Name: _____ Date: _____

Determine if the following equations are parallel, perpendicular, or neither

1. $y = \frac{1}{2}x + 4$ $m = \frac{1}{2}$
$y = \frac{1}{2}x - 5$ $m = \frac{1}{2}$
parallel

2. $y = 2x + 7$ $m = 2$
$y = -2x + 3$
$m = -2$
Neither

3. $y = \frac{-1}{4}x$ $m = -\frac{1}{4}$
$y = 4x - 3$ $m = 4$
Perpendicular

4. $2x + 4y = 8$
$3x + 6y = -6$
$2x + 4y = 8$
$-2x \quad -2x$
$\frac{4y}{4} = \frac{-2x}{4} + \frac{8}{4}$
$y = -\frac{1}{2}x + 2$
$3x + 6y = -6$
$-3x \quad -3x$
$\frac{6y}{6} = \frac{-3x}{6} - \frac{6}{6}$
$y = -\frac{1}{2}x - 1$
parallel

5. $3x + y = 5$ $y = -3x + 5$
$x - 3y = -3$
$\frac{-3y}{-3} = \frac{-x}{-3} + \frac{-3}{-3}$
$y = \frac{1}{3}x + 1$
Perpendicular

6. $8x + y = 7$ $y = -8x + 7$
$8x - y = 4$
$-y = -8x + 4$
$y = 8x - 11$
Neither

7. $y = \frac{1}{4}x + 3$
$2x + 8y = -8$
$\frac{8y}{8} = \frac{-2x}{8} - \frac{8}{8}$
$y = -\frac{1}{4}x - 1$
Neither

8. $x - 2y = -4$
$y = \frac{1}{2}x + 5$
Parallel
$x - 2y = -4$
$-x \quad -x$
$\frac{-2y}{-2} = \frac{-x}{-2} - \frac{4}{-2}$
$y = \frac{1}{2}x + 2$

Write the equation of a line parallel and a line perpendicular to the given equation.

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

∥: $m = \frac{1}{3}$, $b =$, $x = -3$, $y = 4$
$4 = \frac{1}{3}(-3) + b$
$4 = -1 + b$
$5 = b$
$y = \frac{1}{3}x + 5$

⊥: $m = -3$, $b =$, $x = -3$, $y = 4$
$4 = -3(-3) + b$
$4 = 9 + b$
$-9 \quad -9$
$b = -5$
$y = -3x - 5$

10. $y = 4x + 2$ $(-8, -3)$

∥: $m = 4$, $b =$, $x = -8$, $y = -3$
$-3 = 4(-8) + b$
$-3 = -32 + b$
$+32 \quad +32$
$29 = b$
$y = 4x + 29$

⊥: $m = -\frac{1}{4}$, $b =$, $x = -8$, $y = -3$
$-3 = -\frac{1}{4}(-8) + b$
$-3 = 2 + b$
$-5 = b$
$y = -\frac{1}{4}x - 5$

11. $y = \frac{-2}{3}x + 1$ $(-6, 1)$

∥: $m = -\frac{2}{3}$, $b =$, $x = -6$, $y = 1$
$1 = -\frac{2}{3}(-6) + b$
$1 = 4 + b$
$-3 = b$
$y = -\frac{2}{3}x - 3$

⊥: $m = \frac{3}{2}$, $b =$, $x = -6$, $y = 1$
$1 = \frac{3}{2}(-6) + b$
$1 = -9 + b$
$10 = b$
$y = \frac{3}{2}x + 10$

12. $y = \frac{-5}{2}x - 3$ $(10, -3)$

∥: $m = -\frac{5}{2}$, $b =$, $x = 10$, $y = -3$
$-3 = \frac{-5}{2}(10) + b$
$-3 = -25 + b$
$22 = b$
$y = -\frac{5}{2}x + 22$

⊥: $m = \frac{2}{5}$, $b =$, $x = 10$, $y = -3$
$-3 = \frac{2}{5}(10) + b$
$-3 = 4 + b$
$-7 = b$
$y = \frac{2}{5}x - 7$