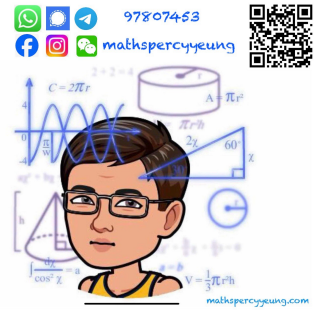


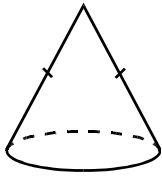
Chapter 4 Study of 3-D Figures



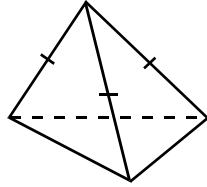
Multiple Choice Section

1. Which of the following is a right pyramid?

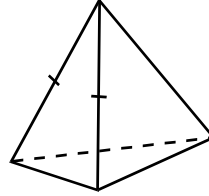
I.



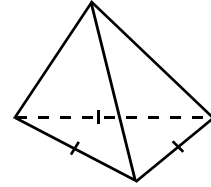
II.



III.



IV.



- A. II only
- B. III only
- C. II, III and IV only
- D. I, II, III and IV

2. If O is the foot of perpendicular of the vertex V of a nonagonal pyramid, find the angle between the straight line VO and the base.

- A. 17°
- B. 20°
- C. 90°
- D. 180°

3. Which of the following are correct?

- I. The base of a right triangular pyramid is a triangle.
 - II. The lateral face of a right rectangular pyramid is a triangle.
 - III. The lateral face of a right regular pentagonal pyramid is a regular pentagon.
- A. I only
 - B. II only
 - C. I and II only
 - D. I, II and III

4. How many planes of reflection are there in a right regular 21-gonal pyramid?

- A. 21
- B. 22
- C. 23

D. 24

5. How many planes of reflection are there in a right regular 19-gonal prism?

A. 19

B. 20

C. 21

D. 22

6. If a solid has 8-fold rotational symmetry about the axis PQ , what should be the smallest angle of rotation of the solid about the axis PQ in order to coincide with itself?

A. 15°

B. 20°

C. 40°

D. 45°

7. A right pyramid with a regular polygonal base has 9-fold rotational symmetry about the axis which passes through the vertex and the foot of perpendicular of the vertex. How many sides are there in the base of this pyramid?

A. 8

B. 9

C. 10

D. 11

8. How many axes of rotation are there in a right regular nonagonal prism?

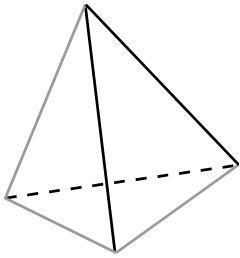
A. 7

B. 8

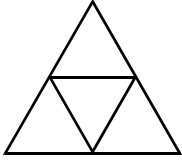
C. 9

D. 10

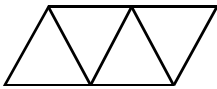
9. The figure shows a regular tetrahedron. If it is cut along the grey edges, what is the net of the solid?



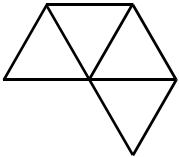
A.



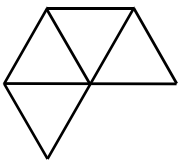
B.



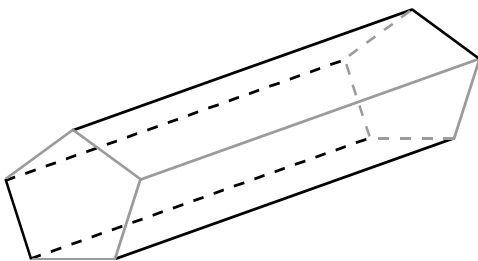
C.



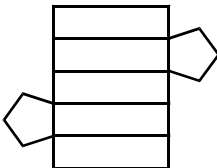
D.

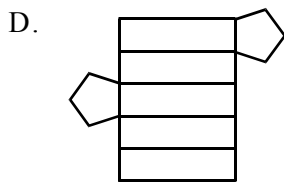
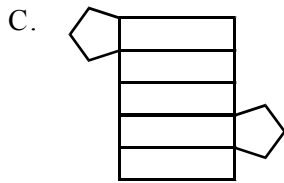
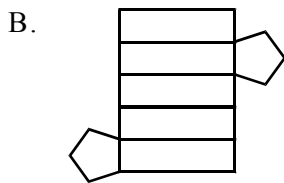


10. The figure shows a right regular pentagonal prism. If it is cut along the grey edges, what is the net of the solid?

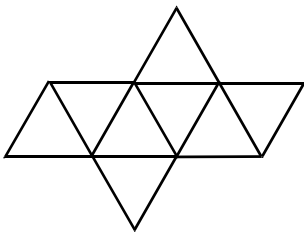


A.





