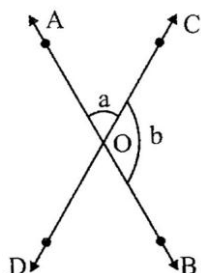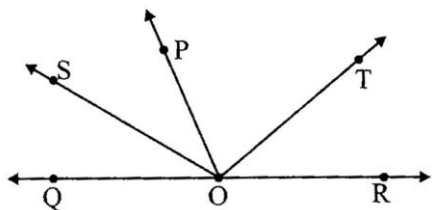# Lines & Angles

QUESTIONS

1. An angle which exactly measures $90°$ is.

    (a) An obtuse angle

    (b) An acute angle

    (c) A right angle

    (d) A reflex angle

2. An angle whose measurement is exactly equal to $0°$?

    (a) An obtuse angle

    (b) A straight angle

    (c) A zero angle

    (d) A right angle

3. In the given figure, lines AB and CD intersect at point 0. If $a:b = 2:3,$ then what is the measure of $\angle BOD$.


    (a) $54°$

    (b) $72°$

    (c) $100°$

    (d) $105°$

4. An angle which measures $180°$ called?

    (a) A zero angle

    (b) A right angle

    (c) A straight angle

    (d) An acute angle

5. In the given figure, rays OS and OT are angle bisectors of $\angle POQ$ and $\angle POR$ respectively.
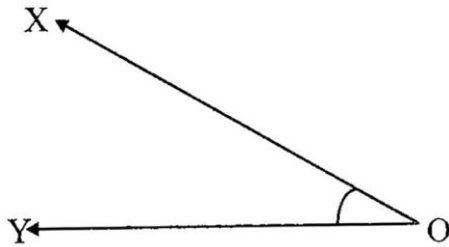

    What is the measure of $\angle SOT$.

    (a) $60°$

    (b) $70°$

    (c) $80°$

    (d) $90°$

6. Units of an angle is

    (a) Seconds

    (b) Kilograms

    (c) Degrees

    (d) Kilometres

7. Which of the following pairs of angles form a pair of supplementary angles?

    (a) $45°$ and $55°$

    (b) $41°$ and $49°$

    (c) $126°$ and $54°$

    (d) $135°$ and $225°$

8. Instrument used to measure or construct angles is called:

    (a) Compass

    (b) Scale

    (c) Protractor

    (d) Set squares

9. What do we call a $169°$ angle?

    (a) An obtuse angle

    (b) An acute angle

    (c) A right angle

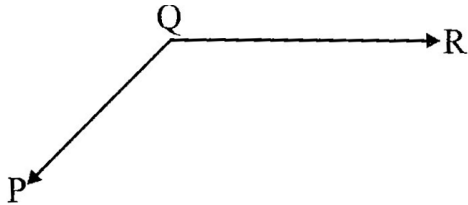   (d) A zero angle

10. The measurement of an angle after the extension of its arms?
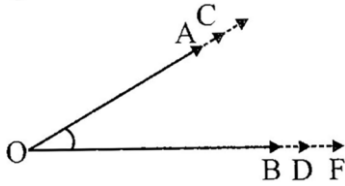
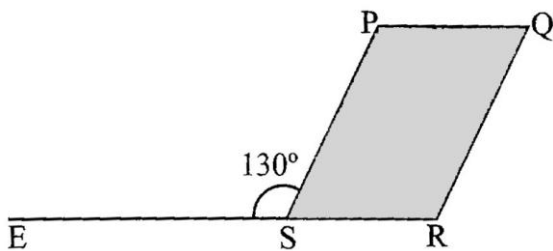(a) Is doubled   (b) Becomes three times

(c) Remains the same   (d) Cannot be said

11. In $\angle XOY$, what is the vertex?

(a) X   (b) Y   (c) O   (d) XY

12. What are the two arms of $\angle PQR$

(a) $\overline{QP}$ and $\overline{QR}$ (b) $\overline{PR}$ and $\overline{PQ}$ (c) $\overline{PR}$ and $\overline{QR}$ (d) All of these

**13.** In the given figure, sides RS of parallelogram PQRS is produced to point E.

What is the measure of angle PQR:

