

# NCERT SOLUTIONS

CLASS - 6TH



[aglasem.com](http://aglasem.com)

### Exercise 13.1

Q1 You have two set-squares in your 'mathematical instruments box'. Are they symmetric?

Answer. Missing

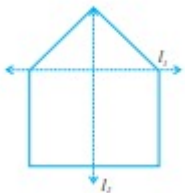
Page : 262 , Block Name : Try These

Q1 List any four symmetrical objects from your home or school.

Answer. Paper sheet, Glass, CD, Bucket

Page : 263 , Block Name : Exercise 13.1

Q2 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.

Page : 263 , Block Name : Exercise 13.1

Q3 Identify the shapes given below. Check whether they are symmetric or not. Draw the line of symmetry as well.



(a)



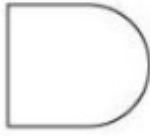
(b)



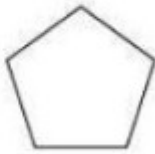
(c)



(d)



(e)



(f)

Answer. (a) Yes

(b) Yes

(c) No

(d) Yes

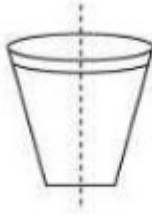
(e) Yes

(f) Yes

Line of symmetry is shown in the following figures.



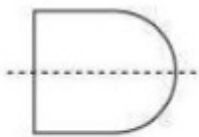
(a)



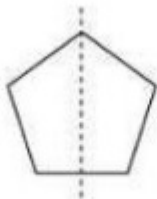
(b)



(d)



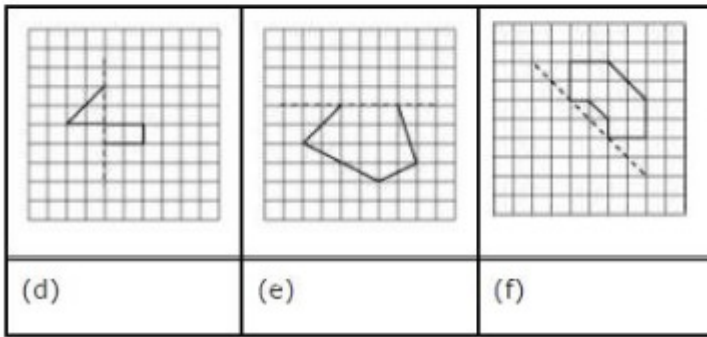
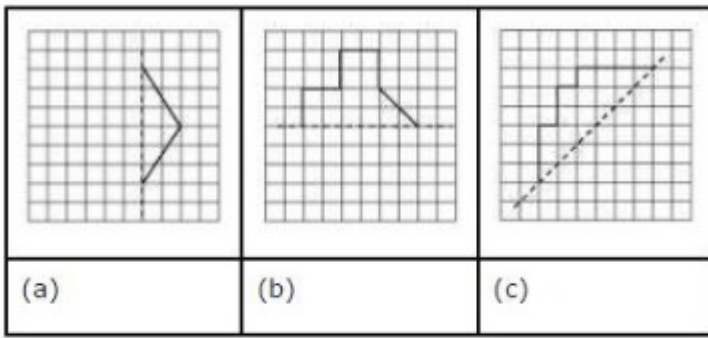
(e)



(f)

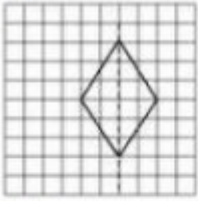
Page : 263 , Block Name : Exercise 13.1

Q4 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.

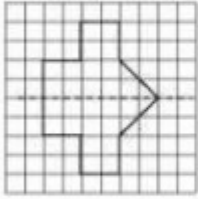


Answer. To make the dotted lines as the line of symmetry, the given figures can be drawn as follows.

