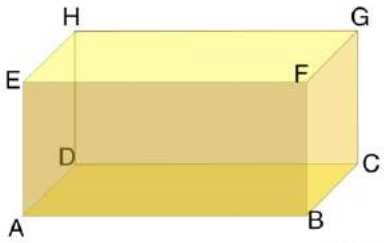
(iii) Triangular prism

(iv) Square pyramid

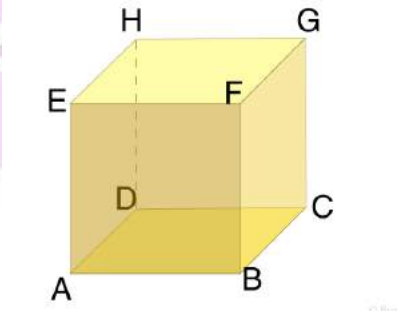
(v) Tetrahedron

Solution:

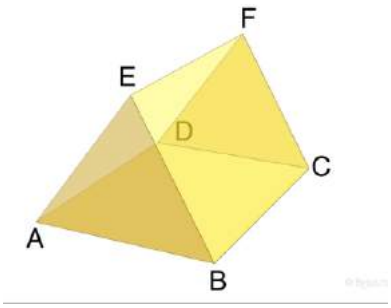
(i) A cuboid has 6 faces and face is also known as sides.
The faces of cuboid are ABFE, BFGC, GHDC, HEAD, DCBA, and HGFE.



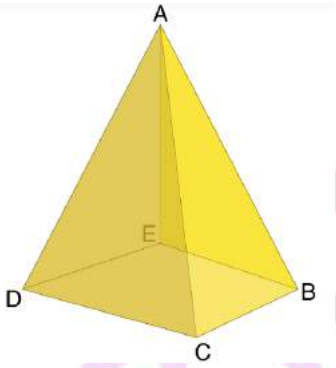
(ii) A cube has 6 faces namely ABFE, BFGC, GHDC, HEAD, DCBA, and HGFE.



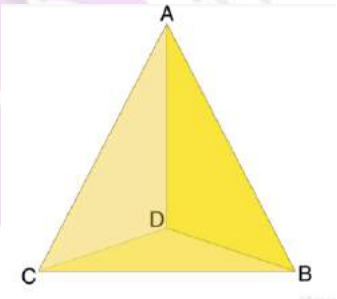
(iii) A triangular prism has totally 5 faces in that 2 are of triangular faces and 3 are rectangular faces. Namely, ABE, ABCD, BCFE, AEFD and FDC



(iv) Square pyramid have totally 5 faces. Square face in the base and 4 triangular faces. Namely, ABC, ACD, ABE, AED and BEDC.



(v) Tetrahedron is also called as triangular prism. Tetrahedron have totally 4 faces in that 1 is triangular face as base and 3 triangular faces as the sides.



2. Write down the number of edges of each of the following figures:

(i) Tetrahedron

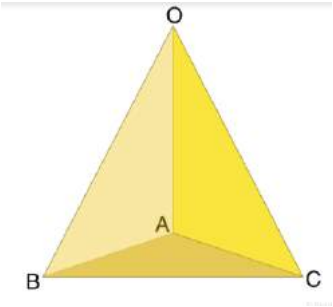
(ii) Rectangular pyramid

(iii) Cube

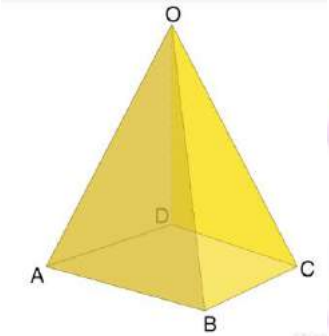
(iv) Triangular prism

Solution:

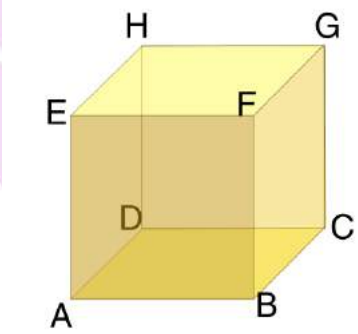
(i) Tetrahedron has six edges. Namely, OA, OB, OC, AB, AC and BC.



