

RS Aggarwal solutions for class 8 mathematics chapter 19  
Three-Dimensional Figures

## EXERCISE 19A

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

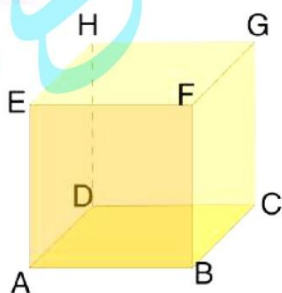
- (i) Cuboid
- (ii) Cube
- (iii) Triangular prism
- (iv) Square pyramid
- (v) Tetrahedron

**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.

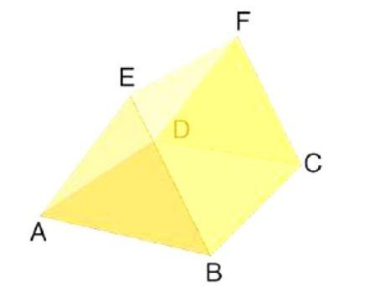


- (ii) A cube has 6 faces namely ABFE, BFGC, GHDC, HEAD, DCBA, and HGFE.

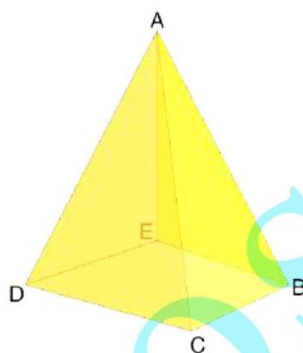


- (iii) A triangular prism has totally 5 faces in that 2 are of triangular faces and 3 are rectangular faces. Namely, ABE, ABCD, BCFE, AEFD and FDC

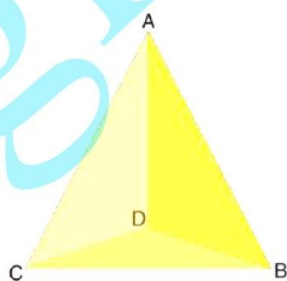
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- (iv) Square pyramid have totally 5 faces. Square face in the base and 4 triangular faces. Namely, ABC, ACD, ABE, AED and BEDC.



- (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.



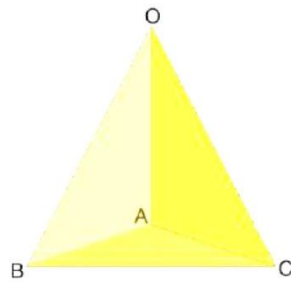
2. Write down the number of edges of each of the following figures:

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

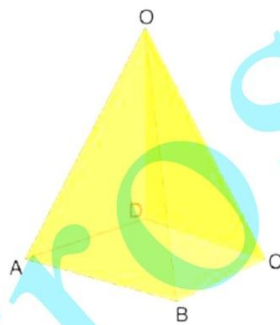
**Solution:**

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

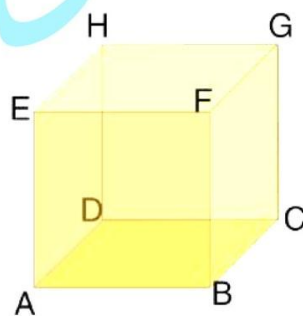
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- (ii) Rectangular pyramid has 8 edges. Namely, AB, BC, CD, DA, OA, OB, DC and OD.

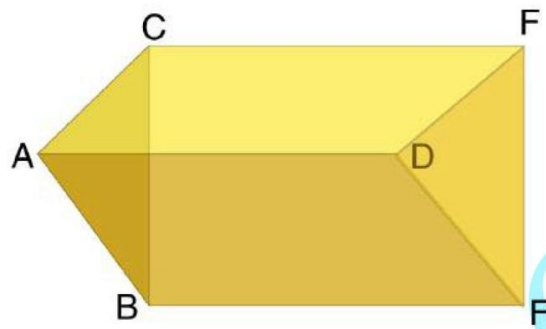


- (iii) A cube has 12 edges. Namely, AB, BC, CD, DA, EF, FG, GH, HE, AE, DH, BF, CG.



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

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## EXERCISE 19B

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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  $F-E+V=2$ .

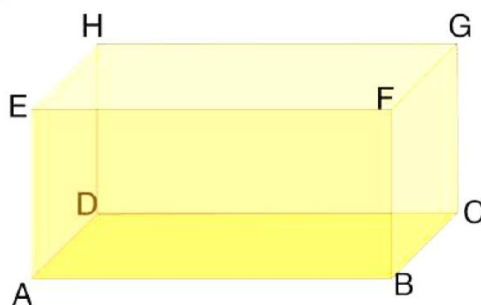
Shape	Faces	Vertices	Edges	$F-E+V$
Cube	6	8	12	2
octahedron	8	6	12	2

2. How many edges are there in a

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

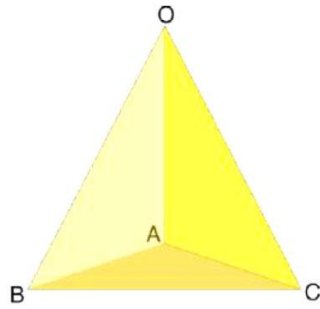
**Solution:**

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

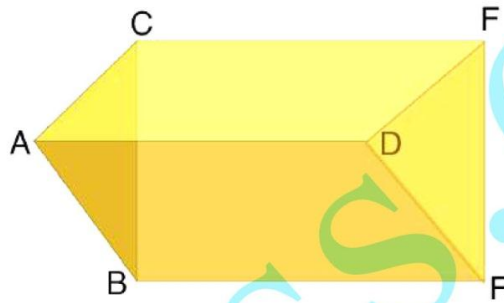


- (ii) A tetrahedron has 6 edges. Namely, OA, OB, OC, AB, AC and BC.

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- (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.

