MATHS

BOOKS - PEARSON IIT JEE FOUNDATION

GEOMETRY

Example

1. $\angle A$ and $\angle B$ are two complementary angles. If $\angle A$ is 20° more than $\angle B$, then find the angles of $\angle A$ and $\angle B$.

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2. $\angle P$ and $\angle Q$ are two supplementary angles. If $\angle P$ is three times of $\angle Q$, then find the measurement of the angles P and Q.

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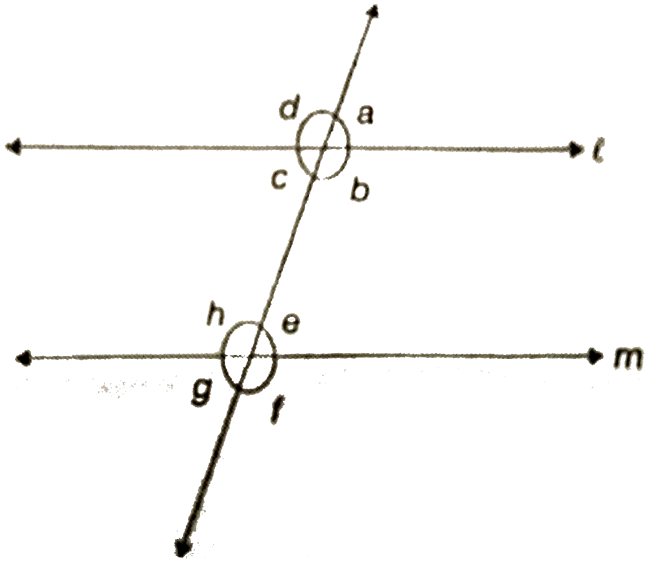
3. In the given figure, $l \parallel m, a = 40^\circ$, then find all the other angles as mentioned in the figure.



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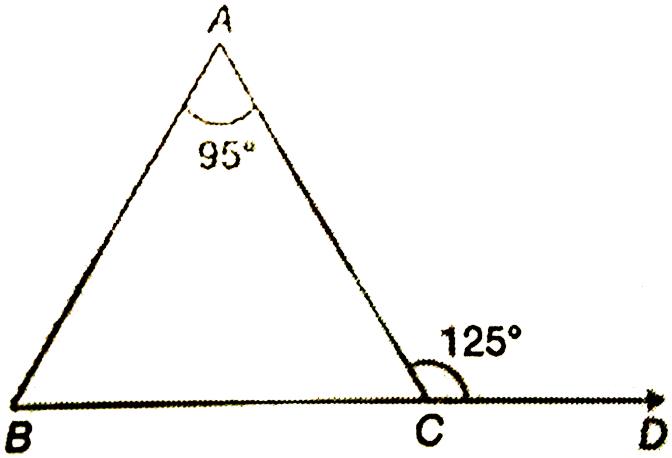
4. In the given figure, C is a point on the line segment BD. Find the measurements of $\angle ACB$ and $\angle ABC$.



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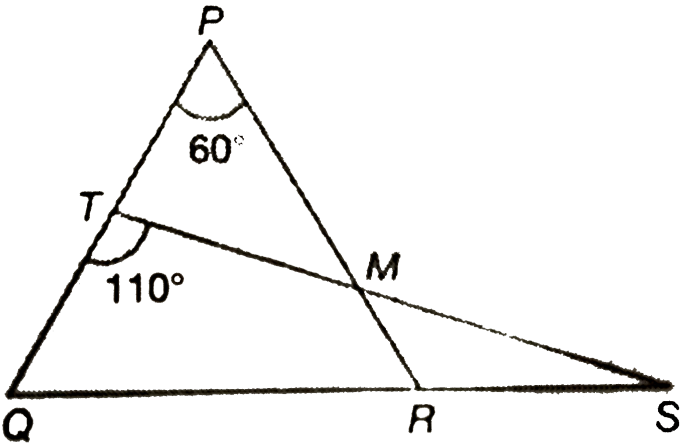
5. In the given figure, PTQ, PMR, SMT and QRS are straight lines. Find the angle of $\angle RMS$.



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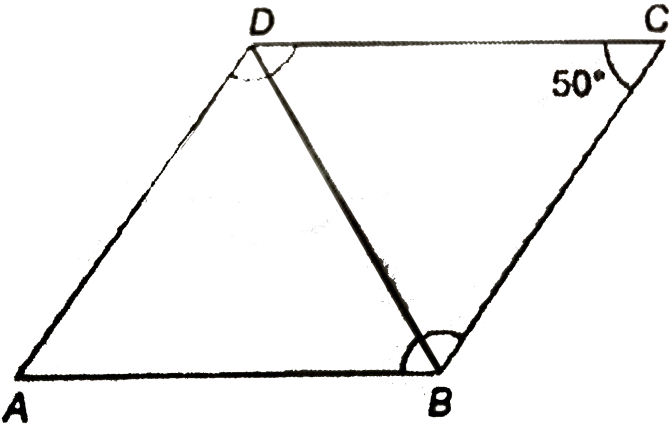
6. In the figure, ABD, BCD are two triangles. BD is the bisector of $\angle ABC$ and $\angle ADC$. $\overline{AB} \parallel \overline{CD}$ and $\overline{AD} \parallel \overline{BC}$. If $\angle BCD = 50^\circ$, then find the angle of $\angle BAD$.



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7. Find the circumference of the circle whose radius is 7 cm.

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8. The circumference of a circle is 22 cm. Find the diameter of the circle.

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9. Draw the lines of symmetry of a rhombus

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10. Draw a line of symmetry of an isosceles right triangle.

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11. Draw the lines of symmetry of a square

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12. Draw the line(s) of symmetr for the first four words of English alphabet, if fxist.

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Very Short Answer Type Questions

1. An angle which is 30° less than the right angle is _____.

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2. An angle which is 50° less than the straight angle is _____.

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3. Find the measure of an angle which is complement of itself.

