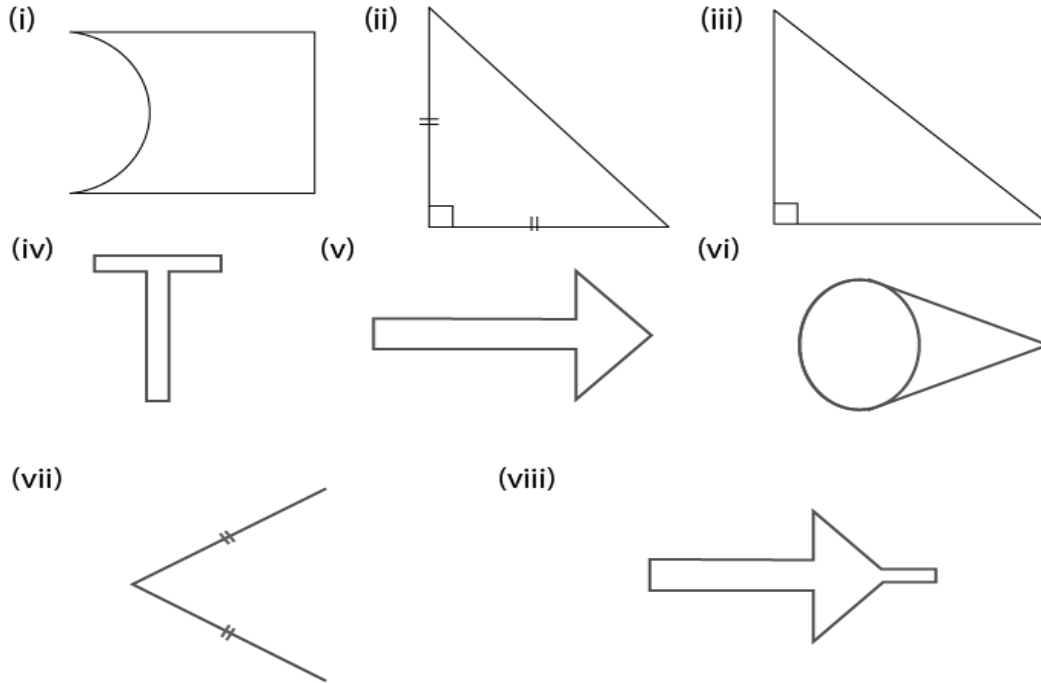
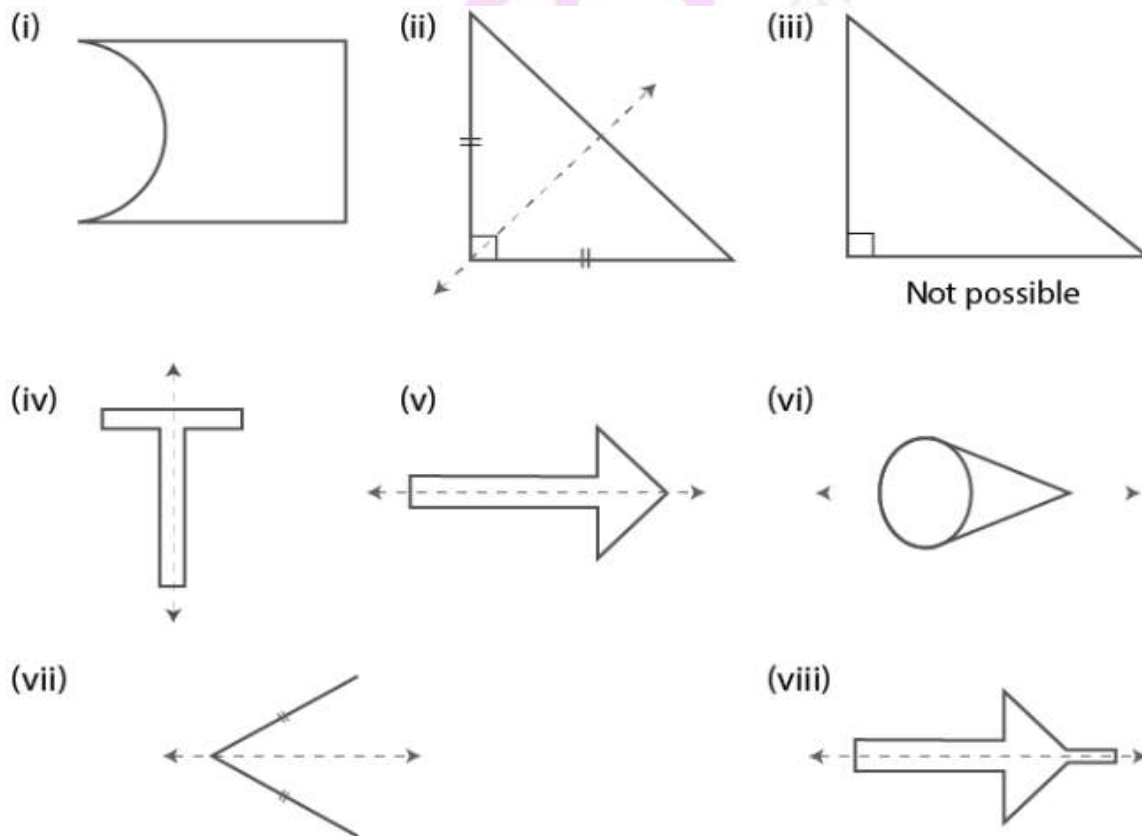


