

## CHAPTER - 7

### Symmetry

#### REVISION EXERCISE:-

1 Sol: Given.

a) Vertical lines of symmetry:-

Sol: In Alphabets has 26.

In 26, we have 11 Vertical lines of symmetry

that is A, H, I, M, O, T, U, V, W, X, Y

b) Horizontal lines of symmetry:-

Sol: In English Alphabets is 26.

In 26, we have 9 Horizontal lines of symmetry

that is, B, C, D, E, H, I, K, O, X

c) Both lines of symmetry:-

Sol: In English Alphabets is 26

In 26, we have 4 letters are Both lines of symmetry

that is - H, I, O, X

d) Unlimited lines of symmetry:-

Sol: In English Alphabets is 26

In 26, We have only one letter is Unlimited Lines of Symmetry

That is 'O'

e, No lines of Symmetry:-

In English Alphabets is 26

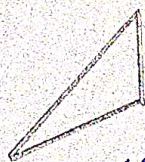
In 26, We have 10 letters are no lines of Symmetry.

That is F, G, J, L, N, P, Q, R, S, Z.

2 Sol:- Given

a) Scalene triangle:-

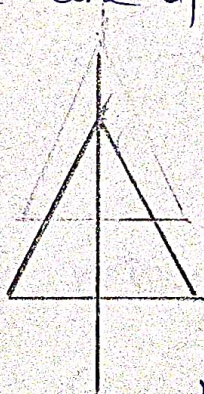
There are no lines of Symmetry in Scalene triangle



Scalene triangle

b) Isosceles triangle:-

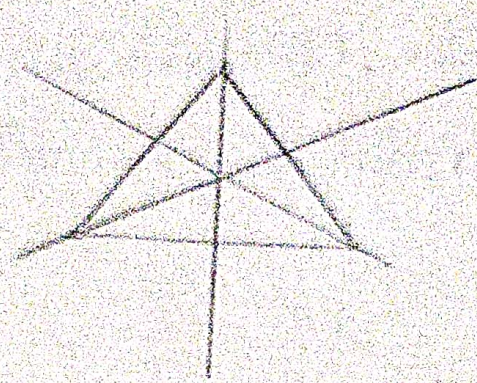
There is only one line of Symmetry in Isosceles triangle



Isosceles triangle

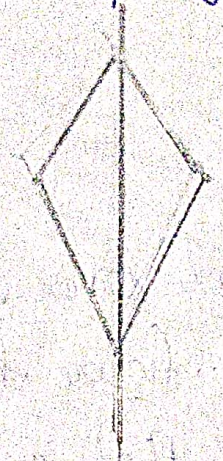
d, Equilateral triangle:

There are three lines of symmetry in an equilateral triangle.

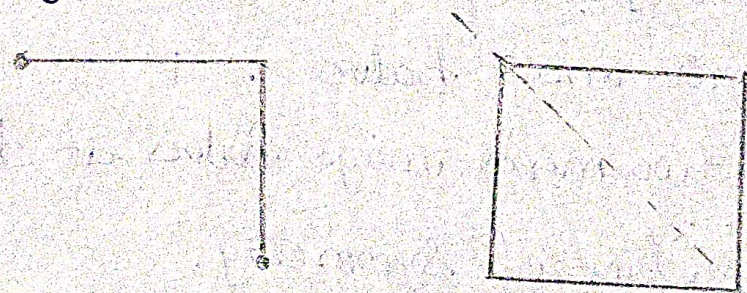


d, Kite:

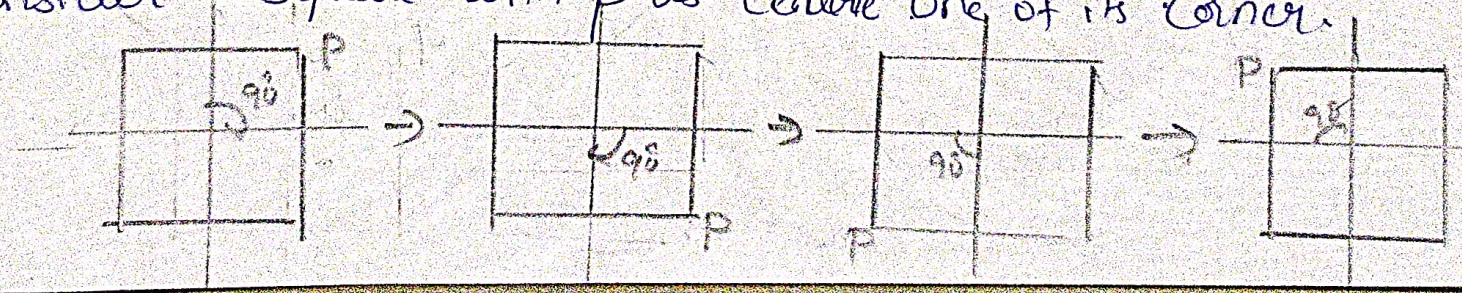
Kite has single line of symmetry.