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4. TRANSVERSALS A line intersecting two or more given lines in a plane at different points is called a transversal to the given lines.

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5. If l is a transversal of p and q, a pair of corresponding angles is equal, then the lines p and q are _____.

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6. Which of the following is a complementary angle to 36°?

A. 36°

B. 64°

C. 72°

D. 54°

Answer: D

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7. Which of the following is a reflex angle ?

A. 90°

B. 120°

C. 180°

D. 200°

Answer: D

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8. The angle between the hours hand and the minutes hand of a clock at 6'O clock is a/an _____.

A. right angle

B. acute angle

C. straight angle

D. obtuse angle

Answer: C

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9. Which of the following pairs of angles are supplementary ?

A. $(0, 180^\circ)$

B. $(90^\circ, 90^\circ)$

C. $(120^\circ, 60^\circ)$

D. All the above

Answer: D

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10. Two lines $\overline{AB}$ and $\overline{CD}$ intersects at 'P'. The number of pairs of adjacent angles formed is _____.

A. 2

B. 3

C. 4

D. 6

Answer: C

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11. Match the following Column A to Column B

	Column A (a pair of angles)		Column B (Ratio of the angles)
(a)	Vertically opposite angles	( )	(p) 2 : 1
(b)	120° and its supplement	( )	(q) 1 : 2
(c)	30° and its complement	( )	(r) 3 : 4
(d)	A straight angle and a reflex angle which is 60° more than the straight angle	( )	(s) 1 : 1

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12. If two of the angles of a triangle are 70° and 80°, then the third angle of the triangle is _____.

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13. If two sides of a triangles are 7 cm and 10 cm, then the largest possible integer value of the third side is _____.

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14. Two sides of a triangle are equal. If one of its angles is 100°, then one of the remaining angles is _____.

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15. In a right-angled isosceles triangle, the measures of the angles are _____.

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16. In a $\Delta ABC, \angle B = 65^\circ$ and $\angle C = 80^\circ$, then the longest side is _____.

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17. Which of the following is true?

(A) A triangle can have utmost two right angles.

(B) A triangle can have two obtuse angles.

(C) A triangle can have three acute angles.

A. A, B and C

B. Only B and C

C. Only B

D. Only C

Answer: D

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18. Which of the following is false?

(A) The sum of any two sides of a triangle is equal to the third side.

(B) The sum of the exterior angles of a triangle is equal to 360°

A. A and B

B. Only A

C. Only B

D. None of these

Answer: B

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19. Which of the following is an acute triangle ?

A. Isosceles triangle

B. Equilateral triangle

C. Right triangle

D. None of the above

Answer: B

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20. Which of the following is true?

(A) Triangle is a polygon.

(B) An isosceles triangle can be obtuse.

(C) All scalene triangles are acute.

A. Only A

B. Only B and C

C. Only A and B

D. A, B and C

Answer: C

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21. Which of the following is the length of the sides of a triangle?

A. 3 cm, 7 cm, 10 cm

B. 2 cm, 5 cm, 7 cm

C. 6 cm, 12 cm, 19 cm

D. 7 cm, 24 cm, 25 cm

Answer: D

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22.

Column A (Triangle)		Column B (Angles of triangle)
(a) Right triangle	( )	(p) 60°, 20°,100°
(b) Isosceles triangle	( )	(q) 60°, 60°, 60°
(c) Acute triangle	( )	(r) 60°, 30°, 90°
(d) Scalene triangle	( )	(s) 40°, 40°, 100°

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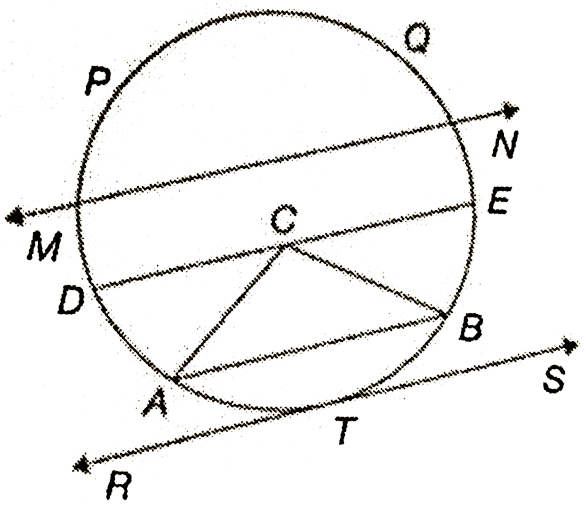

23.

If 'C' is the centre of the circle and A is the point on the circle, then AC is called _____ of the circle.

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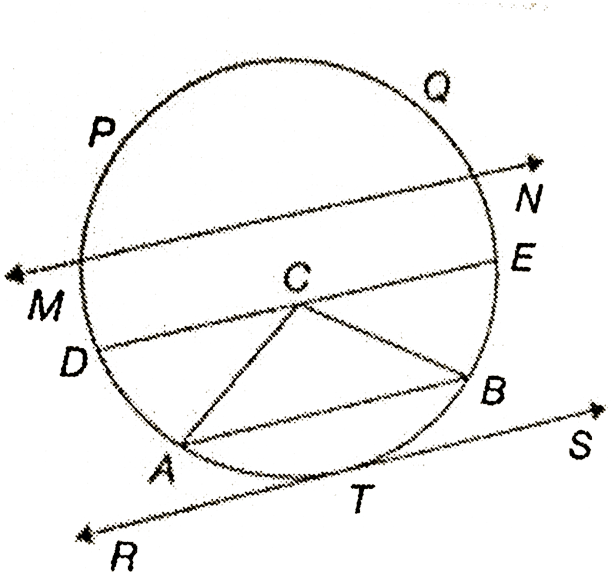

24.

If A, B are the point on the circle. The line segment $\overline{AB}$ is called _____ of the circle.

