

Name : _____

Grade : VI

Subject : Mathematics

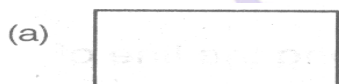
Chapter: 13 Symmetry

Objective Type Questions

1 Marks

I. Multiple choice questions

1. In the following figures, the figure that is not symmetric with respect to any line is



2. The number of lines of symmetry in a scalene triangle is

a. 0

b. 1

c. 2

d. 3

3. Which of the following letters does not have any line of symmetry?

a. E

b. T

c. N

d. X

4. The number of lines of symmetry in a circle is

a. 0

b. 2

c. 4

d. more than 4

5. Which of the following letters does not have the vertical line of symmetry?

a. M

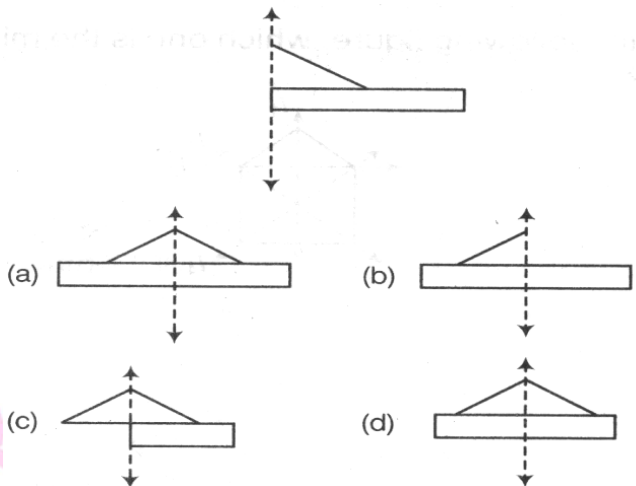
b. H

c. E

d. V

Next Generation School

6. Complete the figure, so that the dotted line is the line of symmetry.

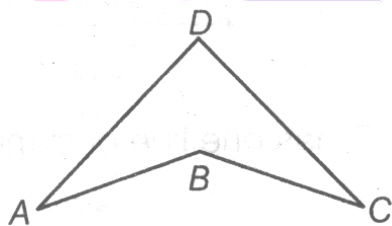


7. Line of symmetry of given figure is



- a. Horizontal b. vertical c. Both (a) and (b) d. None of these

8. How many lines of symmetry are there in the given figure?



- a. One b. Two c. Three d. Four

| | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|--------|
| 1. b | 2. (a) | 3. (c) | 4. (d) | 5. (c) | 6. (a) | 7. (c) | 8. (a) |
|------|--------|--------|--------|--------|--------|--------|--------|

II. Multiple choice questions

- The number of lines of symmetry in a scalene triangle is:
 - 0
 - 1
 - 2
 - 3
- The number of lines of symmetry in a circle is :
 - 0
 - 2
 - 4
 - more than 4
- Which of the following letters does not have the vertical line of symmetry?
 - M
 - H
 - E
 - V

4. Which of the following letters have both horizontal and vertical lines of symmetry.
- a. X b. E c. M d. K
5. Which of the following letters does not have any line of symmetry.
- a. M b. S c. K d. H
6. Which of the following letters has only one line of symmetry?
- a. H b. X c. Z d. T
7. The number of lines of symmetry in a ruler is:
- a. 0 b. 1 c. 2 d. 4
8. The number of lines of symmetry in a divider is :
- a. 0 b. 1 c. 2 d. 4
9. The number of lines of symmetry in compasses is :
- a. 0 b. 1 c. 2 d. 3
10. The number of lines of symmetry in a protractor is:
- a. 0 b. 1 c. 2 d. more than 2
11. The number of line of symmetry in a $45^\circ - 45^\circ - 90^\circ$ set square is :
- a. 0 b. 1 c. 2 d. 3
12. The number of lines of symmetry in a $30^\circ - 60^\circ - 90^\circ$ set square is :
- a. 0 b. 1 c. 2 d. 3
13. The number of lines of symmetry of square is :
- a. 3 b. 4 c. 2 d. 0
14. The figure symmetrical about its diameter is a :
- a. Quadrant b. semicircle c. triangle d. circle
15. The English alphabet which has same mirror image is :
- a. A b. P c. L d. C
16. The number of lines of symmetry of pairs of scissors is :
- a. 0 b. 1 c. 2 d. 3

17. A rectangle is symmetry about:

- a. Each one of its sides
- b. each one of its diagonals
- c. a line joining the mid-points of its opposite sides
- d. none of these

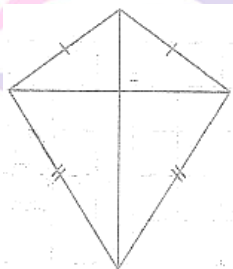
18. A rhombus is symmetrical about:

- a. The line joining the mid-point of its opposite sides.
- b. Each of its diagonals
- c. Perpendicular bisector of each of its sides
- d. None of these

| | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|--------|---------|
| 1. (a) | 2. (d) | 3. (c) | 4. (a) | 5. (b) | 6. (d) | 7. (c) | 8. (b) | 9. (a) | 10. (b) |
| 11. (b) | 12. (a) | 13. (b) | 14. (d) | 15. (a) | 16. (b) | 17. (c) | 18. (b) | | |

