

Practice Problems

Chapter-wise Sheets

Date :		Start Time :		End Time:	
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MATHEMATICS (CM10)

SYLLABUS: Straight Lines and Pair of Straight Lines

Max. Marks: 120 Marking Scheme: (+4) for correct & (-1) for incorrect answer Time: 60 min.

INSTRUCTIONS: This Daily Practice Problem Sheet contains 30 MCQ's. For each question only one option is correct. Darken the correct circle/ bubble in the Response Grid provided on each page.

- If (-4, 5) is one vertex and 7x y + 8 = 0 is one diagonal of a square, then the equation of second diagonal is
 - (a) x + 3y = 21
- (b) 2x-3y=7
- (c) x + 7y = 31
- (d) 2x + 3y = 21
- Two lines are given by $(x-2y)^2 + k(x-2y) = 0$. The value of k, so that the distance between them is 3, is:
 - (a) k=0
- (b) $k = \pm 3\sqrt{5}$
- (c) $k = \pm \sqrt{5}$
- (d) k = 3
- A line through A (-5, -4) meets the line x + 3y + 2 = 0, 2x + y + 4 = 0 and x - y - 5 = 0 at B, C and D respectively. If

$$\left(\frac{15}{AB}\right)^2 + \left(\frac{10}{AC}\right)^2 = \left(\frac{6}{AD}\right)^2$$
, then the equation of the line

- (a) 2x+3y+22=0
- (b) 5x-4y+7=0
- (c) 3x-2y+3=0
- (d) None of these
- The number of lines that are parallel to 2x + 6y + 7 = 0 and have an intercept of length 10 between the coordinate axes is
 - (a) 1

(b) 2

(c) 4

(d) Infinitely many

RESPONSE GRID

- 1. (a)(b)(c)(d)
- 2. (a) b) c) d)
- 3. abcd 4. abcd

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- 5. The distance of the point (1, 2) from the line x + y + 5 = 0 measured along the line parallel to 3x y = 7 is equal to
 - (a) $4\sqrt{10}$
- (b) 40
- (c) $\sqrt{40}$
- (d) $10\sqrt{2}$
- 6. If p_1 , p_2 are the lengths of the normals drawn from the origin on the lines $x \cos \theta + y \sin \theta = 2a \cos 4\theta$ and $x \sec \theta + y \csc \theta = 4a \cos 2\theta$

respectively, and $mp_1^2 + np_2^2 = 4a^2$. Then

- (a) m=1, n=1
- (b) m=1, n=4
- (c) m=4, n=1
- (d) m=1, n=-1
- 7. For what value of 'p', $y^2 + xy + px^2 x 2y + p = 0$ represent 2 straight lines:
 - (a) 2

(b) $\frac{2}{3}$

(c) $\frac{1}{4}$

- (d) $\frac{1}{2}$
- 8. One vertex of an equilateral triangle is (2,3) and the equation of line opposite to the vertex is x + y = 2, then the equation of remaining two sides are
 - (a) $y-3=(2\pm\sqrt{3})(x-2)$ (b) $y+3=(2\pm\sqrt{3})(x+2)$
 - (c) $y+3=((3\pm\sqrt{2})(x+2))$ (d) $y-3=(3\pm\sqrt{2})(x-2)$
- 9. The point on the line x + y = 4 which lie at a unit distance from the line 4x + 3y = 10, are
 - (a) (3,1), (-7,11)
- (b) (3, 1), (7, 11)
- (c) (-3, 1), (-7, 11)
- (d) (1,3), (-7,11)

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- 10. The straight line y=x-2 rotates about a point where it cuts the x-axis and becomes perpendicular to the straight line ax + by + c = 0. Then its equation is
 - (a) ax + by + 2a = 0
- (b) ax by 2a = 0
- (c) bx + ay 2b = 0
- (d) ay bx + 2b = 0
- 11. The number of possible straight lines, passing through (2, 3) and forming a triangle with coordinate axes, whose area is 12 sq. units, is
 - (a) 1

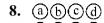
(b) 2

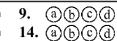
(c) 3

- (d) 4
- 12. The slopes of the lines represented by $x^2 + 2hxy + 2y^2 = 0$ are in the ratio 1:2, then h equals
 - (a) $\pm \frac{1}{2}$
- (b) $\pm \frac{3}{2}$
- (c) ±1

- (d) ± 3
- 13. The distance of the line 2x + y = 3 from the point (-1, 3) in the direction whose slope is 1 is
 - (a) $\frac{2}{3}$

- (b) $\frac{\sqrt{2}}{3}$
- (c) $\frac{2\sqrt{2}}{3}$
- (d) $\frac{2\sqrt{5}}{3}$
- **14.** The equation of the straight line, the portion of which intercepted between the coordinate axes being divided by the point (-5, 4) in the ratio 1:2, is
 - (a) 8x + 5y = 60
- (b) 8x 5y = 60
- (c) -8x + 5y = 60
- (d) None of these