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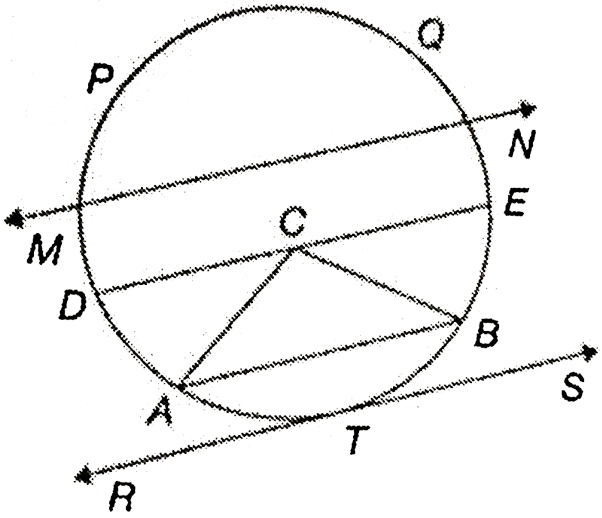

25.

P, Q are the points on the circle. The part of the circle, PQ is called _____ of the circle.

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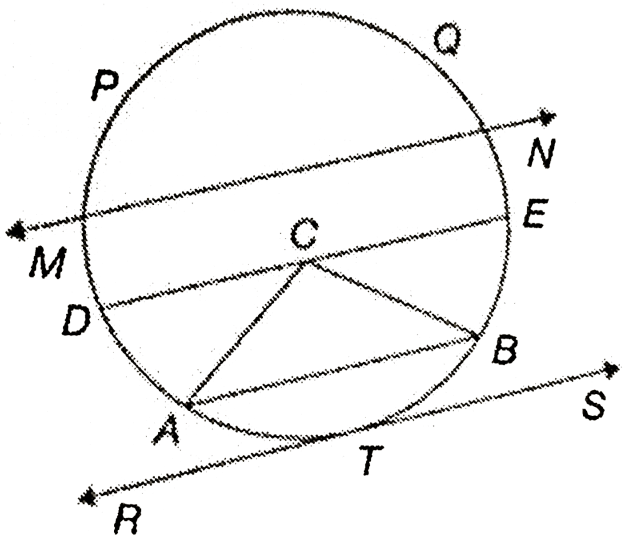

26.

The region bounded by the line segment AB and the part of the circle ATB is called _____ of the circle.

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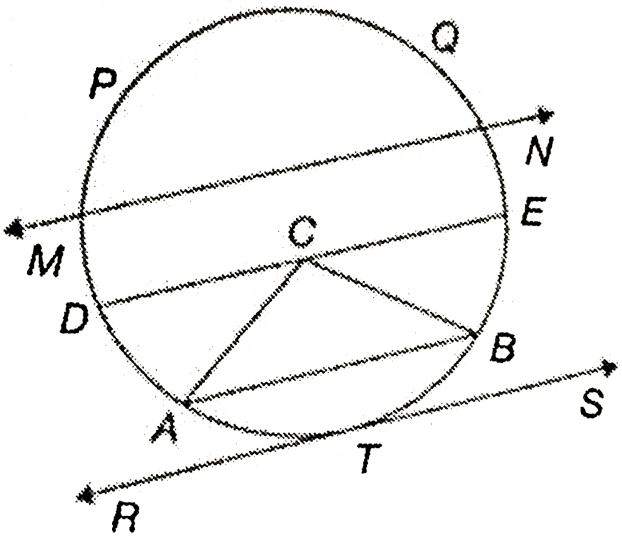

27.

The line RS which touches the circle at T is called _____ to the circle.

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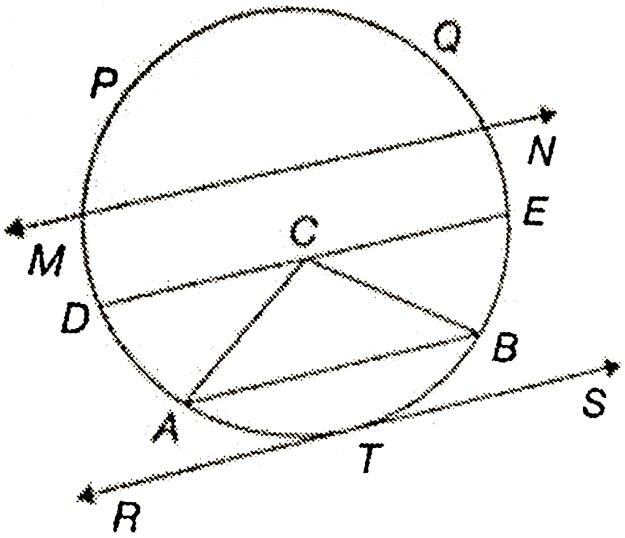

28.

The line intersecting the circle at M and N is called _____ of the circle.

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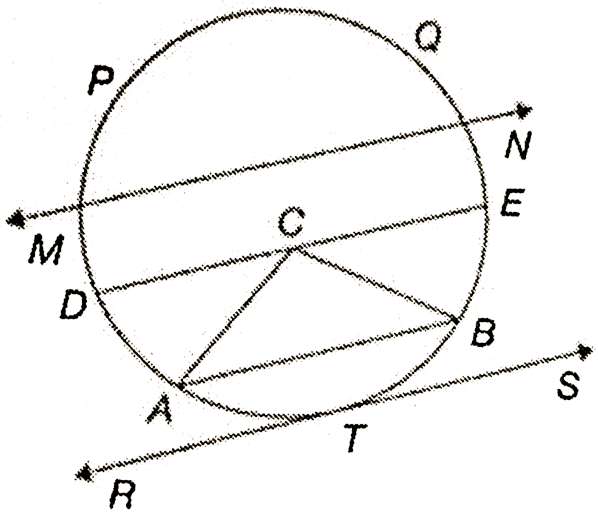

29.

$\overline{DE}$ is passing through the centre, DE is called _____ of the circle.