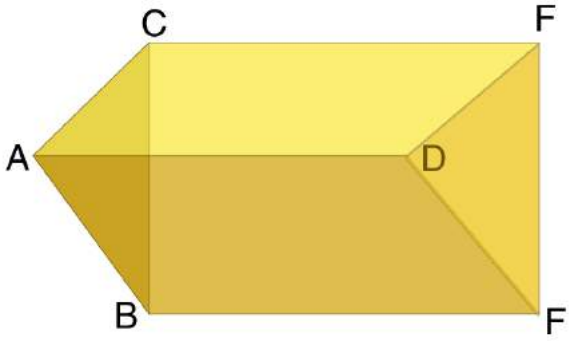
(ii) Rectangular pyramid has 8 edges. Namely, AB, BC, CD, DA, OA, OB, DC and OD.



(iii) A cube has 12 edges. Namely, AB, BC, CD, DA, EF, FG, GH, HE, AE, DH, BF, CG



(iv) A triangular prism has 9 edges. Namely, AB, BC, CD, DA, EF, FD, AD, BE, CF.


C
F
A
D
B
F

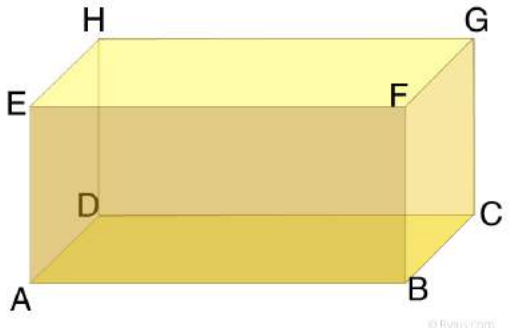
EXERCISE 19B

PAGE NO: 217

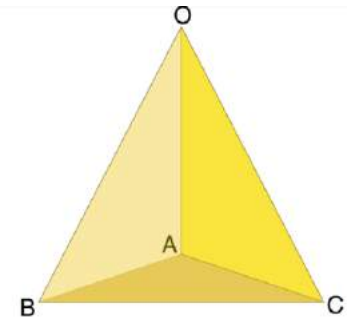
1. **Define Euler's relation between the number faces, number of edges and number of vertices for various 3-dimensional figures.**
   Solution:
   In a 3-dimensional figure, let the number of faces be F, the number of edges be E and the number of vertices be V.
   Then, the Euler's relation is given by F-E+V=2.

Shape	Faces	Vertices	Edges	F-E+V
Cube	6	8	12	2
octahedron	8	6	12	2

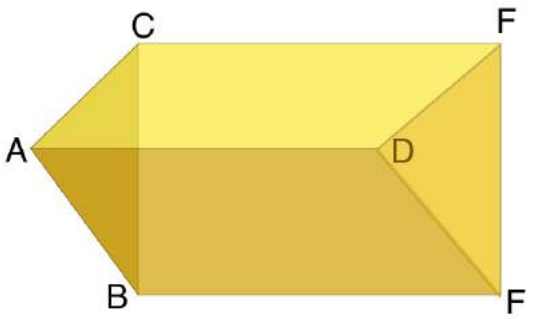
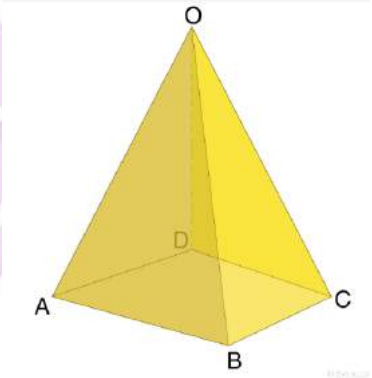
2. **How many edges are there in a**
   (i) Cuboid
   (ii) Tetrahedron
   (iii) Triangular prism
   (iv) Square pyramid
   Solution:
   (i) A cuboid had 12 edges. Namely, AB, BC, CD, DA, EF, FG, GH, HE, AE, DH, BF, CG.



   (ii) A tetrahedron has 6 edges. Namely, OA, OB, OC, AB, AC and BC.



(iii) A triangular prism has 9 edges. Namely, AB, BC, CD, DA, EF, FD, AD, BE, CF.



(iv) A square pyramid has 8 edges. Namely, AB, BC, CD, DA, OA, OB, DC, OD.