MATHS

BOOKS - NCERT EXEMPLAR

PRACTICAL GEOMETRY SYMMETRY AND VISUALISING SOLID SHAPES

Solved Examples

1. Which of the following is not a symmetrical figure?

A. 

B. 

C. 

D. 

Answer: D

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2. In the workd MATHS which of the following pairs of letters shows rotational symmetry

A. M and T

B. H and S

C. A and S

D. T and S

Answer: B

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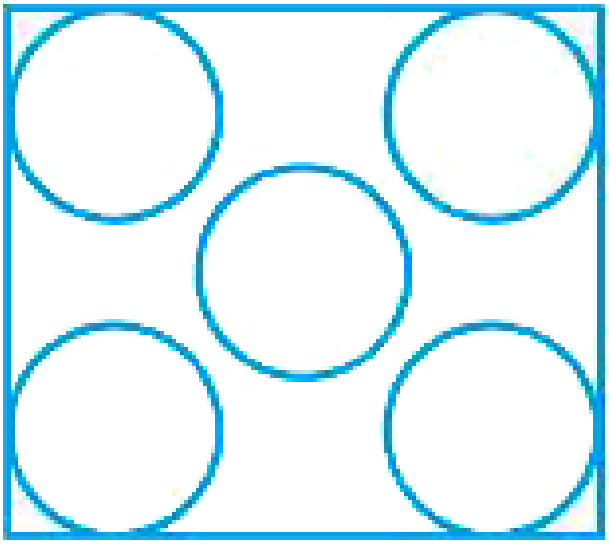
3. The angle of rotation for the figure 12.2 is



A. 45°

B. 60°

C. 90°

D. 180°

Answer: C

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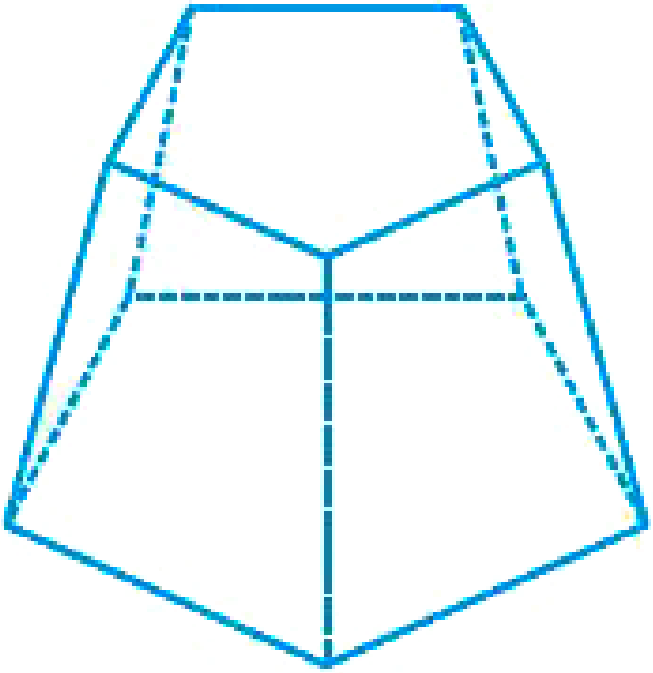
4. The figure 12.3 has _____vertices, _____edges and _____faces.



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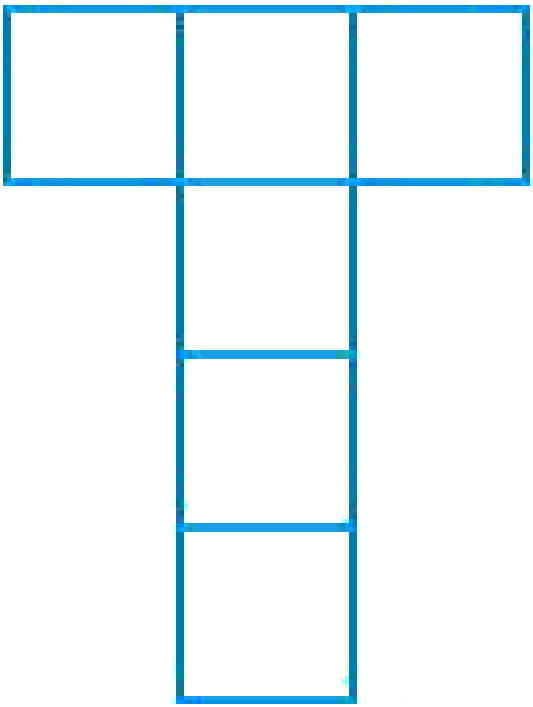
5. The adjoinilng net in figure represents a_____.



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6. Rotation turns an object about a fixed point.

This fixed point is called_____.

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7. True or false: A net of 3-D shape is a sort of skeleton-outline in 2-D,. Which when folded results in the 3-D shape.

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8. A regular pentagon has no lines of symmetry.