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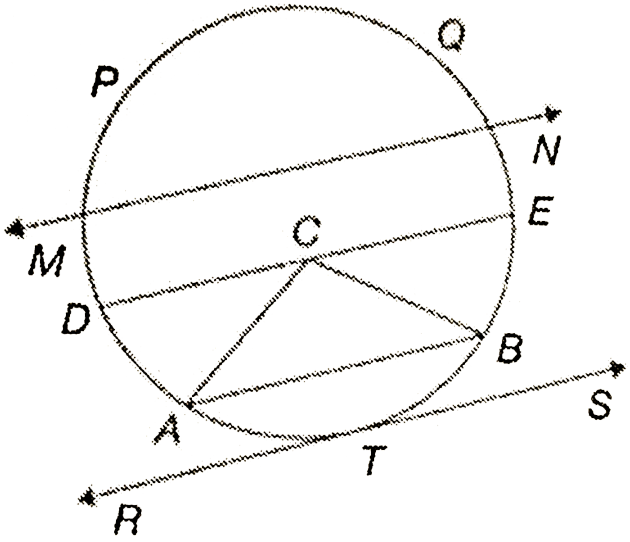

30.

The arc DTE is called _____of the circle.

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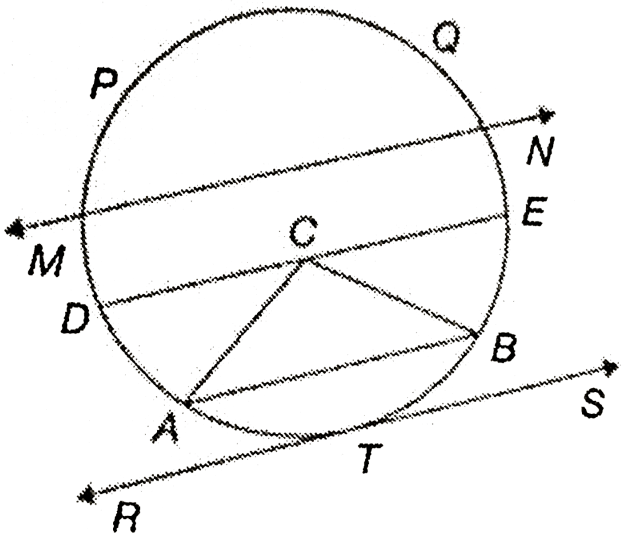

31.

The region bounded by the line segment AB and the part of the circle ATB is called _____ of the circle.

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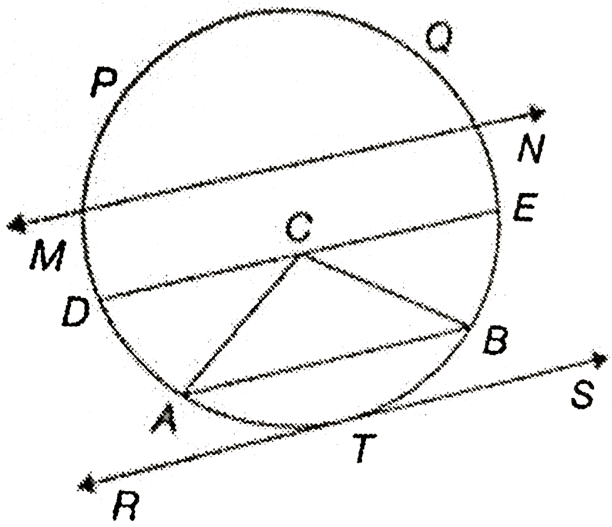

32.

A sector of an angle 90° is called.

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33. Which of the following is true ?

A. Diameter passes through the centre of the circle.

B. The longest chord is the diameter

C. The diameter is equal to 2 times the radius.

D. All the above

Answer: D

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34. Which of the following is an angle of the major sector?

A. 60°

B. 100°

C. 200°

D. 400°

Answer: C

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35. Which of the following is false?

A. Radius is perpendicular to the tangent at the point of contact.

B. Major segment contains the centre of the circle

C. The line segment joining any two points on the circumference is called arc.

D. None of the above

Answer: C

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36. Which of the following is the angle of a quadrant?

A. 60°

B. 90°

C. 180°

D. 360°

Answer: B

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37. Which of the following can be the angle subtended by a minor arc at the centre?

A. 100°

B. 220°

C. 180°

D. 270°

Answer: A

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38. An isosceles triangle has _____ line (s) of symmetry.

A. 0

B. 1

C. 2

D. 3

Answer: B

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39. A semicircle has _____ line (s) of symmetry.

A. 3

B. 2

C. 1

D. 0

Answer: C

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40. A quadrant of a circle has _____line of symmetry.

A. 0

B. 1

C. 2

D. 3

Answer: B

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41. The letter I has _____ lines of symmetry.

A. 1

B. 2

C. 3

D. 0

Answer: B

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42. A letter X has _____ lines of symmetry.

A. 1

B. 0

C. 3

D. 2

Answer: D

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43. Which of the following can have infinite lines of symmetry?

(A) Ellipse

(B) Semicircle

(C) Line segment

A. A, B

B. A, C

C. B, C

D. C

Answer: D

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44. Which of the following letter of English alphabet has only two lines of symmetry?

A. Y

B. W

C. H

D. E

Answer: C

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45. Which of the following has no line of symmetry?

A. P

B. Q

C. R

D. All of these

Answer: D

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46. Which of the following have exactly 3 lines of symmetry?

A. M

B. Equilateral triangle

C. N

D. Line segment.

Answer: B

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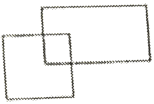
47. Which of the following has no line of symmetry?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: D

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48. Match the following Column A to Column B

Column A		Column B	
(a) Two lines of symmetry	( )	(p)	
(b) Three lines of symmetry	( )	(q)	
(c) Four lines of symmetry	( )	(r)	
(d) No line of symmetry	( )	(s)	

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Short Answer Type Questions

1. Two supplementary angles are in the ratio $3:7$ Find the difference between the angle.

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2. Find the supplement of $50^\circ 36' 52''$.