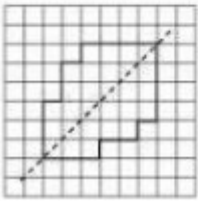
(a)



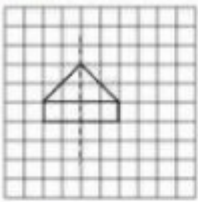
(b)



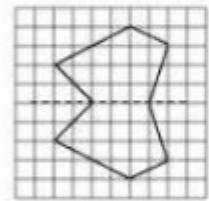
(c)



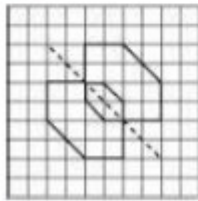
(d)



(e)



(f)

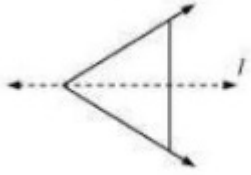


Page : 263 , Block Name : Exercise 13.1

Q5 In the figure,  $l$  is the line of symmetry. Complete the diagram to make it symmetric.

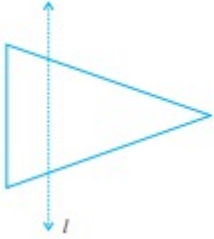


Answer. To make the diagram symmetric, it can be completed as follows.

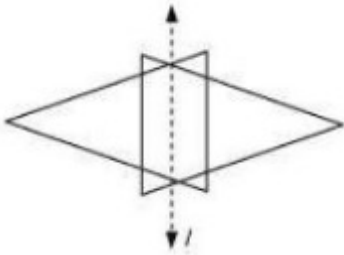


Page : 263 , Block Name : Exercise 13.1

Q6 In the 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.



Page : 264 , Block Name : Exercise 13.1

Q1 Form as many shapes as you can by combining two or more set squares. Draw them on squared paper and note their lines of symmetry.

Answer. Missing

Page : 264 , Block Name : Try These

### Exercise 13.2

Q1 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.

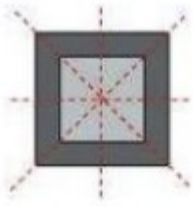
(f) There are 6 lines of symmetry for the given figure.

(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.

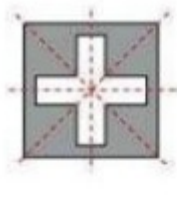
The lines of symmetry in the above figures can be represented as follows.



(a)



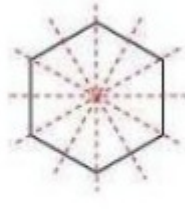
(b)



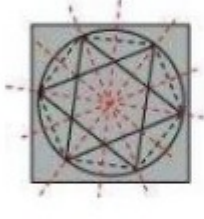
(c)



(d)



(e)



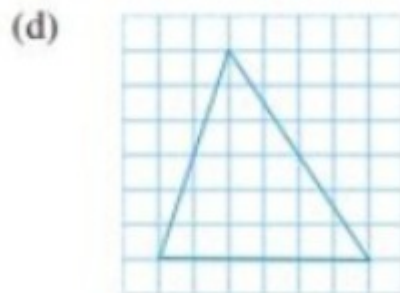
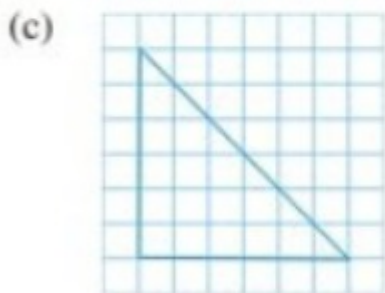
(f)



(i)

Page : 267 , Block Name : Exercise 13.2

Q2 Copy the triangle in each of the following 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!)

