

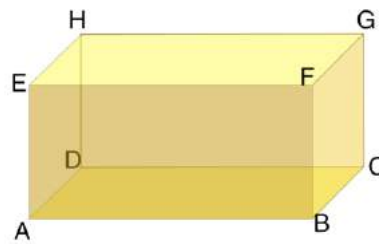
EXERCISE 19A

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

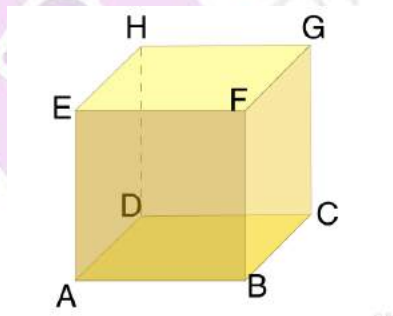
- (i) Cuboid
- (ii) Cube
- (iii) Triangular prism
- (iv) Square pyramid
- (v) Tetrahedron

Solution:

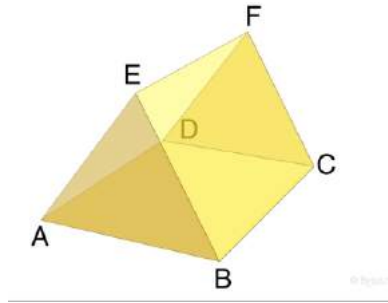
- (i) A cuboid has 6 faces and face is also known as sides.
The faces of cuboid are ABFE, BFGC, GHDC, HEAD, DCBA, and HGFE.



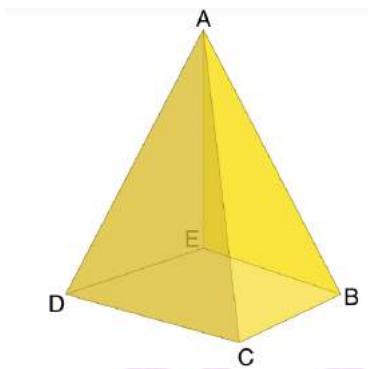
- (ii) A cube has 6 faces namely ABFE, BFGC, GHDC, HEAD, DCBA, and HGFE.



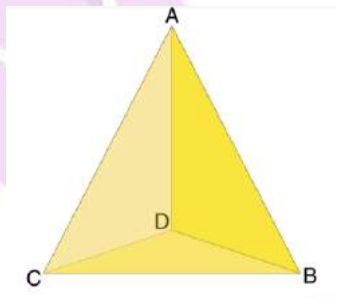
- (iii) A triangular prism has totally 5 faces in that 2 are of triangular faces and 3 are rectangular faces. Namely, ABE, ABCD, BCFE, AEFD and FDC



- (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 has totally 4 faces in that 1 is triangular face as base and 3 triangular faces as the sides. Namely, ADB, ADC, BCD and ABC.

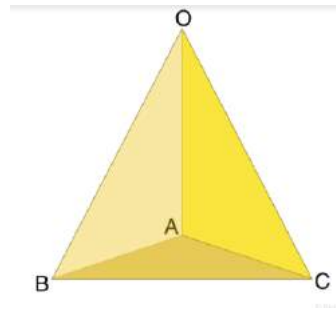


2. Write down the number of edges of each of the following figures:

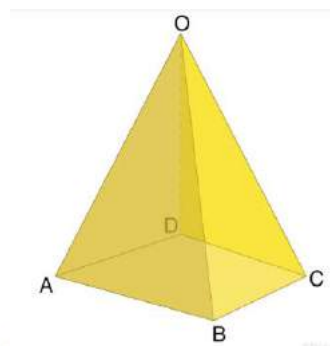
- (i) Tetrahedron
- (ii) Rectangular pyramid
- (iii) Cube
- (iv) Triangular prism

Solution:

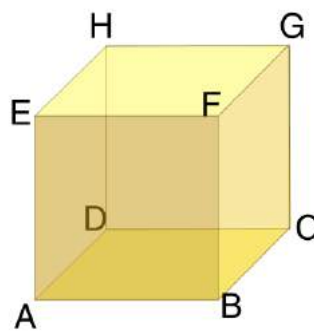
- (i) Tetrahedron has six edges. Namely, OA, OB, OC, AB, AC and BC.



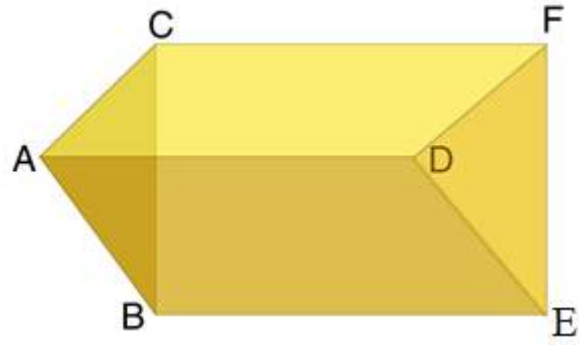
- (ii) Rectangular pyramid has 8 edges. Namely, AB, BC, CD, DA, OA, OB, OC and OD.



- (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, CB, DE, DF, EF, AD, BE, CF.



EXERCISE 19B

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 $F-E+V=2$.

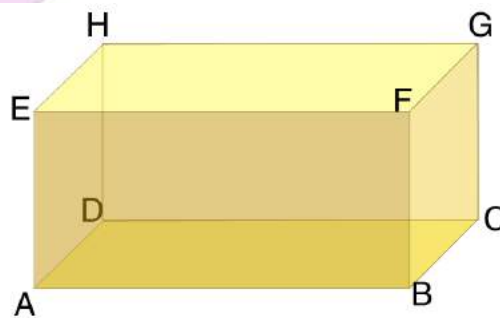
Shape	Faces	Vertices	Edges	$F-E+V$
Cube	6	8	12	2
octahedron	8	6	12	2

2. How many edges are there in a

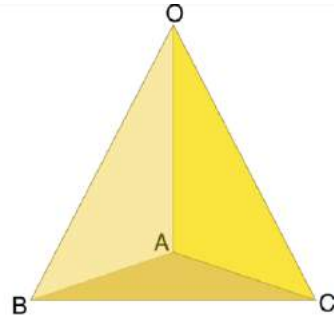
- (i) **Cuboid**
- (ii) **Tetrahedron**
- (iii) **Triangular prism**
- (iv) **Square pyramid**

Solution:

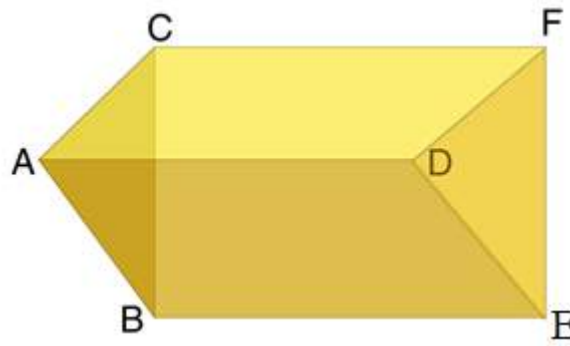
- (i) A cuboid had 12 edges. Namely, AB, BC, CD, DA, EF, FG, GH, HE, AE, DH, BF, CG.



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



(iii) A triangular prism has 9 edges. Namely, AB, BC, CB, DE, DF, EF, AD, BE, CF.



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