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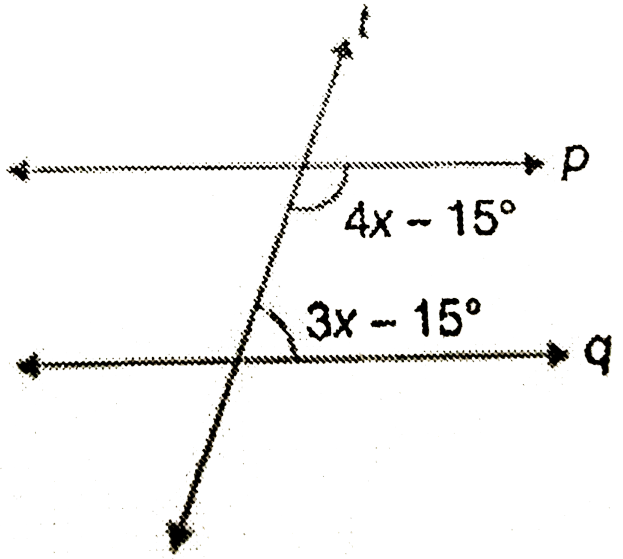
3.



In the figure, t intersects two parallel lines p and q. Find the angles of $4x - 15^\circ$ and $3x - 15^\circ$.

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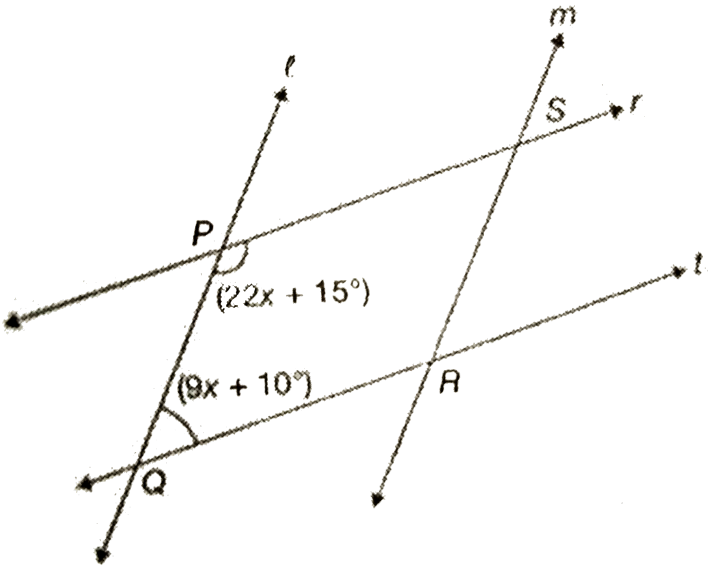
4.



In the figure, $l \parallel m$ and $r \parallel t$. They intersect at P, Q, R and S as shown in the figure. Find the angles of $\angle SPQ$ and $\angle PSR$.

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5. In a triangle ABC, if $\angle A = 70^\circ$ and $AB = AC$, then find the measures of $\angle B$ and $\angle C$.

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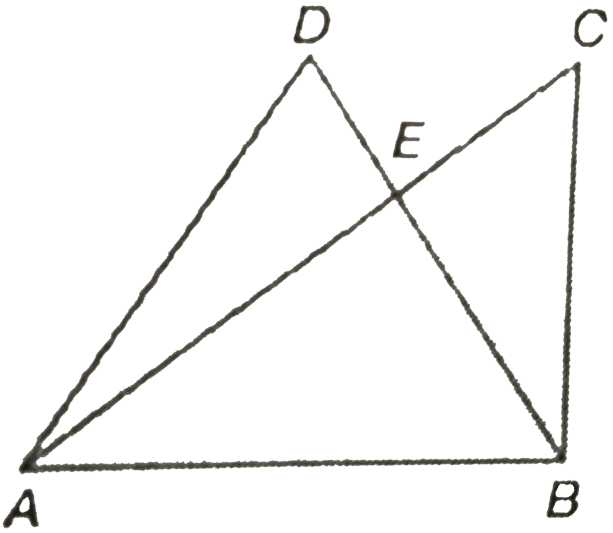
6. List out all the triangles formed in the figure.



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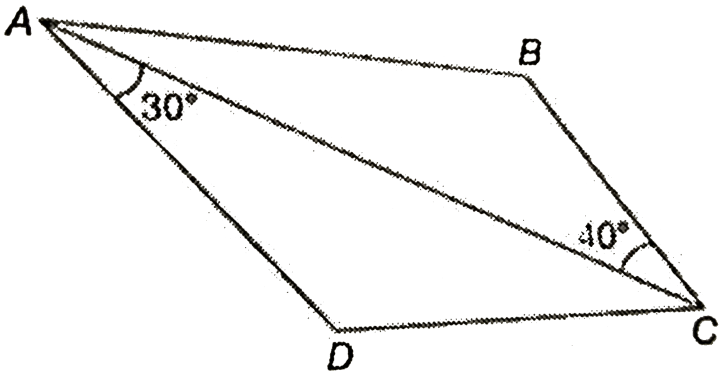
7. In the figure, $\overline{DC} \parallel \overline{AB}$. If $\angle ACB = 40^\circ$ and $\angle CAD = 30^\circ$, AC is the bisector of $\angle DAB$, then find the angle of $\angle ADC$.