11. If the following net is folded up to form a regular polyhedron, what kind of solid will you get?

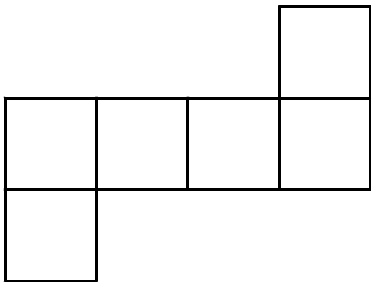


- A. Regular tetrahedron
- B. Regular hexahedron
- C. Regular octahedron
- D. Regular dodecahedron

12. In order to get a net of a right regular hexagonal pyramid, how many edges of it should be cut at least?

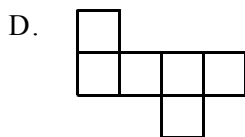
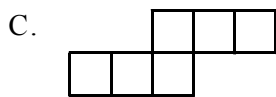
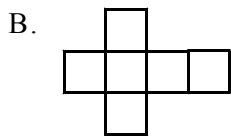
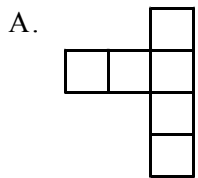
- A. 3
- B. 4
- C. 6
- D. 12

13. If the following net is folded up to form a solid, how many edges are there in this solid?

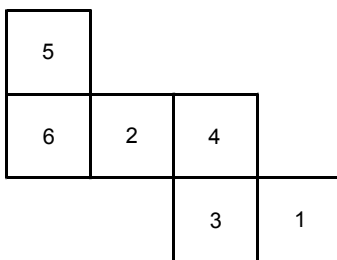


- A. 6
- B. 12
- C. 18
- D. 24

14. Which of the following is not a net of a regular hexahedron?



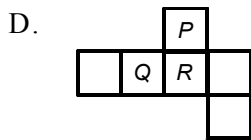
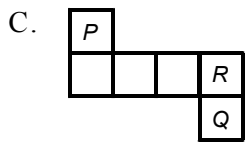
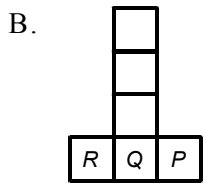
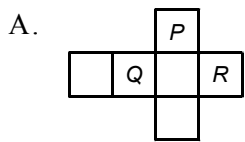
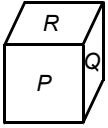
15. If the following net is folded up to form a cube, what is the largest value of the product of the pair of numbers which are facing oppositely to each other?



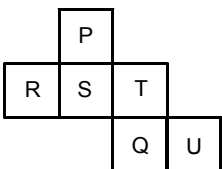
- A. 10

- B. 15
- C. 24
- D. 30

16. Which of the following nets can be folded up to form the cube below?



17. If a cube is made by folding up the following net, what is the letter on the opposite side of letter S?



- A. P
- B. R
- C. T
- D. U

18. Letters A, B, C, D and E are printed on each face of a cube, and one of the letters appears twice. The figures below show three different ways to place the cube, which of the following is a net of the cube?

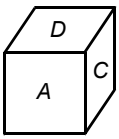


Figure I

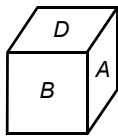


Figure II

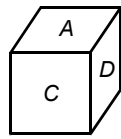
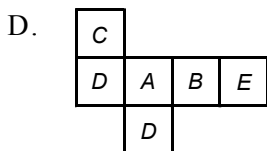
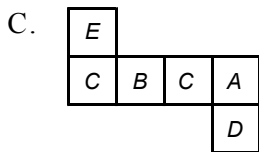
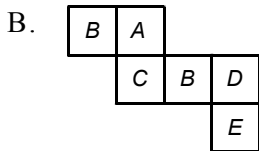
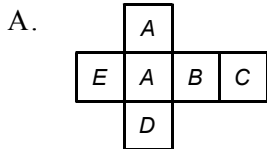
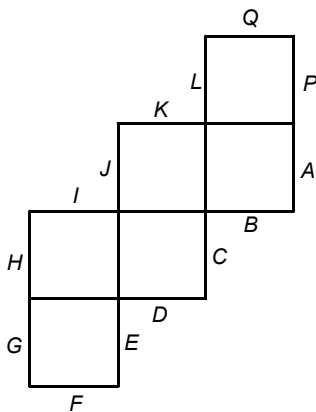


Figure III



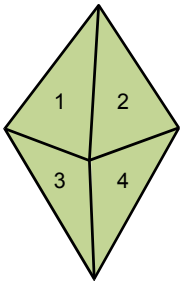
19. The figure shows a net of a cube. If it is folded up to form a cube, which side will coincide with Q ?