EXERCISE 17A

1. For each figure, given below, draw the line (s) of symmetry, if possible:



Solution:



2. Write capital letters A to Z of English alphabet and in each case, if possible, draw the largest number of lines of symmetry.

Solution:

Yes, the line (s) of symmetry is possible in the alphabets mentioned below. It is not possible for other alphabets.



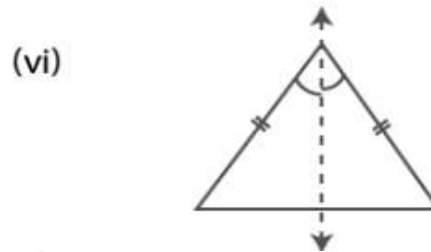
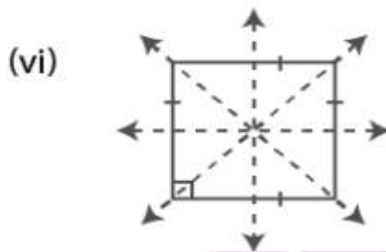
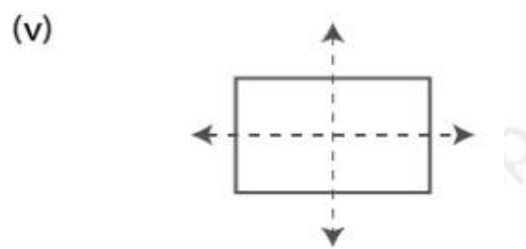
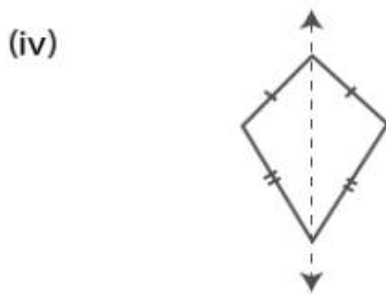
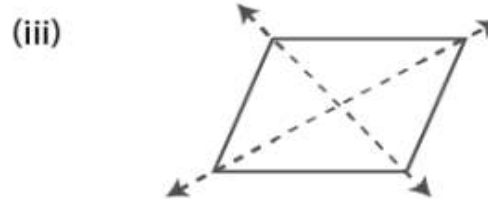
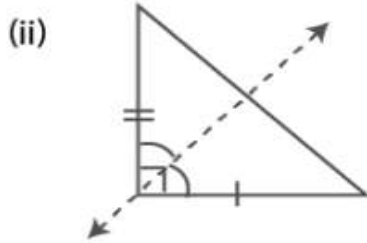
3. By drawing a free hand sketch of each of the following, draw in each case, the line (s) of symmetry, if any:

- (i) a scalene triangle
- (ii) an isosceles right angled triangle
- (iii) a rhombus
- (iv) a kite shaped figure
- (v) a rectangle
- (vi) a square

(vii) an isosceles triangle

Solution:

(i) Not possible



4. Draw a triangle with :

(i) no line of symmetry,

(ii) only one line of symmetry,

(iii) exactly two lines of symmetry,

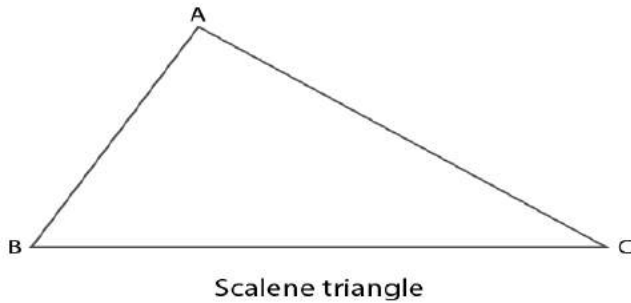
(iv) exactly three lines of symmetry,

(v) more than three lines of symmetry.

