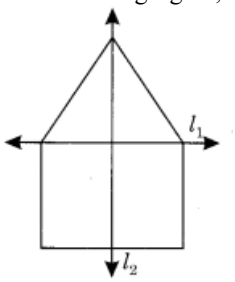
NCERT Solutions For Class 6 Maths Chapter 13 Symmetry Ex 13.1

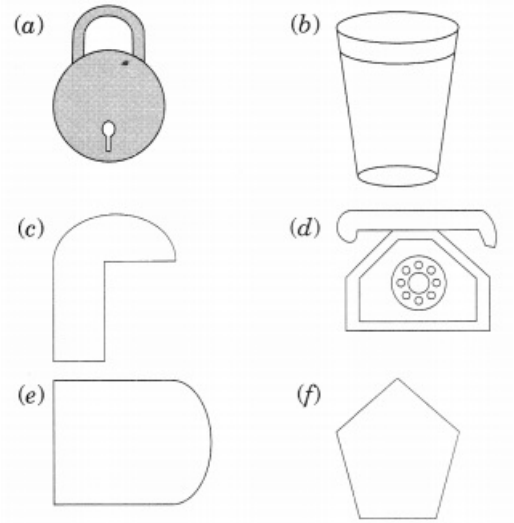
Exercise 13.1

Ex 13.1 Class 6 Maths Question 1.
List any four symmetrical objects from your home or school.
Solution:
The following objects can be symmetrical:
(a) Notebook
(b) Dinning table
(c) A blackboard
(d) Wall clock
(e) A pair of scissors

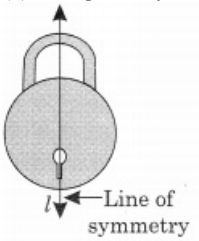
Ex 13.1 Class 6 Maths Question 2.
For the given figure, which one is the mirror line, l^1 or l^2?
Solution:
In the following figure, l^2 is the mirror line.



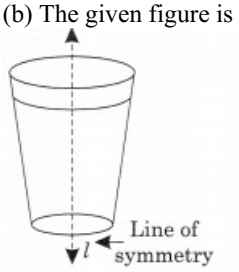
Ex 13.1 Class 6 Maths Question 3.
Identify the shapes given below. Check whether they are symmetrical or not. Draw the line of symmetry as well.



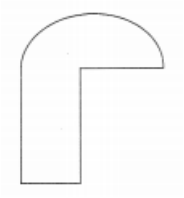
Solution:
(a) The given symmetric figure is a lock in which vertical line 'l' is the line of symmetry.



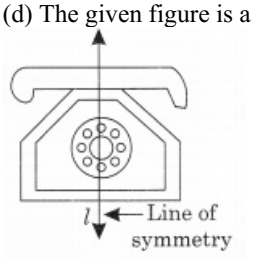
(b) The given figure is a symmetrical bucket in which vertical line 'l' is the line of symmetry.



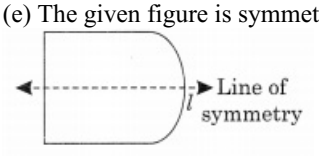
(c) The given figure is not symmetrical.



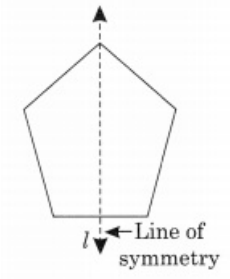
(d) The given figure is a symmetric telephone in which vertical line l is called the line of symmetry.



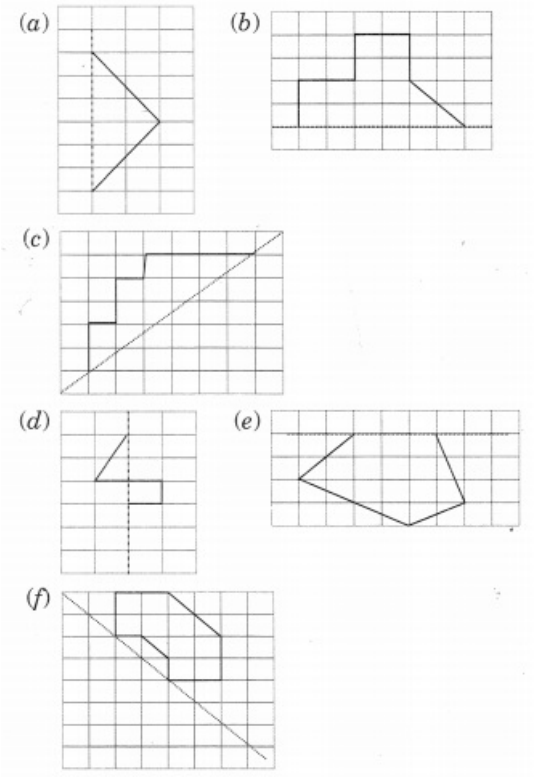
(e) The given figure is symmetrical. Horizontal line l is called the line of symmetry.



