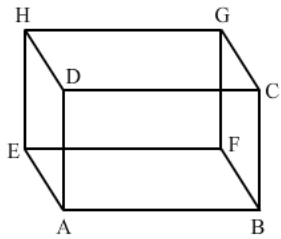
RS Aggarwal Solutions Class 8 Mathematics
Three Dimensional Shapes Ex 19A

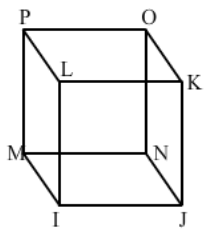
Q1.

Answer :

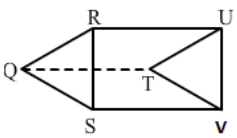
(i) A cuboid has 6 faces, namely *ABCD, EFGH, HDAE, GCBF, HDCG* and *EABF*.



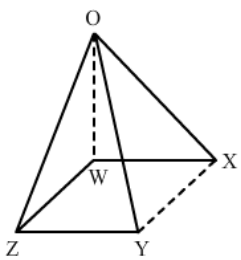
(ii) A cube has 6 faces, namely *IJKL, MNOP, PLIM, OKJN, LKOP* and *IJNM*.



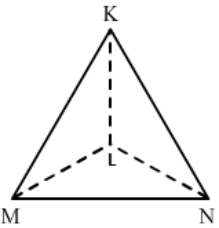
(iii) A triangular prism has 5 faces (3 rectangular faces and 2 triangular faces), namely *QRUT, QTVS, RUVS, QRS* and *TUV*.



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



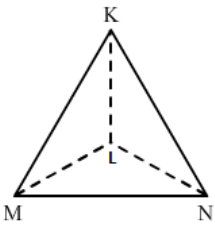
(v) A tetrahedron has 4 triangular faces, namely *KLM, KLN, LMN* and *KMN*.



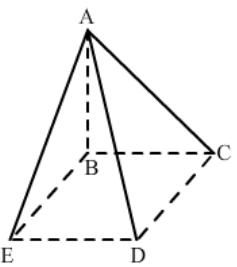
Q2.

Answer :

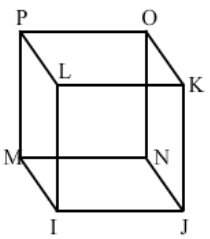
(i) A tetrahedron has 6 edges, namely *KL, LM, LN, MN, KN* and *KM*.



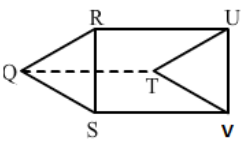
(ii) A rectangular pyramid has 8 edges, namely *AB, AE, AD, AC, EB, ED, DC* and *CB*.



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



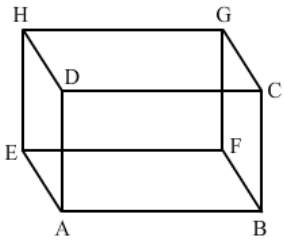
(iv) A triangular prism has 9 edges, namely *QR, RS, QS, TU, TV, UV, QT, RU*, and *SV*.



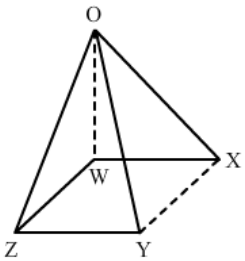
Q3.

Answer :

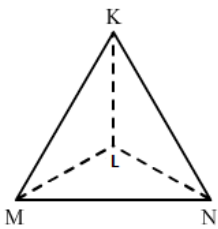
(i) A cuboid has 8 vertices, namely *A, B, C, D, E, F, G* and *H.*



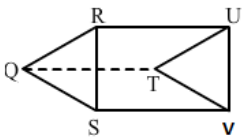
(ii) A square pyramid has 5 vertices, namely *O, W, X, Y* and *Z.*



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



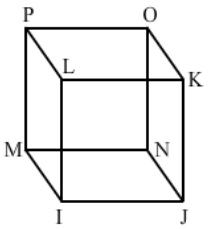
(iv) A triangular prism has 6 vertices, namely *Q, R, S, T, U* and *V.*



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.

