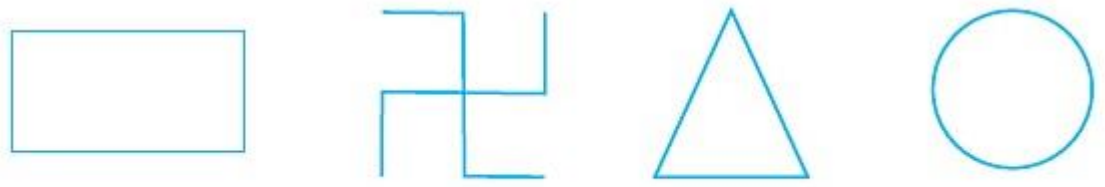
Chapter - 9
Symmetry and Practical Geometry

Exercise

In questions 1 to 17, out of the given four options, only one is correct. Write the correct answer.

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



(i) (ii) (iii) (iv)

Solution:

In fig (ii), either it is look through horizontal or vertical symmetry, the two parts are not exact copy of each other.

So, option (ii) is correct.

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

(A) 0 (B) 1 (C) 2 (D) 3

Solution:

A scalene triangle has no lines of symmetry as it has no equal sides and no equal angles.

So, option (A) is correct.

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

(A) 0 (B) 2 (C) 4 (D) more than 4

Solution:

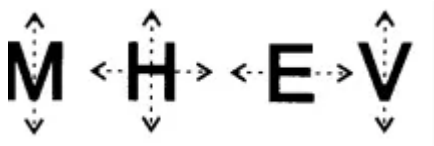
Circle is a spherical figure and its symmetry is determined by its circular structure. Any line passing through the centre splits the circle in two exact parts and such lines can be infinite. So, number of lines of symmetry in a circle is infinite.

So, option (D) is correct.

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

(A) M (B) H (C) E (D) V

Solution:



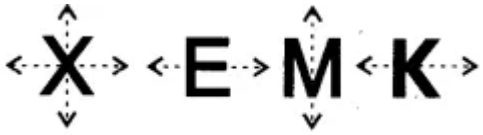
Letter ‘E’ is not symmetrical about the vertical line as the line does not split the two parts in exact similar figure.

So, option (C) is correct.

5. Which of the following letters have both horizontal and vertical lines of symmetry?

(A) X (B) E (C) M (D) K

Solution:



In letter ‘X’, exact similar figures are obtained either observed along horizontal line of symmetry or along vertical line of symmetry.

So, option (B) is correct.

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

(A) M (B) S (C) K (D) H

Solution:

In letter ‘S’, no symmetry in the splitted parts is obtained either along horizontal line of symmetry or along vertical line of symmetry.

So, option (B) is correct.

7. Which of the following letters has only one line of symmetry?

(A) H (B) X (C) Z (D) T

Solution:

Letter ‘T’ has only one line of symmetry and that is vertical line of symmetry.

So, option (D) is correct.

8. The instrument to measure an angle is a

(A) Ruler (B) Protractor (C) Divider (D) Compasses

Solution:

Protractor is generally used for measuring the angles.

So, option (B) is correct.

9. The instrument to draw a circle is

(A) Ruler (B) Protractor (C) Divider (D) Compasses

Solution:

Compass is needed for drawing a circle or an arc.

So, option (D) is correct.

10. Number of set squares in the geometry box is

(A) 0 (B) 1 (C) 2 (D) 3

Solution:

Geometry box consists of two set squares, one having internal angles as 30°,60°,90° and other have internal angles as 45°,45°,90°.

So, option (C) is correct.

11. The number of lines of symmetry in a ruler is

(A) 0 (B) 1 (C) 2 (D) 4

Solution:

Rule being rectangular in shape possess two lines of symmetry, horizontal as well as vertical.

So, option (C) is correct.

12. The number of lines of symmetry in a divider is

(A) 0 (B) 1 (C) 2 (D) 3

Solution:

Being triangular in shape divider has only one line of symmetry.

So, option (B) is correct.

13. The number of lines of symmetry in compasses is

(A) 0 (B) 1 (C) 2 (D) 3

Solution:

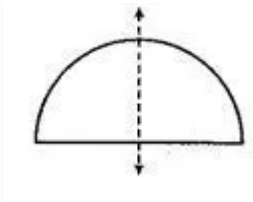
The two sides of the compass are not symmetrical and hence the splitted parts are not equivalent. Thus, number of lines of symmetry in compasses is 0.

So, (A) is correct.

14. The number of lines of symmetry in a protractor is

(A) 0 (B) 1 (C) 2 (D) more than 2

Solution:



Protractor when observed along vertical line of symmetry, the splitted parts are identical but not in case of horizontal line of symmetry. Hence, it has one line of symmetry.