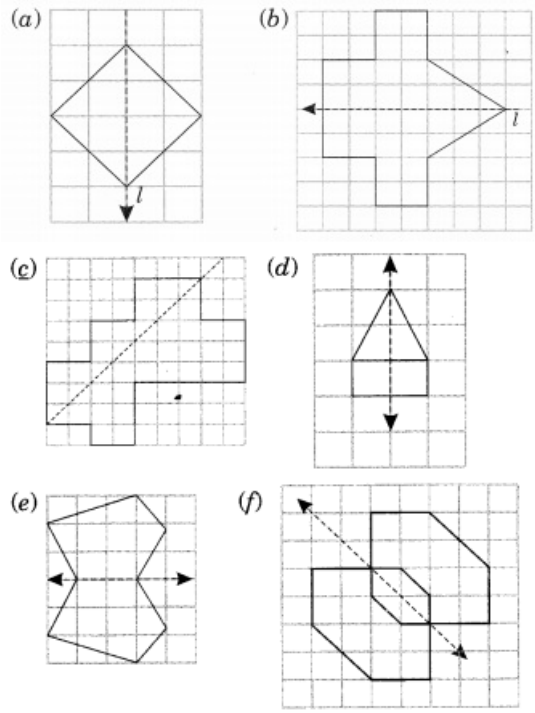
(f) The given figure is symmetrical. Vertical line l is called its line of symmetry.



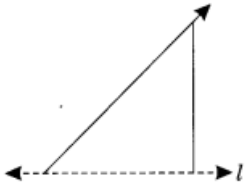
Ex 13.1 Class 6 Maths Question 4.
Copy the following on a squared paper. A square paper is what you would have used in your arithmetic notebook is earlier classes. Then complete them such that the dotted line is the line of symmetry.



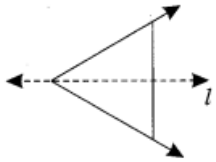
Solution:



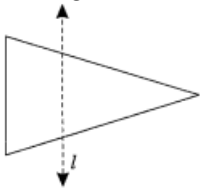
Ex 13.1 Class 6 Maths Question 5.
In the figure, l is the line of symmetry. Complete the diagram to make it symmetric.



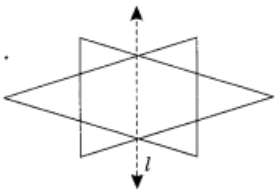
Solution:
The completed figure is as follows:



Ex 13.1 Class 6 Maths Question 6.
In the figure, l is the line of symmetry. Draw the image of the triangle and complete the diagram so that it becomes symmetric.



Solution:
The symmetric figure is given as follows.



Exercise 13.1

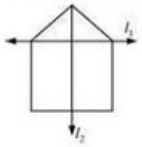
List any four symmetrical objects from your home or school.

Answer:

Paper sheet, Glass, CD, Bucket

Question 2:

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



Answer:

Line l_2 is the mirror line of this figure. This is because when the given figure is folded about the line l_2, the left part can exactly cover the right part and vice-versa.

Question 3:

Identify the shapes given below. Check whether they are symmetric or not. Draw the line of symmetry as well.

(a) (b) (c)

(d) (e) (f)

Answer:

(a) Yes

(b) Yes

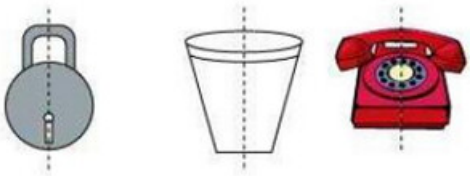
(c) No

(d) Yes

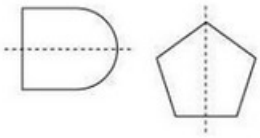
(e) Yes

(f) Yes

Line of symmetry is shown in the following figures.



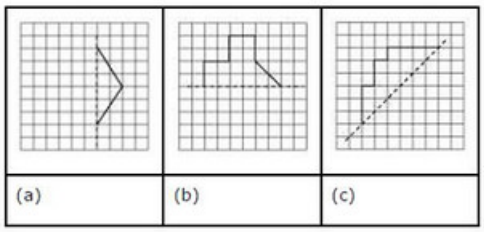
(a) **(b)** **(d)**



(e) **(f)**

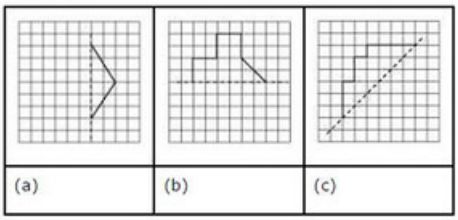
Question 4:

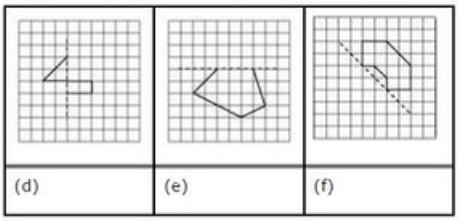
Copy the following on a squared paper. A square paper is what you would have used in your arithmetic notebook in earlier classes. Then complete them such that the dotted line is the line of symmetry.