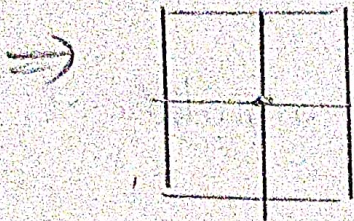


3 Sol: Given figure



Consider a square with p as centre one of its corner.

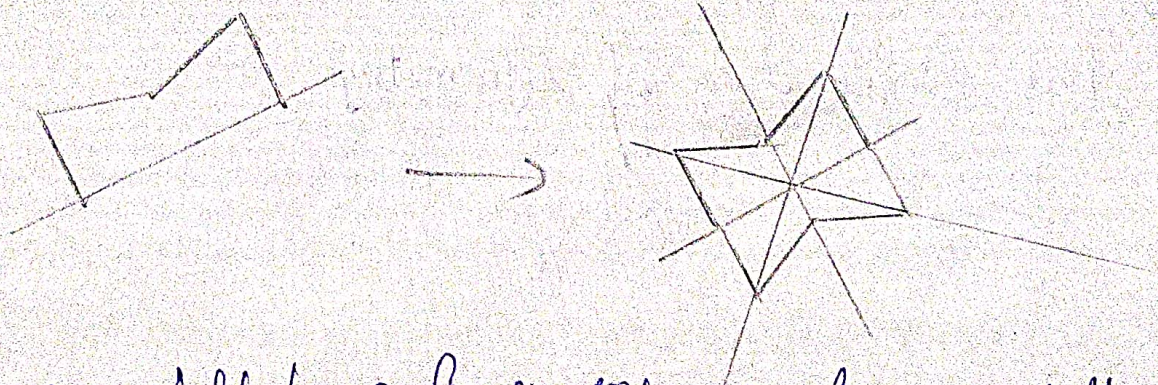




Here we performed Quarter-Turns about centre.

So square has  $90^\circ$  rotational symmetry of order 4, about its centre.

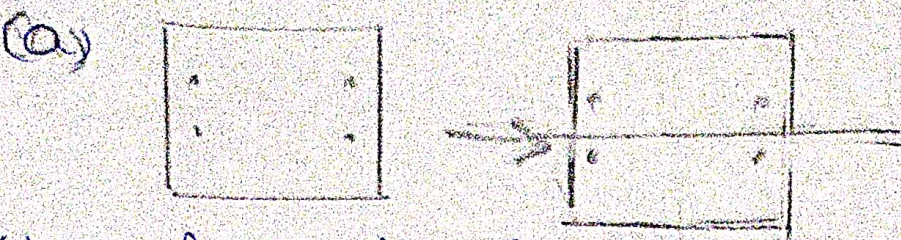
Q.80/2 Given.



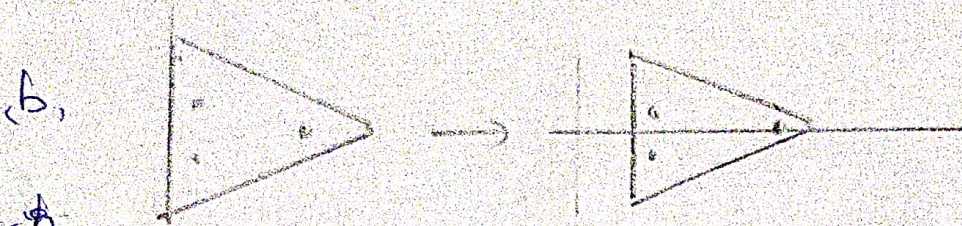
If you can reflect a figure over a line and the figure appears unchanged, then the figure has reflection symmetry or line symmetry. The line that you reflect over is called the line of symmetry. A line of symmetry divides a figure into two mirror-image halves.  $\therefore$  1

$\therefore$  The figure has two mirror image halves it divides. So the figure has line of symmetry.