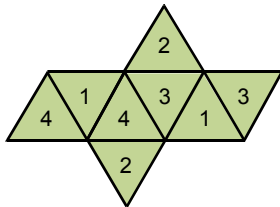
- A. E

- B. *H*
- C. *J*
- D. *K*

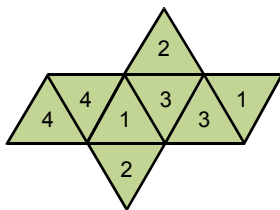
20. Which of the following nets can be folded up to form the regular octahedron below?



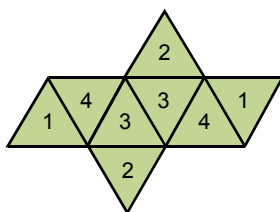
A.



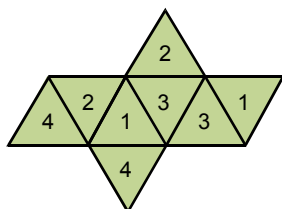
B.



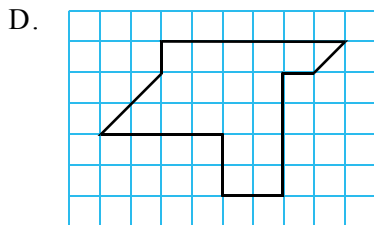
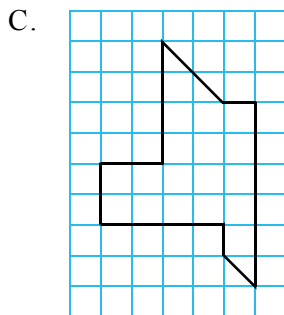
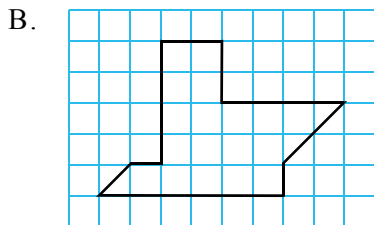
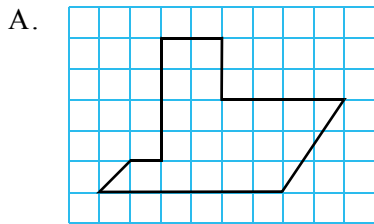
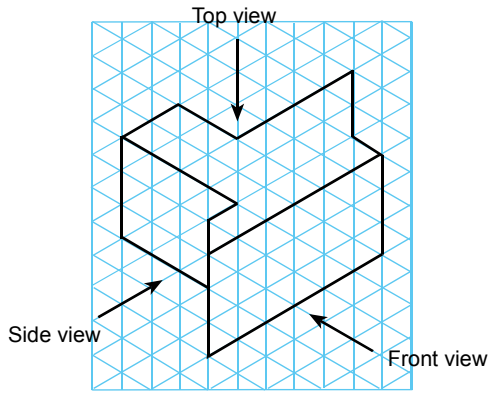
C.



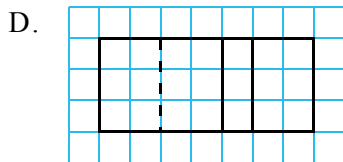
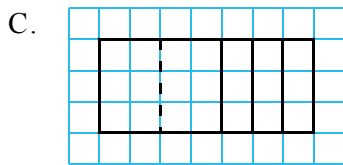
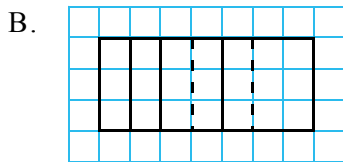
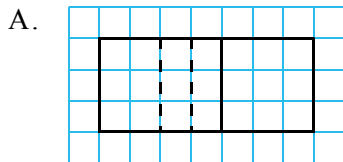
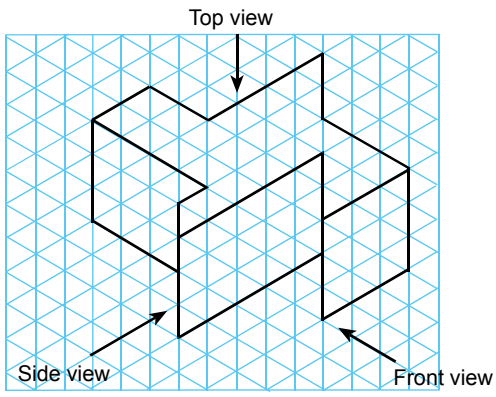
D.



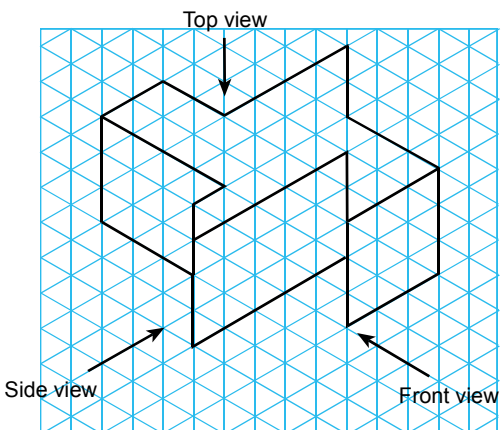
21. Which of the following is the top view of the solid?