So, option (B) is correct.

15. The number of lines of symmetry in a 45o - 45o - 90o set-square is

(A) 0 (B) 1 (C) 2 (D) 3

Solution:

The 45°, 45°,90° set-square is symmetrical only along vertical line.

So, option (B) is correct.

16. The number of lines of symmetry in a 30o - 60o - 90o set square is

(A) 0 (B) 1 (C) 2 (D) 3

Solution:

The 30°, 60°, 90° set-square is not symmetrical either along horizontal line or along vertical line. This implies it has no line of symmetry.

So, option (A) is correct.

17. The instrument in the geometry box having the shape of a triangle is called a

(A) Protractor (B) Compasses (C) Divider (D) Set-square

Solution:

Set-square is the instrument in the geometry box which has the shape of a triangle.

So, option (D) is correct.

In questions 18 to 42, fill in the blanks to make the statements true.

18. 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).

Solution:

The object and the image are same distance apart from the line of symmetry (mirror).

The distance of the image of a point (or an object) from the line of symmetry (mirror) is same as that of the point (object) from the line (mirror).

19. The number of lines of symmetry in a picture of Taj Mahal is _____.

Solution:

As observed in the picture of Taj Mahal, there is only vertical line of symmetry.

The number of lines of symmetry in a picture of Taj Mahal is one.

20. The number of lines of symmetry in a rectangle and a rhombus are _____ (equal/unequal).

Solution:

There are in total 2 lines of symmetry in both rectangle and rhombus.

The number of lines of symmetry in a rectangle and a rhombus are equal (equal/unequal).

21. The number of lines of symmetry in a rectangle and a square are_____ (equal/unequal).

Solution:

Rectangle has two lines of symmetry while square has four sides of symmetry. This implies rectangle and square has unequal number of lines of symmetry.

The number of lines of symmetry in a rectangle and a square are equal (equal/unequal).

22. If a line segment of length 5cm is reflected in a line of symmetry (mirror), then its reflection (image) is a _____ of length _____.

Solution:

The object and its length remains the same when viewed in a mirror.

If a line segment of length 5cm is reflected in a line of symmetry (mirror), then its reflection (image) is same of length 15cm.

23. If an angle of measure 80° is reflected in a line of symmetry, then the reflection is an _____ of measure _____.

Solution:

The reflection of an angle in a line of symmetry is same as that of the original angle and its measure.

If an angle of measure 80° is reflected in a line of symmetry, then the reflection is an angle of measure 80°.

24. The image of a point lying on a line l with respect to the line of symmetry l lies on _____.

Solution:

The image lies exactly where the object lies if seen in line of symmetry.

The image of a point lying on a line l with respect to the line of symmetry l lies on line l.

25. In Fig. 9.10, 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 _____.

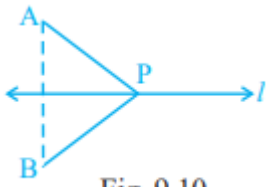


Fig. 9.10

Solution:

Since B is the image of the point A with respect to the line l and P is any point lying on l, this clearly indicates that the line segments PA and PB are equal.

In Fig. 9.10, 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 equal.

26. The number of lines of symmetry in Fig. 9.11 is_____.

Fig. 9.11

Solution:

From the figure, it can be observed that the number of lines of symmetry is 5.

The number of lines of symmetry in Fig. 9.11 is 5.

27. 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 _____.

Solution:

The common properties that can be observed in set-squares are, firstly they are in shape of triangle and secondly, they have a right angle.

The common properties in the two set-squares of a geometry box are that they have a right angle and they are of the shape of a triangle.

28. The digits having only two lines of symmetry are_____ and _____.

Solution:

0 and 8 are the digits that have only two lines of symmetry.

The digits having only two lines of symmetry are 0 and 8.

29. The digit having only one line of symmetry is _____.

Solution:

3 is the digit which has only one line of symmetry.

The digit having only one line of symmetry is 3.

30. The number of digits having no line of symmetry is_____.

Solution:

1, 4, 5, 6, 7 and 9 are the digits which has no line of symmetry.

The number of digits having no line of symmetry is 7.

31. The number of capital letters of the English alphabets having only vertical line of symmetry is_____.

Solution:

A, M, T, U, V, W and Y are the letters which has only vertical line of symmetry.

The number of capital letters of the English alphabets having only vertical line of symmetry is 7.

32. The number of capital letters of the English alphabets having only horizontal line of symmetry is_____.

Solution:

B, C, D, E and K are capital letters of the English alphabets having only horizontal line of symmetry.