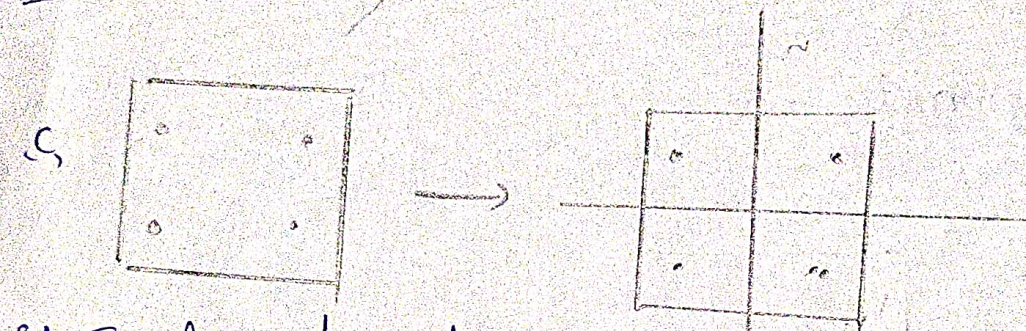
Sol: Given



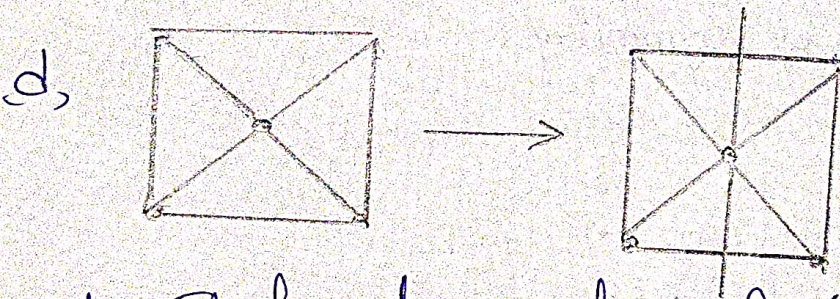
Sol: It has one line of symmetry. It has one horizontal line of symmetry.



Sol: It has one line of symmetry. It has only one horizontal line of symmetry.



Sol: It has two lines of symmetry. It has both vertical and horizontal lines of symmetry.



Sol: It has two lines of symmetry. It has vertical line of symmetry.



Sol: It has one line of symmetry. It has one vertical line of symmetry.

f,



It has one line of symmetry, one diagonal.

6.6.6.1

a,



It has 4 lines of symmetry.

b,



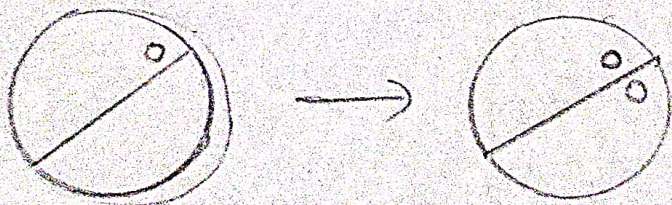
It has only one horizontal line of symmetry.

c,



It has only one vertical line of symmetry.

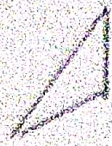
d,



In figure the circle has only one line of symmetry.

7 sol: The three examples are

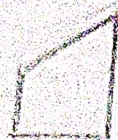
i) Scalene triangle: It has no lines of symmetry.



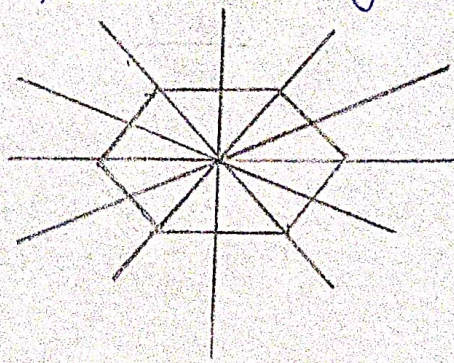
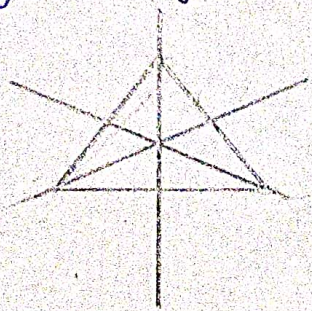
ii) Parallelogram triangle: It has no lines of symmetry.



iii) Quadrilateral triangle: It has no lines of symmetry.