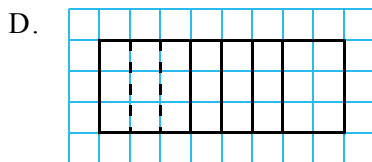
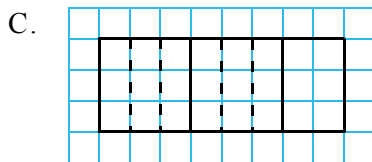
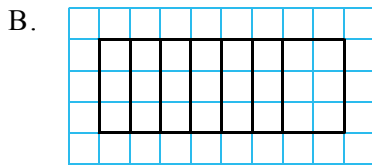
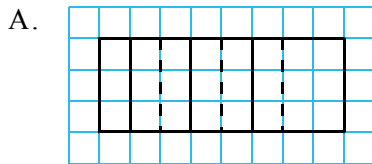


22. Which of the following is the side view of the solid?

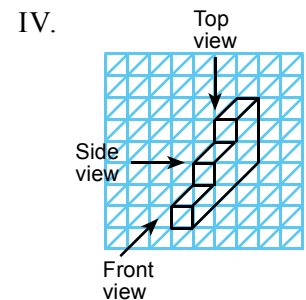
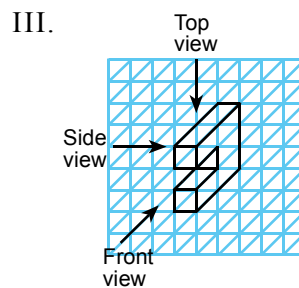
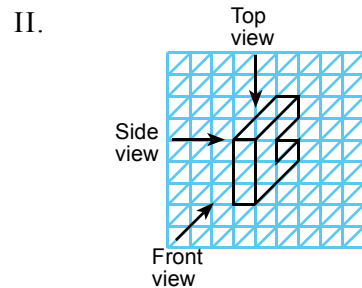
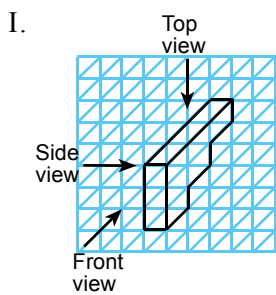
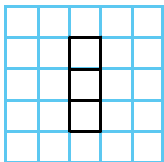


23. Which of the following is the front view of the solid?



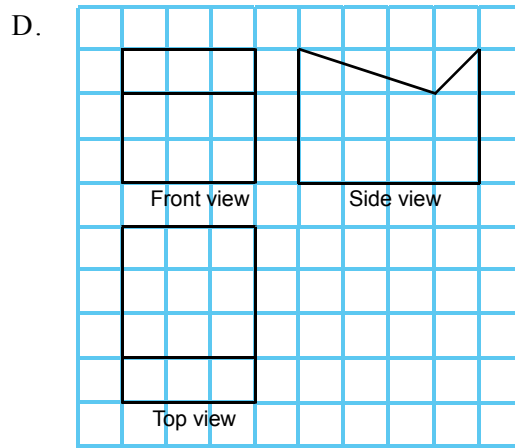
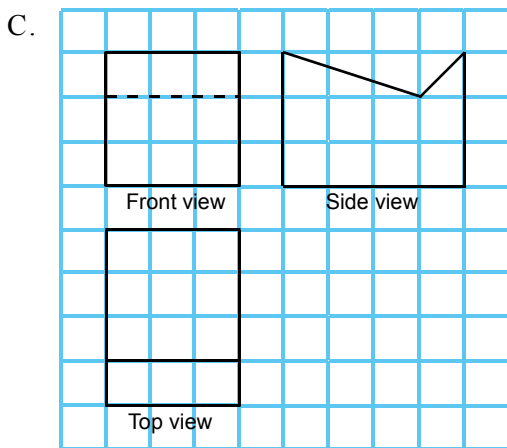
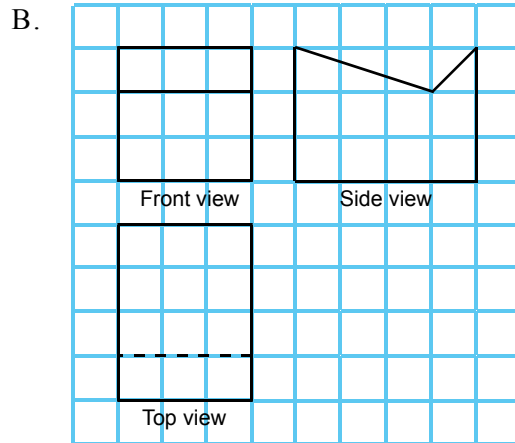
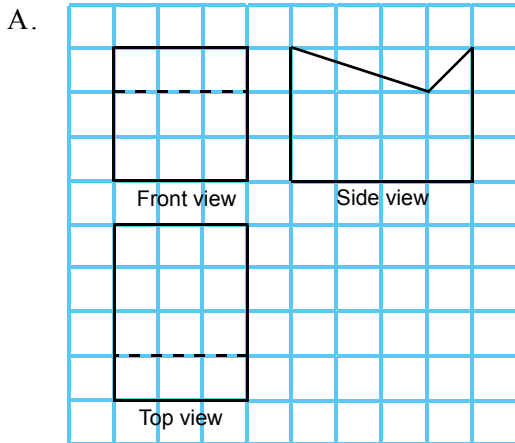
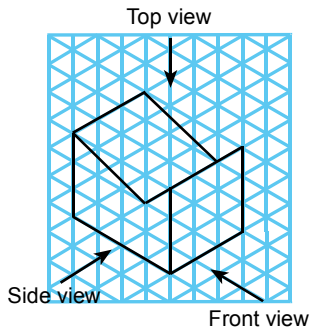