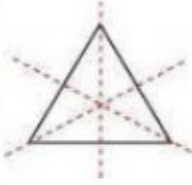


Answer. DIY

Page : 267 , Block Name : Exercise 13.2

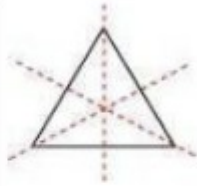
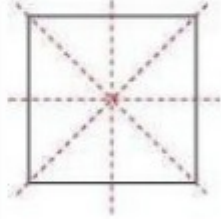
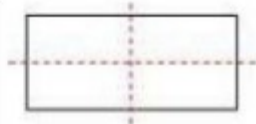
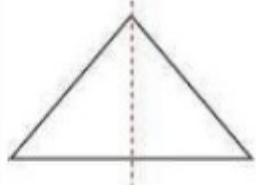
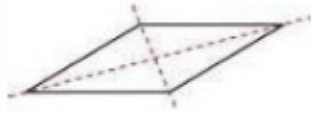
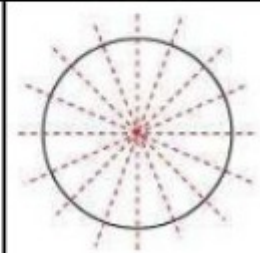


Q3 Complete the following table

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.

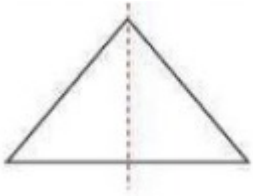
Page : 268 , Block Name : Exercise 13.2

Q4 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?

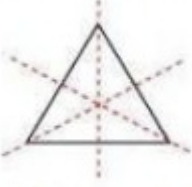
Sketch a rough figure in each case.

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.



Page : 268 , Block Name : Exercise 13.2

Q5 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.

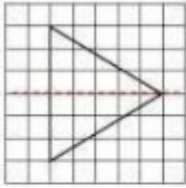
(d) A hexagon with exactly two lines of symmetry.

(e) A hexagon with six lines of symmetry.

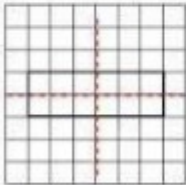
(Hint : It will be helpful if you first draw the lines of symmetry and then complete the figures.)

Answer.

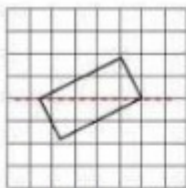
(a) A triangle with only 1 horizontal line of symmetry and no other vertical line of symmetry can be sketched as follows.



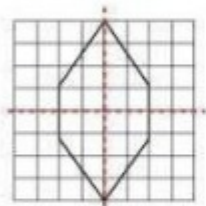
(b) A quadrilateral with both horizontal and vertical lines of symmetry can be drawn as follows.



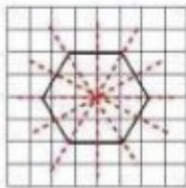
(c) A quadrilateral with a horizontal line of symmetry but no vertical line of symmetry can be drawn as follows.



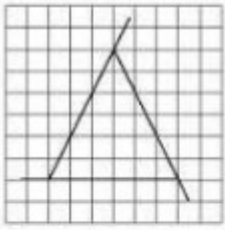
(d) A hexagon with exactly two lines of symmetry can be sketched as follows.



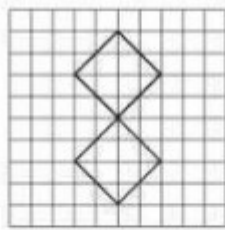
(e) A hexagon with six lines of symmetry can be sketched as follows.



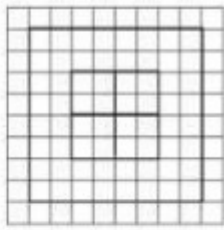
Q6 Trace each figure and draw the lines of symmetry, if any:



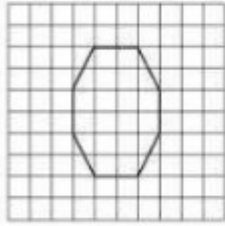
(a)



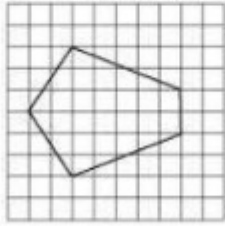
(b)