The number of capital letters of the English alphabets having only horizontal line of symmetry is 5.

33. The number of capital letters of the English alphabets having both horizontal and vertical lines of symmetry is_____.

Solution:

H, I, O and X are capital letters of the English alphabets having both horizontal and vertical lines of symmetry.

The number of capital letters of the English alphabets having both horizontal and vertical lines of symmetry is 4.

34. The number of capital letters of the English alphabets having no line of symmetry is_____.

Solution:

F, G, J, K, L, N, P, Q, R, S and Z are capital letters of the English alphabets having no line of symmetry.

The number of capital letters of the English alphabets having no line of symmetry is 11.

35. The line of symmetry of a line segment is the _____ bisector of the line segment.

Solution:

Perpendicular bisector of the line segment is its line of symmetry.

The line of symmetry of a line segment is the perpendicular bisector of the line segment.

36. The number of lines of symmetry in a regular hexagon is _____.

Solution:

A regular hexagon has six equal sides and has corresponding six lines of symmetry.

The number of lines of symmetry in a regular hexagon is six.

37. The number of lines of symmetry in a regular polygon of n sides is_____.

Solution:

A regular polygon has n equal sides and has corresponding n lines of symmetry.

The number of lines of symmetry in a regular polygon of n sides is n.

38. A protractor has _____ line/lines of symmetry.

Solution:

Having a shape of semicircle, a protractor has one line of symmetry.

A protractor has one line/lines of symmetry.

39. A 30° - 60° - 90° set-square has _____ line/lines of symmetry.

Solution:

In 30° - 60° - 90° set-square there is no line across which it shows symmetry.

A 30° - 60° - 90° set-square has 0 line/lines of symmetry.

40. A 45° - 45° - 90° set-square has _____ line/lines of symmetry.

Solution:

45° - 45° - 90° set-square is symmetrical along only vertical line of symmetry.

A 45° - 45° - 90° set-square has one line/lines of symmetry.

41. A rhombus is symmetrical about _____.

Solution:

Rhombus has symmetry along two of its diagonal.

A rhombus is symmetrical about its diagonals.

42. A rectangle is symmetrical about the lines joining the _____ of the opposite sides.

Solution:

If the mid points of the opposite sides of a rectangle then the rectangle is symmetrical.

A rectangle is symmetrical about the lines joining the mid-point of the opposite sides.

In questions 43 - 61, state whether the statements are true (T) or false (F).

43. A right triangle can have at most one line of symmetry.

Solution:

No, a right angle can at most have two line of symmetry depending whether the right triangle is isosceles or scalene.

So, given statement is **False**.

44. A kite has two lines of symmetry.

Solution:

No, kite has only one line of symmetry and that is vertical line symmetry.

So, given statement is **False**.

45. A parallelogram has no line of symmetry.

Solution:

There is no way to draw a line of symmetry in case of parallelogram and so it has no line of symmetry.

So, given statement is **true**.

46. If an isosceles triangle has more than one line of symmetry, then it need not be an equilateral triangle.

Solution:

Since, isosceles triangle is symmetrical about the bisector of the angle included between the equal sides, i.e., only one line of symmetry.
∴ If it has more than one line of symmetry then it must be an equilateral triangle.

So, given statement is **False**.

47. If a rectangle has more than two lines of symmetry, then it must be a square.

Solution:

Yes, rectangle has only two lines of symmetry but square has 4 lines of symmetry.

So, given statement is **True**.

48. With ruler and compasses, we can bisect any given line segment.

Solution:

Yes, it is correct that any line segment can be bisected with ruler and compasses.

So, given statement is **True**.

49. Only one perpendicular bisector can be drawn to a given line segment.

Solution:

Yes, there can be many perpendiculars drawn to a given line segment but only one perpendicular bisector can be drawn to a given line segment.

So, given statement is **True**.

50. Two perpendiculars can be drawn to a given line from a point not lying on it.

Solution:

This is not true as from one point which is not lying on the line, only one perpendicular can be drawn.

So, given statement is **False**.

51. With a given centre and a given radius, only one circle can be drawn.

Solution:

Yes, a particular centre and the radius are the characteristics of a particular circle. So only one circle can be drawn with a given centre and a given radius.

So, given statement is **True**.

52. Using only the two set-squares of the geometry box, an angle of 40o can be drawn.

Solution:

No, an angle of 40 degrees cannot be drawn simply by using the two set-squares of the geometry box.

So, given statement is **False**.

53. Using only the two set-squares of the geometry box, an angle of 15° can be drawn.

Solution:

Yes, by using 45° 45° 90° and 30° 60° 90° an angle of 15° can be drawn.

So, given statement is **true**.