(a) 50°   (b) 180°   (c) 130°   (d) 90°

14. When two line segments meet at a point forming right angles, what type of segments are they called?

(a) Parallel segments   (b) Perpendicular segments

(c) Equal segments   (d) Bisecting segments

15. How is " $\overrightarrow{AB}$ is perpendicular to $\overrightarrow{CD}$ " written symbolically?

(a) $\overrightarrow{AB} \perp \overrightarrow{CD}$ (b) $\overrightarrow{AB} \parallel \overrightarrow{CD}$ (c) $\overrightarrow{AB} \neq \overrightarrow{CD}$ (d) $\overrightarrow{AB} = \overrightarrow{CD}$

16. $\overrightarrow{OC} \perp \overrightarrow{AB}$. What is the measure of $\angle BOC$?
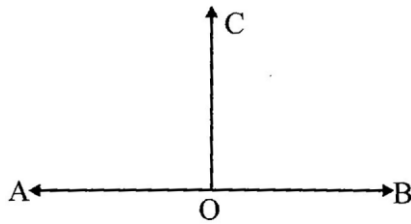
(a) 180°   (b) 45°   (c) 90°   (d) 120°

17. A line AB is parallel to the line CD. How is this symbolically written?

(a) $\overrightarrow{AB} \neq \overrightarrow{CD}$ (b) $\overrightarrow{AB} = \overrightarrow{CD}$ (c) $\overrightarrow{AB} \perp \overrightarrow{CD}$ (d) $\overrightarrow{AB} // \overrightarrow{CD}$

18. What are the lines which lie on the same plane and do not intersect at any point called?

(a) Perpendicular lines   (b) Intersecting lines

(c) Parallel lines   (d) Transversal

19. If two lines are parallel, what happens to the distance between them?

(a) Remains equal   (b) Is zero

(c) Increase to the right.   (d) Decrease to the right.

**20.** What is the number of pairs of parallel lines in the given figure?
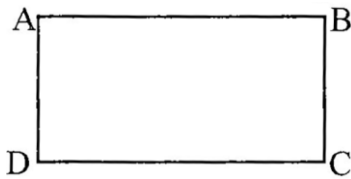
(a) 2   (b) 1   (c) 4   (d) 3

21. What is the Complementary angle of $12°$?

(a) 78°   (b) 180°   (c) 90°   (d) 168°

22. What is the supplementary angle of $89°$?

(a) 11°   (b) 10°   (c) 91°   (d) 180°

23. Complementary angle of an angle greater than $45°$ is.

(a) Less than $45°$ (b) Equal to $45°$

(c) Greater than $45°$ (d) Equal to $90°$

24. Which of the following is true?

(a) Two acute angles are supplementary.

(b) Two obtuse angles are supplementary.

(c) Two right angles are supplementary.

(d) Two reflex angles are supplementary.

25. The angle which is a complement of itself.

(a) 30°   (b) 45°   (c) 90°   (d) 180°

**26.** Angle which is a supplement of itself?

(a) 90° (b) 180° (c) 45° (d) 110°

**Direction: 27 - 30** based on the following figures

27. What type of angles are 3 and 5?
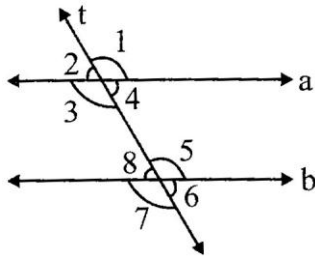
(a) Corresponding angles

(b) Alternate angles

(c) Vertically opposite angels

(d) Interior angles on the same side of the transversal

28. Which of the following is a pair of vertically opposite angles?

(a) 1 and 4 (b) 1 and 7 (c) 2 and 3 (d) 5 and 7

29. If the measure of $\angle 2 = 70°$, what is the measure of $\angle 6$.

(a) 110° (b) 70° (c) 45° (d) 120°

30. If $\angle 2 = 70°$, what is the measure of $\angle 4 + \angle 5$?

(a) 180° (b) 110° (c) 90° (d) 70°

31. Find the angle y in the given figure, if $AB \parallel CD$
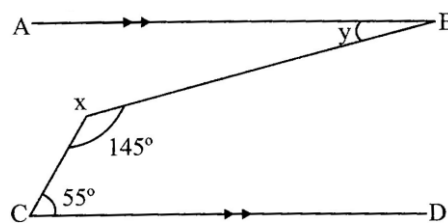
(a) 25° (b) 55° (c) 160° (d) 20°

