

EXERCISE - I

UNSOLVED PROBLEMS

- **Q.1** Find the complement of each of the following angles :
 - (i) 40° (ii) 86° (iii) 55° (iv) 34° (v) 0° (vi) 90°
 - $(V) 34^{\circ}$ $(V) 0^{\circ}$ $(VI) 90^{\circ}$
- Q.2 Find the supplement of each of the following angles : (i) 80° (ii) 130° (iii) 145°
 - (i) 80° (ii) 130° (iii) 145° (iv) 90° (v) 0° (vi) 180°
- $\label{eq:Q.3} \textbf{Find `y' in each of the following figures :}$





- **Q.4** Can two angles be complement, if both of them be
- (i) acute (ii) right (iii) obtuse ?Q.5 Name the two pairs of supplementary angles in the figure :



Q.6 Observe the following figure and answer the questions :



- (i) Are $\angle u$ and $\angle t$ supplementary ?
- (ii) Is $\angle y$ vertically opposite to $\angle u$?
- (iii) Do $\angle AOB$ and $\angle BOD$ form a linear pair?
- (iv) Is \angle BOC adjacent to \angle BOD ?
- (v) Is $\angle x$ adjacent to $\angle y$?
- **Q.7** Name the linear pairs, and pairs of vertically opposite angles in the following figure.



Q.8 In figure below, $\angle 1 = 52^{\circ}$, find the other angles.



Q.9 In the given figure (below) identify
(i) the pairs of corresponding angles.
(ii) the pairs of alternate interior angles.
(iii) the pairs of consecutive interior angles.



Q.10 State the property that is used in each of the
following statement :
 (i) If / || m, then ∠d = ∠h

(ii) If $\angle d = \angle f$, then $I \parallel m$

(iii) If $\angle c + \angle f = 180^\circ$, then / || m



Q.11 In the figure below, if $\angle 1 = 55^{\circ}$, find all the remaining angles.



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Q.12 In the figure given below, $\angle 1 = 60^{\circ}$, $\angle 8 = 65^{\circ}$. Is / || m ?



- **Q.14** In the given figure, a || b and / || m, find the measures of the angles x, y, z and t.



- **Q.15** Two interior angles on the same side of the transversal measure (a 6)° and (5a 6)°. Find the measure of each angle.
- Q.16 In the figure below, prove that CD || EF.



- **Q.17** In the adjoining figure, p || q and p || r. (i) Is q || r ? Why ?
 - (ii) Find the values of a, b and c.



Q.18 In the figure, find $\angle AOC$ if AB || CD.



- **Q.19** If ray PO stands on line RS such that $\angle POS = \angle POR$ then $\angle POR = 90^{\circ}$.
- **Q.20** In figure below, if $x y = 40^{\circ}$, find x and y.



Q.21 In figure below, p || q and t is transversal. Find the values of a, b, c.



Q.22 In figure below, find the values of a, b, c, d, e and f.



Q.23 Find the complement of each of the following angles :

iv)
$$22\frac{1}{2}^{\circ}$$
 (v) 50.5°

Q.24 Find the supplement of each of the following angles :

(i) 95° (ii) 110° (iii)
$$115\frac{1}{2}°$$

(iv)
$$135\frac{1}{2}^{\circ}$$

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- **Q.25** Two angles form a linear pair. If one of them is:
 - (i) an acute angle
 - (ii) an obtuse angle
 - (iii) a right angle

then what type of the angle is the other ?

- **Q.26** Two angles are supplementary. Can both of them be :
 - (i) acute angles ?
 - (ii) obtuse angles ?
 - (iii) right angles ?

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Q.27 Observe the following figure and write :



- (i) Linear pairs of angles
- (ii) Vertically opposite angles
- (iii) Adjacent pairs of angles
- **Q.28** In the figure, if ray \overrightarrow{OC} rotates to the left of its initial position then,



(i) ∠AOC will decrease or increase

(ii) ∠COB will increase or decrease

(iii) Suppose $\angle AOC$ decrease, what changes should take place in $\angle BOC$ so that both the angles still remain supplementary.

Q.29 In the figure, name the following pairs of angles:



(i) Equal supplementary angles

- (ii) Vertically opposite angels
- (iii) Unequal supplementary angles
- (iv) Adjacent complementary angles
- (v) Obtuse vertically opposite angles

(vi) Adjacent angles that do not form a linear pair.

