



# MATHS

# **BOOKS - NAND LAL PUBLICATION**

# SYMMETRY

**Solution Of Textual Questions** 

# 1. The shapes you see here are symmetrical .Why?



## 2. How do you name the dotted line in the figure ?



3. Where will you place the mirror for having the image exactly over the other half of the picture ?
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4. The adjacent fig 13.2 is not symmetrical can you

tell 'why not '?



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### **Do This**

1. One of the two set squares in your instrument box has angles of measure  $30^{\circ} - 60^{\circ} - 90^{\circ}$ Take two such identical set - squares .Place them side by side to form a kite like the one shown here . How many lines of symmetry does the shape have ? Do you think that some shapes may have more than

# one line of symmetry ?



**2.** Take a rectangular sheet (like a post - card) .fold it once length wise so that one half fits exactly over the other half . Is this fold a line of symmetry . Why ?

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# **3.** Check whether this shape is symmetrical or not ?





**4.** Do you find that these two lines are lines of symmetry ?

**5.** There is difference between the objects and the image in one aspect . Can you guess what the difference is ?



**6.** 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 ?

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7. Paper delievery boy wants to park his cycle at some point P and deliver the newspaper to house A and B . Where should he park the cycle so that his walking distance AP + Bp will be least ? You can use relfection symmetry here .

Let A' be the image of A in the mirror line which is the street here . Then the point P is the ideal place to park the cycle . (where the mirror line and A'b

meet ) Can you say why ?





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

There are two set squares in our mathematical instruments box, they are :

(i)  $30^\circ - 60^\circ - 90^\circ$  set square



(ii)  $45^\circ - 45^\circ - 90^\circ$  set square





**3.** Observe this beautiful figure . It is a symmetric pattern known as koch's snow flake ( If you have access to a computer , browse through the topic

'fractal ' and find more such beauties !) .Find the

lines of symmetry in this figure .





Exercise 13 1

1. List any four symmetrical objects from your home

or school.



# **2.** For the given figure,which one is mirror line $l_1$ or

 $l_2$ ?

2



**3.** In the figure ,I is the line of symmetry .

complete the diagram to make it symmetric



**4.** In the figure , I is the line of symmetry . Draw the image of the triangle and the diagram , so that it

### becomes symmetric.



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

answer?





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





7. In each figure alongside, a letterof the alphabet is shown alongwith a vertical line. Take themirror image of the letter in thegiven line. Find which letters lookthe same after reflection (i.e.which letters look the same in theimage) and which do not. Canyou guess why?



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Exercise 13 2

## 1. Find the number of lines of symmetry for each of

## the following shapes :

	Shape	* Rough figure	Number of lines of symmetry
(a)	Equilateral triangle	×	3
(b)	Square		4
(c)	Rectangle	<	2

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**2.** Copy the triangle in each of the following figures on squared paper . In each case , draw in line (s) of

symmetry .if any and identigy the type of triangle . (Some of you may like to trace the figures and try paper - folding first ).





## 3. Complete the following table .

	Shape	* Rough figure	Number of lines of symmetry
(a)	Equilateral triangle	×	3
(b)	Square		4
(c)	Rectangle	<	2

	Shape	Rough figure	Number of lines of symmetry
(d)	Isosceles triangle	Å	1
(c)	Rhombus	$\leftrightarrow$	2



**4.** Can you draw a triangle which has:

exactly one line of symmetry?

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**5.** Draw a figure having exactly two lines of symmetry

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**6.** draw a figure having exactly three line of symmetry.









10. Consider the English alphabets A to Z.List among

them the letters which have:

vertical lines of symmery.(like A)

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**11.** Given here are the 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.



Additional Questions For Practice Very Short Answer Type Questions

**1.** When a line divides the given figure into two identical halves then the line is called .

A. parallel line

B. congrument line

C. line of symmetry

D. None

#### **Answer:**



## 2. A geometrical figure and its corresponfing mirror

image are

A. similar

B. laterally inverted

C. congrument

D. None

#### Answer:

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3. Rhombus is symmetrical about

A. each of its two diagonals

B. each of the two lines joining the mid points of

opposite sides

C. each of the perpendicular bisectors of its

sides

D. none

**Answer:** 

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**4.** The angle between the mirror line I and the line segment joining a point and its reflection

A.  $0^{\circ}$ 

B.  $45^{\circ}$ 

C.  $90^{\circ}$ 

D.