32. Find the unknown angle y in the figure $t_1 \parallel t_2$
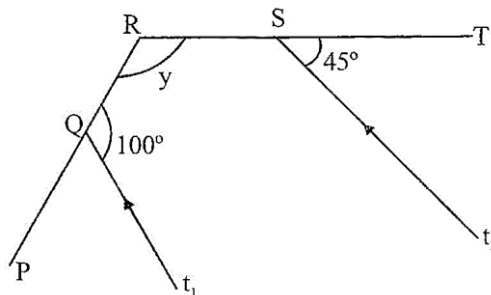
(a) 45° (b) 125° (c) 90° (d) 80°

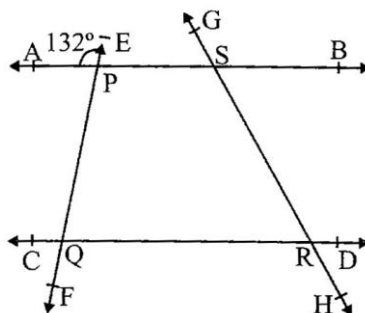**33.** Observe the figure given $AE \parallel BD$ and $BE \parallel CD$
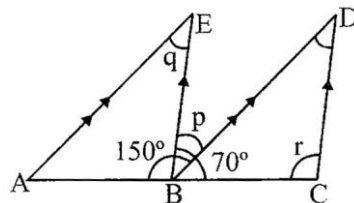
Compute the sum $p + q + r$

(a) $180°$ (b) $70°$ (c) $190°$ (d) $80°$

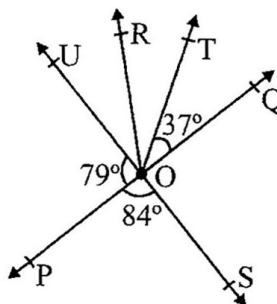**34.** In the given figure, $PQ \parallel RT$ and $QR \parallel PS$
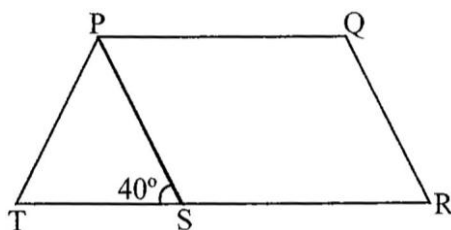
What is the measure of $\angle PQR$?

(a) $80°$ (b) $100°$ (c) $120°$ (d) $140°$

35. The given figure shows two parallel lines AB and CD, which are cut by transversals EF and GH in such a way that $\angle PQR = \angle GSP$.

What is the measure of $\angle HRD$?
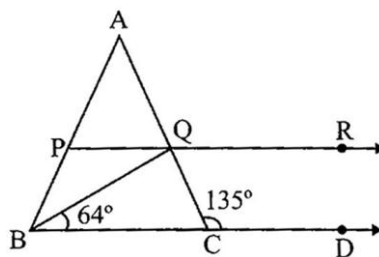
(a) $52°$ (b) $50°$ (c) $48°$ (d) $46°$

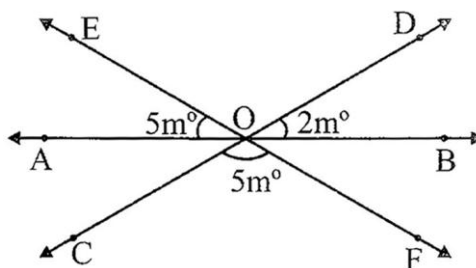**36.** What is the complement of $\angle TOU$ in the given figure, given that PQ is a straight

(a) $60°$ (b) $35°$ (c) $32°$ (d) $26°$

37. In the given figure. $PR \parallel BD$. What is the measure of $\angle AQB$ in the given figure?

(a) $109°$ (b) $92°$ (c) $112°$ (d) $126°$

38. In the figure given, what is the value of m?

(a) $5°$ (b) $10°$ (c) $15°$ (d) $20°$

39. In the given figure $\angle POR = 90°$ and OQ bisects $\angle POS$, then the value of $2q + r$ is
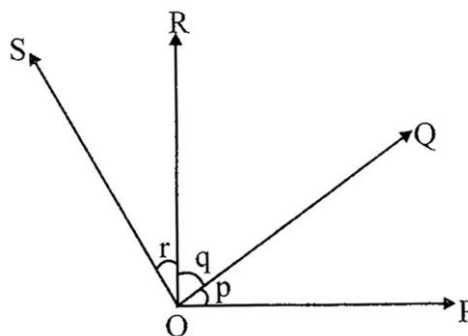
(a) $65°$ (b) $80°$ (c) $90°$ (d) $140°$

