3.3 Parallel and Perpendicular Lines - Day 2

***Parallel lines have the same slope

***Perpendicular lines have negative reciprocal (flip) slopes

Examples: State whether the given lines are parallel, perpendicular, or neither. Solve for y if necessary.

1. $y = \frac{3}{4}x - 5$
   $y = \frac{3}{4}x - 7$

   $y=\frac{3}{4}x-5$ $y=\frac{3}{4}x-7$

   $m=\frac{3}{4}$ $m=\frac{3}{4}$

   parallel

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

   $y=\frac{2}{5}x+1$ $y=\frac{-2}{5}x+2$

   $m=\frac{2}{5}$ $m=\frac{-2}{5}$

   neither

3. $x + 2y = 4$
   $4x - 2y = 12$

   $x+2y=4$

   $2y=-x+4$

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

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

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

   $m=-\frac{1}{2}$

   $4x-2y=12$

   $-2y=-4x+12$

   $y=\frac{-4x+12}{-2}$

   $y=\frac{-4x}{-2}+\frac{12}{-2}$

   $y=2x-6$

   $m=2$

   perpendicular

4. $2x = 8$
   $4y - 3 = 5$

   $2x=8$

   $\frac{2x}{2}=\frac{8}{2}$

   $x=4$

   no slope

   $4y-3=5$

   $4y=5+3$

   $4y=8$

   $\frac{4y}{4}=\frac{8}{4}$

   $y=2$

   $m=0$

   perpendicular

5. $y = -\frac{1}{3}x - 5$
   $x + 3y = -6$

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

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

   $x+3y=-6$

   $3y=-x-6$

   $y=\frac{-x-6}{3}$

   $y=\frac{-x}{3}-\frac{6}{3}$

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

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

   parallel

6. $x + 7y = 14$
   $-7x + y = 2$

   $x+7y=14$

   $7y=-x+14$

   $y=\frac{-x+14}{7}$

   $y=\frac{-x}{7}+\frac{14}{7}$

   $y=-\frac{1}{7}x+2$

   $m=\frac{-1}{7}$

   $-7x+y=2$

   $y=7x+2$

   $m=\frac{7}{1}$

   perpendicular

Select the one equation whose graph would not be parallel to the other two.

7. $\{5x - y = 2,\ y + 5x = 4,\ 5x - y = 6\}$

   $5x-y=2$

   $-y=-5x+2$

   $y=\frac{-5x+2}{-1}$

   $y=5x-2$

   $m=5$

   $y+5x=4$

   $y=-5x+4$

   $m=-5$

   $5x-y=6$

   $-y=-5x+6$

   $y=\frac{-5x+6}{-1}$

   $y=5x-6$

   $m=5$

   $y+5x=4$

HOMEWORK

Worksheet - HW 3.3 Parallel and Perpendicular Lines - Day 2