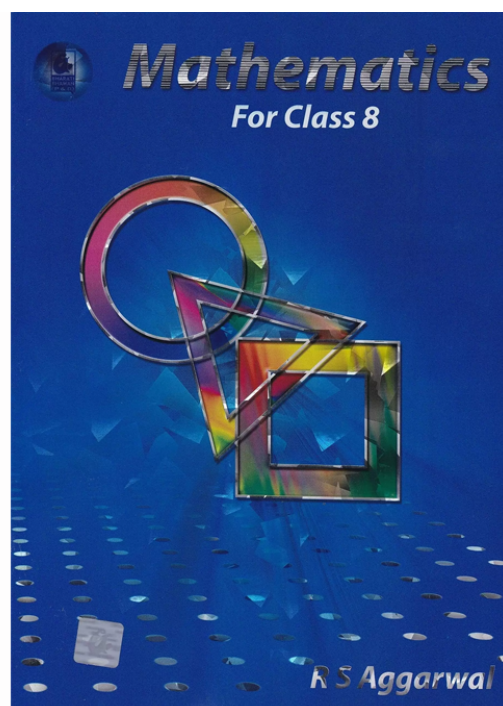


RS Aggarwal Solutions for Class 8 Maths Chapter 19–Three-Dimensional Figures

Class 8 - Chapter 19 Three- Dimensional Figures



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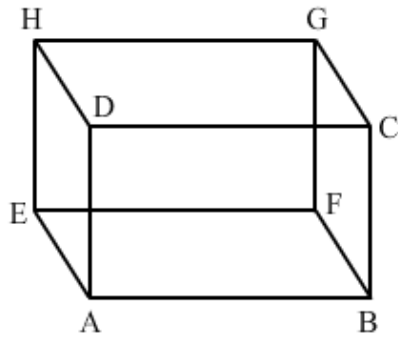
Ex 19A

Q1.

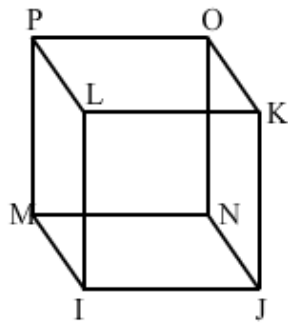
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Answer :

(i) A cuboid has 6 faces, namely $ABCD$, $EFGH$, $HDAE$, $GCBF$, $HDCG$ and $EABF$.

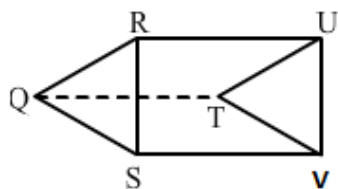


(ii) A cube has 6 faces, namely $IJKL$, $MNOP$, $PLIM$, $OKJN$, $LKOP$ and $IJNM$.

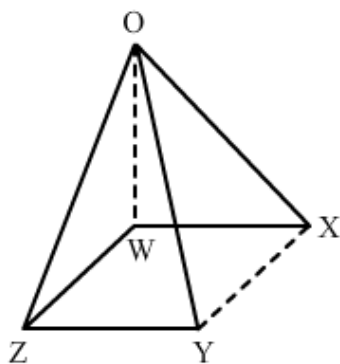


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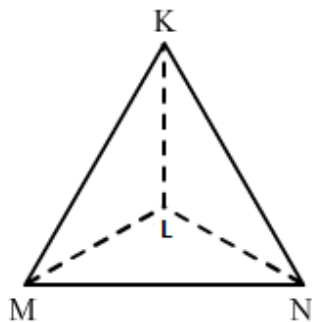
(iii) A triangular prism has 5 faces (3 rectangular faces and 2 triangular faces), namely $QRUT$, $QTVS$, $RUVS$, QRS and TUV .



(iv) A square pyramid has 5 faces (4 triangular faces and 1 square face), namely OWZ , OWX , OXY , OYZ and $WXYZ$.



(v) A tetrahedron has 4 triangular faces, namely KLM , KLN , LMN and KMN .