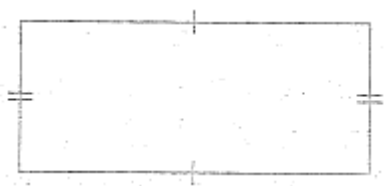
III. Multiple choice questions

1. How many lines of symmetry does the figure have?



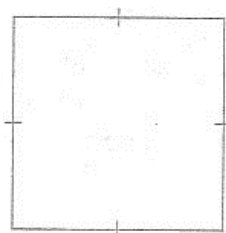
- a. 1
- b. 2
- c. 3
- d. 4

2. How many lines of symmetry does the figure have?



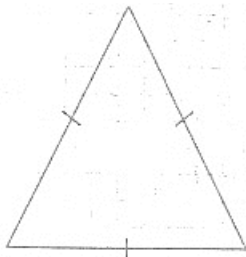
- a. 1
- b. 2
- c. 3
- d. 4

3. How many lines symmetry does the figure have?



- a. 1
- b. 2
- c. 3
- d. 4

4. How many lines symmetry does the figure have?



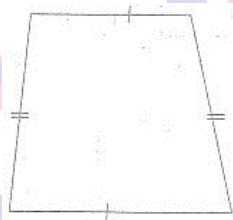
- a. 1 b. 2 c. 3 d. 4

5. How many lines symmetry does the figure have?



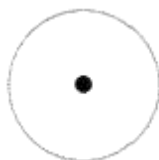
- a. 1 b. 2 c. 3 d. 4

6. How many lines symmetry does the figure have?



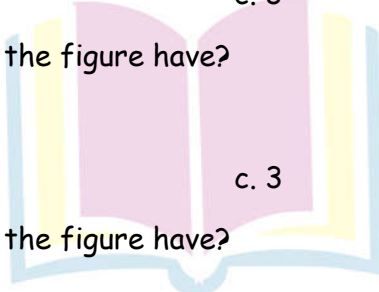
- a. 1 b. 2 c. 3 d. no line of symmetry

7. How many lines symmetry does the figure have?

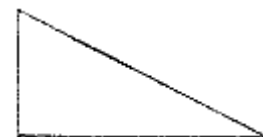


- a. 1 b. 2 c. 3 d. 4

8. How many lines symmetry does the figure have?



- a.1 b. 2 c. 3 d. 4



9. How many lines symmetry does the figure have?



- a. 1 b. 2 c. 3 d. 4

10. How many lines of symmetry does a regular hexagon have?
 a. 1 b. 3 c. 4 d. 6
11. Which of the following letters have horizontal line of symmetry?
 a. C b. A c. J d. L
12. Which of the following letters have horizontal line of symmetry?
 a. Z b. V c. U d. E
13. Which of the following letters have horizontal line of symmetry?
 a. S b. W c. D d. Y
14. Which of the following letters has vertical line of symmetry?
 a. R b. C c. B d. T
15. Which of the following letters has vertical line of symmetry?
 a. N b. K c. B d. M
16. Which of the following letters has vertical line of symmetry?
 a. J b. D c. E d. O
17. Which of the following letters has no line of symmetry?
 a. P b. O c. H d. X
18. Which of the following letters has no line of symmetry?
 a. O b. X c. I d. Q

| | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1.(a) | 2. (b) | 3. (d) | 4. (c) | 5. (a) | 6. (d) | 7. (d) | 8. (a) | 9. (b) |
| 10. (d) | 11. (a) | 12. (d) | 13. (c) | 14. (d) | 15. (d) | 16. (d) | 17. (a) | 18. (d) |

IV. Multiple choice questions

1. The number of line of symmetry in a scalene triangle is
 a. 0 b. 1 c. 2 d. 3
2. The number of lines of symmetry in a circle is
 a. 0 b. 2 c. 2 d. more than 4
3. The number of lines of symmetry of a regular hexagon is
 a. 1 b. 3 c. 6 d. 8
4. Which of the following letters does not have the vertical line of symmetry?
 a. M b. H c. E d. V

5. Which of the following letters does not have any line of symmetry?
a. M b. S c. K d. H
6. The number of lines of symmetry in a ruler is
a. 0 b. 1 c. 2 d. 4
7. The number of lines of symmetry in a divider is
a. 0 b. 1 c. 2 d. 3
8. The number of lines of symmetry in a protractor is
a. 0 b. 1 c. 2 d. more than 2
9. Which of the following figures does not have line of symmetry always?
a. A line b. An angle c. A triangle d. A square
10. The number of lines of symmetry in a $45^\circ - 45^\circ - 90^\circ$ set-square is
a. 0 b. 1 c. 2 d. 3
11. The number of lines of symmetry in a $30^\circ - 60^\circ - 90^\circ$ set-square is
a. 0 b. 1 c. 2 d. 3

| | | | | | |
|--------|--------|--------|---------|---------|--------|
| 1. (a) | 2. (d) | 3. (c) | 4. (c) | 5. (b) | 6. (c) |
| 7. (b) | 8. (b) | 9. (c) | 10. (b) | 12. (a) | |

I. Fill in the blanks

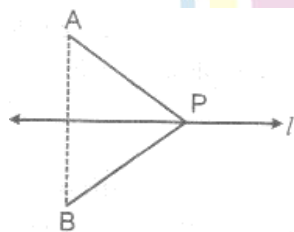
- A line of _____ divides a figure into two matching parts.
- An isosceles triangle has _____ line of symmetry.
- An equilateral triangle has _____ lines of symmetry.
- A scalene triangle has _____ line of symmetry.
- The distance of the image of a point (or an object) from the line of symmetry (mirror) is _____ as that of the point (object) from the line (mirror).
- The number of line of symmetry in a picture of Taj Mahal is _____.
- The number of lines of symmetry in a rectangle and a rhombus are _____ (equal/unequal).

8. The number of lines of symmetry in a rectangle and a square are _____ (equal/unequal).
9. If a line segment of length 5 cm is reflected in a line of symmetry (mirror), then its reflection (image) is a line of length _____.
10. If an angle of measure 80° is reflected in a line of symmetry, then the reflection is an _____ of measure _____.

| | | | | |
|-------------|----------|------------|---------|-----------------------|
| 1. symmetry | 2. one | 3. three | 4. zero | 5. same |
| 6. one | 7. equal | 8. unequal | 9. 5 cm | 10. angle, 80° |

II. Fill in the blanks

1. The distance of the image of a point (or an object) from the line of symmetry (mirror) is _____ as that of the point (object) from the line (mirror).
2. The number of lines of symmetry in a picture of Taj Mahal is _____.
3. The number of lines of symmetry in a rectangle and a rhombus are _____.
4. The number of lines of symmetry in a rectangle and a square are _____.
5. If a line segment of length 5 cm is reflected in a line of symmetry (mirror), then its reflection (image) is a _____ of length _____.
6. If an angle of measure 80° is reflected in a line of symmetry, then the reflection is an _____ of measure _____.
7. The image of a point lying on a line l with respect to the line of symmetry l lies on _____.
8. In fig. the if B is the image of the point A with respect to the line l and P is any point lying on l , then the lengths of line segments PA and PB are _____.



