Parallel Lines Worksheet

Determine whether the graphs of the equations are parallel lines.

1. $x + 4 = y$ and $y - x = -3$

$y = x + 4 \qquad y = x - 3$

$\boxed{m = 1} \quad \boxed{m = 1}$

$\boxed{\text{PARALLEL}}$

2. $3x - 4 = y$ and $y - 3x = 8$

$y = 3x - 4 \qquad y = 3x + 8$

$\boxed{m = 3} \qquad \boxed{m = 3}$

$\boxed{\text{PARALLEL}}$

3. $y + 3 = 6x$ and $-6x - y = 2$

$y = 6x - 3 \qquad -y = 6x + 2$

$\boxed{m = 6} \qquad y = -6x - 2$

$\qquad\qquad \boxed{m = -6}$

$\boxed{\text{NOT PARALLEL}}$

4. $y = -4x + 2$ and $-5 = -2y + 8x$

$y = -4x + 2 \qquad -2y + 8x = -5$

$\boxed{m = -4} \qquad \underline{\quad -8x \quad -8x}$

$\qquad\qquad \dfrac{-2y = -8x - 5}{-2 \quad -2 \quad -2}$

$\boxed{\text{NOT PARALLEL}} \quad \boxed{m = 4} \quad y = 4x + \dfrac{5}{2}$

5. $y = 2x + 7$ and $5y + 10x = 20$

$y = 2x + 7 \qquad\qquad \underline{-10x \quad -10x}$

$\boxed{m = 2} \qquad \dfrac{5y = -10x + 2}{5 \qquad 5 \qquad 5}$

$\boxed{\text{NOT PARALLEL}} \quad y = -2x + \dfrac{2}{5}$

$\qquad\qquad\qquad \boxed{m = -2}$

6. $y = -7x - 5$ and $2y = -7x - 10$

$y = -7x - 5 \qquad \dfrac{2y = -7x - 10}{2 \quad 2 \quad 2}$

$\boxed{m = -7}$

$\qquad\qquad y = \dfrac{7x}{2} - 5$

$\boxed{\text{NOT PARALLEL}} \qquad \boxed{m = \dfrac{7}{2}}$

7. $3x - y = -9$ and $2y - 6x = -2$

$\underline{-3x \qquad -3x} \qquad \underline{+6x \quad +6x}$

$-y = -3x - 9 \qquad \dfrac{2y = 6x - 2}{2 \quad 2 \quad 2} \quad \boxed{\text{PARALLEL}}$

$y = 3x + 9$

$\boxed{m = 3} \qquad\qquad y = 3x + 1 \quad \boxed{m = 3}$

8. $y - 6 = -6x$ and $-2x + y = 5$

$y - 6 = -6x \qquad \underline{+2x \qquad +2x}$

$\underline{+6 \quad +6} \qquad y = 2x + 5$

$y = -6x + 6 \qquad \boxed{m = 2}$

$\boxed{m = -6} \qquad \text{NOT PARALLEL}$

9. $-3x + y = 4$ and $3x - y = -6$

$\underline{+3x \qquad +3x} \quad \underline{-3x \qquad -3x}$

$y = 3x + 4 \qquad -y = -3x - 6$

$\boxed{m = 3} \qquad y = 3x + 6$

$\qquad\qquad \boxed{m = 3}$

$\boxed{\text{PARALLEL}}$

10. $-4 = y + 2x$ and $6x + 3y = 4$

$y + 2x = -4 \qquad 3y = -6x + 4$

$\underline{-2x \quad -2x} \qquad \dfrac{3y}{3} = \dfrac{-6x}{3} + \dfrac{4}{3}$

$y = -2x - 4 \qquad y = -2x + \dfrac{4}{3}$

$\boxed{m = -2} \qquad \boxed{m = -2} \quad \boxed{\text{PARALLEL}}$

11. $8x - 4y = 16$ and $5y - 10x = 3$

$\underline{-8x \qquad -8x} \qquad \underline{+10x \quad +10x}$

$\dfrac{-4y = -8x + 16}{-4 \quad -4 \quad -4} \qquad \dfrac{5y = 10x + 3}{5 \quad 5 \quad 5}$