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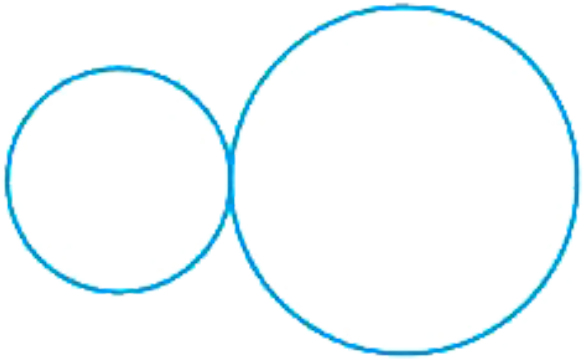
9. State whether given statement is True or False.

Order of rotational symmetry for the figure is 4.



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10. Draw all the lines of symmetry for the following letters if they exist.

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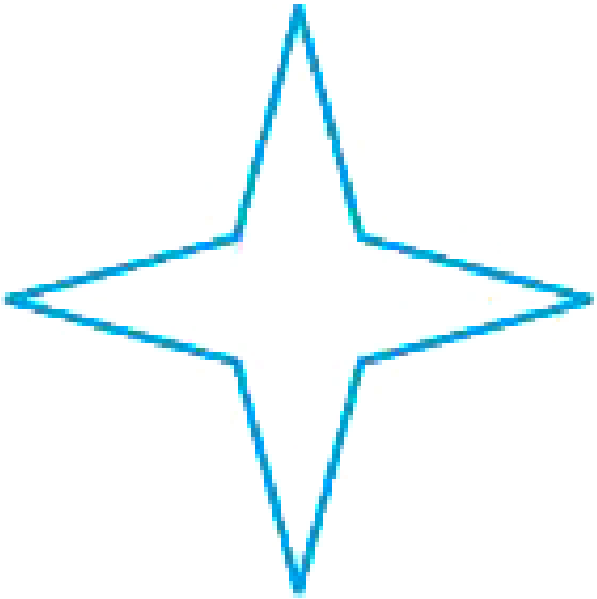
11. State whether the figure shows rotational symmetry. If yes then what is the order of

rotational symmetry?



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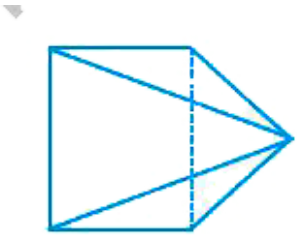
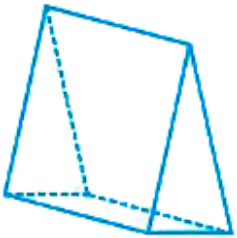
12. Identify the following figures:



(i)



(ii)

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13. Construct a triangle PQR such that PQ=6 cm, QR=7cm and PR=4.5cm.

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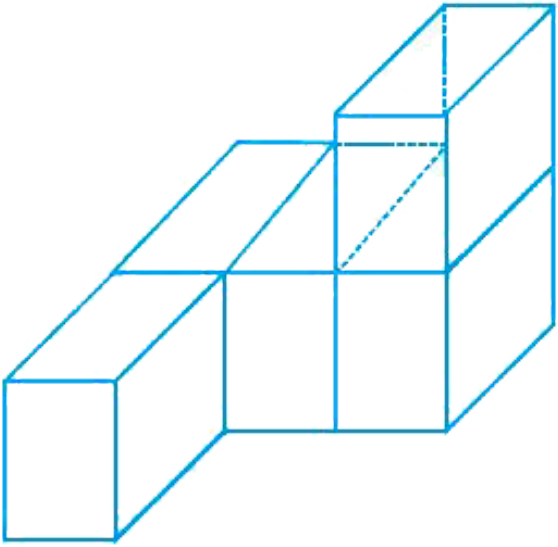
14. Draw the top, the front and the side views of the following solid figure made up of cubes.



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15. Given a line l and a point M on it draw a perpendicular MP of l where MP=5.2cm and a line q parallel to l through P.

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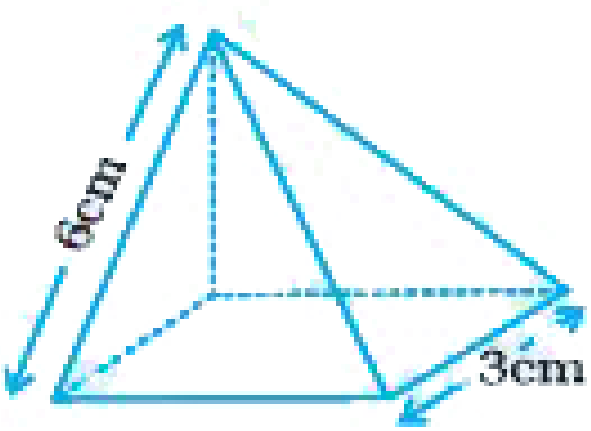
16. Determine the number of edges, vertices and faces in the fig.



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Think And Discuss

1. Write the number of vertices, edges and faces of a pentagonal prism ?

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2. Explain what it means for a figures to be symmetric.

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3. Tell which capital letters of the alphabet have line symmetry.

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4. Tell which capital letters of the alphabet have rotational symmetry.