9. The number of lines of symmetry in the given Fig. _____.





10. The common properties in the two set-squares of a geometry box are that they have a _____ angle and they are of the shape of a _____.
11. The digits having only two lines of symmetry are _____ and _____.
12. The digit having only one line of symmetry is _____.
13. The number of digits having no line of symmetry is _____.
14. The number of capital letters of the English alphabets having only vertical line of symmetry is _____.
15. The number of capital letters of the English alphabets having only horizontal line of symmetry is _____.
16. The number of capital letters of the English alphabets having both only horizontal and vertical lines of symmetry is _____.
17. The number of capital letters of the English alphabets having no line of symmetry is _____.
18. The line of symmetry of a line segment is the _____ bisector of the line segment.
19. The number of lines of symmetry in a regular hexagon is _____.
20. The number of lines of symmetry in a regular polygon of n sides is _____.
21. A protractor has _____ line/lines of symmetry.
22. A $30^\circ - 60^\circ - 90^\circ$ set-square has _____ line/lines of symmetry.
23. A $45^\circ - 45^\circ - 90^\circ$ set-square has _____ line/lines of symmetry.
24. A rhombus is symmetrical about _____.
25. A rectangle is symmetrical about the lines joining the _____ of the opposite sides.
26. A _____ divides a figure into two symmetric parts.
27. A _____ triangle has no line symmetry.
28. A rhombus has _____ lines of symmetry.
29. Other name for line of symmetry is _____.
30. In our daily life we apply _____ in art, rangoli, textile, technology etc.

| | | | | |
|----------------------|------------------------------------|-----------------------------|-----------------------------|-----------------------|
| 1. same | 2. one | 3. equal | 4. unequal | 5. line segment, 5 cm |
| 6. Angle, 80° | 7. l | 8. equal | 9. 5 | 10. right, triangle |
| 11. 0, 8 | 12. 3 | 13. 7 (1, 2, 4, 5, 6, 7, 9) | 14. 7 (A, M, U, V, W, Y, T) | 15. 5 (B, C, D, E, K) |
| 16. 4 (H, I, O, X) | 17. 10 (F, G, J, L, N, P, Q, R, S, | 18. Perpendicular | 19. 6 | 20. n |



| | | | | |
|----------------------|-------------|---------|----------------------|----------------|
| | Z) | | | |
| 21. One | 22. no | 23. one | 24. diagonals | 25. Mid-points |
| 26. Line of symmetry | 27. scalene | 28. 2 | 29. Axis of symmetry | 30. Symmetry |

I. Match the followings

| Column I (Shape) | Column II (Number of lines of symmetry) |
|-------------------------|---|
| a. Isosceles triangle | 6 |
| b. Square | Infinitely many |
| c. Circle | 4 |
| d. Equilateral triangle | 3 |
| e. Rectangle | 2 |
| f. Regular hexagon | 1 |
| g. Scalene triangle | 0 |

| | | | | | | |
|---------|----------|---------|---------|--------|--------|----------|
| a. (vi) | b. (iii) | c. (ii) | d. (iv) | e. (v) | f. (i) | g. (vii) |
|---------|----------|---------|---------|--------|--------|----------|

| Column A | Column B |
|----------|--|
| a. 6 | i. Only horizontal line of symmetry |
| b. 3 | ii. No line of symmetry |
| c. A | iii. Both vertical and horizontal line of symmetry |
| d. X | iv. Infinite lines of symmetry |
| e. O | v. Only vertical line of symmetry |

| | | | | |
|---------|--------|--------|----------|---------|
| a. (ii) | b. (i) | c. (v) | d. (iii) | e. (iv) |
|---------|--------|--------|----------|---------|

II. Match the followings

| Shape | No of lines of symmetry |
|-------------------------|-------------------------|
| a. Isosceles triangle | i. 6 |
| b. Square | ii. 5 |
| c. Kite | iii. 4 |
| d. Equilateral triangle | iv. 3 |
| e. Rectangle | v. 2 |
| f. Regular hexagon | vi. 1 |
| g. Scalene triangle | vii. 0 |

| | | | | | | |
|---------|----------|---------|---------|--------|--------|----------|
| a. (vi) | b. (iii) | c. (vi) | d. (iv) | e. (v) | f. (i) | g. (vii) |
|---------|----------|---------|---------|--------|--------|----------|

I. True or False

1. The letter D has one line of symmetry.
2. The letter N has two line of symmetry.
3. Irregular shapes have zero line of symmetry.
4. If an isosceles triangle has more than one line of symmetry, then it need not be an equilateral triangle.
5. If a rectangle has more than two lines of symmetry, then it must be a square.
6. A right triangle can have almost one line of symmetry.
7. A kite has two lines of symmetry.
8. A parallelogram has no line of symmetry.
9. An equilateral triangle has more than one line of symmetry.
10. A square and a rectangle have the same number of lines of symmetry.

| | | | | |
|---------|----------|----------|----------|-----------|
| 1. True | 2. False | 3. False | 4. False | 5. True |
| 6. True | 7. False | 8. True | 9. True | 10. False |

II. True or False

1. A right triangle can have at most one line of symmetry.
2. A kite has two lines of symmetry.
3. A parallelogram has no line of symmetry.
4. If an isosceles triangle has more than one line of symmetry then it need not be equilateral triangle.
5. If a rectangle has more than two lines of symmetry.
6. If an isosceles triangle has more than one line of symmetry, then it must be an equilateral triangle.
7. A square and a rectangle have the same number of lines of symmetry.
8. A circle has only 16 lines of symmetry.
9. A $45^\circ - 45^\circ - 90^\circ$ set - square and a protractor have the same number of lines of symmetry.
10. A regular octagon has 10 lines of symmetry.
11. An angle with equal arms has its bisector as the line of symmetry.
12. An equilateral triangle has three lines of symmetry.
13. A rhombus has four line of symmetry.
14. Each one of the letters H, I, O, X of the English alphabet has minimum two lines of symmetry.

| | | | | | | |
|----------|----------|-----------|----------|----------|-----------|----------|
| 1. True | 2. False | 3. True | 4. False | 5. True | 6. True | 7. False |
| 8. False | 9. True | 10. False | 11. True | 12. True | 13. False | 14. True |

I. Very Short Answer Type Questions

1. What are symmetrical figures?

Figures which can be divided into two identical parts are called symmetrical figures.

2. What is a line of symmetry?

A line along with a figure can be divided into two identical parts is called its line of symmetry.

3. How many lines of symmetry a human face has?

A human face has only one line of symmetry.