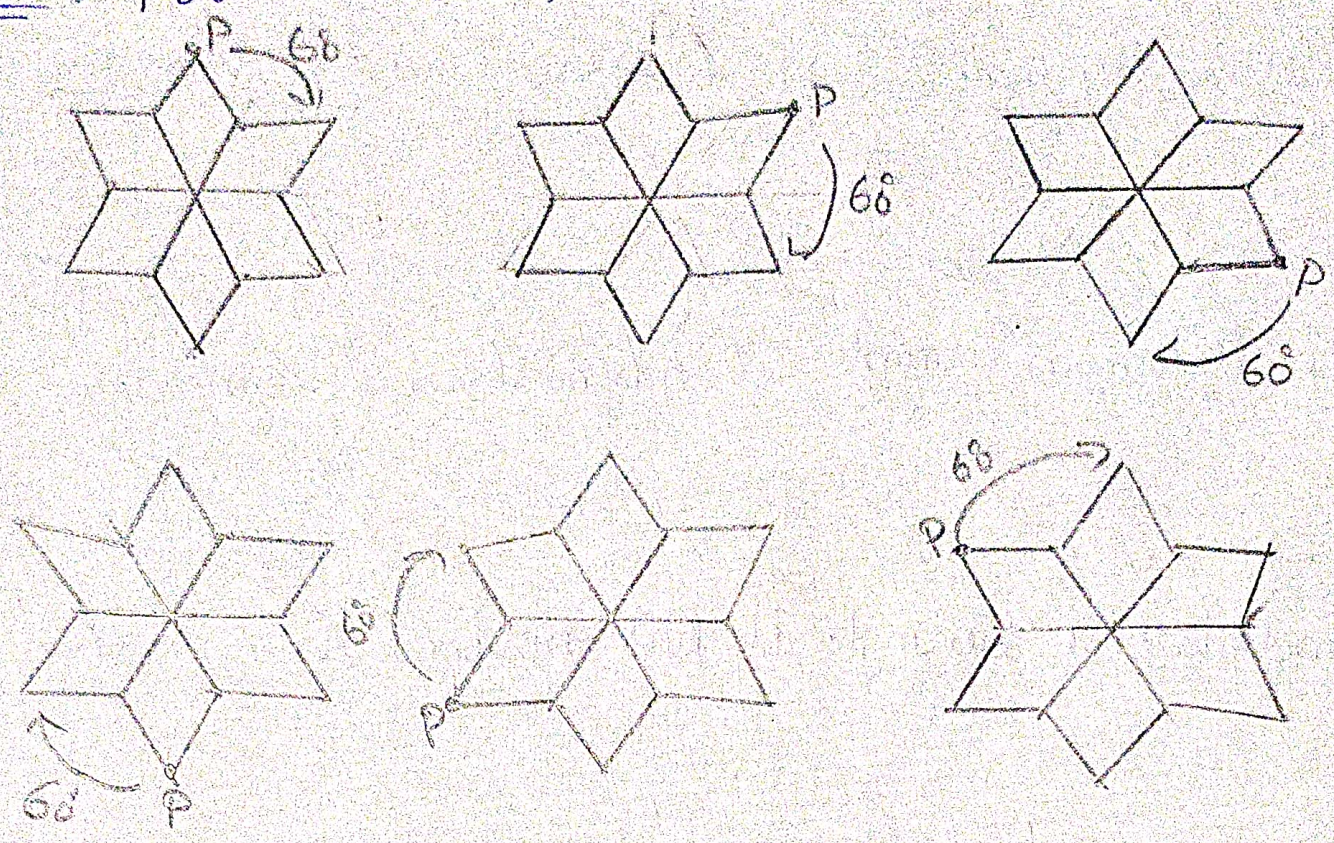


8 sol: - Equilateral triangle and regular hexagon have both line symmetry and Rotational symmetry.