54. If an isosceles triangle has more than one line of symmetry, then it must be an equilateral triangle.

Solution:

Yes, equilateral triangle posses three lines of symmetry and if an isosceles triangle has more than one line of symmetry then it must be an equilateral triangle as no triangle has more than two lines of symmetry.

So, given statement is **True**.

55. A square and a rectangle have the same number of lines of symmetry.

Solution:

No, a square has 4 lines of symmetry and a rectangle has 2 lines of symmetry.

So, given statement is **False**.

56. A circle has only 16 lines of symmetry.

Solution:

Circles possess infinite number of lines of symmetry and not just 16.

So, given statement is **False**.

57. A 45° - 45° - 90° set-square and a protractor have the same number of lines of symmetry.

Solution:

Yes, both 45° - 45° - 90° set-square and a protractor have only one line of symmetry.

So, given statement is **True**.

58. It is possible to draw two bisectors of a given angle.

Solution:

No, only one bisector can be drawn of a given angle.

So, given statement is **False**.

59. A regular octagon has 10 lines of symmetry.

Solution:

Number of lines of symmetry of a polygon is equal to its no. of sides. So, yes a regular octagon has 10 lines of symmetry.

So, given statement is **True**.

60. Infinitely many perpendiculars can be drawn to a given ray.

Solution:

A ray goes to infinity and so innumerable perpendiculars can be drawn to it.

So, given statement is **True**.

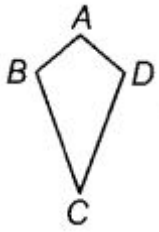
61. Infinitely many perpendicular bisectors can be drawn to a given ray.

Solution:

Yes, as the length of a ray is undetermined and so every drawn perpendicular bisectors can be said to divide it into two equal parts.

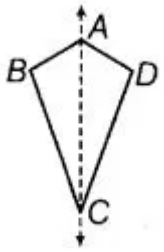
So, given statement is **True**.

62. Is there any line of symmetry in the Fig. 9.12? If yes, draw all the lines of symmetry.

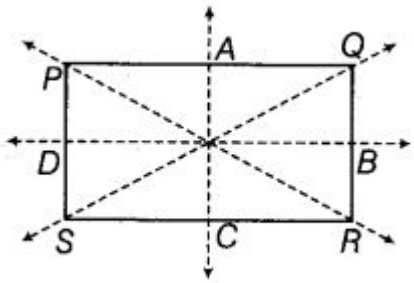


Solution:

Yes, there is one line of symmetry in the figure which can be drawn from point A to point C and it is shown below:



63. In Fig. 9.13, PQRS is a rectangle. State the lines of symmetry of the rectangle.



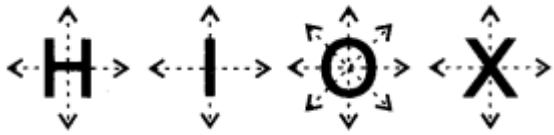
Solution:

Rectangle has two lines of symmetry and each line can be drawn by joining the mid-points of the opposite two sides.

So, in above figure AC and BD are the two lines of symmetry.

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

Solution:



H, I, O and X are the capital letters of the English alphabets which have more than one lines of symmetry.

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

Solution:

Only letter 'S' in MATHEMATICS has no line of symmetry otherwise other letters do posses line of symmetry.

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

Solution:

In 'SYMMETRY', letter S has no line of symmetry, letter Y has one line of symmetry, letter M has one line of symmetry, letter E has one line of symmetry, letter T has one line of symmetry and letter R has no line of symmetry.

67. Match the following:

Shape	**Number of lines of 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**

Solution:

(i) An isosceles triangle has one line of symmetry.

So, (i) match (f).

(ii) An square has 4 lines of symmetry.

So, (ii) match (c).

(iii) A kite has one line of symmetry.

So (iii) match (f).

(iv) An equilateral triangle has 3 lines of symmetry.

So, (iv) match (d).

(v) A rectangle has two lines of symmetry.

So, (v) match (e).

(vi) A regular hexagon has 6 lines of symmetry.

So, (vi) match (a).

(vii) A scalene triangle has no line of symmetry.

So, (vii) match (g).

Matches are as follows:

(i)-(f)

(ii)-(c)

(iii)-(f)

(iv)-(d)

(v)-(e)

(vi)-(a)

(vii)-(g)

68. 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) The Ruler	**_____**
(ii) The Divider	**_____**
(iii) The Compass	**_____**
(iv) The Protactor	**_____**
(v) Triangular piece with two equal sides	**_____**

(vi) Triangular piece with unequal sides	_____

Solution:

Completed table is as follows:

Name of the tool	Number of lines of symmetry
(i) The Ruler	Two
(ii) The Divider	One
(iii) The Compass	Zero
(iv) The Protactor	One
(v) Triangular piece with two equal sides	One
(vi) Triangular piece with unequal sides	Zero

69. Draw the images of points A and B in line l of Fig. 9.14 and name them as A′ and B′ respectively. Measure AB and A′ B′. Are they equal?