4. Name a figure having many lines of symmetry.

Circle has many lines of symmetry.

5. Name two letters having only vertical line of symmetry

Two letters having only vertical line of symmetry are A and M.

6. How many lines of symmetry a rectangle has?

A rectangle has two lines of symmetry.

7. Write two letters having only horizontal line of symmetry.

Two letters having horizontal line of symmetry are E and K.

8. Give two letters having same mirror reflection.

The letters A and M have same mirror reflection.

9. How many lines of symmetry are there in a semi-circle?

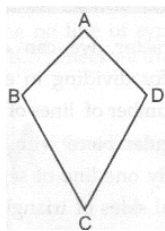
A semi-circle has only one line of symmetry.

10. How many lines of symmetry are there in an angle? What is the name given to it?

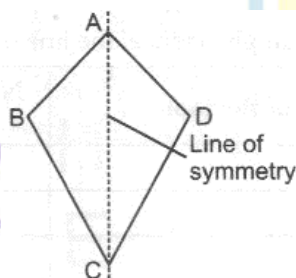
In a angle, there is only one line of symmetry and it is called its angle bisector.

II. Very Short Answer Type Questions

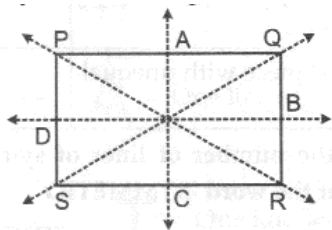
1. Is there any line of symmetry in the figure? If yes, draw all the lines of symmetry.



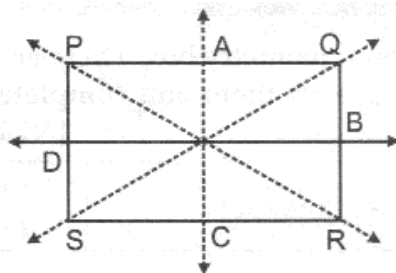
Yes, in the given figure, we can draw only one line of symmetry as shown in figure that divides the figure into two equal parts.



2. In figure, PQRS is a rectangle. State the lines of symmetry of the rectangle.



In the given figure, AC and BD are bisectors of rectangle which divides the rectangle in two equal parts.



Hence, the line of symmetry of given rectangular figure is two.

3. How many lines of symmetry does an isosceles triangle have?

1

4. What do you call axis of symmetry of line segment?

Perpendicular bisector.

5. What do you call axis of symmetry of an angle having equal arms?

Angle bisector.

6. How many lines of symmetry do English alphabet U has?

One.

7. What are the axis of symmetry of a rhombus called?

Diagonal.

III. Very Short Answer Type Questions

1. How many number of lines of symmetry are in compasses?

Zero.

2. What is total number of lines of symmetry of a square?

Four

3. What is symmetrical in a rhombus?

Each diagonal of rhombus is symmetrical.

4. Which instrument in geometry box has shape of triangle?

Set-square.

5. Which instrument is used to measure an angle?

Protractor.

6. How many number of lines of symmetry are there in n -sided regular polygon?

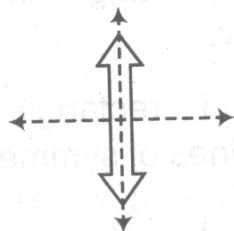
Number of lines of symmetry are n .

I. Short Answer Type Questions

1. Write the number of lines of symmetry of the figure.



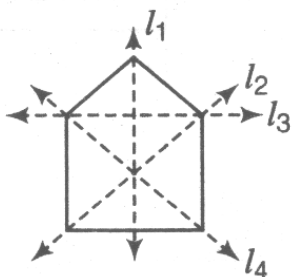
This figure has two lines of symmetry.



2. Write the letters of the word ALGEBRA which have no line of symmetry.

The letters L, G and R have no line of symmetry.

3. For the following figure, which one is the mirror line?



In the above figure, the line l_1 is the mirror line.

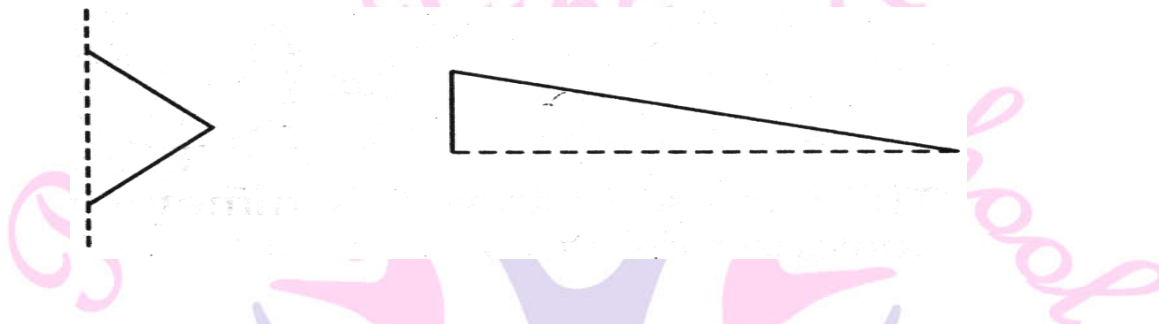
4. Write all the capital letters of the English alphabets which have more than one lines of symmetry.

The capital letters H, I, O and X have more than one line of symmetry.

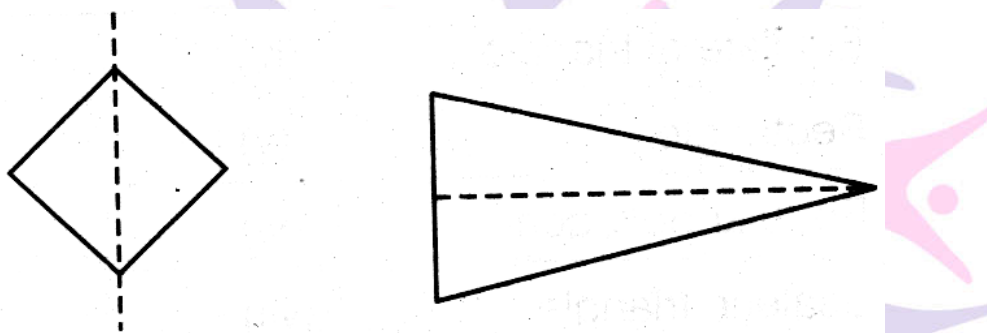
5. Write the letters of the word 'MATHEMATICS' which have no line of symmetry.