Question 4:

Copy the following on a squared paper. A square paper is what you would have used in your arithmetic notebook in earlier classes. Then complete them such that the dotted line is the line of symmetry.

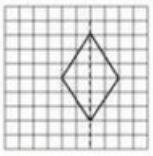




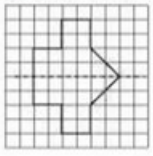
Answer:

To make the dotted line as the line of symmetry, the given figures can be drawn as follows.

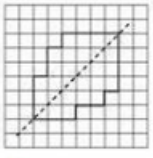
(a)



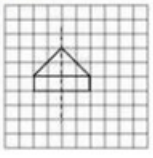
(b)



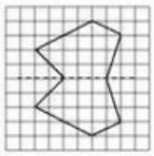
(c)



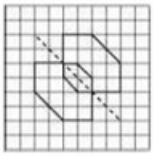
(d)



(e)



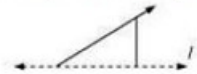
(f)



Question 5:

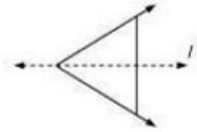
In the figure, *l* is the line of symmetry.

Complete the diagram to make it symmetric.



Answer:

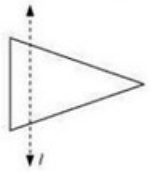
To make the diagram symmetric, it can be completed as follows.



Question 6:

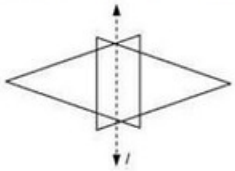
In figure, *l* is the line of symmetry.

Draw the image of the triangle and complete the diagram so that it becomes symmetric.



Answer:

The required triangle can be formed as follows.

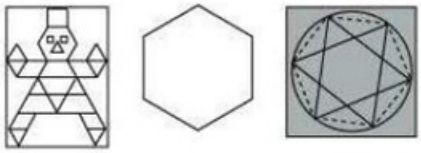


Exercise 13.2

Question 1:

Find the number of lines of symmetry for each of the following shapes:

(a) (b) (c)



(d) (e) (f)

(g) (h) (i)

Answer:

(a) There are 4 lines of symmetry for the given figure.

(b) There are 4 lines of symmetry for the given figure.

(c) There are 4 lines of symmetry for the given figure.

(d) There is only 1 line of symmetry for the given figure.

(e) There are 6 lines of symmetry for the given figure.

(f) There are 6 lines of symmetry for the given figure.

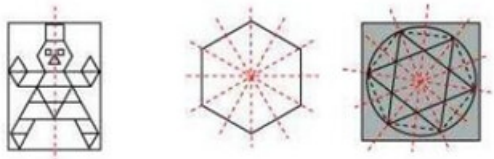
(g) There is no line of symmetry for the given figure.

(h) There is no line of symmetry for the given figure.

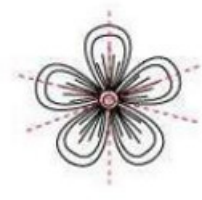
(i) There are 3 lines of symmetry for the given figure.

The lines of symmetry in the above figures can be represented as follows.

(a) (b) (c)



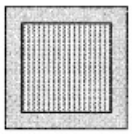
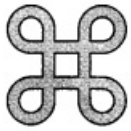
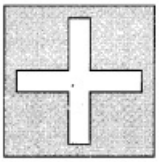
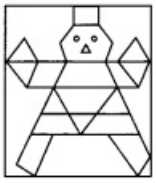
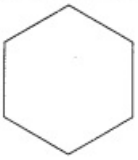
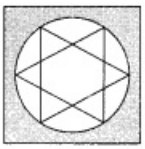
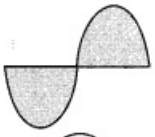
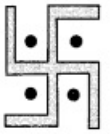
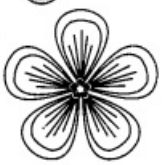
(d) (e) (f)



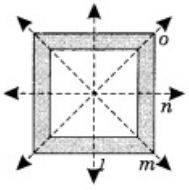
(i)

Exercise 13.2

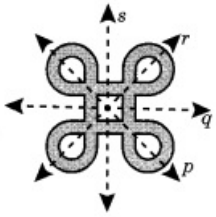
Ex 13.2 Class 6 Maths Question 1.
Find the number of lines of symmetry for each of the following shapes.

(a) 
(b) 
(c) 
(d) 
(e) 
(f) 
(g) 
(h) 
(i) 

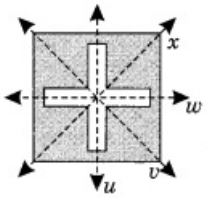
Solution:
(a) Here, there are four symmetric lines l, m, n and o.



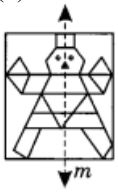
(b) In this figure, there are four symmetric lines p, q, r and s.