**Answer:** 



5. State the number of lines of symmetry for the

following figures:

A parallelogram

A. 1

B. 0

C. 2

D.

#### **Answer:**

6.



#### In

 $riangle PQRPR = Pq, PS \perp QR, QT \perp PR, RU \perp PQ$ 

then  $\ \ \bigtriangleup \ PQR$  is symmetrical about

#### A. PR

B. UR

C. QT

D.

Answer:



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7. Alphabet X has

A. only horizontal line of symmetry

B. only vertical line of symmetry

C. both lines of symmetry

D.



## 8. Which alphabet has both lines of symmetry

A. A

B. B

С. Н

D.

Answer:



9. Fill in the blanks

5.34m=\_\_\_cm

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10. Correct the following statements

All triangles have one line of symmetry.



11. Check whether the following statement is true or

not

Each of the letters D,F,A,H have two lines of symmetry.



12. Check whether the following statement is true or

not

Symmetry does not occur in geometrical figures .



13. Check whether the following statement is true or

not

Circle has one line of symmetry .



**14.** State true or false:

A regular hexagon has 6 lines of symmetry.

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15. The number of lines of symmetry in letter N is 1.

**16.** All right angled triangles have one line of symmetry .

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17. Fill in the blanks

The number of line of symmetry in rectangle is \_\_\_.

**18.** Which of the lines drawn in the figure are correct lines of symmetry .Also the correct lines of symmetry where ever needed.





**19.** Draw the lines of symmetry if any of the following road signs and count their number .





# Additional Questions For Practice Long Short Answer Type Questions

- 1. Can you draw a quadrilateral having
- (a) no line of symmetry
- (b) 2 lines of symmetry

2. Find five letter of English alphabet which are symmetrical and look same after reflection

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**3.** Find five letter of English alphabet which are symmetrical and

do not look same after reflection

Also write five which letters which are not symmetrical and do not look same after reflection .

1. Add one square to each figure to make each figure

below have a line of symmetry



**2.** Divide a rectangle of size (  $3 \text{ cm} \times 8 \text{ cm}$  ) such that the identical parts will cover exactly the rectangle of size (  $2 \text{ cm} \times 12 \text{ cm}$ )



3. The number of lines of symmetry in a Equilateral

triangle is . . . . . . . . .



4. Check whether the following statement is true or

not

The line of symmetry divides a figure into two parts

in which one part will equal to other .



Sample Paper For Practice State True Or False

1. State true or false

A semicircle has two lines of symmetry .



2. The figure on any one side of a line of symmetry is

the mirror image of the figure on the other side of

it ?



3. State whether the following is true or false

An equilateral triangle can have no line of symmetry



4. State whether the following is true or false
All the vowels when written as capital letters have
symmetry.

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Sample Paper For Practice Answer The Multiple Choice Questions

# 1. Which of the following is the mirror image of





A.



A. 0

B. 1

C. 2

D.

#### **Answer:**

![](_page_52_Picture_5.jpeg)

### 3. Amongst the given sign the one having maximum

lines of symmetry is

a.  $\times$ 

b. – c. + A. ×

B. —

C. +

D.

#### **Answer:**

![](_page_53_Picture_5.jpeg)

4. The number of lines of symmetry which a triangle

have is

A. 0

B. 1

C. 2

D.

#### Answer:

![](_page_54_Picture_7.jpeg)

Sample Paper For Practice Match The Following

![](_page_55_Figure_0.jpeg)

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## Sample Paper For Practice

### 1. Which of the two figures are the images of each

other (mirror line is the dotted line)

![](_page_56_Figure_2.jpeg)

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2. Is the mirror image of a figure related to

symmetry ? Explain

3. If a line segment of length 10 cm is reflected in a

line of symmetry (mirror) then what is its reflection

(image).Draw figure also.

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4. Draw hexagon having two line of symmetry

having 6 - lines of symmetry

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**5.** Draw two figures which has only one line of symmetry.

![](_page_58_Picture_0.jpeg)

![](_page_58_Picture_1.jpeg)

# 8. Match the following

(a)	Square	0
(b)	Kite	2
(c)	Parallelogram	3
(d)	Regular hexagon	1
(e)	equilateral triangle	4
(f)	Isosceles Trapezium	6
(g)	Rhombus	infinite
(h)	Circle	1

![](_page_59_Picture_2.jpeg)