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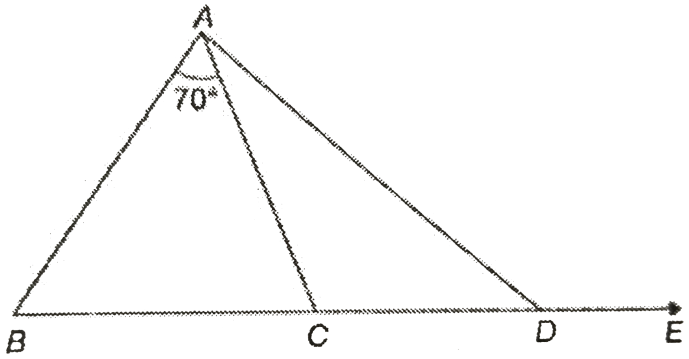
8. In the given figure, AB = BC, $\angle BAC = 70^\circ$ and BC is produced to E, AC = CD and $\angle ADE$ is the exterior angle of ΔADC. Find the angle of $\angle ADE$.



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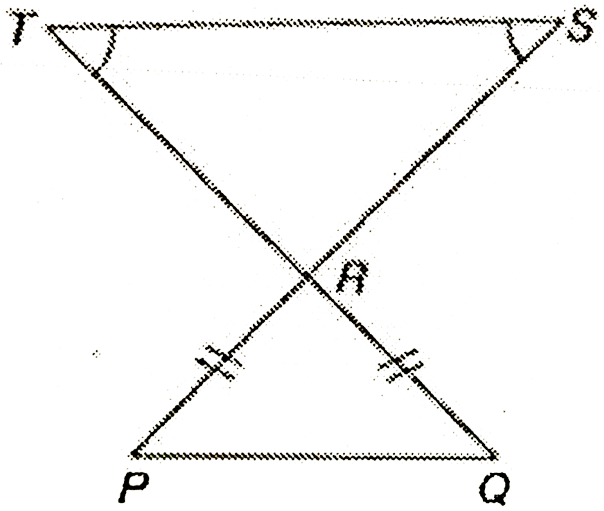
9. In the figure, PS and QT are two straight lines intersecting at the point R. PR = RQ. If $\angle PRQ = 98^\circ$ and $\angle TSR = 40^\circ$, then find the angles of $\angle T$ and $\angle Q$.



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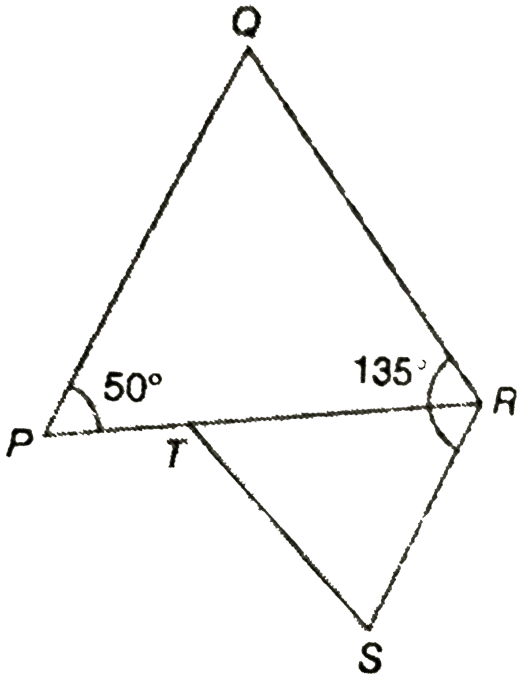
10. In the given figure, $\angle QPR = 50^\circ$, $\angle QRS = 135^\circ$ and PQ = PR and ST = SR. Find the angle of $\angle S$.



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11. The radius of a circle is 10.5 cm. Find its circumference.

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12. The circumference of a circle is 132 cm. Find the length of its diameter.

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13. Draw a chord of length 6 cm in a circle of radius 4 cm and shade the major segment.

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14. Make a sector of angle 90° in a circle of radius 3.5 cm.

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15. The circumference of a circle is 220 cm. Find the perimeter of its quadrant.

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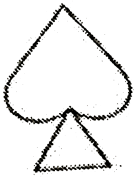
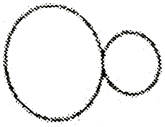
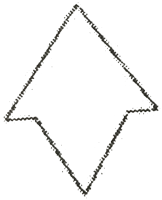
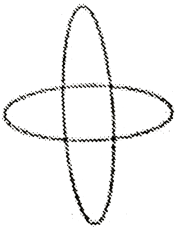
16. Draw the line of symmetry for the following.

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer:

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17. Construct an equilateral triangle of side 4 cm and draw all its lines of symmetry.

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18. Draw an acute angle POQ and draw its line symmetry.

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19. Which of the following letter of English alphabet has only two lines of symmetry?

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Concept Application

1. The two sides of an isosceles triangle are 6 cm and 12 cm. Find the perimeter of the triangle (in cm).

A. 32

B. 30

C. 24

D. 18

Answer: B

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2. Which of the following cannot be the measures of an isosceles triangle ABC?

A. Angle A is 50° and angle B is 80°

B. Angle A is 65° and angle B is 50°

C. Angle A is 60° and angle B is 70°

D. All of these

Answer: C

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3. The perimeter of the quadrant of a circle is 37.5 cm. Find area of the circle (in cm^2).

A. 346.5

B. 325.5

C. 275.25

D. 173.25

Answer: A

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4. The sides of a scalene triangle are integers in cm If the perimeter of the triangle is 15 cm, then how many such triangles exist?

A. One

B. Two

C. Three

D. Infinitely many

Answer: C

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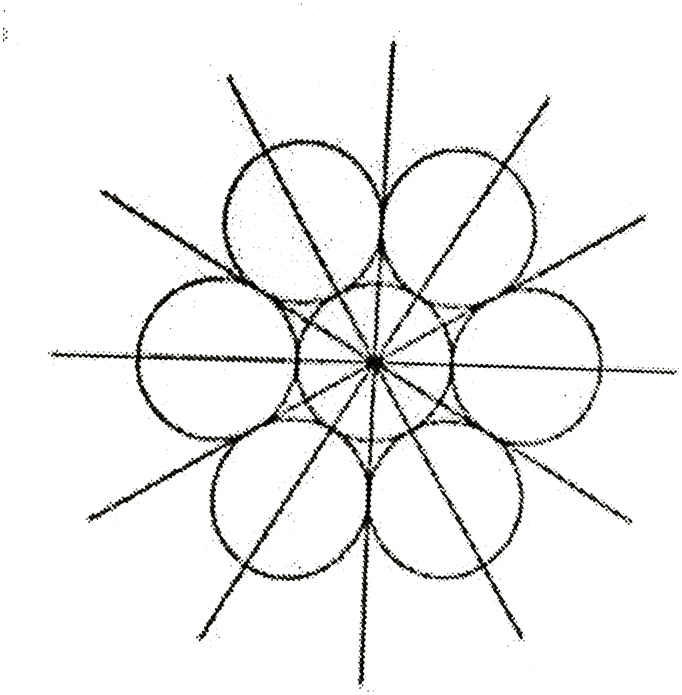

5.