40. In the following figure if $PQ = PR$, then $\angle p$ is
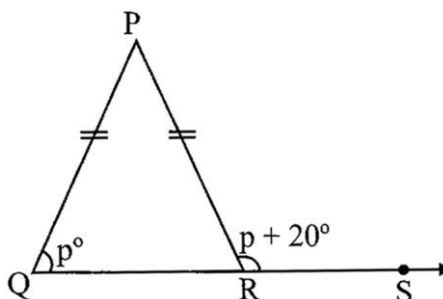
(a) $50°$ (b) $80°$ (c) $110°$ (d) None of these

ANSWER – KEY

|									
1.	C	**2.**	C	**3.**	B	**4.**	C	**5.**	D
6.	C	**7.**	C	**8.**	C	**9.**	A	**10.**	C
11.	C	**12.**	A	**13.**	A	**14.**	B	**15.**	A
16.	C	**17.**	D	**18.**	C	**19.**	A	**20.**	A
21.	A	**22.**	C	**23.**	A	**24.**	C	**25.**	B
26.	A	**27.**	B	**28.**	D	**29.**	B	**30.**	A
31.	D	**32.**	B	**33.**	C	**34.**	D	**35.**	C
36.	D	**37.**	A	**38.**	C	**39.**	C	**40.**	B

1. (C): An angle which exactly measures $90°$ is called the right angle.

2. (C) Not available

3. (B): $\angle a + \angle b = 180° \dfrac{\angle a}{\angle b} = \dfrac{2}{3}$

$\therefore \ \angle a = 2x \quad \angle b = 3x$

$\Rightarrow 2x + 3x = 180° \Rightarrow x = 36°$

Now, $\angle BOD$ is vertically opposite to

$\qquad \angle a \ \therefore \angle BOD = \angle a = 2x = 72°$

4. (C) Not available

5. (D): $\angle SOT = \angle POS + \angle POT = \dfrac{1}{2} \ (\angle POQ + POR)$: (Mind of a mathematician). This result should elicit in mind

of students that for all supplementary angles and angle bisectors drawn, the inside $\angle les$ are complementary.

$= \dfrac{1}{2}(\angle POQW + \angle POR) = \dfrac{1}{2} \times 180° = 90°$

6. (C): A common unit of measurement of angles is degrees.

7. (C) Not available

8. (C) Not available

9. (A) Not available

10. (C): Extending the arms of an angle does not affect the angle between them.

11. (C): The vertex of an angle is the common point of the rays that form the arms of an angle. Hence, it is 0.

12. (A): $\overrightarrow{QP}$ and $\overrightarrow{QR}$ are the two arms of $\angle PQR$

13. (A): In $\parallel$ gm PQRS; $PQ\parallel SR$ and $PS\parallel QR$

$\angle PSR = 180° - \angle PSE = 180° - 130° = 50°$

By property of transversal,

$\angle QRS = 180° - \angle PSR = 130°;$ Again $\angle PQR = 180° - \angle QRS = 50°$

14. (B): Perpendicular segments meet at a point forming right angles.

15. (A) Not available

16. (C) Not available

17. (D) Not available

18. (C) Not available

**19.** (A): The distance between the parallel lines is the same.
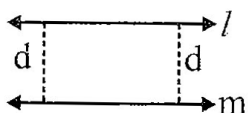
20. (A): There are two pairs of parallel lines ($AB \parallel DC$ and $AD \parallel BC$) as the opposite sides of a rectangle are parallel.

21. (A): Complementary angles add up to $90°$. Hence, $90° - 12° = 78°$

22. (C): The sum of supplementary angles is $180°$

$\therefore 180° - 80° = 91°$

23. (A): Let angle $\angle a > 45°$: Its complementary angle, say $\angle b = 90 - \angle a \quad \angle a > 45°$

$\therefore \ -\angle a < -45°$

Add $90°$ to both sides $\Rightarrow$

$= 90° - \angle a \ < 90° - 45°$

$\Rightarrow \angle b = 90° - \angle a < 45°$

Note: This technique of dealing with inequalities $\angle a > 45° \Rightarrow -\angle a < -45°$ should be. learnt and remembered for future applications.