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- The reflection of the point (4, -13) in the line 5x + y + 6 = 0, is
 - (-1, -14)
- (b) (3,4)
- (c) (1,2)
- (d) (-4, 13)
- The combined equation of the pair of lines through the point (1, 0) and parallel to the lines represented by $2x^2 - xy - y^2 = 0$ is
 - (a) $2x^2 xy y^2 4x y = 0$
 - (b) $2x^2 xy y^2 4x + y + 2 = 0$
 - (c) $2x^2 + xy + y^2 2x + y = 0$
 - (d) None of these
- 17. P is a point on either of the two lines $y \sqrt{3} \mid x \mid = 2$ at a distance of 5 units from their point of intersection. The coordinates of the foot of the perpendicular from P on the bisector of the angle between them are
 - (a) $\left(0, \frac{4+5\sqrt{3}}{2}\right)$ or $\left(0, \frac{4-5\sqrt{3}}{2}\right)$ depending on which the
 - (b) $\left[0, \frac{4+5\sqrt{3}}{2}\right]$
 - (c) $\left[0, \frac{4-5\sqrt{3}}{2}\right]$
- The distance between the parallel lines

$$9x^2 - 6xy + y^2 + 18x - 6y + 8 = 0$$
 is

- (b) $\frac{1}{\sqrt{10}}$
- (d) None of these
- Equation of the hour hand at 4 O' clock is

- (a) $x \sqrt{3} y = 0$
- (b) $\sqrt{3} x v = 0$
- (c) $x + \sqrt{3}y = 0$
- (d) $\sqrt{3}x + y = 0$
- 20. If the image of point P(2, 3) in a line L is Q(4, 5), then the image of point R(0, 0) in the same line is:
 - (a) (2,2)
- (b) (4, 5)
- (c) (3,4)
- (d) (7,7)
- 21. The coordinates of a point which is at +3 distance from points (1, -3) of line 2x + 3y + 7 = 0 is
 - (a) $\left(1 \frac{9}{\sqrt{13}}, -3 + \frac{6}{\sqrt{13}}\right)$ (b) $\left(1 + \frac{9}{\sqrt{13}}, 1 \frac{9}{\sqrt{13}}\right)$
 - (c) $\left(3 \frac{6}{\sqrt{13}}, 3 + \frac{6}{\sqrt{13}}\right)$ (d) $\left(1 + \frac{9}{\sqrt{13}}, -3 \frac{6}{\sqrt{13}}\right)$
- 22. If one of the diagonals of a square is along the line x = 2yand one of its vertices is (3, 0), then its sides through this vertex are given by the equations
 - (a) y-3x+9=0, 3y+x-3=0
 - (b) y+3x+9=0, 3y+x-3=0
 - (c) y-3x+9=0, 3y-x+3=0
 - (d) y-3x+3=0, 3y+x+9=0
- **23.** Given a family of lines a(2x + y + 4) + b(x 2y 3) = 0, the number of lines belonging to the family at a distance $\sqrt{10}$ from P(2, -3) is
 - (a) 0

(b) 1 (d) 4

(c)

24.

- The line parallel to the x- axis and passing through the intersection of the lines ax + 2by + 3b = 0 and bx - 2ay - 3a = 0, where $(a, b) \neq (0, 0)$ is
- (a) below the x axis at a distance of $\frac{3}{2}$ from it
- (b) below the x axis at a distance of $\frac{2}{3}$ from it
- (c) above the x axis at a distance of $\frac{3}{2}$ from it
- (d) above the x axis at a distance of $\frac{2}{3}$ from it



18. (a) (b) (c) (d)

19. (a)(b)(c)(d)

23. (a) (b) (c) (d)

24. (a)(b)(c)(d)

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25. The equation

 $8x^2 + 8xy + 2y^2 + 26x + 13y + 15 = 0$ represents a pair of straight lines. The distance between them is

- (a) $7/\sqrt{5}$
- (b) $7/2\sqrt{5}$
- (c) $\sqrt{7}/5$
- (d) None of these
- **26.** A straight line L through the point (3, -2) is inclined at an angle 60° to the line $\sqrt{3}x + y = 1$. If L also intersects the x-axis, then the equation of L is
 - $y + \sqrt{3}x + 2 3\sqrt{3} = 0$ (b) $y \sqrt{3}x + 2 + 3\sqrt{3} = 0$
 - (c) $\sqrt{3}y x + 3 + 2\sqrt{3} = 0$ (d) $\sqrt{3}y + x 3 + 2\sqrt{3} = 0$ The equation of a straight line, which passes through the
- 27. point (a, 0) and whose perpendicular distance from the point (2a, 2a) is a, is
 - (a) 3x-4y-3a=0
- (b) x-a=0
- (c) both (a) and (b)
- (d) Neither of (a) and (b)

- The points (1,3) and (5,1) are two opposite vertices of a rectangle. The other two vertices lie on the line y = 2x + c, then one of the remaining vertices is
 - (a) (4,4)
- (c) (0,2)
- (d) (4,2)
- **29.** $(\sin \theta, \cos \theta)$ and (3, 2) lies on the same side of the line x + y = 1, then θ lies between
 - (a) $(0, \pi/2)$
- (b) $(0, \pi)$
- (c) $(\pi/4, \pi/2)$
- (d) $(0, \pi/4)$
- **30.** The perpendicular distance between the straight lines 6x + 8y + 15 = 0 and 3x + 4y + 9 = 0 is
 - (a) $\frac{3}{2}$ units
- (b) $\frac{3}{10}$ unit
- (c) $\frac{3}{4}$ unit
- (d) $\frac{2}{7}$ unit

RESPONSE GRID

25. a b c d
30. a b c d

26. abcd

27. a b c d 28. a b c d

29. (a) (b) (c) (d)

DAILY PRACTICE PROBLEM DPP CHAPTERWISE 10 - MATHEMATICS							
Total Questions	30	Total Marks	120				
Attempted		Correct					
Incorrect		Net Score					
Cut-off Score	38	Qualifying Score	55				
Success Gap = Net Score — Qualifying Score							
Net Score = (Correct × 4) – (Incorrect × 1)							