5. Give a situation in which the front and side views of a figure would be the same.

6. How many cubes did you use to build the three dimensional figure?

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Exercise

1. A triangle can be constructed by taking its sides as:

A. 1.8 cm, 2.6 cm, 4.4 cm

B. 2cm, 3cm, 4cm

C. 2.4cm, 2.4cm, 6.4cm

D. 3.2 cm, 2.3 cm, 5.5 cm

Answer:

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2. A triangle can be constructed by taking two of its angles as:

A. $110^\circ, 40^\circ$

B. $70^\circ, 115^\circ$

C. $135^\circ, 45^\circ$

D. $90^\circ, 90^\circ$

Answer:

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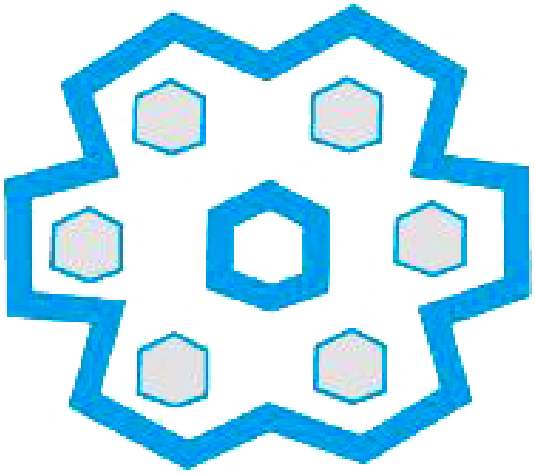
3. The number of lines of symmetry in the figure given below is:



A. 4

B. 8

C. 6

D. infinitely many

Answer:

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4. The number of lines of symmetry in fig. is

A. 1

B. 3

C. 6

D. infinitely many

Answer:

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5. The order of rotational symmetry in the fig given below is

A. 4

B. 8

C. 6

D. infinitely many

Answer:

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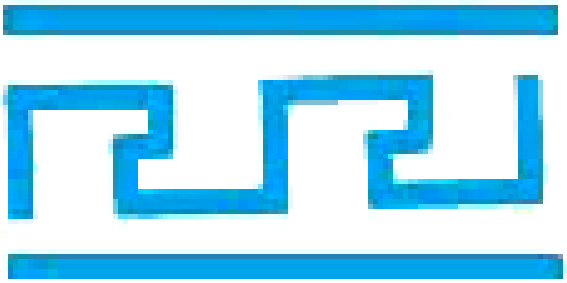
6. The order of rotational symmetry in the figure given below is



A. 4

B. 2

C. 1

D. infinitely many

Answer:

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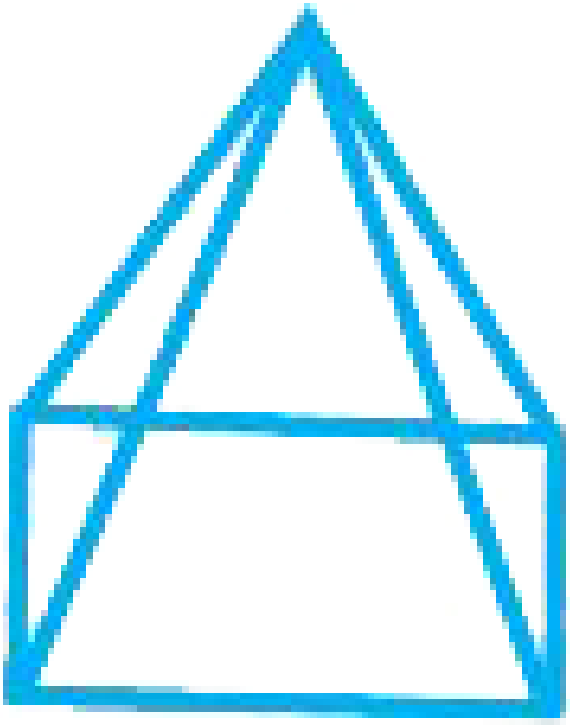
7. The name of the given solid in fig is



A. triangular pyramid

B. rectangular pyramid

C. rectangular prism

D. triangular prism

Answer:

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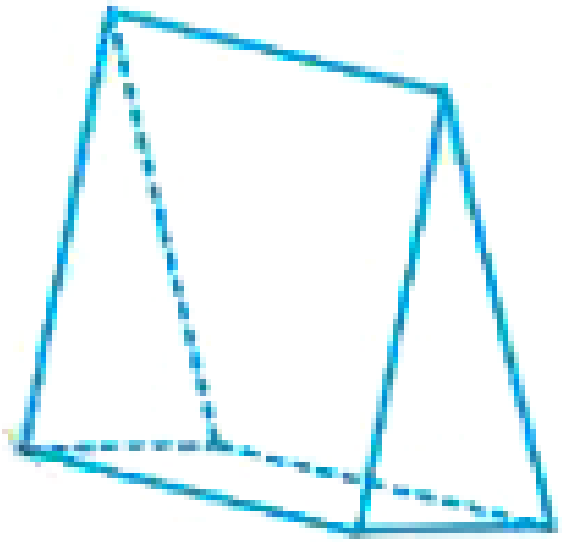
8. The name of the solid in fig is



A. triangular pyramid

B. rectangular pyramid

C. triangular prism

D. rectangular pyramid

Answer:

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9. All faces of a pyramid are always:

A. Triangular

B. Rectangular

C. Congruent

D. None of these

Answer:

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10. A solid that has only one vertex is

A. Pyramid

B. Cube

C. Cone

D. Cylinder

Answer:

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11. Out of the following which is a 3-D figure?