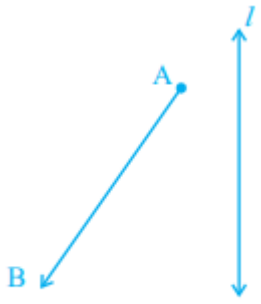
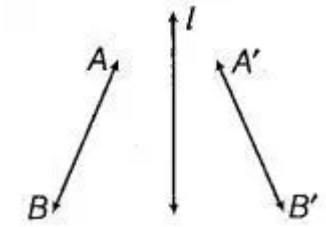


Fig. 9.14

Solution:

Images of points A and B in line l of Fig. 9.14 as A′ and B′ are shown below:



On measuring AB and A′ B′, it is observed that both are of same length.

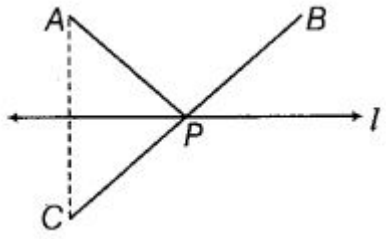
70. In Fig. 9.15, the point C is the image of point A in line l and line segment BC intersects the line l at P.

(a) Is the image of P in line l the point P itself?

(b) Is PA = PC?

(c) Is PA + PB = PC + PB?

(d) Is P that point on line l from which the sum of the distances of points A and B is minimum?



Solution:

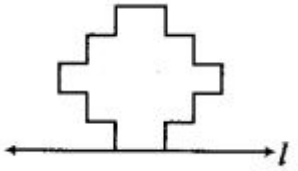
(a) Yes, it can be seen from the figure that image of P in line l the point P itself.

(b) Yes, due to symmetry PA is equal to PC.

(c) Since distance PA = PC, this implies PA + PB = PC + PB.

(d) Yes, the sum of the distances of points A and B is minimum from point P on line l.

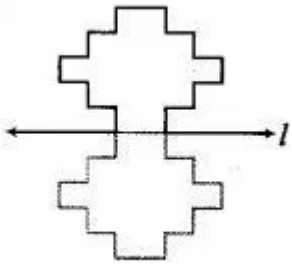
71. Complete the figure so that line l becomes the line of symmetry of the whole figure (Fig. 9.16).



Solution:

Line of symmetry divides the figure into two equal parts as if the two parts are identical.

The completed figure is shown below:



72. Draw the images of the points A, B and C in the line m (Fig. 9.17). Name them as A′, B′ and C′, respectively and join them in pairs. Measure AB, BC, CA, A′B′, B′C′ and C′A′. Is AB = A′B′, BC = B′C′ and CA = C′A′?

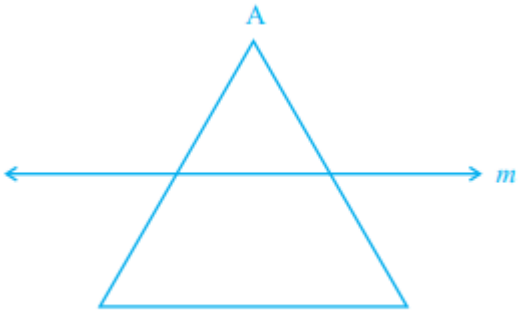
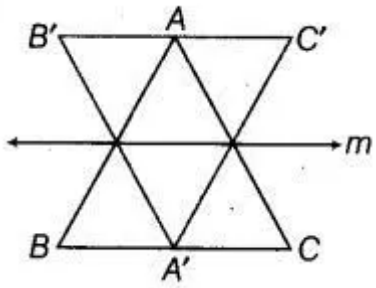


Fig. 9.17

Solution:

Images of point A, B, and C in the line m are A′, B′ and C′ as shown below:



When measured, it is clear that AB = A′B′, BC = B′C′ and CA = C′A′.

73. Draw the images P′, Q′ and R′ of the points P, Q and R, respectively in the line n (Fig. 9.18). Join P′ Q′ and Q′ R′ to form an angle P′ Q′ R′. Measure ∠PQR and ∠P′Q′R′. Are the two angles equal?