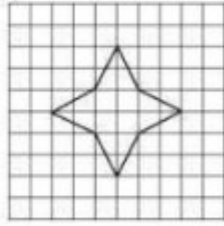
(c)



(d)

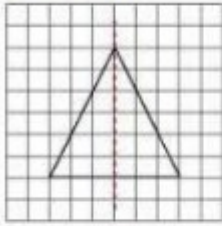


(e)

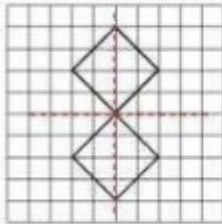


(f)

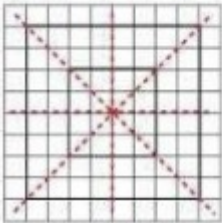
(a) The given figure is an isosceles triangle. Therefore, there will be 1 line of symmetry.



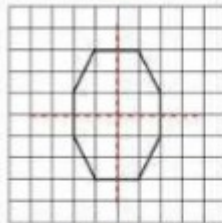
(b) The given figure has 2 lines of symmetry.



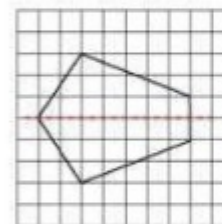
(c) The given figure has 4 lines of symmetry.



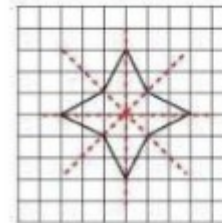
(d) The given figure is an octagonal having 2 lines of symmetry.



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



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



Answer.

Page : 268 , Block Name : Exercise 13.2

Q7 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)

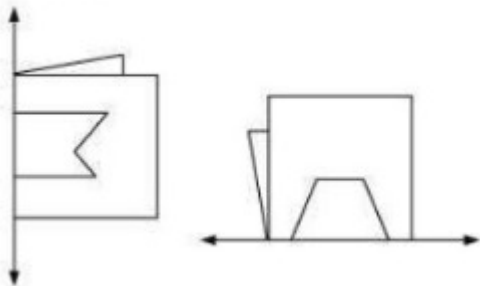
Answer. (a) A, H, I, M, O, T, U, V, W, X, Y

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

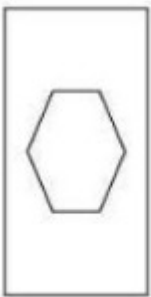
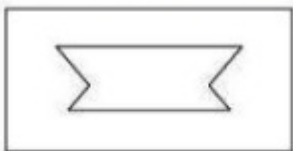
(c) F, G, J, L, N, P, Q, R, S, Z

Page : 269 , Block Name : Exercise 13.2

Q8 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.



Page : 269 , Block Name : Exercise 13.2

Q1 If you are 100 cm in front of a mirror, where does your image appear to be? If you move towards the mirror, how does your image move?

Answer. Missing

Page : 270 , Block Name : Try These

### Exercise 13.3

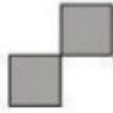
Q1 Find the number of lines of symmetry in each of the following shapes. How will you check your answers?



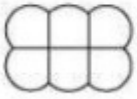
(a)



(b)



(c)



(d)

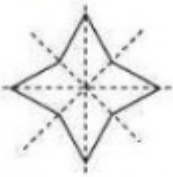


(e)



(f)

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



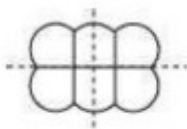
(b) It can be observed that there is only 1 line of symmetry.



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



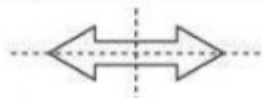
(d) It can be observed that there are 2 lines of symmetry.



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



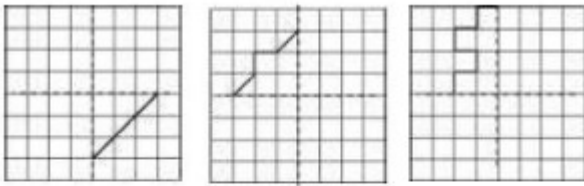
(f) It can be observed that there are 2 lines of symmetry.