24. Which of the following solids has/have the same front view as the figure below?

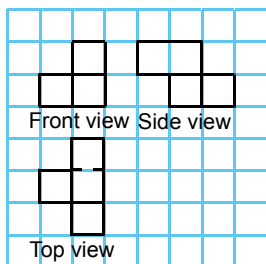


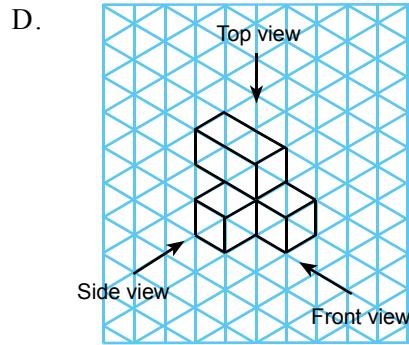
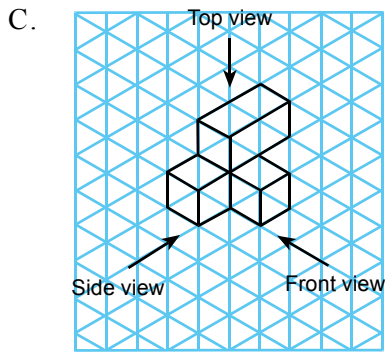
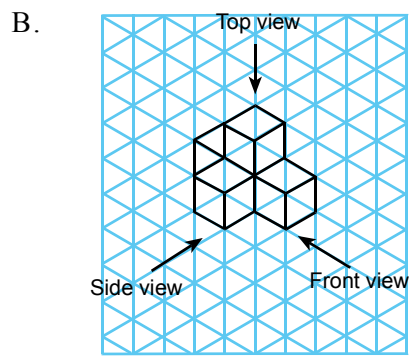
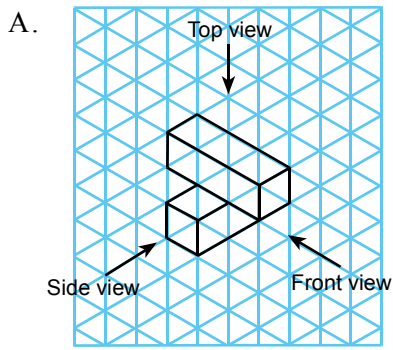
- A. I and II only
- B. III only
- C. III and IV only
- D. I, II, III and IV

25. Which of the following is the orthographic projection of the solid?

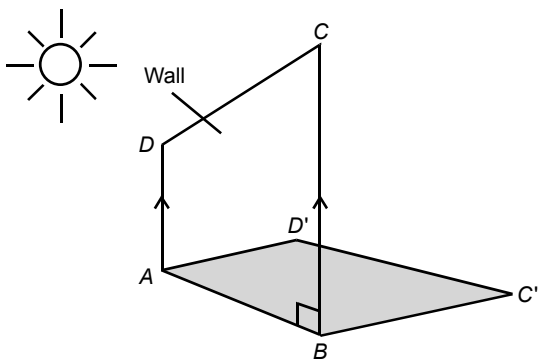


26. The figure shows the orthographic projection of a solid, which of the following is the isometric projection of the solid?

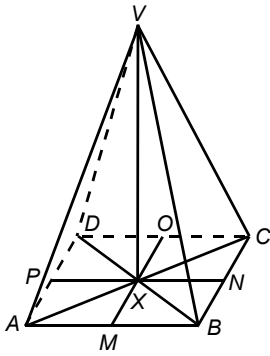




27. The figure shows a vertical wall $ABCD$ which is a trapezium. If the sun shines from the left and the image $ABC'D'$ is formed on the ground, which of the following is a right angle?