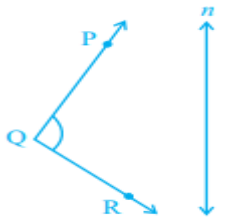
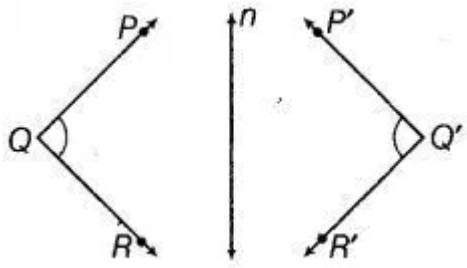


Fig. 9.18

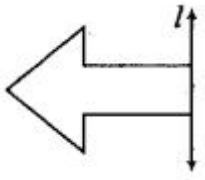
Solution:

Images of point P, Q, and R in line n are P′, Q′ and R′ as shown below:



Yes, when measured ∠PQR is equal to ∠P′Q′R′.

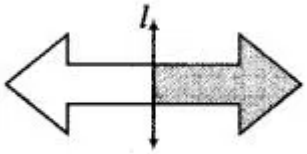
74. Complete Fig. 9.19 by taking l as the line of symmetry of the whole figure.



Solution:

Line of symmetry divides the figure into two equal parts as if the two parts are identical.

The completed figure is shown below:

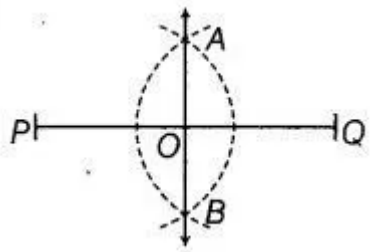


75. Draw a line segment of length 7cm. Draw its perpendicular bisector, using ruler and compasses.

Solution:

Following the steps we have:

A line segment PQ of length 7cm with its perpendicular bisector AB, using ruler and compasses is shown below:

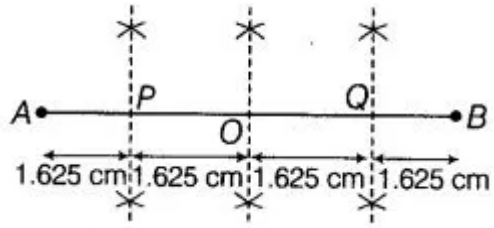


76. Draw a line segment of length 6.5cm and divide it into four equal parts, using ruler and compasses.

Solution:

Following the steps we have:

A line segment AB of length 6.5cm which is divided it into four equal parts AP, PO, OQ and QB using ruler and compasses is shown below:

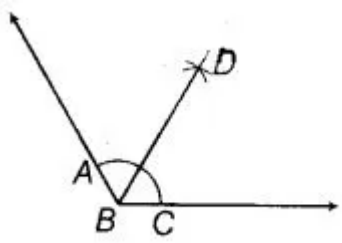


77. Draw an angle of 140° with the help of a protractor and bisect it using ruler and compasses.

Solution:

Following the steps we have:

An angle ∠ABC of 140° with the help of a protractor which is bisected by the ray BD, using ruler and compasses is shown below:

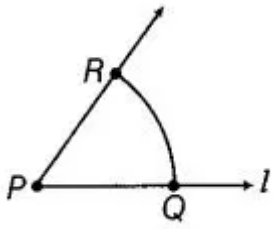


78. Draw an angle of 65° and draw an angle equal to this angle, using ruler and compasses.

Solution:

Following the steps we have:

An angle ∠RPQ of 65° with another angle of same measurement using ruler and compassess shown below:

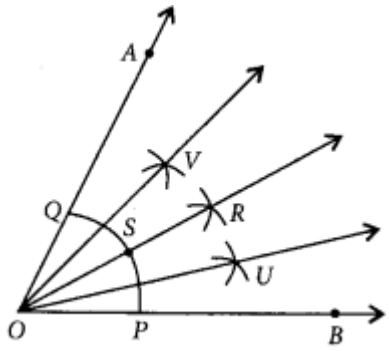


79. Draw an angle of 80° using a protractor and divide it into four equal parts, using ruler and compasses. Check your construction by measurement.

Solution:

Following the steps we have:

An angle ∠AOB of 80° using a protractor which is divided into four equal parts ∠AOV, ∠VOR, ∠ROU and ∠UOB using ruler and compasses is shown below:



Construction is verified by carrying out the measurements.

80. Copy Fig. 9.20 on your notebook and draw a perpendicular to l through P, using (i) set squares (ii) Protractor (iii) ruler and compasses. How many such perpendiculars are you able to draw?