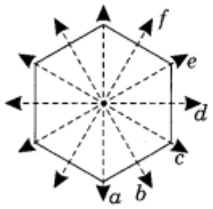
(c) In this shape, u, v , w and x are four lines of symmetry.



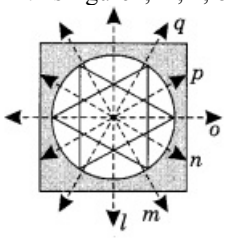
(d) In this shape only m is the line of symmetry.



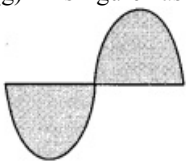
(e) Here, a, b, c, d, e and fare six lines of symmetry.



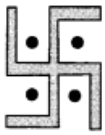
(f) In this figure l, m, n, o, p and q are six lines of symmetry.



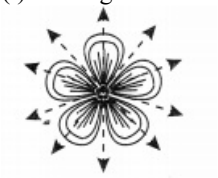
(g) This figure has no lines of symmetry.



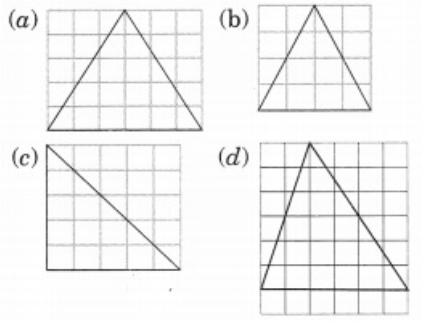
(h) This figure has no lines of symmetry.



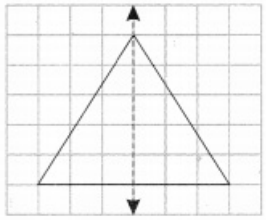
(i) This figure has five lines of symmetry.



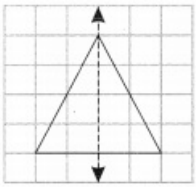
Ex 13.2 Class 6 Maths Question 2.
Copy the triangle in each of the figures on squared paper. In each case, draw the line(s) of symmetry, if any and identify the type of triangle. (Some of you may like to trace the figures and try paper-folding first!)



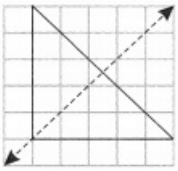
Solution:
(a) It is an isosceles triangle having one symmetric line.



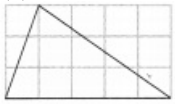
(b) This figure is an isosceles triangle having only one symmetric line.



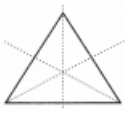
(c) It is an isosceles right angled triangle which has only one symmetric line.



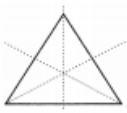
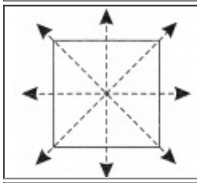
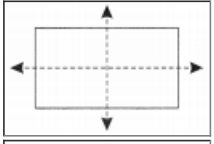
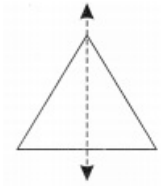
(d) It is a scalene triangle. It has no symmetric line.

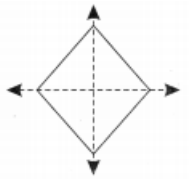
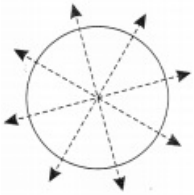


Ex 13.2 Class 6 Maths Question 3.
Complete the following table.

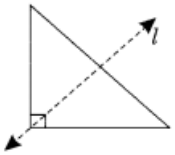
Shape	Rough figure	Number of lines of symmetry
Equilateral triangle		3
Square		
Rectangle		
Isosceles triangle		
Rhombus		
Circle		

Solution:
Completed table:

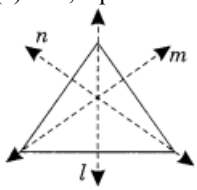
Shape	Rough figure	Number of lines of symmetry
(a) Equilateral triangle		3
(b) Square		4
(c) Rectangle		2
(d) Isosceles triangle		1

(e) Rhombus		2
(f) Circle		Infinite

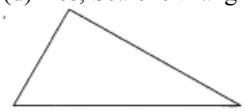
Ex 13.2 Class 6 Maths Question 4.
Can you draw a triangle which has
(a) exactly one line of symmetry?
(b) exactly two lines of symmetry?
(c) exactly three lines of symmetry?
(d) no lings of symmetry?
Sketch a rough figure in each case.
Solution:
(a) Yes, Isosceles right angled triangle has exactly one line of symmetry.



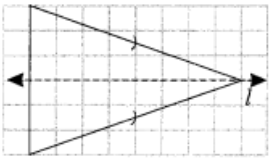
(b) No, we cannot draw any triangle with two symmetric lines.
(c) Yes, equilateral triangle has three lines of symmetry.