Here, the letter S and no line of symmetry.

6. Complete the figure along the line of symmetry.



The complete figures are



II. Short Answer Type Questions

1. Write all the capital letters of the English alphabets which have more than one line of symmetry.

For solution of this question, observe all English alphabets A to Z.



In the letters H, we can draw two lines of symmetry. Hence, the lines of symmetry are 2.



In the letters I, we can draw two lines of symmetry. Hence, the lines of symmetry are 2.



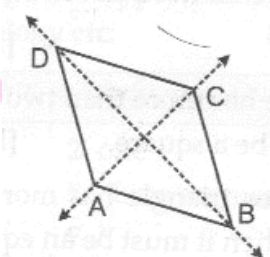
In the letters O, we can draw two lines of symmetry. Hence, the lines of symmetry are 2.

(iv) Line of symmetry

In the letters X, we can draw two lines of segment. Hence, the lines of symmetry are 2.

2. Show that a rhombus is symmetrical about each one of its diagonals.

Let ABCD be a rhombus. Now, if we fold it along the diagonal AC, we find that the two parts coincide with each other.



Hence, the rhombus ABCD is symmetrical about its diagonal AC. Similarly, the rhombus ABCD is symmetrical about its diagonal BD.

Short Answer Type Questions

1. Open your geometry box. There are some drawing tools. Observe them and complete the following table:

| Name of the tool | Number of lines of symmetry |
|--|-----------------------------|
| (i) Ruler | _____ |
| (ii) Divider | _____ |
| (iii) Compasses | _____ |
| (iv) Protractor | _____ |
| (v) Triangle piece with two equal sides | _____ |
| (vi) Triangular piece with unequal sides | _____ |

By observing the geometry tools, we find some important results.

- (i) In the ruler, we can draw both horizontal and vertical lines. Hence, in the ruler, number of lines of symmetry is 2.
- (ii) In the divider, we can draw only one line of segment for dividing. So, in the divider, number of lines symmetry is 1.
- (iii) In the compass, we cannot draw any line of segment for dividing in each part. So, in the compass, number of lines of symmetry is 0.

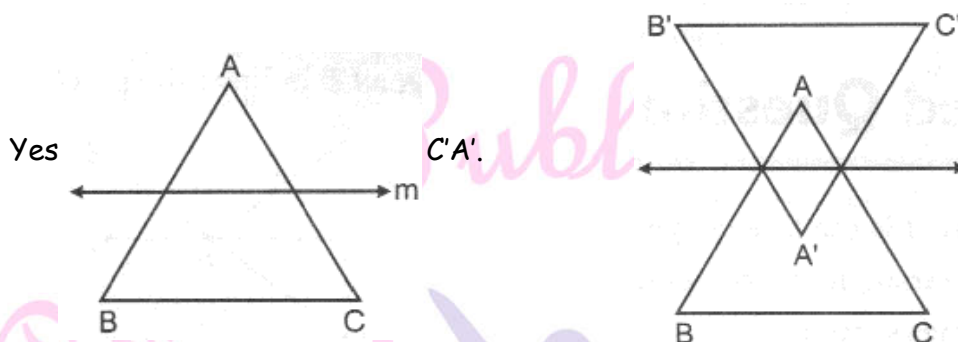
- (iv) In the protractor, we can draw only one line of segment for dividing in each part. So, in the protractor, number of lines of symmetry is 1.
- (v) In the triangular piece with two equal sides, we can draw only one line of segment because there are two equal sides of triangle. Hence, the line of symmetry is 1.
- (vi) In the triangular piece with unequal sides, we can't draw any line of segment because there is no equal side of triangle. Hence, the line of symmetry is 0.

| Name of the tool | Number of lines of symmetry |
|--|-----------------------------|
| (i) Ruler | 2 |
| (ii) Divider | 1 |
| (iii) Compasses | 0 |
| (iv) Protractor | 1 |
| (v) Triangle piece with two equal sides | 1 |
| (vi) Triangular piece with unequal sides | 0 |

2. Write the number of lines of symmetry in each letter of the word 'SYMMETRY'. For defining, the lines of symmetry in the word 'SYMMETRY', check one by one line at segment.
- S → In the letter S, there is one line segment for dividing equal parts, hence line of symmetry of S letter is one.
 - Y → In the letter Y, there is one line segment for dividing equal parts, hence line of symmetry of Y letter is one.
 - M → In the letter M, there is one line segment for dividing equal parts, hence line of symmetry of M letter is one.
 - E → In the letter E, there is one line segment for dividing equal parts, hence line of symmetry of E letter is one.
 - T → In the letter T, there is one line segment for dividing equal parts, hence line of symmetry of T letter is one.
 - R → In the letter R, there is one line segment for dividing equal parts, hence line of symmetry of R letter is zero.

Next Generation School

3. Draw the image of the points A , B , and C in the line m (See Fig). Name them as A' , B' and C' respectively and join them in pairs. Measure AB , BC , CA , $A'B'$ and $C'A'$. Is $AB = A'B'$, $BC = B'C'$ and $CA = C'A'$?



IV. Short Answer Type Questions

1. How many capital letters of English have only vertical line of symmetry?

The capital letters of English that have only vertical line of symmetry are A, M, T, U, V, W, Y

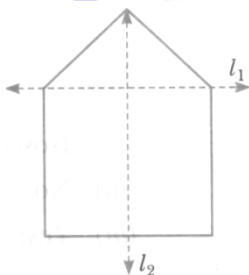
\therefore The number of capital letters of English having only vertical of symmetry is 7.

2. Is number of lines of symmetry in rectangle and rhombus equal?

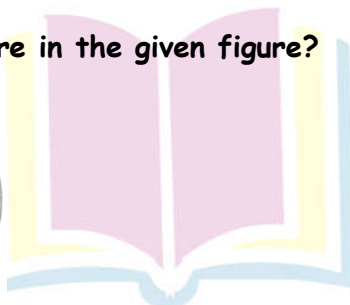
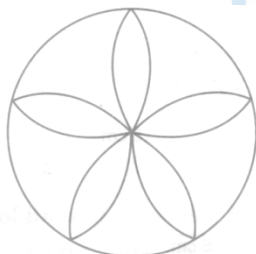
Yes.