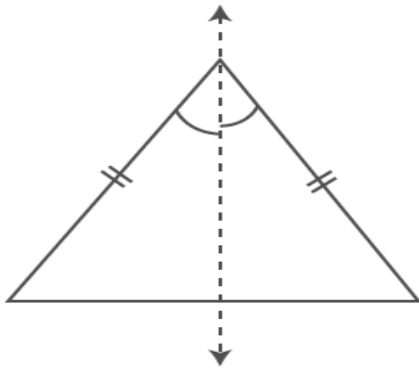
In each case, if possible, represent the line (s) of symmetry by dotted lines. Also, write the special name of the triangle drawn.

Solution:

(i) Scalene triangle has no line of symmetry.



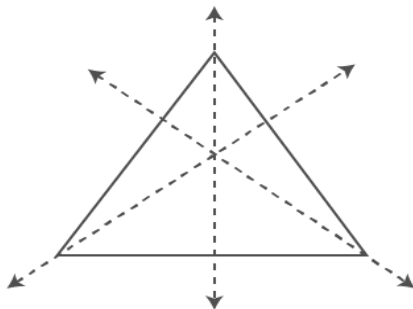
(ii) Isosceles triangle has one line of symmetry.



(Isosceles triangle)

(iii) Not possible.

(iv) Equilateral triangle has three lines of symmetry.



(Equilateral triangle)

(v) Not possible.

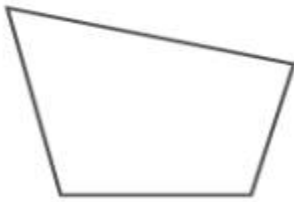
5. Draw a quadrilateral with :

- (i) no line of symmetry.
- (ii) only one line of symmetry.
- (iii) exactly two lines of symmetry.
- (iv) exactly three lines of symmetry.
- (v) exactly four lines of symmetry.
- (vi) more than four lines of symmetry.

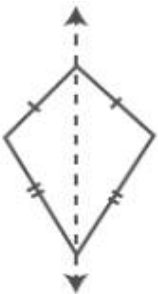
In each case, if possible, represent the line (s) of symmetry by dotted lines. Also, write the special name of the quadrilateral drawn.

Solution:

(i)

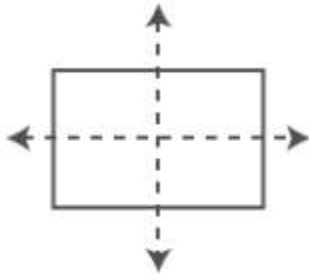


(ii)

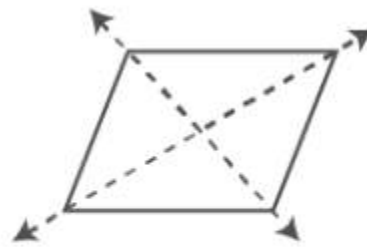


(Kite-shaped)

(iii)



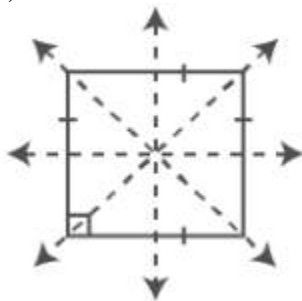
(Rectangle)



(Rhombus)

(iv) It is not possible.

(v)



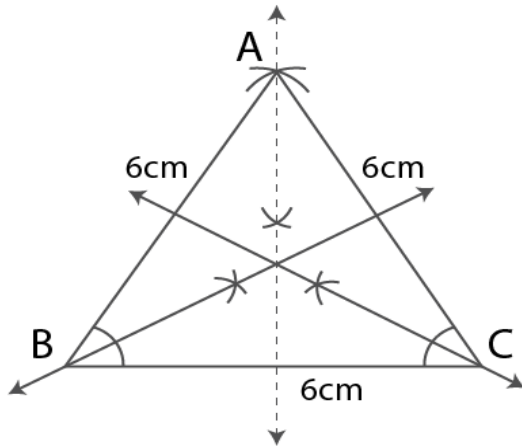
(vi) It is not possible.

6. Construct an equilateral triangle with each side 6 cm. In the triangle drawn, draw all the possible lines of symmetry.

Solution:

Steps of Construction

1. Construct a line segment $BC = 6$ cm.
 2. Taking B and C as centres and 6 cm radius construct two arcs which intersect each other at the point A.
 3. Now join AB and AC.
- ΔABC is the required equilateral triangle.
4. Construct the angle bisectors of $\angle A$, $\angle B$ and $\angle C$ which are the lines of symmetry. These are three in number as the triangle is equilateral.