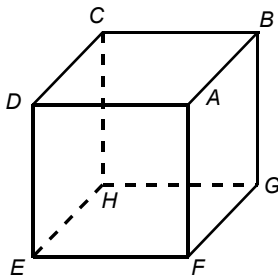


- A. $\angle AD'C'$
 B. $\angle DAD'$
 C. $\angle BC'C$
 D. $\angle BC'D'$
28. In the figure, $VABCD$ is a right pyramid with a square base. If M , N , O and P are the mid-points of AB , BC , CD and DA respectively, which of the following are right angles?



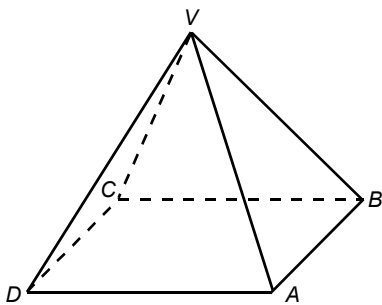
- I. $\angle V X N$ II. $\angle N X O$ III. $\angle M X D$ IV. $\angle B A C$
- A. I and II only
 B. II and IV only
 C. I, II and IV only
 D. I, II, III and IV

29. In the figure, $ABCDEF GH$ is a cube. Which of the following is not a right angle with D as the vertex?



- A. $\angle A D C$
 B. $\angle B D G$
 C. $\angle E D C$
 D. $\angle B D E$

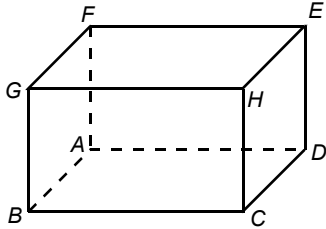
30. In the figure, $V A B C D$ is a right pyramid with a rectangular base. Which of the following is the angle between the line segment $V C$ and the base $A B C D$?



- A. $\angle B C D$
 B. $\angle V C B$

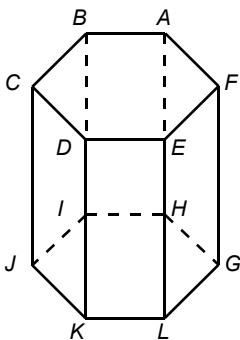
- C. $\angle VCD$
- D. $\angle VCA$

31. In the figure, $ABCDEFGH$ is a cuboid. Which of the following is the angle between the plane $GFDC$ and the plane $EDCH$?



- A. $\angle FDC$
- B. $\angle FDE$
- C. $\angle GCD$
- D. $\angle GCB$

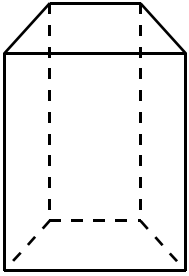
32. The figure shows a right regular hexagonal prism. Which of the following line segments is not perpendicular to the line segment AH ?



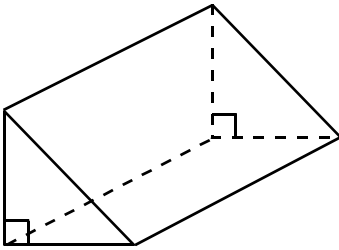
- A. DK
- B. BA
- C. IH
- D. HG

Section A(1)

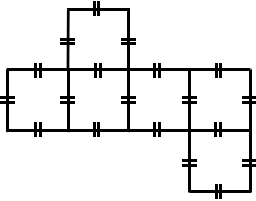
1. The figure shows a prism with a trapezium base. How many plane(s) of reflection is/are there? Show all the plane(s) of reflection by drawing diagram(s).



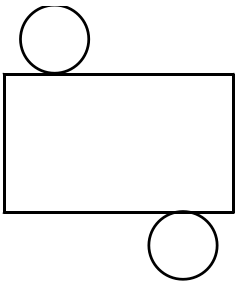
2. The figure shows a right prism with an isosceles right-angled triangular base. How many plane(s) of reflection is/are there? Show all the plane(s) of reflection by drawing diagram(s).



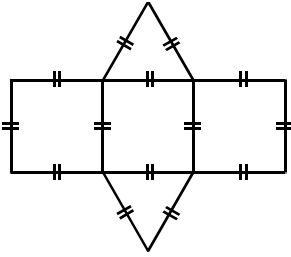
3. If the following net is folded up to form a solid, what kind of solid will you get?



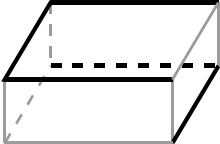
4. If the following net is folded up to form a solid, what kind of solid will you get?



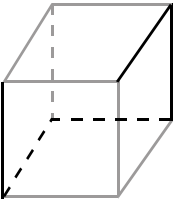
5. If the following net is folded up to form a solid, what kind of solid will you get?



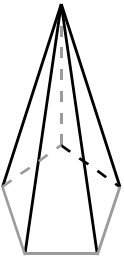
6. If the following cuboid is cut along the grey edges, draw its net.