A. Square

B. Sphere

C. Triangle

D. Circle

Answer:

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12. Total number of edges a cylinder has

A. 0

B. 1

C. 2

D. 3

Answer:

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13. A solid that has two opposite identical faces and other faces as parallelograms is a

A. prism

B. pyramid

C. cone

D. sphere

Answer:

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14. The solid with one circular face, one curved surface and one vertex is known as:

A. cone

B. sphere

C. cylinder

D. prism

Answer:

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15. If three cubes each of edge 4 cm are placed end to end, then the dimensions of resulting solild are:

A. $12cm \times 4cm \times 4cm$

B. $4cm \times 8cm \times 4cm$

C. $4cm \times 8cm \times 12cm$

D. $4cm \times 6cm \times 8cm$

Answer:

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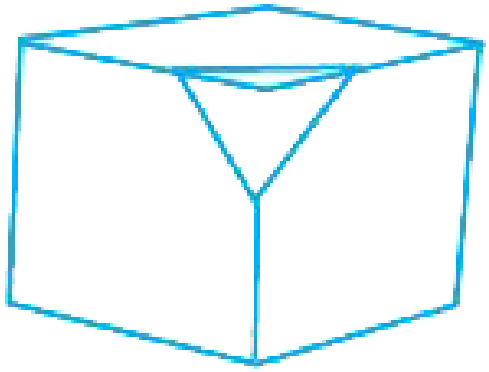
16. When we cut a corner of a cube as shown in the figure we get the cutout piece as:



A. square pyramid

B. trapezium prism

C. triangular pyramid

D. a triangle

Answer:

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17. If we rotate a right angled triangle of height 5 cm and base 3 cm about its height a full turn, we get

A. cone of height 5 cm, base 3 cm

B. triangle of height 5 cm, base 3 cm

C. cone of height 5 cm, base 6 cm

D. triangle of height 5 cm, base 6 cm

Answer:

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18. If we rotate a right angled triangle of height 5 cm and base 3 cm about its base, we get:

A. cone of height 3 cm and base 3 cm

B. cone of height 5 cm and base 5 cm

C. cone of height 5 cm and base 3 cm

D. cone of height 3 cm and base 5 cm

Answer:

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19. When a torch is pointed towards one of the vertical edges of a cube, you get a shadow of cube in the shape of

A. square

B. rectangle but not a square

C. circle

D. triangle

Answer:

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20. Which of the following sets of triangles could be the lengths of the sides of a right angled triangle:

A. 4cm, 4cm, 6cm

B. 9cm, 16cm, 26m

C. 1.5cm,3.6cm, 3.9cm

D. 7cm, 24cm, 26cm

Answer:

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21. In which of the following cases, a unique triangle can be drawn

A. AB=4cm, BC=8cm and CA=2cm

B. BC=4.2cm, $\angle B = 90^\circ$ and $\angle C = 110^\circ$

C. $XY = 5cm$, $\angle X = 45^\circ$ and $\angle Y = 60^\circ$

D. An isosceles triangles with the length of each equal side 6.2 cm.

Answer:

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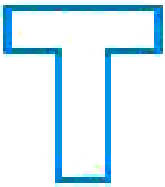
22. Which of the following has no line of symmetry?

A. 

B. 

C. 

D. 

Answer:

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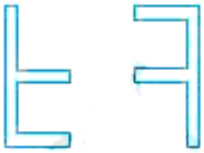
23. Which of the following are reflections of each other?

A. 

B. 

C. 

D. 

Answer:

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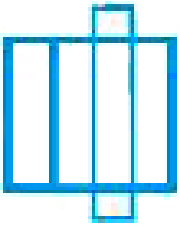
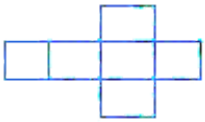
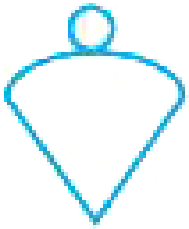
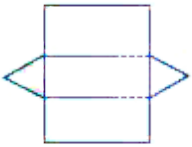
24. Which of these nets is a net of a cube?

A. 

B. 

C. 

D. 

Answer:

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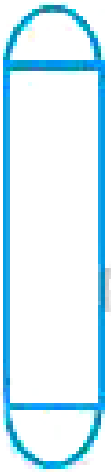
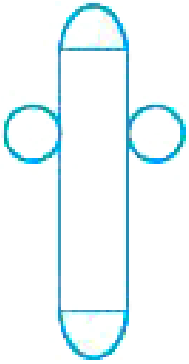
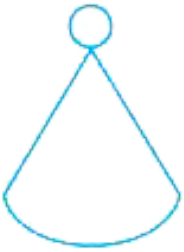
25. Which of the following nets is a net of a cylinder?

A. 

B. 

C. 

D. 

Answer:

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26. Which of the following letter of English alphabet has only two lines of symmetry?

A. 

B. 

C. 

D. 