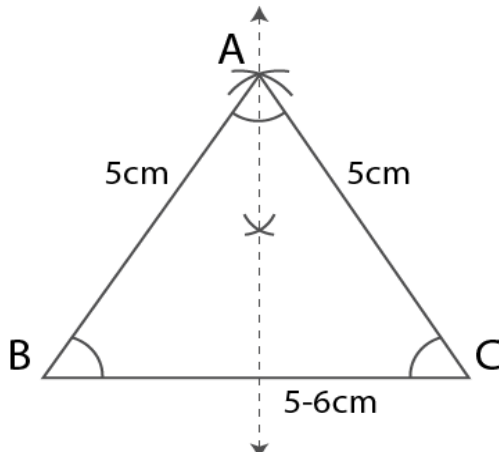


7. Construct a triangle ABC in which $AB = AC = 5$ cm and $BC = 5.6$ cm. If possible, draw its line (s) of symmetry.

Solution:

Steps of Construction

1. Construct a line segment $BC = 5.6$ cm.
 2. Taking B and C as centres and 5 cm radius construct two arcs which intersect each other at the point A.
 3. Now join AB and AC.
- ΔABC is the required isosceles triangle.
4. Construct the bisector of $\angle A$ which is the line of symmetry. These are one in number as the triangle is isosceles.



8. Construct a triangle PQR such that $PQ = QR = 5.5$ cm and angle $PQR = 90^\circ$. If possible, draw its lines of symmetry.

Solution:

It is given that
angle $PQR = 90^\circ$

$\angle P = \angle R$

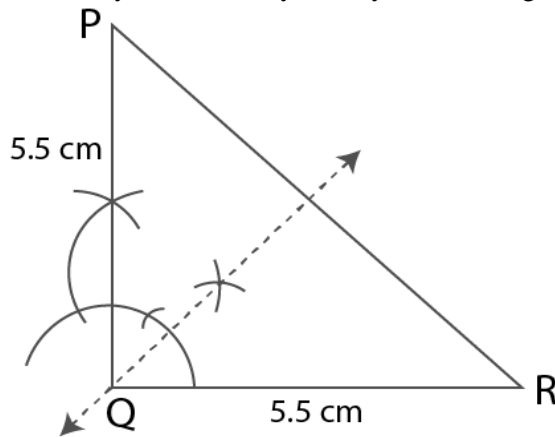
Since the opposite sides are equal we get

$\angle P + \angle R = 90^\circ$

Here $\angle P = \angle R = 90/2 = 45^\circ$

Steps of Construction

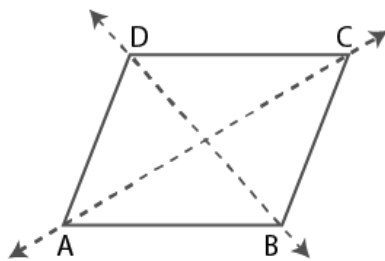
1. Construct a line segment $QR = 5.5$ cm.
 2. At the point Q construct a ray which makes an angle 90° and cut off $QP = 5.5$ cm.
 3. Now join PR.
- ΔPQR is an isosceles triangle.
4. Construct an angle bisector of $\angle PQR$ which is the line of symmetry.
- It has only one line of symmetry as the triangle is isosceles.



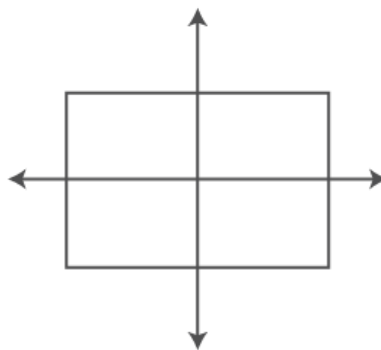
9. If possible, draw a rough sketch of a quadrilateral which has exactly two lines of symmetry.

Solution:

It is given that the quadrilateral has exactly two lines of symmetry.
So it must be a rhombus or a rectangle.



Rhombus



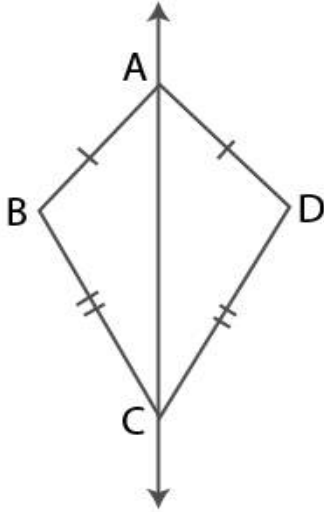
Rectangle

10. A quadrilateral ABCD is symmetric about its diagonal AC. Name the sides of this quadrilateral which are equal.

Solution:

It is given that

A quadrilateral ABCD is symmetric about its diagonal AC



It is kite shaped.

Therefore, side $AB = AD$ and $BC = DC$.