RS Aggarwal Solutions Class 8 Mathematics

Three Dimensional Shapes

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

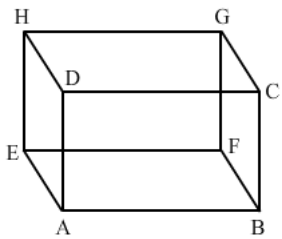
E – Number of edges

V – Number of vertices

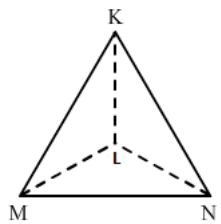
Q2.

Answer :

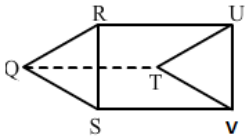
(i) A cuboid has 12 edges, namely *AD, DC, CB, BA, EA, FB, HD, DC, CG, GH, HE,* and *GF.*



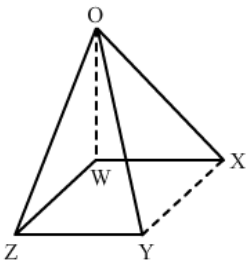
(ii) A tetrahedron has 6 edges, namely *KL, LM, MN, NL , KM* and *KN.*



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



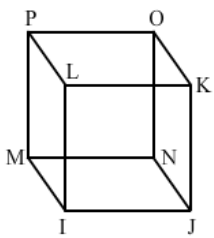
(iv) A square pyramid has 8 edges, namely *OW, OX, OY , OZ , WX, XY, YZ* and *ZW.*



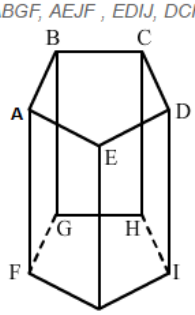
Q3.

Answer :

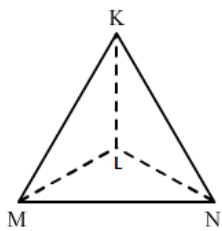
(i) A cube has 6 faces, namely *IJKL, MNOP, PLIM , OKJN, POKL* and *MNJI.*



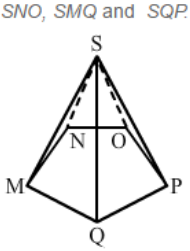
(ii) A pentagonal prism has 7 faces, i.e. 2 pentagons and 5 rectangles, namely *ABCDE, FGHIJ, ABGF, AEJF , EDIJ, DCHI* and *CBGH.*



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



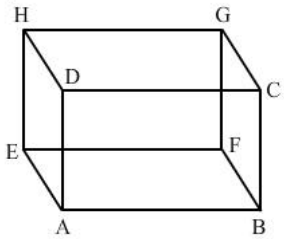
(iv) A pentagonal pyramid has 6 faces, i.e. 1 pentagon and 5 triangles, namely *NOPQM, SNM, SOP, SNO, SMQ* and *SQP.*



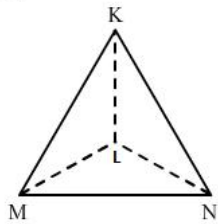
Q4.

Answer :

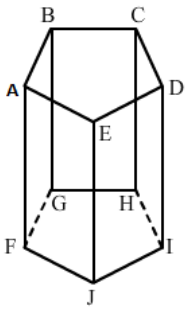
(i) A cuboid has 8 vertices, namely *A, B, C, D, E, F, G* and *H*.



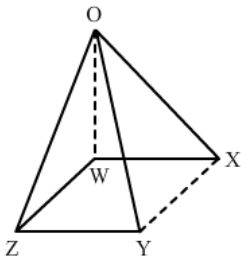
(ii) A tetrahedron has 4 vertices, namely *K, L, M* and *N*.



(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.

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.)

$\text{Number of faces} = F = 2 \text{ squares} + 4 \text{ rectangular} = 6$
$\text{Number of edges} = E = 12$
$\text{Number of vertices} = V = 8$
$\Rightarrow (F - E + V) = 6 - 12 + 8 = 2$

(ii) A tetrahedron

$\text{Number of faces} = F = 4$
$\text{Number of edges} = E = 6$
$\text{Number of vertices} = V = 4$
$\Rightarrow (F - E + V) = 4 - 6 + 4 = 2$

(iii) A triangular prism

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

(iv) A square pyramid

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