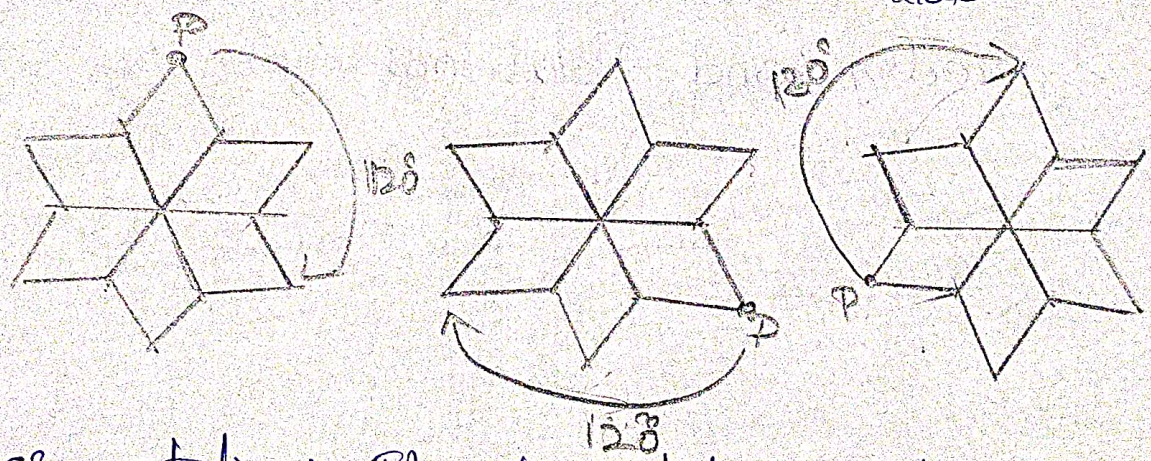


9 sol: - It can be observed that if a figure looks symmetrical on rotating by  $60^\circ$ . Then it will also look symmetrical on rotating  $120^\circ$ ,  $180^\circ$ ,  $240^\circ$ ,  $300^\circ$  and  $360^\circ$ . i.e. either multiples of  $60^\circ$ .

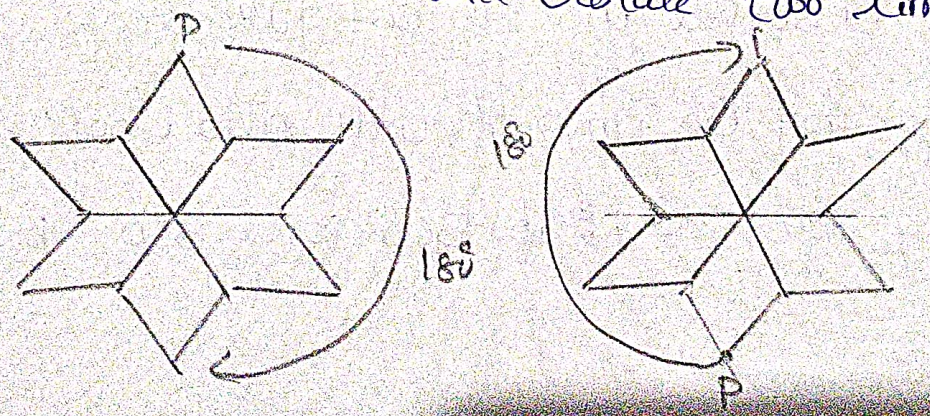
Question: For  $60^\circ$  rotation: It will rotate six times



For  $120^\circ$  rotation: It will rotate one two three times

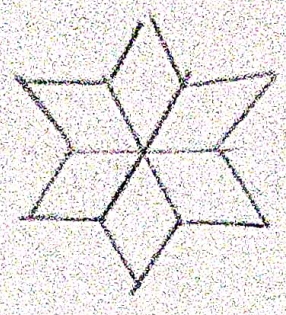
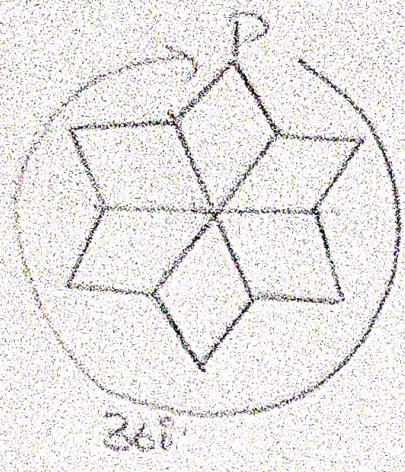


For  $180^\circ$  rotation: It will rotate two times:





10 Ques: For 360 rotation: only I will rotate only one time



10 Sol:-

a) C

Solution: C  $\rightarrow$  It has horizontal lines of symmetry  
Mirror Image

b) J  $\rightarrow$  I

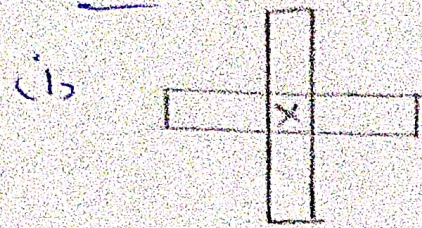
Solution: It has no mirror image. It has no lines of symmetry

c) U

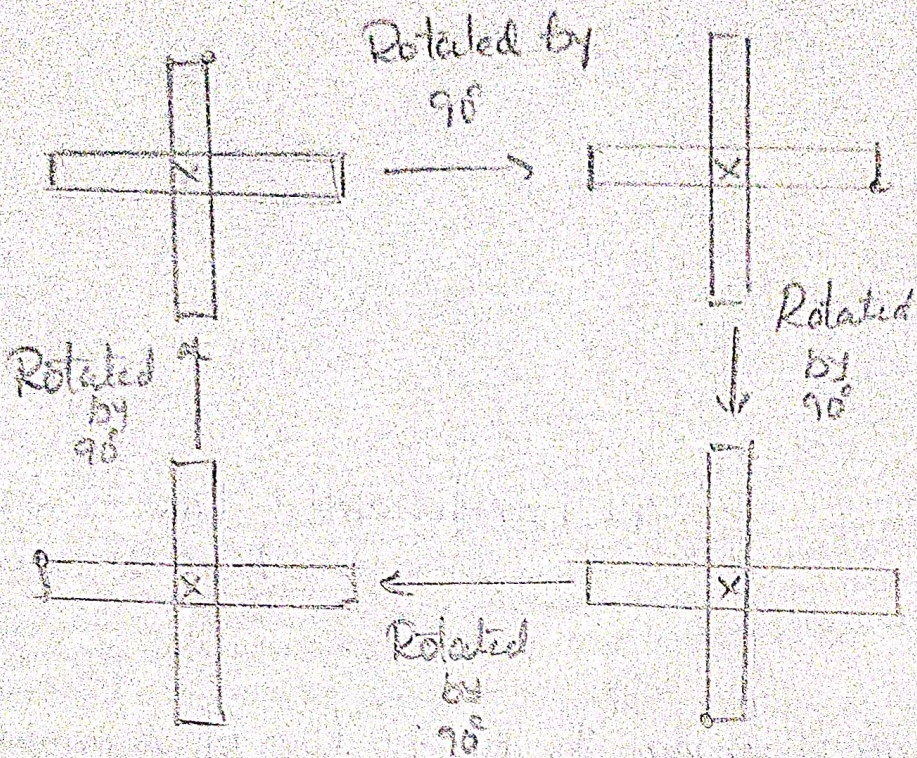
Solution: U  $\rightarrow$  It has vertical line of symmetry  
Mirror Image

d) T  $\rightarrow$  It has vertical lines of symmetry. mirror image

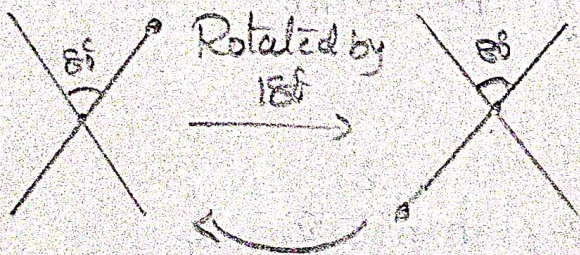
11 Sol:- Given



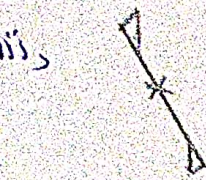
The given figure has its rotational symmetry is 4.



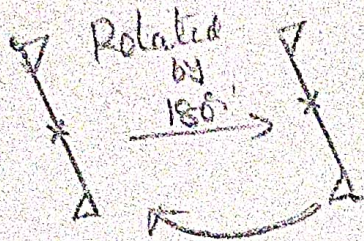
The give figure has its rotational symmetry as 2.



(iii)



The give figure has its rotational symmetry as 2.