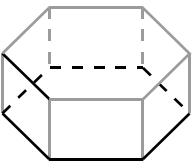
7. If the following cube is cut along the grey edges, draw its net.



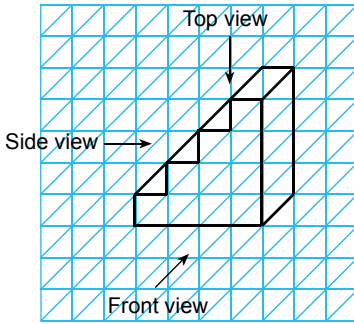
8. If the following right regular pentagonal pyramid is cut along the grey edges, draw its net.



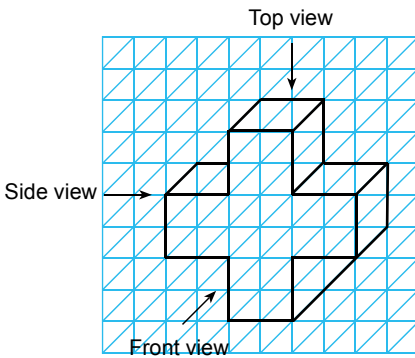
9. If the following right regular hexagonal prism is cut along the grey edges, draw its net.



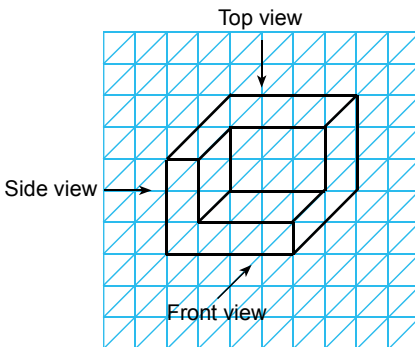
10. Draw the orthographic projection for the following solid.



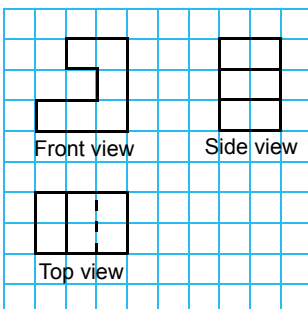
11. Draw the orthographic projection for the following solid.



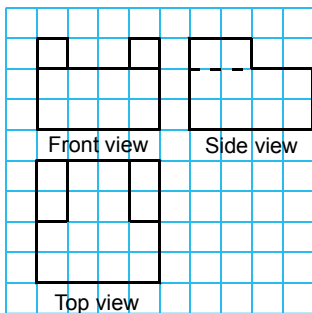
12. Draw the orthographic projection for the following solid.



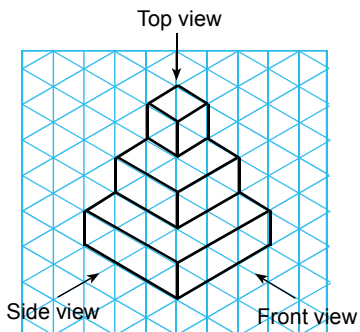
13. Draw the oblique projection of the solid according to its orthographic projection.



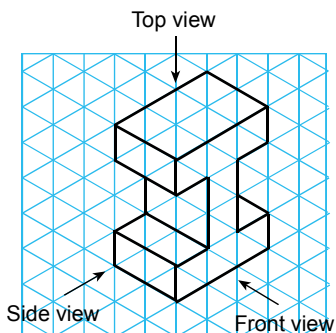
14. Draw the oblique projection of the solid according to its orthographic projection.



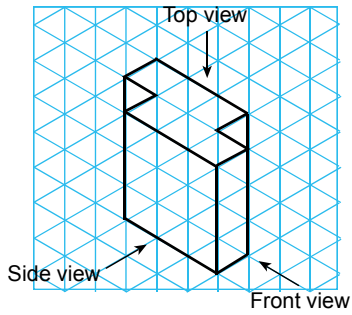
15. Draw the orthographic projection for the following solid.



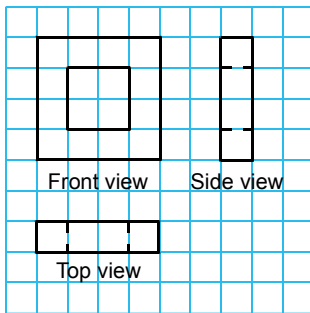
16. Draw the orthographic projection for the following solid.



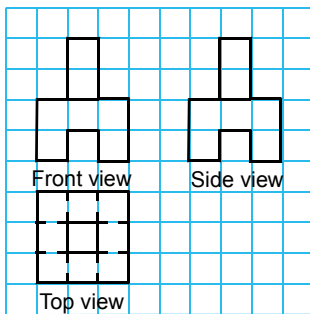
17. Draw the orthographic projection for the following solid.