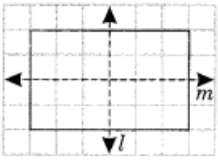
(d) Yes, Scalene triangle has no lines of symmetry



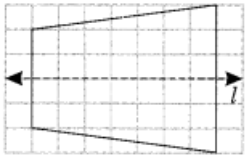
Ex 13.2 Class 6 Maths Question 5.
On a squared paper, sketch the following:
(a) A triangle with a horizontal line of symmetry but no vertical line of symmetry.
(b) A quadrilateral with both horizontal and vertical lines of symmetry.
(c) A quadrilateral with a horizontal line of symmetry but no vertical line of symmetry.
(d) A hexagon with exactly two lines of symmetry.
(e) A hexagon with six lines of symmetry. (Hint: It will be helpful if you first draw the lines of symmetry and then complete the figures)
Solution:
(a) The figure shows an isosceles triangle with horizontal line of symmetry.



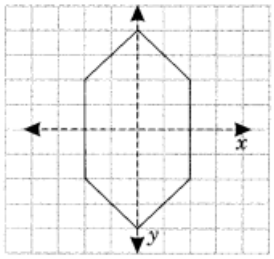
(b) Rectangle (quadrilateral) shows both the horizontal and vertical lines of symmetry.



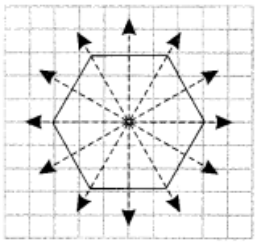
(c) Trapezium (quadrilateral) shows the horizontal but no vertical line of symmetry.



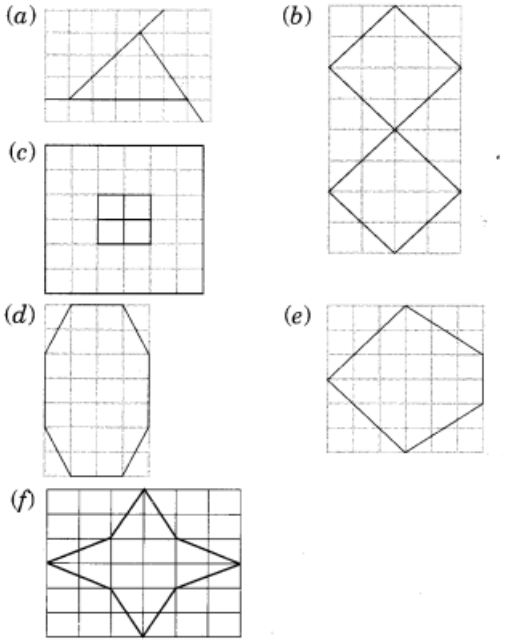
(d) The hexagon drawn below shows only two lines of symmetry.



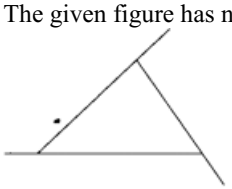
(e) The regular hexagon shows the six lines of symmetry.



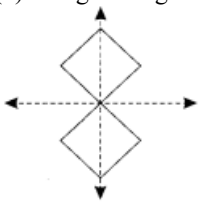
Ex 13.2 Class 6 Maths Question 6.
Trace each figure and draw the lines of symmetry, if any.



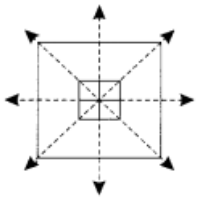
Solution:
(a) The given figure has no line of symmetry as it is not symmetrical.



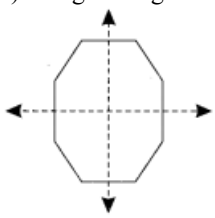
(b) The given figure has two lines of symmetry.



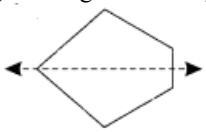
(c) The given figure has four lines of symmetry.



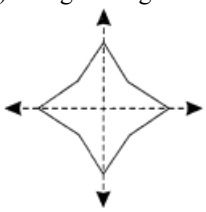
(d) The given figure has two lines of symmetry.



(e) This figure has only one horizontal line of symmetry.

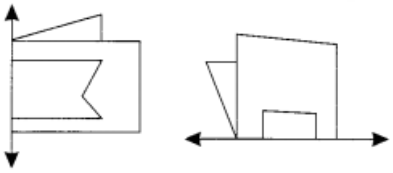


(f) The given figure has two lines of symmetry.

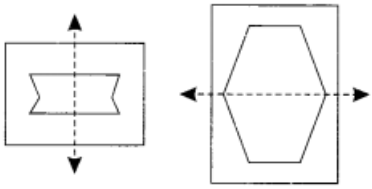


Ex 13.2 Class 6 Maths Question 7.
Consider the letters of English alphabets A to Z. List among them the letters which have
(a) vertical lines of symmetry, (like A)
(b) horizontal lines of symmetry (like B)
(c) no lines of symmetry, (like Q)
Solution:
(a) The following letters have vertical lines of symmetry:
A, H, I, M, O, T, U, V, W, X, and Y
(b) The following letters have horizontal lines of symmetry:
B, C, D, E, H, I, K, O and X.
(c) The following letters have no lines of symmetry:
F, G, J, L, N, P, Q, R, S and Z.