Answer:

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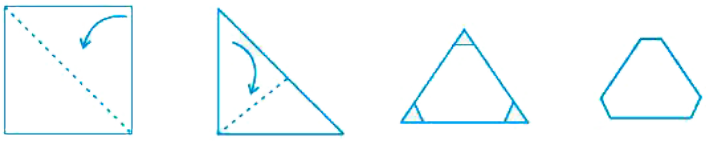
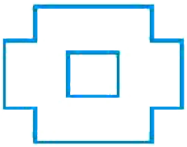
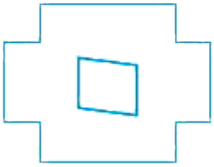
27. Take a square piece of paper as shown in figure(1). Fold it along its diagonals as shown in figure (2). Again fold it as shown in figure (3). Imagine that you have cut off 3 pieces of the form of congruent isosceles right angled triangles out of it as shown in figure 4.

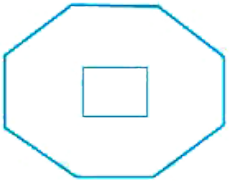


(1) (2) (3) (4)

On opening the piece of paper which of the following shapes will you get?

A. 

B. 

C. 

D. 

Answer:

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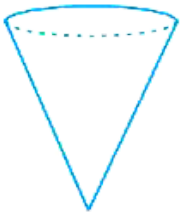
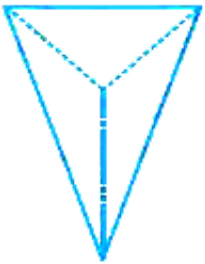
28. Which of the following 3-dimensional figures has the top, side and front as triangles?

A. 

B. 

C. 

D. 

Answer:

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29. In an isosceles right triangle, the number of lines of symmetry is _____.

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30. Rhombus is a figure that has _____lines of symmetry and has a rotational symmetry of order_____.

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31. _____triangle is a figure that has a line of symmetry but lacks rotational symmetry.

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32. _____is a figure that has neither a line of symmetry nor a rotational symmetry.

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33. _____and _____are the capital letter of English alphabets that have one line of symmetry but they interchange to each other when rotated through 180°.

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34. The common portion of two adjacent faces of a cuboid is called _____.

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35. A plane surface of a solid enclosed by edges is called_____.

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36. The corners of solid shapes are called its_____.

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37. A solid with no vertex is _____.

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38. A triangular prism has_____faces, _____edges and _____vertices.

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39. A triangular pyramid has _____faces,_____ edges and _____vertices.

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40. A square pyramid has_____faces,_____edges and _____vertices.

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41. Fill in the blanks:- Out of _____faces of a triangular prism,_____are rectangles and _____are triangles.

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42. The base of a triangular pyramid is a _____.

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43. Out of _____faces of a square pyramid, _____are triangles and _____is/are squares.

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44. Out of _____faces of a rectangular pyramid _____are triangles and base is _____.

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45. Each of the letters H,N,S and Z has a rotational symmetry of order _____.

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46. Order of rotational symmetry of a rectangle is _____.

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47. Order of rotational symmetry of a circle is _____.

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48. Each face of a cuboid is a _____.

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49. Line of symmetry for an angle is its _____.

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50. A parallelogram has _____line of symmetry.

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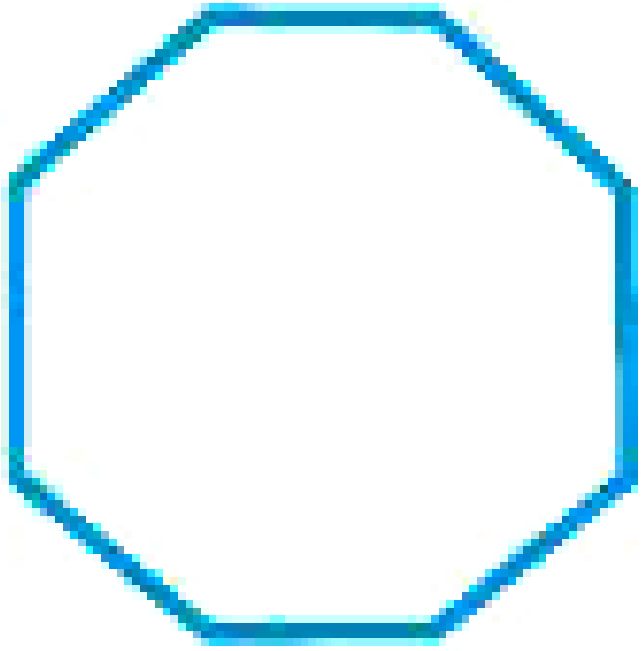
51. Order of rotational symmetry of



is _____.

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52. A_____triangle has no lines of symetry.