24. (C): Sum of two right $\angle les - 90° + 90° = 180°$

Hence, supplementary

25. (B): Let angle be $\angle a$: If its complementary $\angle le \ (\theta)$ is same angle, then complement is also $\angle a$

Their sum

$\angle a + \angle \theta = \angle a + \angle a = 90° \Rightarrow \angle a = 45°$

26. (A): Let $\angle a \ \& \ \angle b$ be supplementary $\Rightarrow \angle a + \angle b = 180°$

But according to question, $\angle a = \angle b$

$\therefore \ 2\angle a = 180°$

$\therefore \angle a = 90°$

27. (B): $a \parallel b$, t is the transversal. '3' and '5' are both interior angles, but on different sides of transversal. So, '3' and '5' are alternate angles.

28. (D): 5 and 7 are vertically opposite angles formed at the intersection of transversal 't' and line 'b'.

29. (B): $\angle 2 = \angle 4$ (Vertically opposite)

$\angle 4 = \angle 8$ (Alternate angles)

$\angle 8 = \angle 6$ (vertically opposite angles)

$\therefore \ \angle 2 = \angle 4 = \angle 6 = 70°$

30. (A): $\angle 2 = \angle 4 = 70°$

$\angle 4 + \angle 5 = 180° \ \therefore \ \angle 2 + \angle 5 = 70° + 110° = 180°$

31. (D): Draw $XY \parallel AB$ and CD.
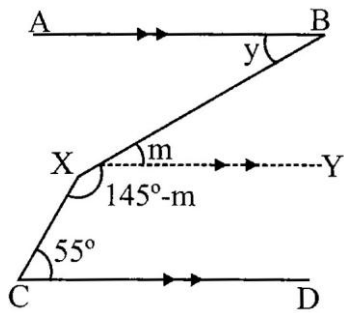
32. (B): Draw $t_3 \parallel t_1$ from point 'R'
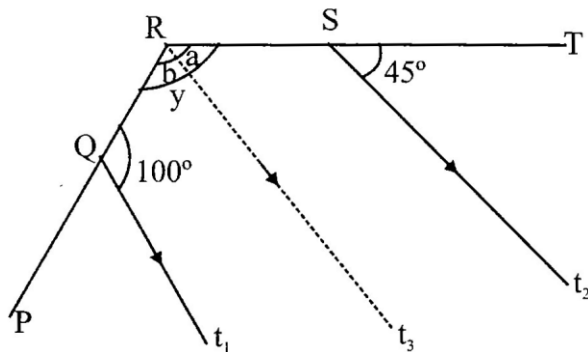
Construct a line t_3 through R and parallel to t_1 & t_2.

$\Rightarrow a + b = y$ and $a = 45°$

(Corresponding angles)

$b = 180° - 100° = 80°$

(Angles on the same side of transversal.)

$\Rightarrow y = a + b = 45° + 80° = 125°$

33. (C): From the figure.

$150 - p + 70 - p + p = 180°$

$\Rightarrow p = 220° - 180° = 40°$

Since $AE \parallel BD$, $q = p$ as they are alternate angles.

In $\triangle BCD$, $\angle BDC = p$ (Alternate angles)

$70 - p + p + r = 180° \Rightarrow r = 110°$

$\therefore$ The required sum

$= \angle p + \angle q + \angle r = 40° + 40° + 110° = 190°$

34. (D) Not available

35. (C): $\angle HRD = \angle SRQ = \angle GSP = \angle PQR$

$= 180° - \angle PQC = 180° - \angle SPQ$

$= 180° - \angle APE = 180° - 132° = 48°$

36. (D): $\angle POU + 79° + 37° = 180° \Rightarrow \Rightarrow TOU = 64° \Rightarrow$ its complementary $\angle le = 90° - 64° = 26°$.

37. (A): $\angle AQB = \angle PQB + \angle AQP = 64° + \angle AQP$; $\angle AQP = \angle RQC = 180° - 135° = 45°$

$\therefore \angle AQB = 64° + 45° = 109°$

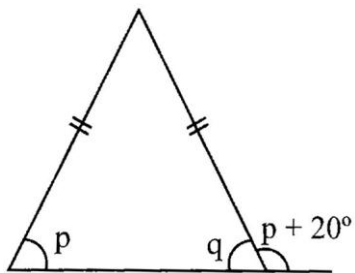**38.** (C): $\angle EOD = 5m°$ (by principle of vertically opposite $\angle les$)

$\therefore 5m + 5m + 5m + 5m + 2m + 2m = 360°$

$\Rightarrow 24m = 360°$

$\Rightarrow m = 15°$

39. (C) Not available

40. (B): $\angle p = \angle q$

$q + p + 20° = 180°$

$\therefore 2p + 20° = 180°$

$\Rightarrow p = 80°$