Chapter - 4

Symmetry

Ex 4.1

Question 1.

Fill in the blanks

(i) The reflected image of the letter 'q' is

(ii) A rhombus has lines of symmetry.

(iii) The order of rotational symmetry of the letter 'Z' is

(iv) A figure is said to have rotational symmetry, if the order of rotation is atleast

.....

(v) symmetry occurs when an object slides to new position.

Solution:

(i) P

- (ii) two
- (iii) 2
- (iv) two

(v) Translation

Question 2.

Say True or False

(i) A rectangle has four lines of symmetry.

(ii) A shape has reflection symmetry if it has a line of symmetry.

(iii) The reflection of the name RANI is INAЯ.

(iv) Order of rotation of a circle is infinite.

(v) The number 191 has rotational symmetry.

Solution:

(i) False (ii) True

- (iii) False
- (iv) True

(v) False

Question 3.

Match the following shapes with their number of lines of symmetry.

i)	Square	a)	No line of symmetry		
ii)	Parallelogram	b)	One line of symmetry		
iii)	Isosceles triangle	riangle c) Two lines of sy			
iv)	Rectangle	d)	Four lines of symmetry		

(i) d

(ii) a

(iii) b

(iv) c

Question 4.

Draw the lines of symmetry of the following.



Solution:



Question 5.

Using the given horizontal line/vertical line as a line of symmetry, complete each alphabet to discover the hidden word.



(i) DECODE
(ii) KICK
(iii) BED
(iv) WAY
(v) MATY
(vi) TOMATO

Question 6.

Draw a line of symmetry of the given figures such that one hole coincides with the other hole(s) to make pairs.



Solution:



Question 7.

Complete the other half of the following figures such that the dotted line is the line of symmetry.



Solution:



Question 8. Find the order of rotation for each of the following.



- (i) 2 (ii) 2
- (iii) 2 (iii) 4
- (iv) 8
- (v) 2

Question 9.

A standard die has six faces which are shown below. Find the order of rotational symmetry of each face of a die?



Solution:

- (i) 4
- (ii) 2
- (iii) 2
- (iv) 4
- (v) 4
- (vi) 2

Question 10.

What pattern is translated in the given border kolams?



Solution:

ii) 🎇 iii) 🎇 i) H

Objective Type Questions

Question 11. Which of the following letter does not have a line of symmetry? (a) A (b) P (c) T (d) U Hint: A, T, U have one line of symmetry

Solution:

(b) P

Question 12.

Which of the following is a symmetrical figure?



Solution:

(C)

Question 13.

Which word has a vertical line of symmetry?

- (a) DAD
- (b) NUN
- (c) MAM
- (d) EVE

Hint: D, N, E have no vertical line of symmetry

Solution:

D, N, E have no vertical line of symmetry

Question 14.

The order of rotational symmetry of 818 is

- (a) 1
- (b) 2
- (c) 3
- (d) 4

Solution: (b) 2

Question 15.

The order of rotational symmetry \star is ____

(a) 5

(b) 6

(c) 7

(d) 8

Solution:

(a) 5

Ex 4.2

Miscellaneous Practice Problems

Question 1.

Draw and answer the following.

(i) A triangle which has no line of symmetry.

(ii) A triangle which has only one line of symmetry

(iii) A triangle which has three lines of symmetry.

Solution:

(i) Scalene triangle

(ii) Isosceles triangle

(iii) Equilateral triangle

Question 2.

Find the alphabets in the box which have

Α	М	Р	Е	
D	I	К	0	
N	Х	S	н	
U	V	W	Z	

(i) No line of symmetry

(ii) Rotational symmetry

(iii) Reflection symmetry

(iv) Reflection and rotational symmetry.

Solution:

i) The alphabets which have no line of symmetry are P, N, S, Z

ii) The alphabets which have Rotational symmetry are I, O, N, X, S, H, Z

iii) The alphabets which have reflection symmetry are A, M, E, D, I, K, O, X, H, U, V, W. iv) The alphabets which has reflection and rotational symmetry are I, O, X, H.

Question 3.

For the following pictures, find the number of lines of symmetry and also find the order of rotation.



Solution:

(i) 0, 2 (ii) 1, 0 (iii) 2, 2 (iv) 8, 8 (v) 1, 0

Question 4.

The three-digit number 101 has rotational and reflection symmetry. Give five more examples of three-digit numbers that have both rotational and reflection symmetry

Solution:

The digits 0, 1, 8 have rotational and reflection symmetry.

∴ The three digits numbers 181, 111, 808, 818, 888 have both rotational and reflection symmetry.

Question 5.

Translate the given pattern and complete the design in a rectangular strips?



Solution:



Challenge Problems

Question 6. Shade one square so that it possesses

(i) One line of symmetry

(ii) Rotational symmetry of order 2

Solution:



Question 7.

Join six identical squares so that atleast one side of a square fits exactly with any other side of the square and has reflection symmetry (any three ways).

Solution:



Question 8.Draw the following(i) A figure which has reflection symmetry but no rotational symmetry.

(ii) A figure which has rotational symmetry but no reflection symmetry.

(iii) A figure which has both reflection and rotational symmetry.

Solution:



Question 9.

Find the line of symmetry and the order of rotational symmetry' of the given regular polygons and complete the following table and answer the questions given below.

Shape	Equilateral triangle	Square	Regular pentagon	Regular hexagon	Regular octagon
Number of lines of symmetry					
Order of rotational symmetry					

i) A regular polygon of 10 sides will have _____ lines of symmetry.

ii) If a regular polygon has 10 lines of symmetry then its order of rotational symmetry is _____

iii) A regular polygon of 'n' sides has lines of symmetry and the order of rotational symmetry is _____

Solution:

(i) 10

(ii) 10

(iii) n, n

Question 10.

Colour the boxes in such a way that it possesses translation symmetry.