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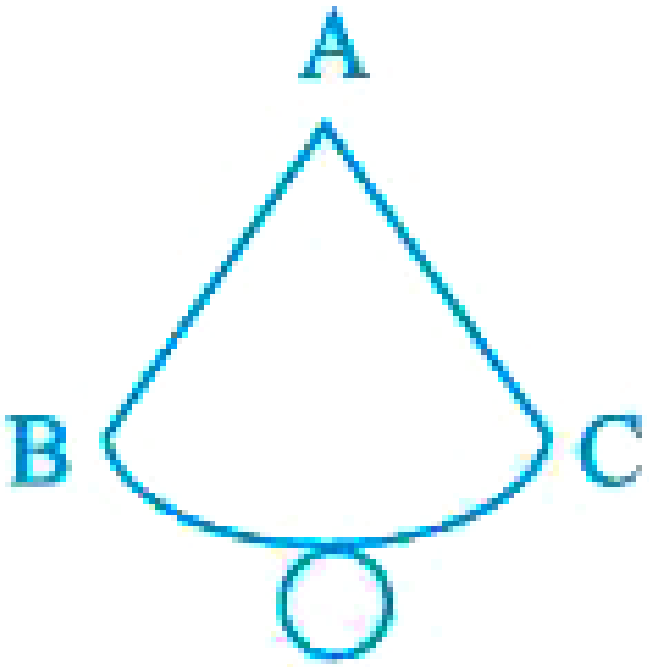

53. is a net of _____.

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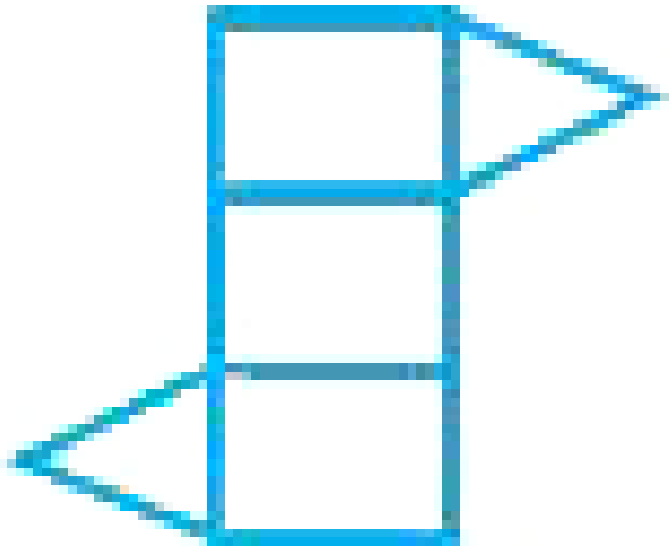

54. is a net of a _____.

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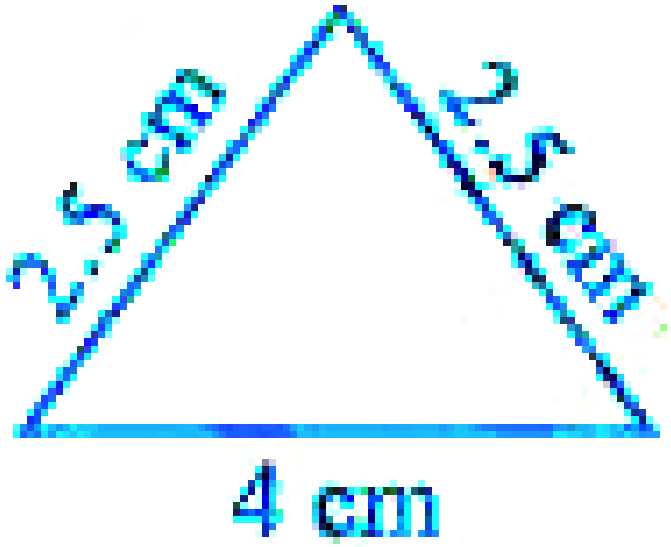
55. Order of rotational symmetry of



_____.

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56. A regular hexagon has six lines of symmetry.

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57. An isosceles trapezium has one line of symmetry.

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58. Order of rotational symmetry of a rhombus is four.

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59. Order of rotational symmetry of a semi circle is two.

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60. True or False: In oblique sketch of the solid, the measurements are kept proportional.

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61. True of False: An isometric sketch does not have proportional length.

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62. Write (T) for True and (F) for false:

(i) A Cylinder has no vertex.

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63. All the faces, except the base of a square pyramid are triangular. state true or false

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64. A pyramid has only one vertex. state true or false

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65. A triangular prism has 5 faces, 9 edges and 6 vertices. state true or false

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66. If the base of a pyramid is a square, it is called a square pyramid. state true or false

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67. A rectangular pyramid has 5 rectangular faces. state true or false

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68. Rectangular prism and cuboid refer to the same solid.

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69. A tetrahedron has 3 triangular faces and 1 rectangular face.

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70. State True or False

While rectangle is a 2 -D figure , cuboid is a 3-D figure.

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71. State True or False:

While sphere is a 2-D figure, circle is a 3-D figure.

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72. State True or False

Two dimensional figures are also called plane figures.


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73. A cone is a polyhedron.


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74. A prism has four bases.

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75. The number of lines of symmetry of a regular polygon is equal to the vertices of the polygon.

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76. State whether the given statement is True or False: The order of rotational symmetry of a figure is 4 and the angle of rotation is 180° only.

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77. Mirror reflection leads to symmetry always.

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78. Rotation turns an object about a fixed point which is known as centre of rotation.

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79. State True or False:

Isometric sheet divides the paper into small isosceles triangles made up of dots of lines.

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80. State True or False

The circle, the square, the rectangle and the triangle are examples of plane figures.

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81. State True or False:

The solid shapes are of two dimensional.

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82. State True or False

Triangle with length of sides as 5 cm, 6 cm and 11 cm can be constructed.