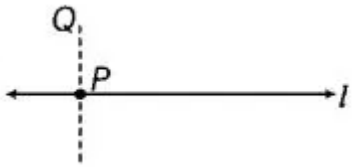
Fig. 9.20

Solution:

Drawing perpendicular from P to line l in given figure:

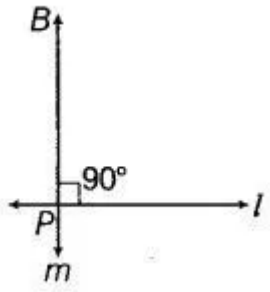
(i) By using set-squares:

Following the steps we have perpendicular bisector PQ in given figure as shown below:



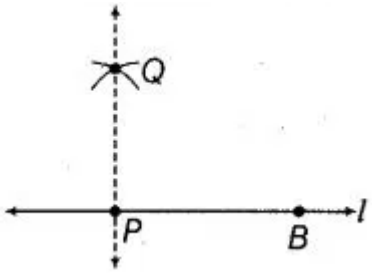
(ii) By using protractor:

Following the steps we have perpendicular bisector PB in given figure as shown below:



(iii) By using ruler and compasses:

Following the steps we have perpendicular bisector PQ in given figure as shown below:



81. Copy Fig. 9.21 on your notebook and draw a perpendicular from P to line m, using (i) set squares (ii) Protractor (iii) ruler and compasses. How many such perpendiculars are you able to draw?

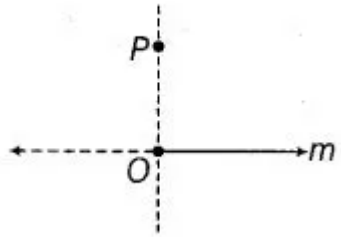
Fig. 9.21

Solution:

Drawing perpendicular from P to line m in given figure:

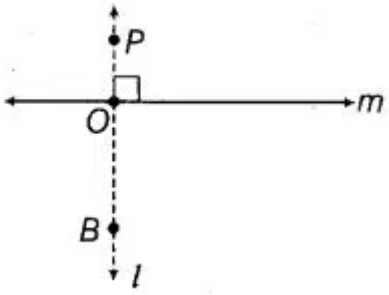
(i) By using set-squares:

Following the steps we have perpendicular bisector OP in given figure as shown below:



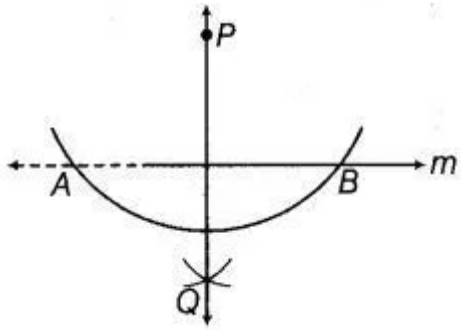
(ii) By using protractor:

Following the steps we have perpendicular bisector PB in given figure as shown below:



(iii) By using ruler and compasses:

Following the steps we have perpendicular bisector PQ in given figure as shown below:

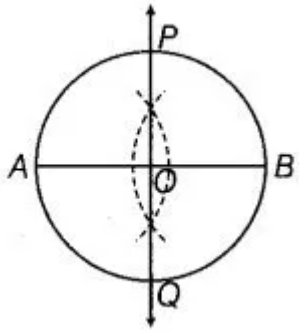


82. Draw a circle of radius 6cm using ruler and compasses. Draw one of its diameters. Draw the perpendicular bisector of this diameter. Does this perpendicular bisector contain another diameter of the circle?

Solution:

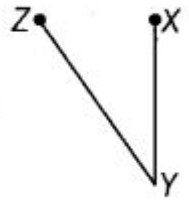
Following the steps we have:

A circle of radius 6cm along with one of its diameter AB and perpendicular bisector PQ of its diameter is shown below:



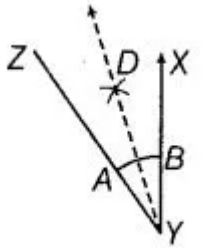
Yes, this perpendicular bisector contains another diameter of the circle as can be seen from the figure.

83. Bisect ∠XYZ of Fig. 9.22



Solution:

Bisected angle ∠XYZ of given figure is shown below:

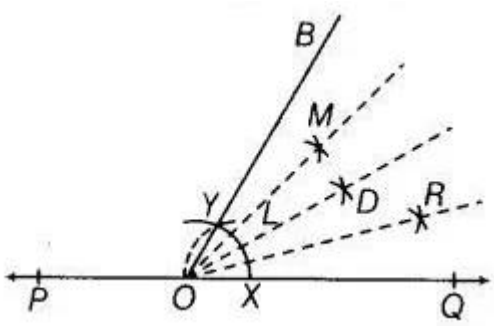


84. Draw an angle of 60° using ruler and compasses and divide it into four equal parts. Measure each part.

Solution:

Following the steps we have:

An angle ∠BOQ of 60° which is divided into four equal parts ∠BOM, ∠MOD, ∠DOR, ∠ROQ is shown below:



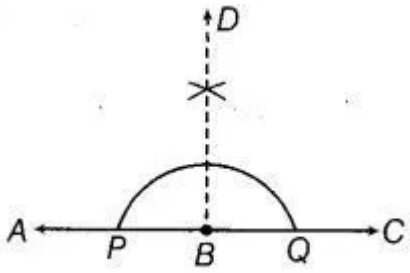
On measuring each part is equal to 15 degrees.

