MATHEMATICS
WORKSHEET_060323
CHAPTER 09 STRAIGHT

SUBJECT: MATHEMATICSLINES **MAX. MARKS : 40**

CLASS : XI **DURATION : 1½ hrs**

General Instructions:

(i). **All** questions are compulsory.
(ii). This question paper contains 2**0** questions divided into five Sections A, B, C, D and E.
(iii). **Section A** comprises of **10 MCQs** of **1 mark** each. **Section B** comprises of 4 questions of **2 marks** each. **Section C** comprises of 3 questions of **3 marks** each. **Section D** comprises of 1 question of **5 marks** each and **Section E** comprises of 2 Case Study Based Questions of **4 marks** each.
(iv). There is no overall choice.
(v). Use of Calculators is not permitted

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. The value of y will be, so that the line through (3, y) and (2, 7) is parallel to the line through (−1, 4) and (0, 6).
(a) 7 (b) 8 (c) 9 (d) 10

2. The equation of the line passing through the point (1, 2) and perpendicular to the line x + y + 1 = 0 is
(a) y − x + 1 =0 (b) y − x −1 =0 (c) y − x + 2 =0 (d) y − x −2 =0

3. The equation of line, which passes through point (4, 3) and parallel to the line 2x − 3y = 7 is
(a) 2x − 3y + 1 =0 (b) 2x − 3y −1 =0 (c) 2x + 3y + 1 =0 (d) 2x + 3y −1 =0

4. The distance of the point (3, − 5) from the line 3x − 4y − 26 = 0 is
(a) 3/7 (b) 2/5 (c) 7/5 (d) 3/5

5. The distance between the parallel lines 3x − 4y + 7 = 0 and 3x − 4y + 5 = 0, is
(a) 3/7 (b) 2/5 (c) 7/5 (d) 3/5

6. The equation of line whose intercepts on the axes of x and y are –2 and 3 respectively is
(a) 3x – 2y = 6 (b) 3x – 2y + 6 = 0 (c) 3x + 2y = 6 (d) 3x + 2y = –6

7. The new coordinates of point (3, –5), if origin is shifted to the point (–3, –2) are
(a) (6, 3) (b) (6, –3) (c) (–6, 3) (d) (–6, –3)

8. The angle between the X -axis and the line joining the points (3, − 1) and (4, − 2) is
(a) 45° (b) 135° (c) 90° (d) 180°

For Q9 and Q10, a statement of assertion (A) is followed by a statement of reason (R). Choose the correct answer out of the following choices.

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

9. **Assertion (A):** The slope of the line x + 7y = 0 is 1/7 and y-intercept is 0.
Reason (R): The slope of the line 6x + 3y − 5 = 0 is − 2 and y-intercept is 5/3.

10. **Assertion (A):** Slope of line 3x − 4y + 10 = 0 is 3/4.
Reason (R): x-intercept and y-intercept of 3x − 4y + 10 = 0 respectively are −10/3 and 5/2.

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. If the lines $2x + y - 3 = 0$, $5x + ky - 3 = 0$ and $3x - y - 2 = 0$ are concurrent, find the value of k.

12. Find the equation of lines passing through (1, 2) and making angle 30° with y-axis.

13. Line through the points (–2, 6) and (4, 8) is perpendicular to the line through the points (8, 12) and (x, 24), find the value of x.

14. Find the equation of the straight line passing through the point (6, 2) and having slope – 3.

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. The vertices of the triangle are A(2, 3), B(4, –1) and C(1, 2). Find the length and equation of the perpendicular drawn from the point A on side BC.

16. If P (a, b) is the mid-point of a line segment between axes.

Show that equation of the line is $\frac{x}{a}+\frac{y}{b} = 2$.

17. Find the equations of the altitudes of the triangle whose vertices are A(7, –1), B(–2, 8) and C (1, 2).

SECTION – D

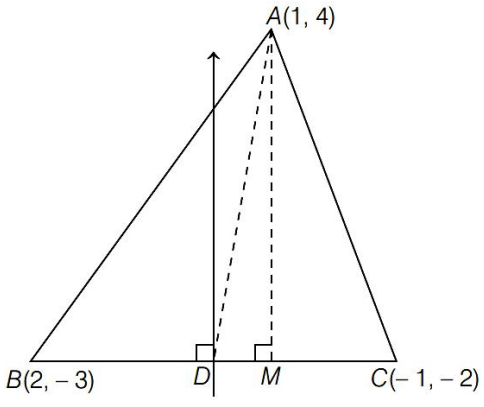
Questions 18 carry 5 marks.

18. Find the equations of the lines which pass through the point (4, 5) and make equal angles with the lines $5x - 12y + 6 = 0$ and $3x = 4y + 7$.

SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. One day the mathematics teacher drew a triangle ΔABC while revising straight lines. He marked vertices A(1, 4), B (2, − 3) and C(− 1, − 2) as shown in the given below figure. AD is the median and AM is the altitude through A.



Based on the above information answer the following questions.

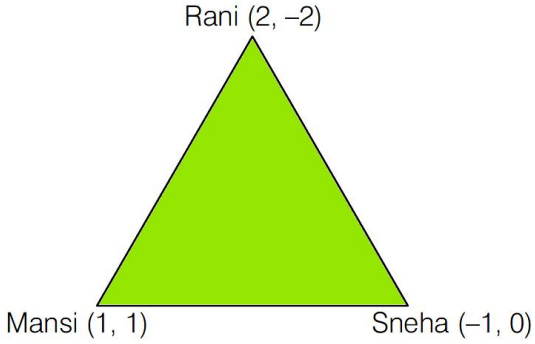
(i) Find the slope of BC. (1)

(ii) Find the equation of median through A. (1)

(iii) Find the equation of the altitude through A. (1)

(iv) Find the equation of right bisector of side BC. (1)

20. One triangular shaped pond is there in a park. Three friends Rani, Mansi, Sneha are sitting at the corners of the triangular park. They are studying in Class XI in an International.
Rani marked her position as (2, –2), Mansi marked as (1, 1) and Sneha marked her position as (–1, 0) as shown in figure given below.



Based on the above information answer the following questions.
(i) Find the equation of lines formed by Rani and Mansi. (1)
(ii) Find the Slope of equation of line formed by Rani and Sneha. (1)
(iii) Find the equation of median of lines through Rani. (1)
(iv) Find the equation of altitude through Mansi. (1)