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83. Construct a right triangle whose base is 12cm and sum of its hypotenuse and other side is 18 cm.

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84. Draw a right triangle in which the sides (other than hypotenuse) are of lengths 4 cm and 3 cm. Then construct another triangle whose sides are $\frac{5}{3}$ times the corresponding sides of the given triangle.

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85. Draw two parallel lines at a distance 5 cm apart.

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86. Draw an isosceles triangle in which each of the equal sides is of length 3 cm and the angle between them is 45^0.

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87. Draw a triangle whose sides are of lengths $4\ cm,\ 5\ cm\ and\ 7\ cm$. Draw the perpendicular bisector of the largest side.

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88. Construct an obtuse angled triangle which has a base of 5.5 cm and base angles of 30° and 120°.

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89. Construct an equilateral triangle ABC of side 6cm.

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90. By what minimum angle does a regular hexagon rotate so as to coincide with its origional position for the first time?

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91. In the figure of cube.

(i) Which edge is the intersection of faces EFGH and EFBA?

(ii) Which faces intersect at edge FB?

(iii) Which three faces form the vertex A?

(iv) Which vertex is formed by the faces ABCD, ADHE and CDHG?

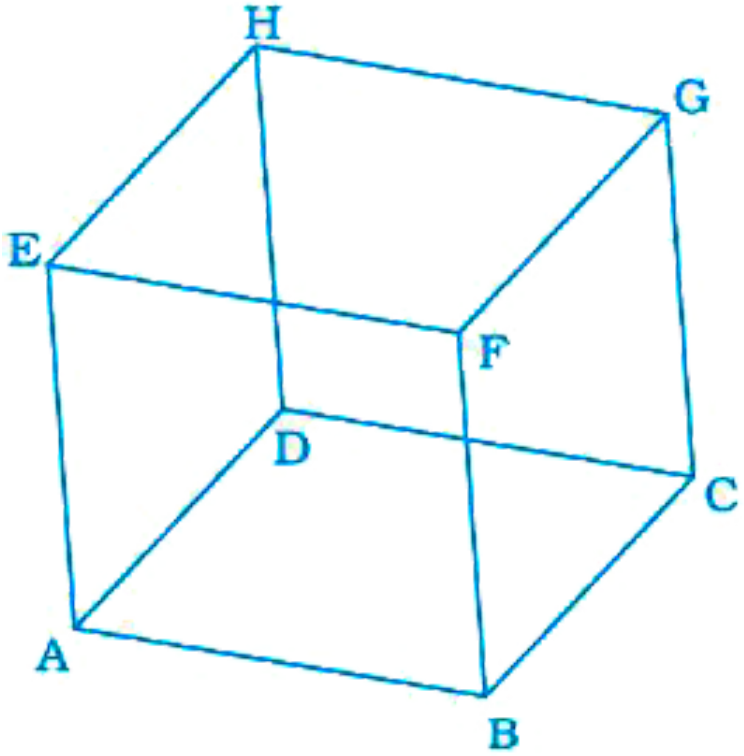
(v) Give all the eges that are parallel to edge AB.

(vi) Give the eges that are neither parallel nor perpendicular to edge BC.

(vii) Give all the edges that are perpendicular

to edge AB.

(viii) Give four vertices that do not all lie in one plane.



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92. Draw a net of a cuboid having same breadth and height, but length double the breadth.

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93. Draw the nets of the following

(i) Triangular prism

(ii) Tetrahedron

(iii) Cuboid

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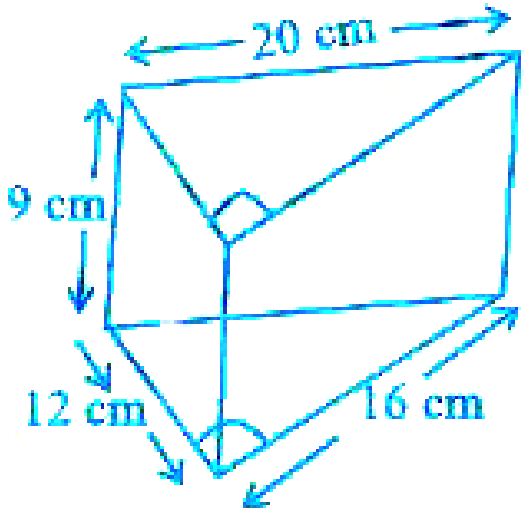
94. Draw a net of the solid given in the figure



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95. Draw an isometric view of a cuboid $6cm \times 4cm \times 2cm.$

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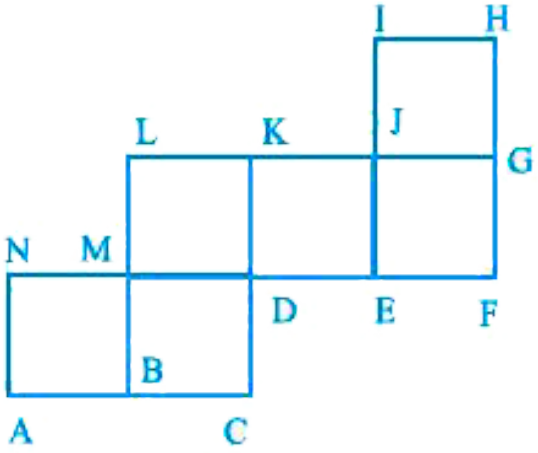
96. The net given below in fig can be used to make a cube.