Ex 13.2 Class 6 Maths Question 8.
Given here are figures of a few folded sheets and designs drawn about the fold. In each case, draw a rough diagram of the complete figure that would be seen when the design is cut off.



Solution:
The given figures will be seen as follows when they are completed.

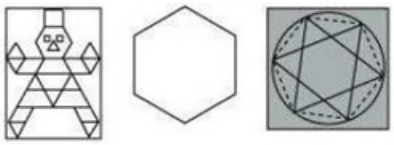


Exercise 13.2

Question 1:

Find the number of lines of symmetry for each of the following shapes:

(a) (b) (c)



(d) (e) (f)

(g) (h) (i)

Answer:

(a) There are 4 lines of symmetry for the given figure.

(b) There are 4 lines of symmetry for the given figure.

(c) There are 4 lines of symmetry for the given figure.

(d) There is only 1 line of symmetry for the given figure.

(e) There are 6 lines of symmetry for the given figure.

(f) There are 6 lines of symmetry for the given figure.

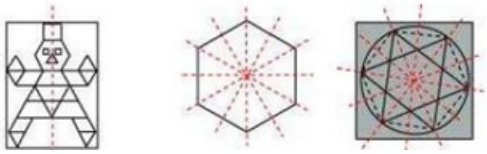
(g) There is no line of symmetry for the given figure.

(h) There is no line of symmetry for the given figure.

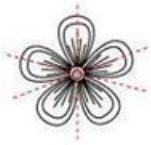
(i) There are 3 lines of symmetry for the given figure.

The lines of symmetry in the above figures can be represented as follows.

(a) (b) (c)



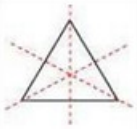
(d) (e) (f)



(i)

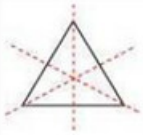
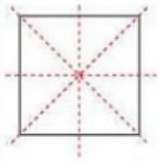
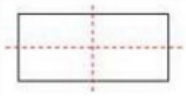
Question 3:

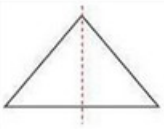
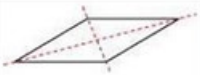
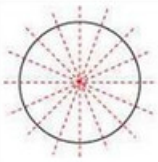
Complete the following table.

Shape	**Rough figure**	**Number of lines of symmetry**
Equilateral triangle		3
Square	-	-
Rectangle	-	-
Isosceles triangle	-	-
Rhombus	-	-
Circle	-	-

Answer:

The given table can be completed as follows.

Shape	**Rough figure**	**Number of lines of symmetry**
Equilateral triangle		3
Square		4
Rectangle		2

Isosceles triangle		1
Rhombus		2
Circle		Infinite

In case of a circle, there are infinite lines. In the above table, only some lines of symmetry are drawn. More symmetric lines can be similarly drawn for it.

Question 4:

Can you draw a triangle which has

(a) exactly one line of symmetry?

(b) exactly two lines of symmetry?

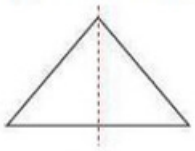
(c) exactly three lines of symmetry?

(d) no lines of symmetry?

Sketch a rough figure in each case.

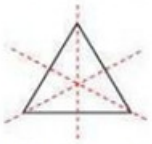
Answer:

(a) Yes, we can make an isosceles triangle which has 1 line of symmetry.



(b) No, we cannot draw such a triangle.

(c) Yes, we can make an equilateral triangle which has 3 lines of symmetry.



(d) Yes, we can make a scalene triangle which has no line of symmetry.

Question 5:

On a squared paper, sketch the following:

(a) A triangle with a horizontal line of symmetry but no vertical line of symmetry.

(b) A quadrilateral with both horizontal and vertical lines of symmetry.

(c) A quadrilateral with a horizontal line of symmetry but no vertical line of symmetry.

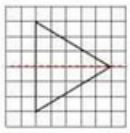
(d) A hexagon with exactly two lines of symmetry.

(e) A hexagon with six lines of symmetry.

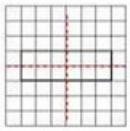
(Hint: It will be helpful if you first draw the lines of symmetry and then complete the figures.)

Answer:

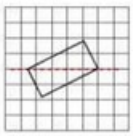
(a) A triangle with only 1 horizontal line of symmetry and no other vertical line of symmetry can be sketched as follows.



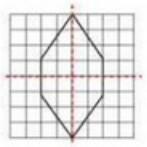
(b) A quadrilateral with both horizontal and vertical lines of symmetry can be drawn as follows.



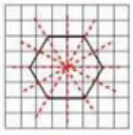
(c) A quadrilateral with a horizontal line of symmetry but no vertical line of symmetry can be drawn as follows.



(d) A hexagon with exactly two lines of symmetry can be sketched as follows.