In the given figure, the radii of the circles are equal. The middle circle is touching all the other circles and each of the other circles is touching exactly three circles as shown in the figure. What is the total number of lines of symmetry that can be drawn for the given figure?

A. 3

B. 6

C. 12

D. Infinitely many

Answer: B

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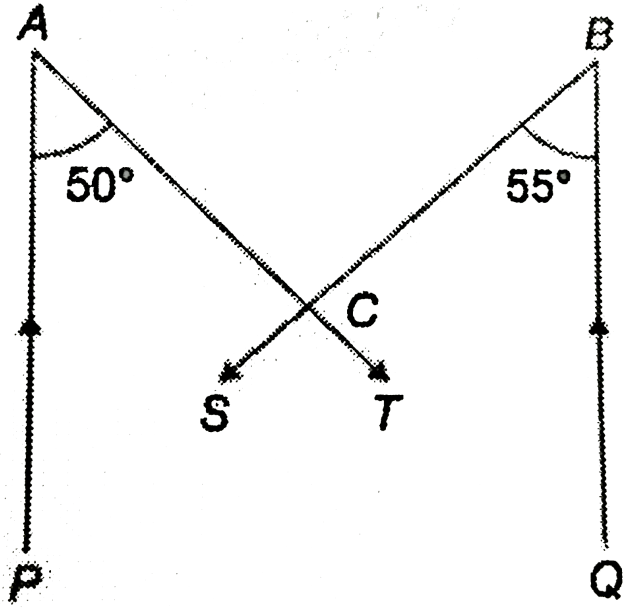
Assessment Test

1. In the figure, $\overline{PA} \parallel \overline{QB}$. If AT and BS ubtersect at C,find $\angle ACS$.



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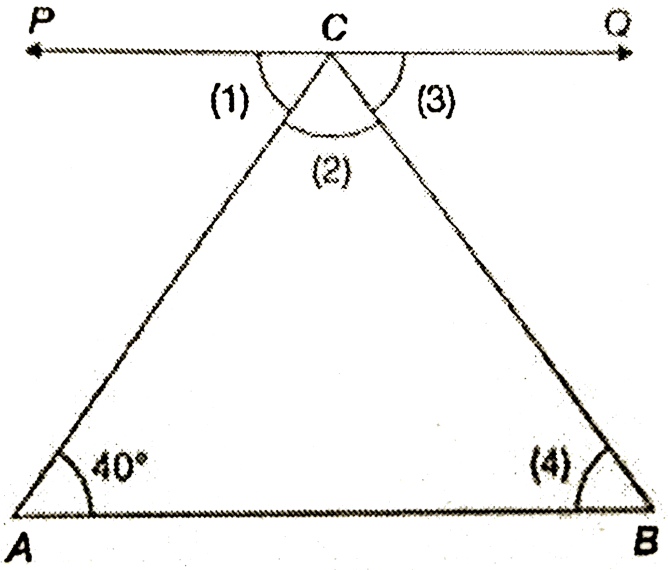
2. In the given figure, $\angle A = 40^\circ, \angle 3 = 60^\circ$ and $\overline{PQ}$ is parallel to $\overline{AB}$.

Find the other angles mentioned in the figure.



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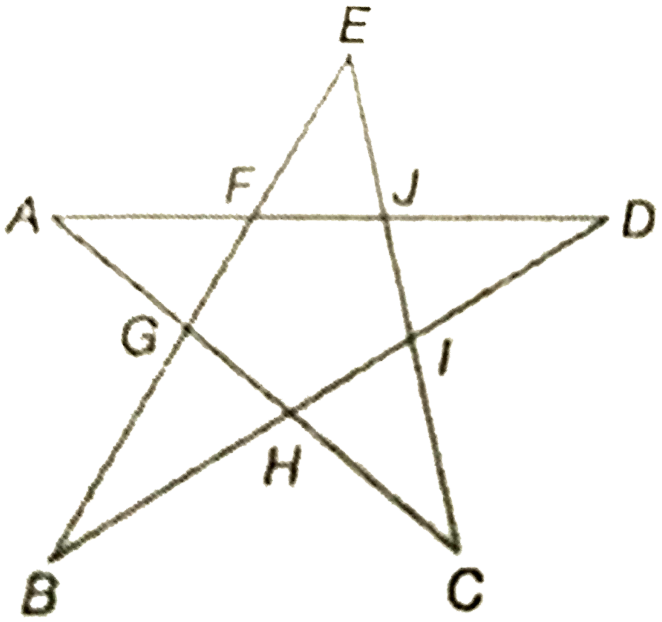
3. List out all the triangles formed in the figure.