3. For the given figure, which one is the mirror line, l_1 or l_2 ?

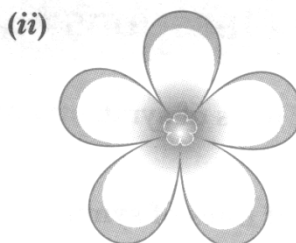
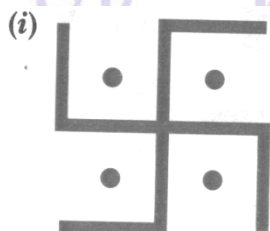
Line l_2 .



4. How many lines of symmetry are in the given figure?



5. Find the number of lines of symmetry in the following shapes:



- i. There is no line of symmetry in this figure.
- ii. The number of lines of symmetry is 5.

6. Fill in the blanks:

- i. The number of scales in a protractor for measuring the angles is _____.
- ii. If B is the image of A in line l and D is the image of C in line l , then AC = _____.
- iii. The number of lines of symmetry in a trapezium is _____.
- iv. The number 8 have _____ lines of symmetry.

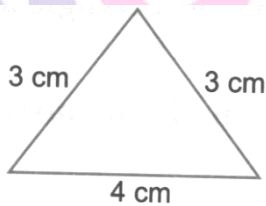
Ans. i. Two ii. BD iii. One iv. Two

7. Can you draw a triangle which has

- i. Exactly one line of symmetry?
- ii. Exactly two lines of symmetry?
- iii. Exactly three lines of symmetry?
- iv. No lines of symmetry?

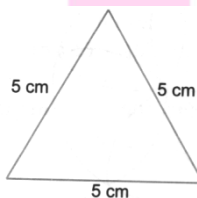
Sketch a rough figure in each case.

- i. Yes;



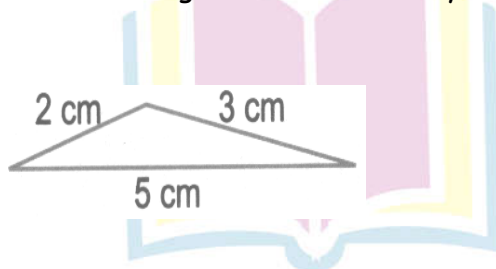
Isosceles triangle has one line of symmetry.

- ii. No,
- iii. Yes;

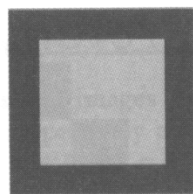


Equilateral triangle has 3 lines of symmetry.

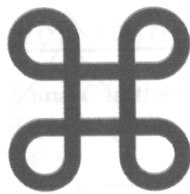
- iv. Yes, Scalene triangle has no lines of symmetry.



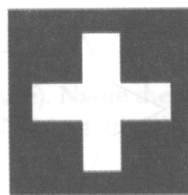
8. Find the number of lines of symmetry for each of the following shapes.



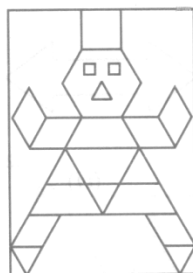
(i)



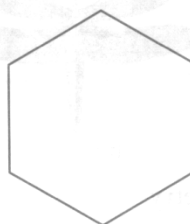
(ii)



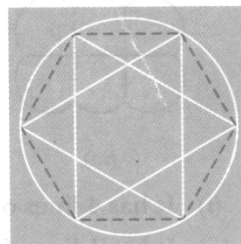
(iii)



(iv)



(v)



(vi)

Ans. i. 4

ii. 4

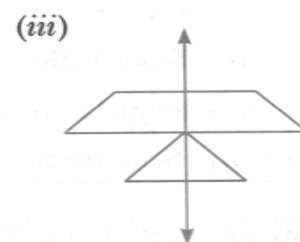
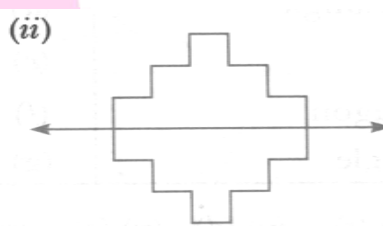
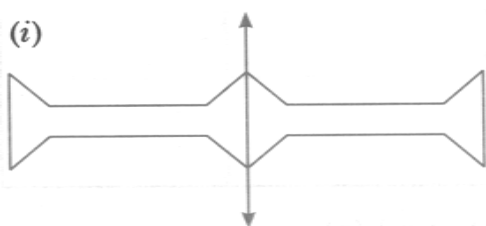
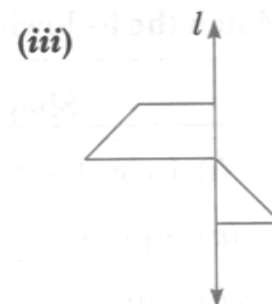
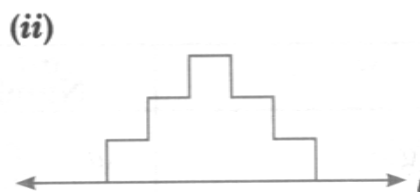
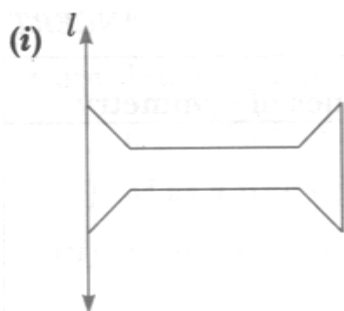
iii. 4

iv. 1

v. 6

vi. 6

9. Complete the following figures so that l is the line of symmetry in each case



10. Write the number of lines of symmetry in each letter of the word 'SYMMETRY'.

S has zero line of symmetry, E has one line of symmetry.

Y has zero line of symmetry, T has one line of symmetry.

M has zero line of symmetry, Y has one line of symmetry.

Next Generation School

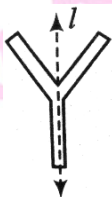
I. Long Answer Type Questions

1. Write the number of lines of symmetry in each letter of the word 'SYMMETRY' and draw the line of symmetry.

The given word is 'SYMMETRY'

The letter S has no line of symmetry.

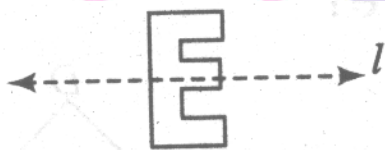
Letter Y has one line of symmetry



The letter M has one line of symmetry



The letter E has one line of symmetry



The letter T has no line of symmetry.