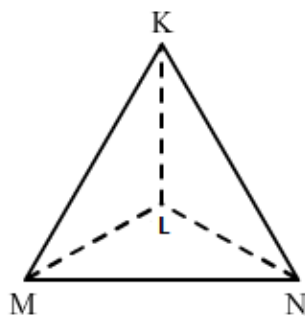


Q2.

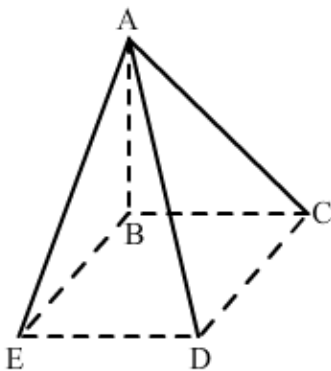
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Answer :

(i) A tetrahedron has 6 edges, namely KL , LM , LN , MN , KN and KM .



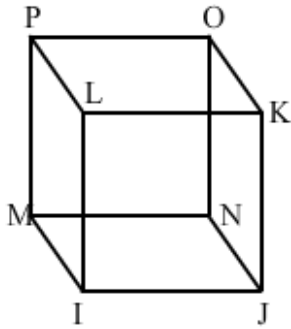
(ii) A rectangular pyramid has 8 edges, namely AB , AE , AD , AC , EB , ED , DC and CB .



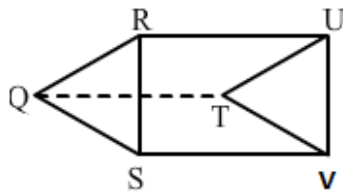
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(iii) A cube has 12 edges, namely PL , LK , KO , OP , MN , NJ , JI , IM , PM , LI , ON and KJ .



(iv) A triangular prism has 9 edges, namely QR , RS , QS , TU , TV , UV , QT , RU , and SV .

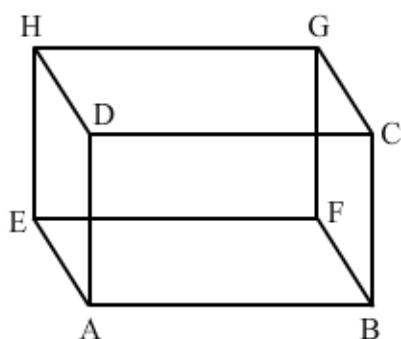


Q3.

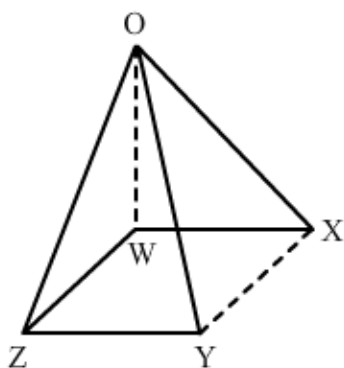
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Answer :

(i) A cuboid has 8 vertices, namely A, B, C, D, E, F, G and H .

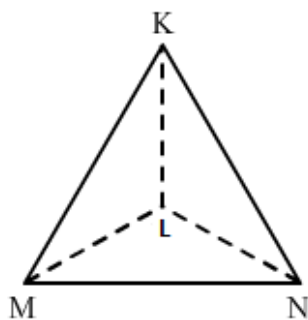


(ii) A square pyramid has 5 vertices, namely O, W, X, Y and Z .

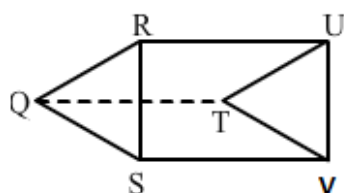


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(iii) A tetrahedron has 4 vertices, namely K , L , M and N .



(iv) A triangular prism has 6 vertices, namely Q , R , S , T , U and V .



Q4.

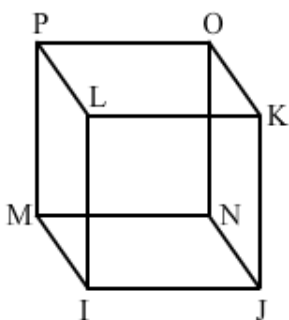
Answer :

(i) A cube has 8 vertices, 12 edges and 6 faces.