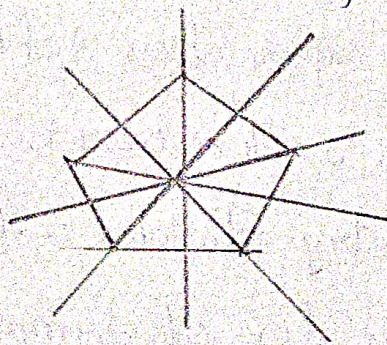
### MULTIPLE CHOICE QUESTIONS

1 Sol - (b) 3.

Explanation: The number 3 has horizontal line of symmetry  
That is --3--

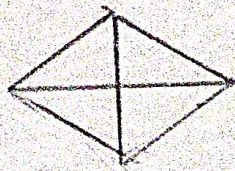
2 Sol - (a) 5.

Explanation: Regular pentagon has 5 lines of symmetry. one  
Vertical and 4 corners.



3 Sol - (a) Diagonals.

Explanation: Rhombus has two lines of symmetry and two  
diagonals.



Q. 4.11 C, H

Explanation In Maths:

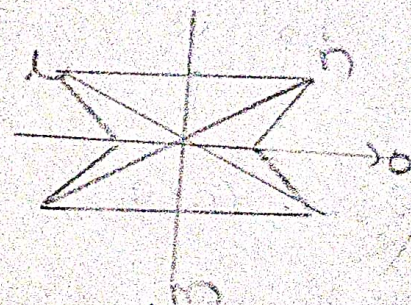
The alphabet H has order 2 linear and rotational symmetry.

Sol: B, C, I and m, n and O.

Explanation: If you can reflect a figure over a line and the figure appears unchanged, then the figure has reflection symmetry or line symmetry. A line that you reflect over is called the line of symmetry. A line symmetry divides a figure into two mirror image halves.

Then design p has exactly in the line of symmetry.

$\therefore$  The m and o has line of symmetry.



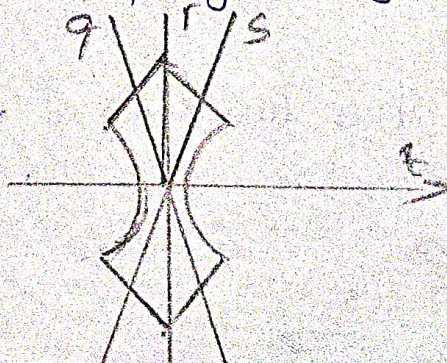
Sol: C, r and t.

Explanation: The figure has reflection or line symmetry.

The line that you reflect over is called the line of symmetry.

A line of symmetry divides a figure into two mirror image.

Then r and t are line of symmetry.



7 sol:

(a) A Semi Circle has order of rotation is symmetry is One

(b) A Regular hexagon has order of rotation is 6.

(c) A rectangle has order of rotation is 2.

(d) A Rhombus has order of rotation is 2.

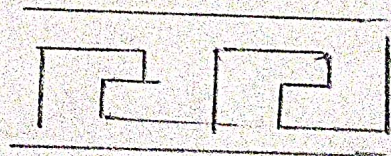
8 sol: (a) 3.

Explanation: An Equilateral triangle has 3 lines of symmetry. One is vertical line and other 2 is remaining corners.



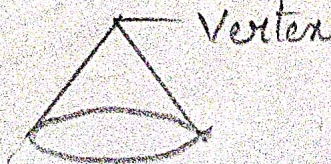
9 sol: (b) 2.

Explanation: Since, the number of times a figure fits into itself in one full rotational symmetry, so the given figure has rotational symmetry order 2.



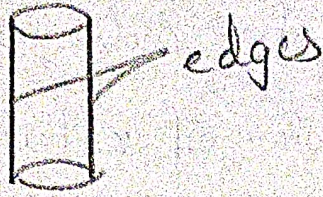
10 sol: (c) Cone

Explanation: The cone is the shape, that has only one vertex.



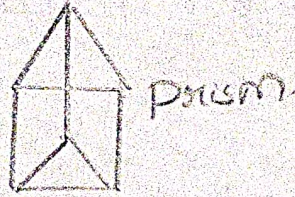
11 Sol: (c), 2

Explanation :- The cylinder has two edges.



12 Sol: (a) Prism

Explanation :- Prism has two opposite identical faces and other faces are parallelogram.



13 Sol: (a) Cone

Explanation :- Cone has one circular face, one curved face, and one vertex.