(i) Which edge meets AN?

(ii) Which edge meets DE?



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97. Draw the net of triangular pyramid with base as equilateral triangle of side 3 cm and slant edges 5 cm.

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98. Draw the net of a square pyramid with base as square of side 4 cm and slant edges 6 cm.

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99. Find the area of a rectangle whose length is 36 cm and breadth 15 cm.

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100. Draw all lines of symmetry for each of the following figures as given below:

(a)  (b)  (c) 

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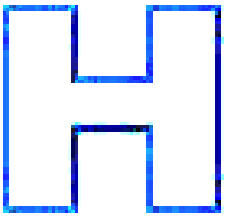
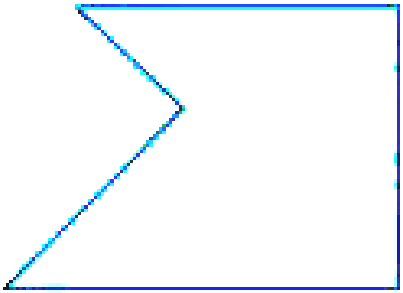
101. Draw all lines of symmetry, if it has.

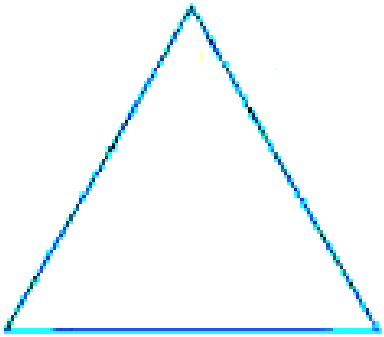
(a)



(b)



(c)



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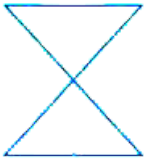
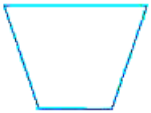
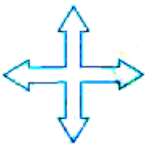
102. Tell whether each figure has rotational symmetry or not.

(a) 

(b) 

(c) 

(d) 

(e) 

(f) 

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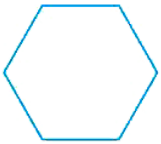
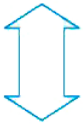
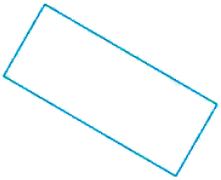
103. Draw all lines of symmetry for each of the following figures :

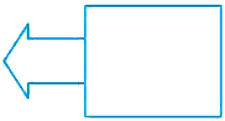
(a) 

(b) 

(c) 

(d) 

(e) 

(f) 

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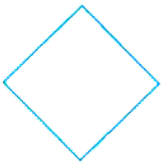
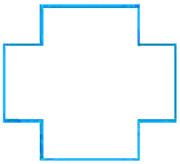
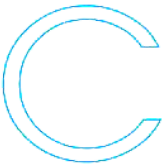
104.

(a) 

(b) 

(c) 

(d) 

Tell whether each figure has rotational symmetry. Write yes or no.

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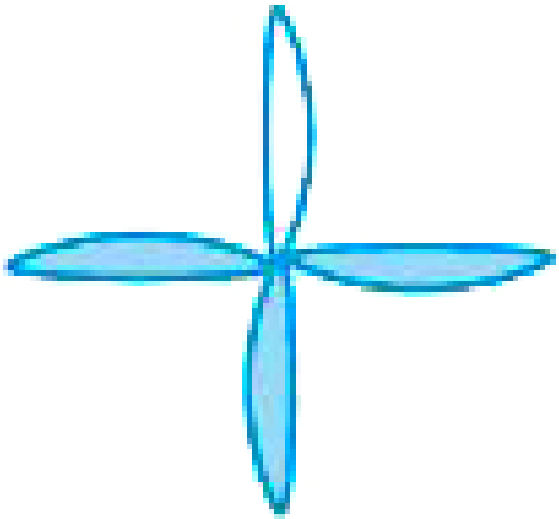
105. Does the fig have rotational symmetry?



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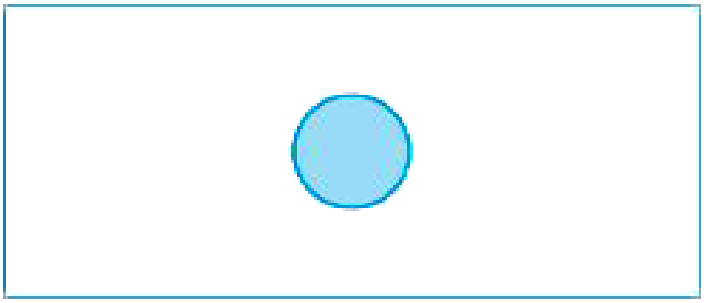
106. The flag of Japan is shown below. How many lines of symmetry does the flag have?



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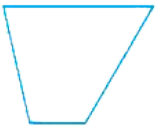
107. Which of the following figures do not have the symmetry?

(a) 

(b) 

(c) 

(d) 

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108. Which capital letters of English alphabet have no line of symmetry?

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