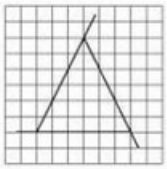


(e) A hexagon with six lines of symmetry can be sketched as follows.

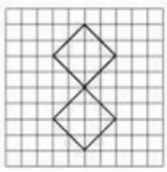


Question 6:

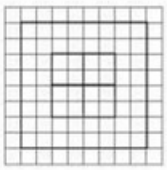
Trace each figure and draw the lines of symmetry, if any:



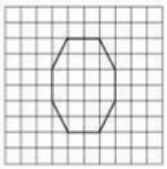
(a)



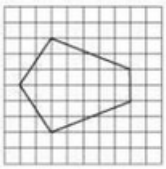
(b)



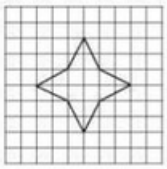
(c)



(d)



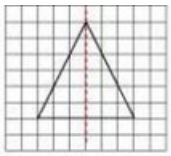
(e)



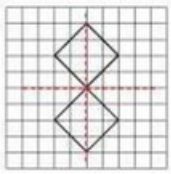
(f)

Answer:

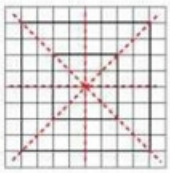
(a) The given figure is an isosceles triangle. Therefore, there will be 1 line of symmetry.



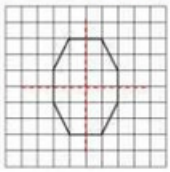
(b) The given figure has 2 lines of symmetry.



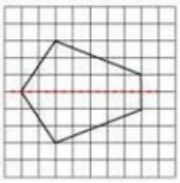
(c) The given figure has 4 lines of symmetry.



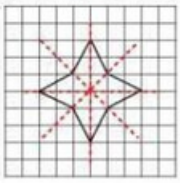
(d) The given figure is an octagonal having 2 lines of symmetry.



(e) The given figure has only 1 line of symmetry.

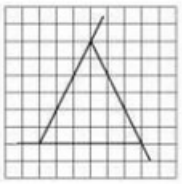


(f) The given figure has 4 lines of symmetry.

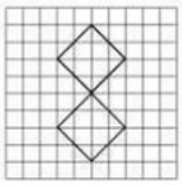


Question 6:

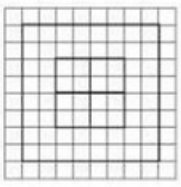
Trace each figure and draw the lines of symmetry, if any:



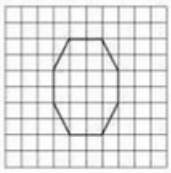
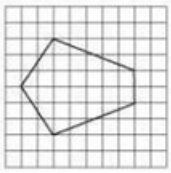
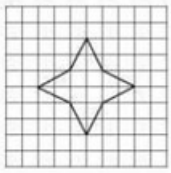
(a)



(b)



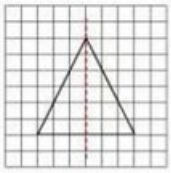
(c)

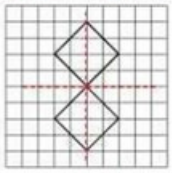
(d) (e) (f)

Answer:

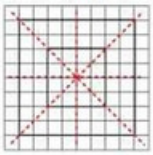
(a) The given figure is an isosceles triangle. Therefore, there will be 1 line of symmetry.



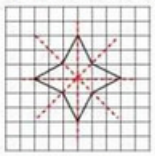
(b) The given figure has 2 lines of symmetry.



(c) The given figure has 4 lines of symmetry.



(d) The given figure is an octagonal having 2 lines of symmetry



Question 7:

Consider the letters of English alphabet, A to Z. List among them the letters which have

(a) vertical lines of symmetry (like A)

(b) horizontal lines of symmetry (like B)

(c) no lines of symmetry (like Q)

Answer:

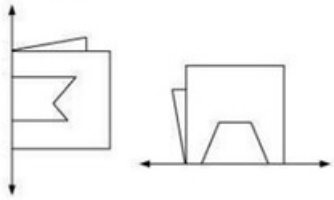
(a) A, H, I, M, O, T, U, V, W, X, Y

(b) B, C, D, E, H, I, K, O, X

(c) F, G, J, L, N, P, Q, R, S, Z

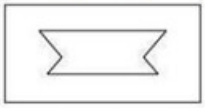
Question 8:

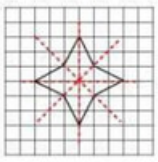
Given here are figures of a few folded sheets and designs drawn about the fold. In each case, draw a rough diagram of the complete figure that would be seen when the design is cut off.



Answer:

The complete figures will be as follows.