85. Bisect a straight angle, using ruler and compasses. Measure each part.

Solution:

Following the steps we have:

Bisected straight angle ∠ABC is as follows:



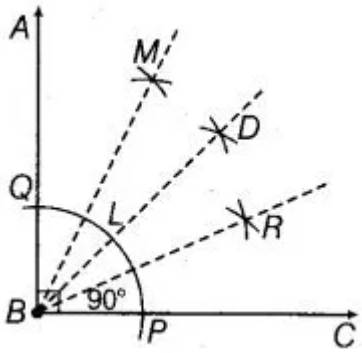
On measuring each part is 90 degrees each.

86. Bisect a right angle, using ruler and compasses. Measure each part. Bisect each of these parts. What will be the measure of each of these parts?

Solution:

Following the steps we have:

A right angle is bisected by the ray BD. The respective bisected parts are further bisected by the ray BM and BR respectively.



On measuring the bisected angles ∠ABD and ∠DBC are 45 degrees each.

Also the further bisected angles are 22.5 degrees each.

87. Draw an angle ABC of measure 45°, using ruler and compasses. Now draw an angle DBA of measure 30°, using ruler and compasses as shown in Fig. 9.23. What is the measure of ∠DBC?

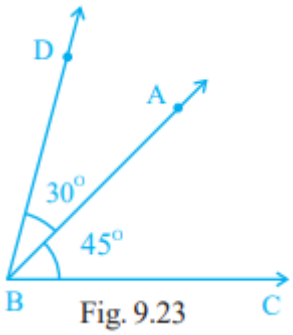
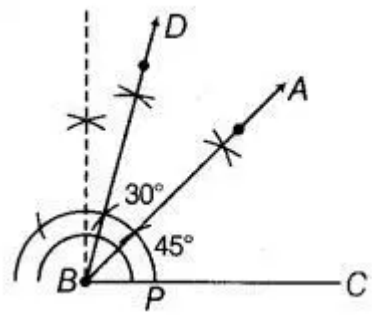


Fig. 9.23

Solution:

Following the steps we have:

An angle ABC of measure 45° with an angle DBA of measure 30°, using ruler and compasses is shown below:



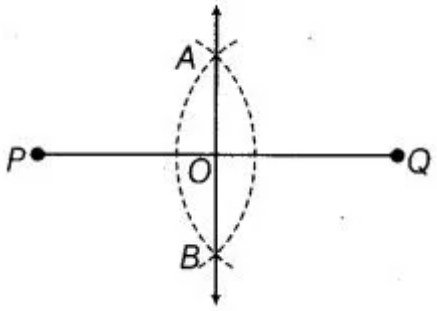
On measuring ∠DBC is equal to 75 degrees.

88. Draw a line segment of length 6cm. Construct its perpendicular bisector. Measure the two parts of the line segment.

Solution:

Following the steps we have:

Line segment PQ of length 6cm along with a perpendicular bisector AB is shown below:



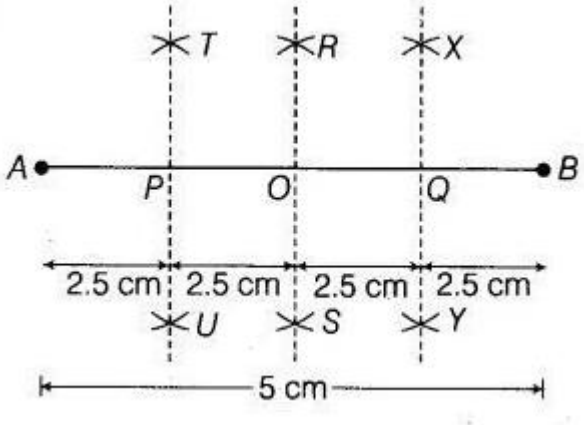
On measuring, the two parts of the line segments are 3cm respectively.

89. Draw a line segment of length 10cm. Divide it into four equal parts. Measure each of these parts.

Solution:

Following the steps we have:

Line segment AB of length 10cm which is divided into four equal parts AP, PO, OQ, QB is shown below:



On measuring each part is equal to 2.5cm respectively.