Vertices: I , J , K , L , M , N , O and P

Edges : IJ , JN , NM , MI , PL , LK , KO , OP , PM , LI , KJ , and ON

Faces : $MNJI$, $POKL$, $PLIM$, $OKJN$, $PONM$ and $LKJI$



(ii) The point at which the three faces of a figure meet is known as its vertex.

(iii) A cuboid is also known as a rectangular cube.

(iv) A triangular pyramid is called a tetrahedraon.

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Ex 19B**Q1.****Answer :**

The Euler's relation for a three dimensional figure can be expressed in the following manner:

$$F - E + V = 2$$

Here,

F – Number of faces

E – Number of edges

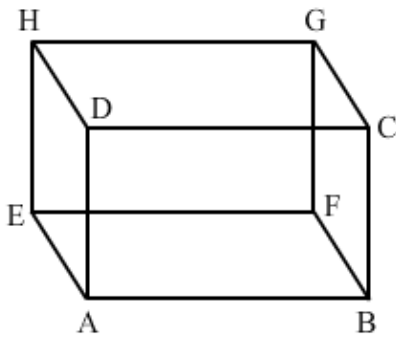
V – Number of vertices

Q2.

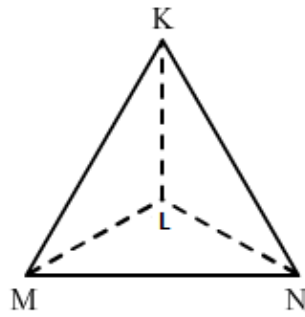
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Answer :

(i) A cuboid has 12 edges, namely AD , DC , CB , BA , EA , FB , HD , DC , CG , GH , HE , and GF .

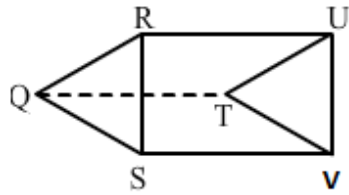


(ii) A tetrahedron has 6 edges, namely KL , LM , MN , NL , KM and KN .

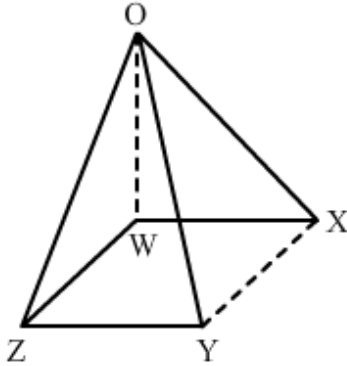


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(iii) A triangular prism has 9 edges, namely QR , RS , SQ , TU , UV , VT , RU , SV and QT .



(iv) A square pyramid has 8 edges, namely OW , OX , OY , OZ , WX , XY , YZ and ZW .

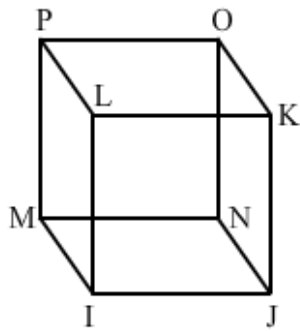


Q3.

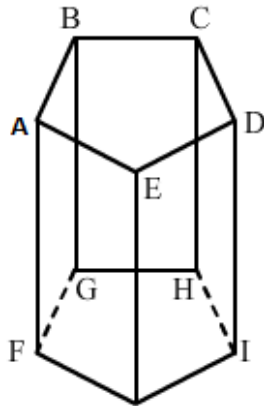
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Answer :

(i) A cube has 6 faces, namely $IJKL$, $MNOP$, $PLIM$, $OKJN$, $POKL$ and $MNJI$.

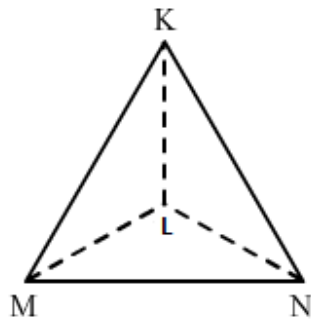


(ii) A pentagonal prism has 7 faces, i.e. 2 pentagons and 5 rectangles, namely $ABCDE$, $FGHIJ$, $ABGF$, $AEJF$, $EDIJ$, $DCHI$ and $CBGH$.