ANSWER KEY

- **1.** (i) 50° (ii) 4° (iii) 35° (iv) 56° (v) 90° (vi) 0°
- **2.** (i) 100° (ii) 50° (iii) 35° (iv) 90° (v) 180° (vi) 0°
- **3.** (i) y = 30° (ii) (22.5)° (iii) 45° (iv) 125° (v) 20° (vi) 15°
- 4. (i) Not always (ii) no (iii) no
- **5.** $(\angle 1, \angle 2)$ and $(\angle 3, \angle 4)$
- **6.** (i) yes (ii) no (iii) yes (iv) no (v) yes
- 7. Linear paired angles are : $(\angle 1, \angle 2), (\angle 1, \angle 4), (\angle 2, \angle 3), (\angle 4, \angle 3), (\angle 5, \angle 6), (\angle 5, \angle 8), (\angle 6, \angle 7), (\angle 7, \angle 8)$; Vertically opposite angles : $(\angle 1, \angle 3), (\angle 4, \angle 2), (\angle 5, \angle 7), (\angle 6, \angle 8)$

 $\angle 3 = 52^\circ, \angle 2 = \angle 4 = 128^\circ$

- (i) (a, e), (b, f), (c, h), (d, g) (ii) (b, h), (d, e) (iii) (b, e), (d, h)
- (i) corresponding angles are equal (ii) if alternate interior angles are equal, lines are parallel (iii) cointerior angles are supplementary

11. $\angle 3 = \angle 6 = \angle 8 = 55^{\circ}, \angle 4 = \angle 2 = \angle 5 = \angle 7 = 125^{\circ}$

12. No

8.

14. x = 75°, t = 105°, z = 75°, y = 105°

- **17.** (i) yes (ii) b = c = 70°, a = 110°
- 130° (Hint : through O, draw a line parallel to AB or CD)
- **20.** x = 110°, y = 70°
- **21.** ∠a = 130°, ∠b = 50°, ∠c = 130°
- **22.** a = b = c = d = e = f = 30°

23 (i) 45° (ii) 15° (iii) 10° (iv)
$$67\frac{1}{2}$$
° (v) 39.5°

24. (i) 85° (ii) 70° (iii) $64\frac{1}{2}^{\circ}$ (iv) $44\frac{1}{2}^{\circ}$

25. (i) obtuse angle(ii) acute angle (iii) a right angle

- **26.** (i) no (ii) no (iii) yes
- 27. (i) Linear pair : ∠1, ∠2 ; ∠2, ∠3 ; ∠3, ∠4 ;
 ∠4, ∠1 ; ∠6, ∠7 ; ∠7, ∠8 ; ∠8, ∠5 ;
 - ∠5, ∠6
 - (ii) Vertically opposite angles : $\angle 1$, $\angle 3$; $\angle 2$, $\angle 4$; $\angle 6$, $\angle 8$; $\angle 5$, $\angle 7$
 - (iii) Adjacent angles : ∠1, ∠2 ; ∠2, ∠3 ; ∠3,
 ∠4 ; ∠4, ∠1 ; ∠6, ∠7 ; ∠7, ∠8 ; ∠8, ∠5 ;
 ∠5, ∠6

28. (i) decrease (ii) increase (iii) ∠COB should not be a straight angle.

29. (i) $\angle AOC$ and $\angle AOD$; $\angle COB$ and $\angle BOD$; $\angle AOC$ and $\angle BOC$; $\angle AOD$ and $\angle BOD$

(ii) ∠AOD and ∠COB; ∠AOC and ∠BOD; ∠AOE
and ∠BOF; ∠EOC and ∠DOF; ∠EOD and ∠COF;
∠BOE

and ∠AOF

(iii) \angle EOC and \angle EOD; \angle FOD and \angle FOC; \angle AOF and \angle FOB; \angle AOE and \angle EOB

- (iv) \angle AOE and \angle EOC; \angle DOF and \angle FOB
- (v) \angle EOB and \angle AOF; \angle EOD and \angle COF

(vi) \angle EOA and \angle EOC; \angle DOF, \angle BOF; \angle AOD and \angle AOE; \angle EOC and \angle COB; \angle COB and \angle BOF; \angle FOD and \angle DOA



(A) 20°

(C) 60°

(B) 50°

(D) 70°