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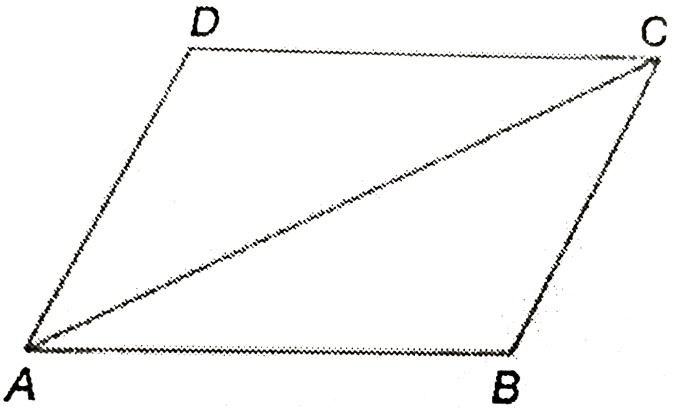
4. In the figure, $\overline{AB} \parallel \overline{CD}$ and $\overline{AD} \parallel \overline{BC}$. If $\angle ABC = 110^\circ$, $\angle ACD = 30^\circ$, then find $\angle ADC$.



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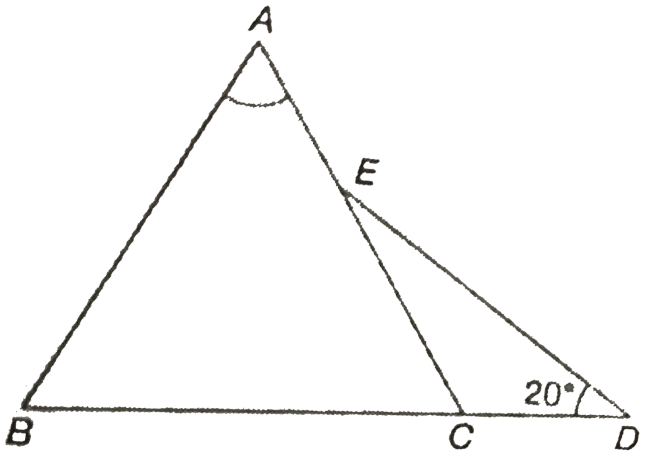
5. In the figure, AB = AC and BC is procured to D, if $\angle CDE = 20^\circ$ and $\angle BAC = 80^\circ$, then find the angle of $\angle CED$.



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6. Find the perimeter of a semicircle of radius 7 cm.

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7. Find the perimeter of the quadrant of a circle of radius 14 cm.

A. 20 cm

B. 500 cm

C. 50 cm

D. 5 cm

Answer: C

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8. Find the diameter of a circle whose circumference is 39.6 cm.

A. 12 cm

B. 12.6 cm

C. 12.4 cm

D. 12.8 cm

Answer: B

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9. Two congruent intersecting circles.

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10. A square inscribed in a circles.

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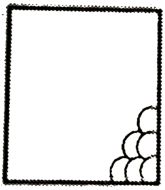
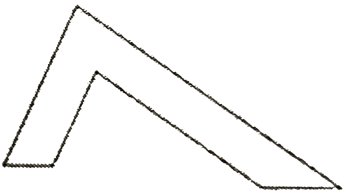
11. Complete the following figures to have the specified number line of symmetry and draw their lines of symmetry.

(a)



(4 lines of symmetry)

(b)



(1 line of symmetry)

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12. Identify the shapes on the basis of description.

(i) A three-sided polygon with all sides equal

(ii) The longest side of a right-angled triangle.

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13. Identify the following pairs of angles as complimentary and supplementary

(i) 60° and 30° $(ii) 45^\circ$ and 135°

(iii) 60° and 10° $(iv) 80^\circ$ and 10°

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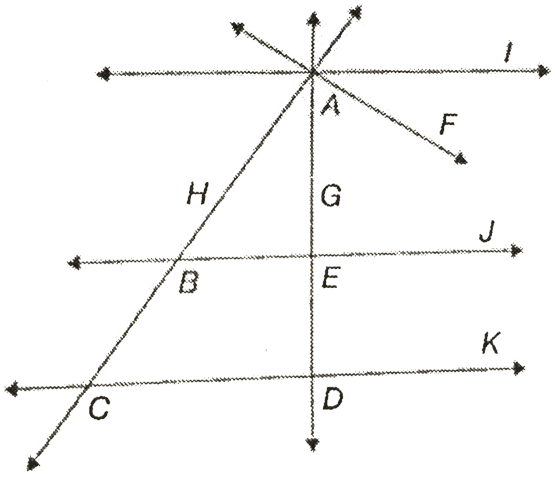
14. From the following figure, identify,

(i) Pairs of intersecting lines

(ii) Parallel lines

(iii) Concurrent lines



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15. Identify the parallel and perpendicular lines :

(i) Railways tracks

(ii) Hands of a clock at 12:15 ltBrgt (iii) Upright pole to the ground

(iv) Two upright trees

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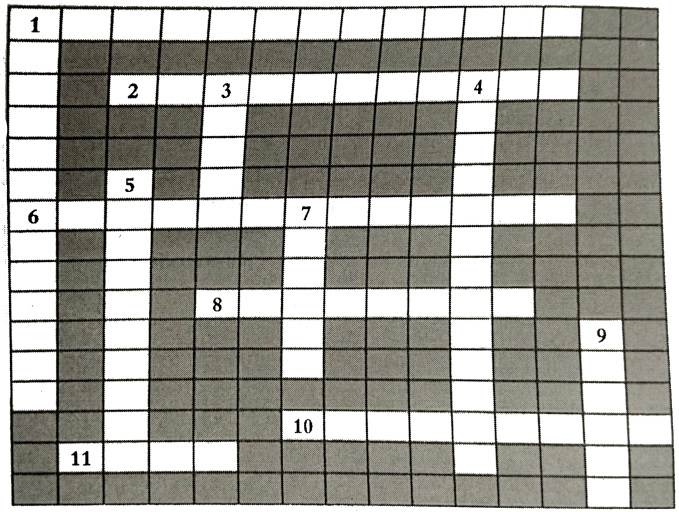
Crossword



1.

Across

1. Angle P is 30 degrees and angle Q is 60 degrees
2. The line intersecting two or more lines at different points is
6. Straight lines intersecting at right angles
8. Non-intersecting lines
10. The two interior non-adjacent angles which lie on either side of the trans
11. The rays which form the angle are

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