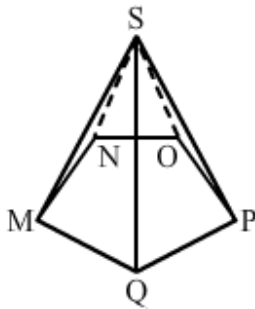


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(iii) A tetrahedron has 4 faces, namely KLM , KLN , LMN and KMN .



(iv) A pentagonal pyramid has 6 faces, i.e. 1 pentagon and 5 triangles, namely $NOPQM$, SNM , SOP , SNO , SMQ and SQP .

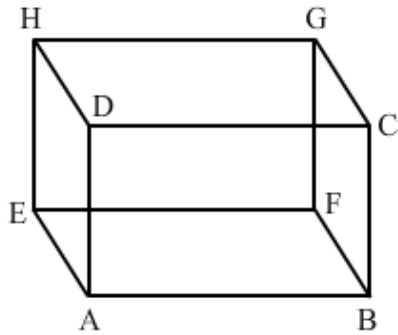


Q4.

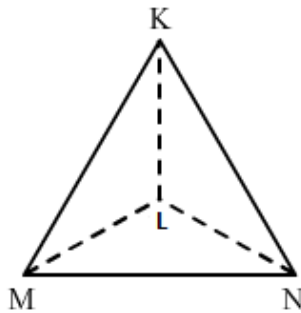
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Answer :

(i) A cuboid has 8 vertices, namely A, B, C, D, E, F, G and H .

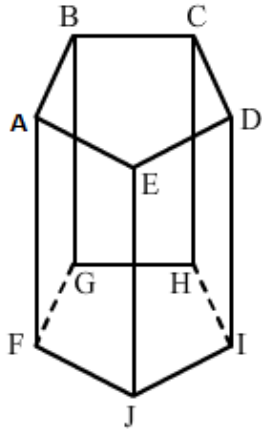


(ii) A tetrahedron has 4 vertices, namely K, L, M and N .

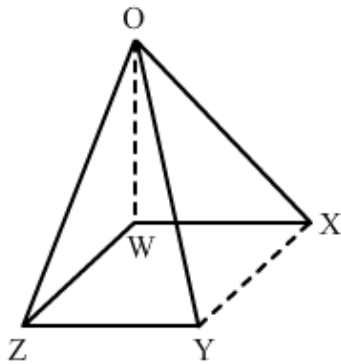


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(iii) A pentagonal prism has 10 vertices, namely $A, B, C, D, E, F, G, H, I$ and J .



(iv) A square pyramid has 5 vertices, namely O, W, X, Y and Z .



Q5.

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Answer :

Euler's relation is:

$$F - E + V = 2$$

Here :

F – Number of faces

E – Number of edges

V – Number of vertices

(i) A square prism

(There is an error in this question. It should have been a square prism rather than square.)

Number of faces = $F = 2$ squares + 4 rectangular = 6

Number of edges = $E = 12$

Number of vertices = $V = 8$

$$\Rightarrow (F - E + V) = 6 - 12 + 8 = 2$$

(ii) A tetrahedron

Number of faces = $F = 4$

Number of edges = $E = 6$

$$\begin{aligned}\text{Number of vertices} &= V = 4 \\ \Rightarrow (F - E + V) &= 4 - 6 + 4 = 2\end{aligned}$$

(iii) A triangular prism

$$\begin{aligned}\text{Number of faces} &= F = 2 \text{ triangular} + 3 \text{ rectangular} = 5 \\ \text{Number of edges} &= E = 9 \\ \text{Number of vertices} &= V = 6 \\ \Rightarrow (F - E + V) &= 5 - 9 + 6 = 2\end{aligned}$$

(iv) A square pyramid

$$\begin{aligned}\text{Number of faces} &= F = 2 \text{ triangular} + 3 \text{ rectangular} = 5 \\ \text{Number of edges} &= E = 8 \\ \text{Number of vertices} &= V = 5 \\ \Rightarrow (F - E + V) &= 5 - 8 + 5 = 2\end{aligned}$$



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