

5-6 Skills Practice

Geometry: Parallel and Perpendicular Lines

(A) EXAMPLE: POINT AND // LINE.

$(4, -2)$
 x, y
 $5x - 3y = 8$

Solve for y :
 $5x - 3y = 8$
 $-5x \quad -5x$
 $-3y = -5x + 8$
 $\frac{-3y}{-3} = \frac{-5x + 8}{-3}$
 $y = \frac{5}{3}x - \frac{8}{3}$
 $y = \frac{5}{3}x - \frac{8}{3}$ (circled)

$m = \frac{5}{3}$
 $y = mx + b$
 $-2 = \frac{5}{3} \cdot 4 + b$
 $-2 = \frac{20}{3} + b$
 $-\frac{26}{3} = b$
 $y = \frac{5}{3}x - \frac{26}{3}$ (boxed)

(B) EXAMPLE: POINT AND \perp LINE.

$(4, 6)$
 x, y
 $x - y = 3$

Solve for y :
 $x - y = 3$
 $-y = -x + 3$
 $y = x - 3$
 $m = 1, m_{\perp} = -1$ (circled)

$-6 = -1 \cdot 4 + b$
 $6 = -4 + b$
 $10 = b$ (circled)
 $y = -x + 10$ (boxed)

USE LOOSE LEAF - SHOW WORK - Note that # 1 - 9 are deleted.

SEE
EXAMPLE
(A)

Write the slope-intercept form of an equation of the line that passes through the given point and is PARALLEL to the given line (i.e. has the SAME SLOPE).

10. $(4, 1), y = -\frac{1}{4}x + 7$

11. $(-5, -1), 2y = 2x - 4$

12. $(3, -1), 3y = x + 9$

SEE
EXAMPLE
(B)

Write the slope-intercept form of an equation of the line that passes through the given point and is PERPENDICULAR to the given line (i.e. has a SLOPE that is a NEGATIVE RECIPROCAL).

13. $(-3, -2), y = x + 2$

14. $(4, -1), y = 2x - 4$

15. $(-1, -6), x + 3y = 6$

16. $(-4, 5), y = -4x - 1$

17. $(-2, 3), y = \frac{1}{4}x - 4$

18. $(0, 0), y = \frac{1}{2}x - 1$

19. $(3, -3), y = \frac{3}{4}x + 5$

20. $(-5, 1), y = -\frac{5}{3}x - 7$

21. $(0, -2), y = -7x + 3$