2. Draw the images of points A and B in line l of figure and name them as A' and B' respectively. Measure AB and A'B'. Are they equal?

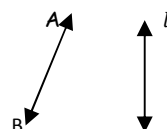
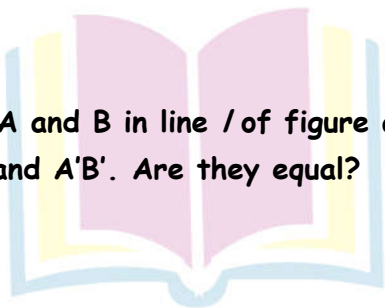
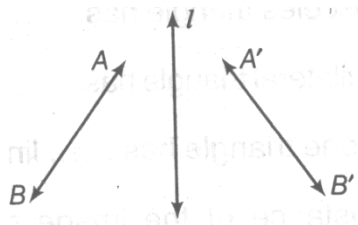


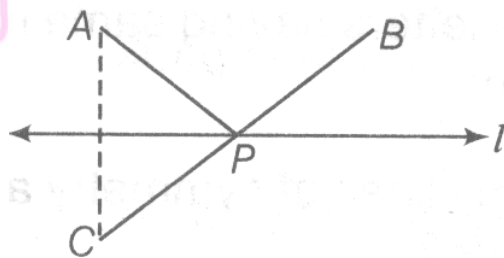
Image of line segment AB is A'B' as shown below in figure.

Next Generation School



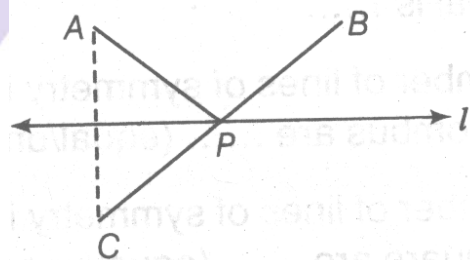
Now, it is clear that the length of line segment AB is equal to length of line segment $A'B'$.

3. In figure, the point C is the image of point A in line l and line segment BC intersects the line l at P .

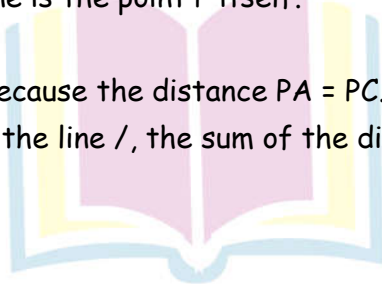


- Is the image of P in line l the point P itself?
- Is $PA = PC$?
- Is $PA + PB = PC + PB$?
- Is P that point on line l from which the sum of the distances of points A and B is minimum?

Given, in figure, the image of the point A is C , in the line l .

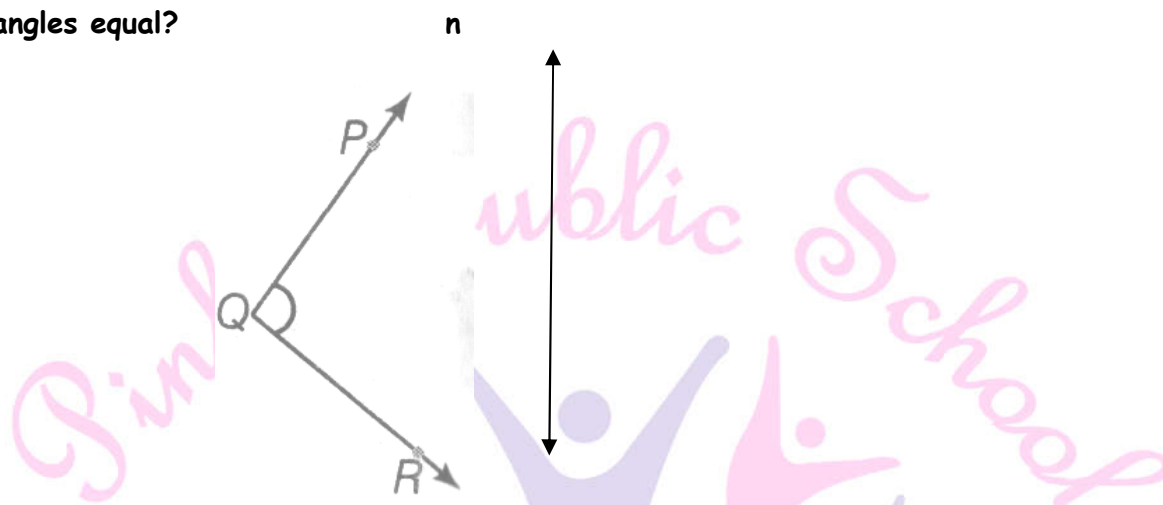


- Yes, the image of P in line is the point P itself.
- Yes, $PA = PC$
- Yes, $PA + PB = PC + PB$ because the distance $PA = PC$.
- Yes, from the point P in the line l , the sum of the distance of point A and B is minimum.

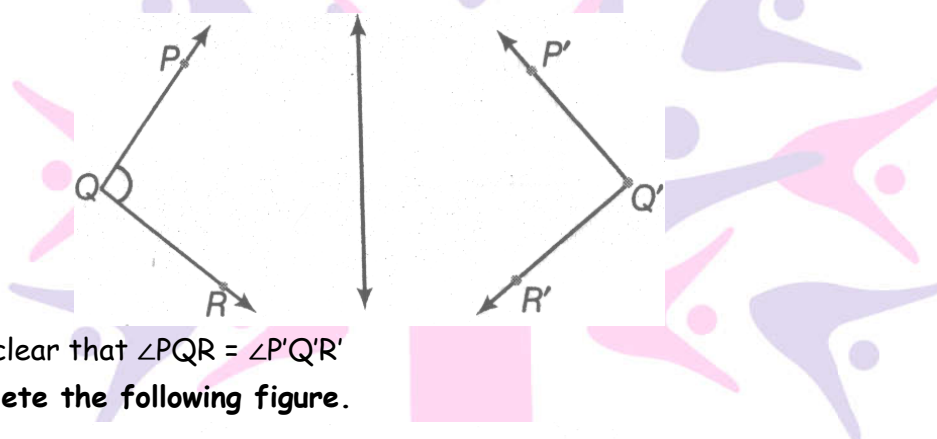


Next Generation School

4. Draw the images P' , Q' and R' of the points P , Q and R , respectively in the line n . join $P'Q'$ and $Q'R'$ to form an angle $P'Q'R'$. Measure $\angle PQR$ and $\angle P'Q'R'$. Are the two angles equal?