Answer.



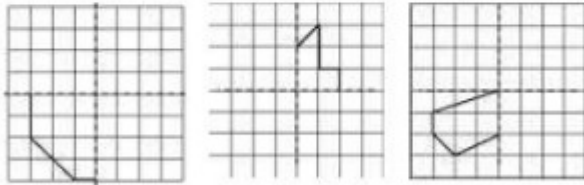
Q2 Copy the following drawing on squared paper. Complete each one of them such that the resulting figure has two dotted lines as two lines of symmetry.



(a)

(b)

(c)



(d)

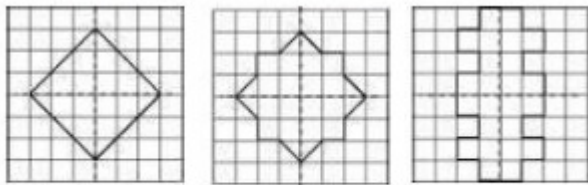
(e)

(f)

How did you go about completing the picture?

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.

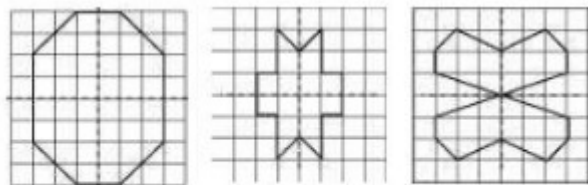
The completed figures will be as follows.



(a)

(b)

(c)



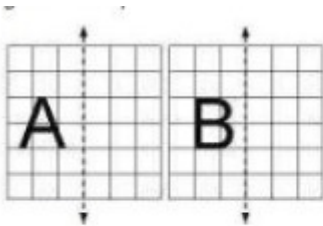
(d)

(e)

(f)

Page : 272 , Block Name : Exercise 13.3

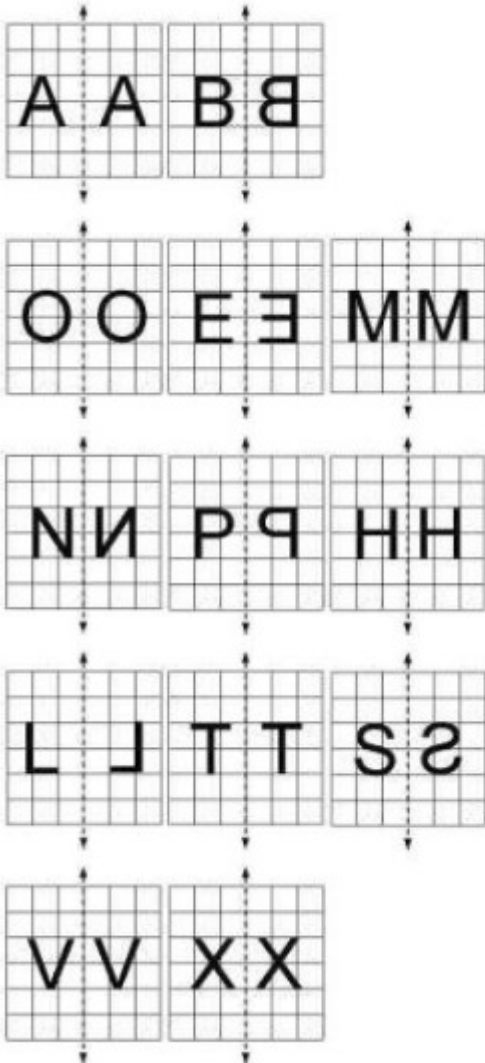
Q3 In each figure alongside, a letter of the alphabet is shown along with a vertical line. Take the mirror image of the letter in the given line. Find which letters look the same after reflection (i.e. which letters look the same in the image) and which do not. Can you guess why?



Try for

O E M N P H L T S V X

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.