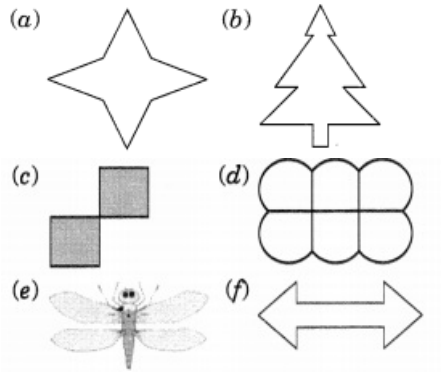




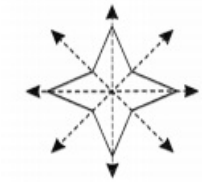
NCERT Solutions For Class 6 Maths Chapter 13 Symmetry Ex 13.3

Exercise 13.3

Ex 13.3 Class 6 Maths Question 1.
Find the number of lines of symmetry in each of the following shapes. How will you check your answer?

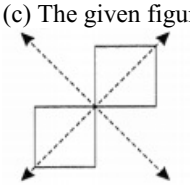


Solution:
(a) The given figure has 4 lines of symmetry.

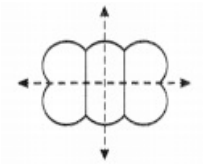


(b) The given figure has only one line of symmetry.

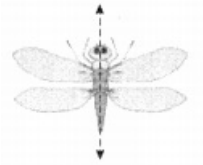
(c) The given figure has two line of symmetry.



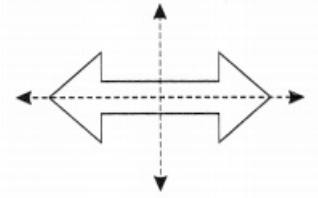
(d) The given figure has two lines of symmetry.



(e) This figure has only one line of symmetry.



(f) The given figure has two lines of symmetry.



Exercise 13.3

Question 1:

Find the number of lines of symmetry in each of the following shapes. How will you check your answers?

(a) (b) (c)

(d) (e) (f)

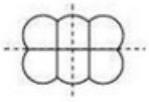
Answer:

(a) It can be observed that there are 4 lines of symmetry.

(b) It can be observed that there is only 1 line of symmetry.

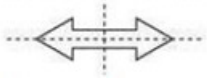
(c) It can be observed that there are 2 lines of symmetry.

(d) It can be observed that there are 2 lines of symmetry.



(e) It can be observed that there is only 1 line of symmetry.

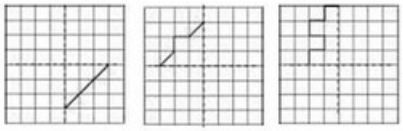
(f) It can be observed that there are 2 lines of symmetry.



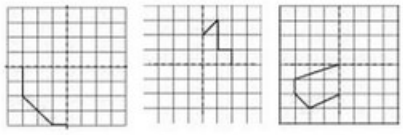
Question 2:

Copy the following drawing on squared paper. Complete each one of them such that the resulting figure has two dotted lines as two lines of symmetry.

How did you go about completing the picture?



(a) (b) (c)

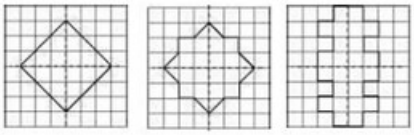


(d) (e) (f)

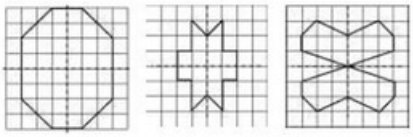
Answer:

These figures can be completed by drawing similar parts as shown in these figures, first about the vertical line of symmetry and then about the horizontal line of symmetry, or first about the horizontal line of symmetry and then about the vertical line of symmetry.

The completed figures will be as follows.



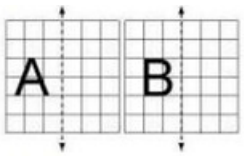
(a) (b) (c)



(d) (e) (f)

Question 3:

In each figure alongside, a letter of the alphabet is shown along with a vertical line. Take the mirror image of the letter in the given line. Find which letters look the same after reflection (i.e. which letters look the same in the image) and which do not. Can you guess why?

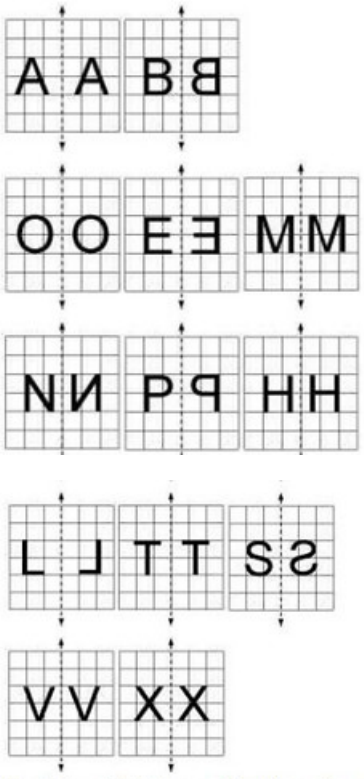


Try for

OEMNPHLTSVX

Answer:

The mirror images of these figures will be as follows.



The letters that have vertical line of symmetry will have same mirror images. These letters are O, M, H, T, V, X and hence, these letters will look the same.