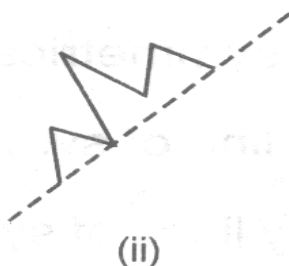


The images of the point P , Q and R in the line n are P' , Q' and R' , respectively.

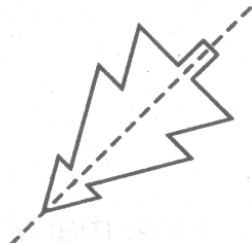
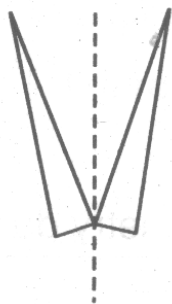


It is clear that $\angle PQR = \angle P'Q'R'$

5. Complete the following figure.



The complete figures are shown below:



II. Long Answer Type Questions

1. Write the letters of the word 'MATHEMATICS'

For finding the no line of symmetry in the word 'MATHEMATICS', check all the letters one by one.

Then,

a.  = One line segment

b.  = One line segment


c.  = One line segment

d.  = Two line segment

d.  = One line segment

e.  = One line segment

f.  = One line segment

g.  = Two line segment

h.  = One line segment

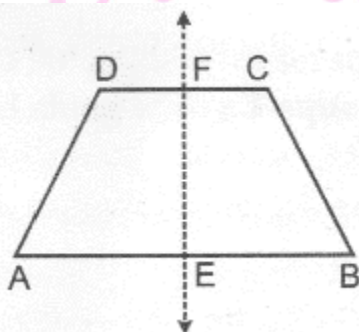
i.  = No line segments

Hence, in the word 'MATHEMATICS', S letter has no line of symmetry.

2. Show that an isosceles trapezium has one line of symmetry, namely the line joining the mid-points of the base of the trapezium.

Let ABCD be an isosceles trapezium in which $AB \parallel DC$ and $AD = BC$.

Let E and F be the mid-points of AB and DC respectively.



If we fold the trapezium along the line EF, we find that the two parts of it coincide with each other. Hence, the trapezium ABCD is symmetrical about the line EF.

III. Long Answer Type Questions

1. Match the following

| Shape | Number of lines symmetry |
|--------------------------|--------------------------|
| i. Isosceles triangle | a. 6 |
| ii. Square | b. 5 |
| iii. Kite | c. 4 |
| iv. equilateral triangle | d. 3 |
| v. rectangle | e. 2 |
| vi. regular hexagon | f. 1 |
| vii. scalene triangle | g. 0 |

| | | | | | | |
|-------|--------|---------|--------|-------|--------|---------|
| i.(f) | ii.(c) | iii.(b) | iv.(d) | v.(e) | vi.(a) | vii.(g) |
|-------|--------|---------|--------|-------|--------|---------|

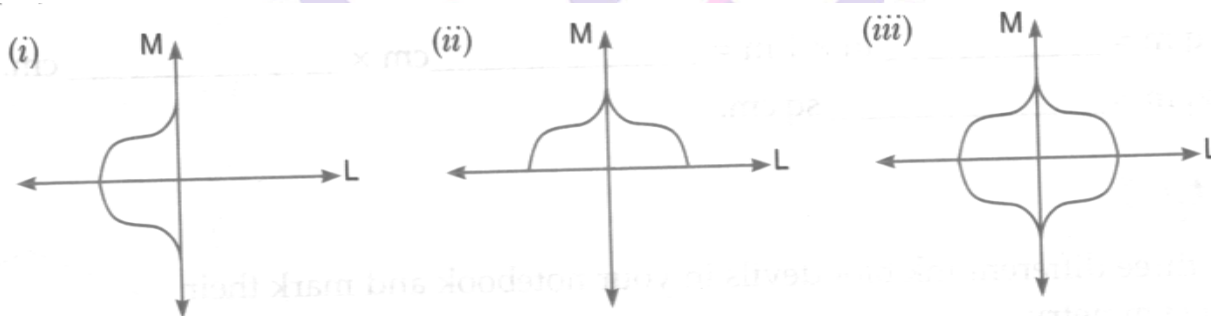
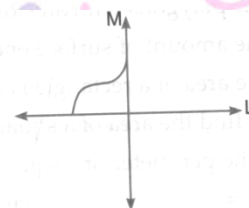
2. Write the letters of the word **GEOMETRY** which have

- (i) No line of symmetry
- (ii) One line of symmetry
- (iii) More than one line of symmetry
- (iv) Only vertical line of symmetry

- (i) G and R do not have any line of symmetry.
- (ii) E, M, T and Y have only one line of symmetry.
- (iii) Only O has more than one line of symmetry.
- (iv) M, T and Y have only vertical line of symmetry.

1. Complete the figure having line

- (i) L as a line of symmetry
- (ii) M as a line of symmetry
- (iii) L and M both as a line of symmetry.



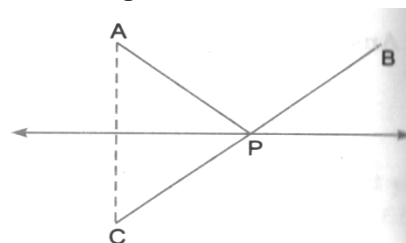
2. A parallelogram has no line of symmetry. A rectangle is also a parallelogram but it has two lines of symmetry. Why?

A rectangle is also a parallelogram but it has two lines of symmetry because:

When a rectangle is folded along its length or breadth, the two halves will overlap to each other but in a parallelogram the two halves will not overlap when it is folded along any line.

3. In figure the point C is the image of point A in line l and line segment BC intersects the line l at P.

- (i) Is the image of P in the l the point P itself?
- (ii) Is $PA = PC$?
- (iii) Is $PA + PB = PC + PB$?
- (iv) Is P that point on line l from which the sum of the distances of points A and B is minimum?



- (i) Yes
- (ii) Yes
- (iii) Yes
- (iv) Yes