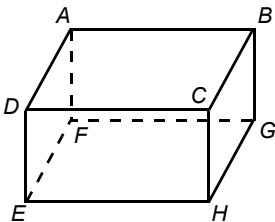
18. Draw the isometric projection of the solid according to its orthographic projection.



19. Draw the isometric projection of the solid according to its orthographic projection.

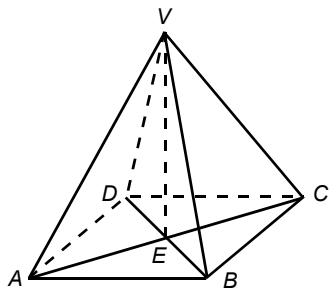


20. In the figure, $ABCDEFGH$ is a cuboid.



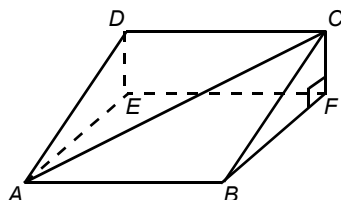
- (a) Find the projection of A on the plane $EFGH$.
- (b) Find the projection of A on the plane $CBGH$.
- (c) Find the projection of A on the plane $CDEH$.

21. In the figure, $VABCD$ is a right pyramid with a rectangular base. VE is the height of the pyramid.



- (a) Find the projection of the line segment VB on the plane $ABCD$.
- (b) Find the angle between the line segment VB on the plane $ABCD$.
- (c) Find the projection of the line segment VC on the plane VDB .
- (d) Find the angle between the line segment VC on the plane VDB .

22. The figure shows a right triangular prism.



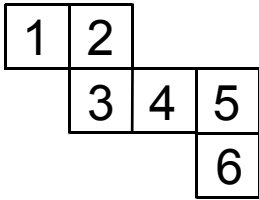
- (a) Find the projection of the line segment DC on the plane $ABFE$.
- (b) Find the projection of the line segment AC on the plane $ABFE$.
- (c) Find the right angles with F as the vertex.
- (d) Find the angle between the line segment AC on the plane $ABFE$.
- (e) Find the angle between the plane $ABCD$ and the plane $ABFE$.

Section A(2)

23. For a right regular hexagonal pyramid,

- (a) find the number of planes of reflection and show the planes of reflection by drawing diagrams.
- (b) find the number of axes of rotation and show the axes of rotation by drawing diagrams. Hence, find the number of folds of rotational symmetry for each axis of rotation.

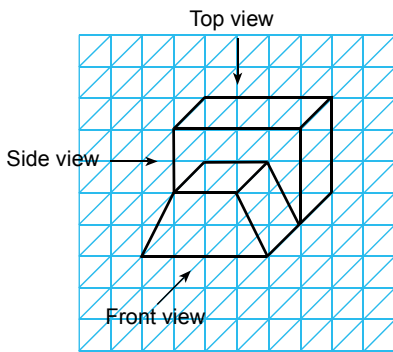
24. The figure shows a net of a cube. A number is printed on each square of the net.



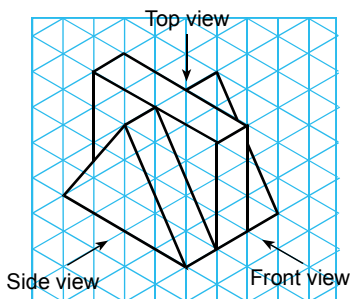
If a cube is made by folding up the net,

- (a) what is the number on the opposite side of 1?
- (b) what is the number on the opposite side of 6?

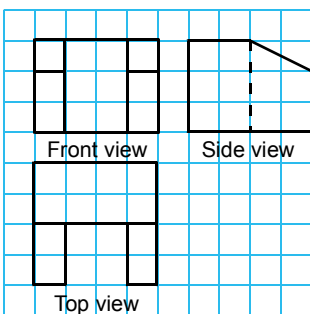
25. Draw the orthographic projection for the following solid.



26. Draw the orthographic projection for the following solid.

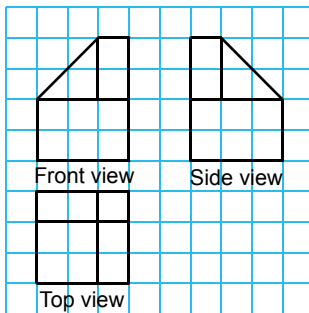


27. Draw the oblique projection of the solid according to its orthographic projection.

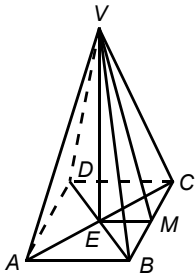


Section B

28. Draw the isometric projection of the solid according to its orthographic projection.



29. In the figure, $VABCD$ is a right regular pyramid with a square base. VE is the height of the pyramid and M is the mid-point of BC .



- Find the projection of the line segment VM on the plane $ABCD$.
- Find all the right angles with M as the vertex.
- Find the angle between the plane VBC and the plane $ABCD$.