$y = 2x - 4 \ \boxed{m = 2} \qquad y = 2x + \dfrac{3}{5}$

$\qquad\qquad\qquad \boxed{m = 2}$

$\boxed{\text{PARALLEL}}$

12. $-4x = 3y + 5$ and $8x + 6y = -1$

$3y + 5 = -4x \qquad \underline{-8x \qquad -8x}$

$\underline{-5 \qquad -5}$

$\dfrac{3y = -4x - 5}{3 \quad 3 \quad 3} \qquad \dfrac{6y = -8x - 1}{6 \quad 6 \quad 6}$

$y = -\dfrac{4}{3}x - \dfrac{5}{3} \qquad y = \dfrac{-8}{6}x - \dfrac{1}{6} \quad \boxed{\text{PARALLEL}}$

$\boxed{m = -\dfrac{4}{3}} \qquad y = \dfrac{-4}{3}x - \dfrac{1}{6}$

$\qquad\qquad \boxed{m = -\dfrac{4}{3}}$

Parallel Lines Worksheet

Write an equation for the line containing the given point and parallel to the given line. Graph _both_ lines on another sheet.

13. (0,6); $y - 3x = 4$

$+3x \quad +3x$

$y - 6 = 3(x - 0)$

$\boxed{y = 3x + 4}$

$y - 6 = 3x$

$m = 3$

$+6 \qquad +6$

$\boxed{y = 3x + 6}$

17. (-3, 2); $x - y = 5$

$-x \qquad -x$

$y - 2 = 1(x - (-3))$

$-y = -x + 5$

$y - 2 = x + 3$

$\dfrac{-y}{-1} = \dfrac{-x + 5}{-1}$

$+2 \qquad +2$

$\boxed{y = x - 5}$

$\boxed{y = x + 5}$

$m = 1$

14. (-2, 4); $\boxed{y = 2x - 3}$

$m = 2$

$y - 4 = 2(x - (-2))$

$y - 4 = 2(x + 2)$

$y - 4 = 2x + 4$

$+4 \qquad +4$

$\boxed{y = 2x + 8}$

18. (-1, -1); $2y + 4x = 8$

$-4x \qquad -4x$

$y - (-1) = -2(x - (-1))$

$\dfrac{2y}{2} = \dfrac{-4x + 8}{2}$

$y + 1 = -2(x + 1)$

$y + 1 = -2x - 2$

$\boxed{y = -2x + 4}$

$-1 \qquad -1$

$\boxed{y = -2x - 3}$

$m = -2$

15. (0, 2); $3y - x = 0$

$+x \quad +x$

$y - 2 = \frac{1}{3}(x - 0)$

$\dfrac{3y}{3} = \dfrac{x}{3}$

$y - 2 = \frac{1}{3}x$

$+2 \qquad +2$

$\boxed{y = \frac{1}{3}x}$

$\boxed{y = \frac{1}{3}X + 2}$

$m = \frac{1}{3}$

19. (0, 0); $2x - y = 6$

$-2x \qquad -2x$

$y - 0 = 2(x - 0)$

$\dfrac{-y}{-1} = \dfrac{-2x + 6}{-1}$

$\boxed{y = 2x}$

$\boxed{y = 2x - 6}$

$m = 2$

16. (1, 0); $2x + y = -4$

$-2x \qquad -2x$

$y - 0 = -2(x - 1)$

$\boxed{y = -2x - 4}$

$y - 0 = -2x + 2$

$m = -2$

$\boxed{y = -2x + 2}$

20. (-4, 5); $3x - 2y = 6$

$-3x \qquad -3x$

$y - 5 = \frac{3}{2}(x - (-4))$

$\dfrac{-2y}{-2} = \dfrac{-3x + 6}{-2}$

$y - 5 = \frac{3}{2}(x + 4)$

$\boxed{y = \frac{3}{2}x - 3}$

$y - 5 = \frac{3}{2}x + 6$

$+5 \qquad +5$

$m = \frac{3}{2}$

$\boxed{y = \frac{3}{2}x + 11}$