Name: Key Hour: _____

Equations and Slopes of Parallel and Perpendicular Lines: HW #1

Determine whether $\overleftrightarrow{MN}$ and $\overleftrightarrow{RS}$ are *parallel*, *perpendicular*, or *neither*.

1. $M(0, 3), N(2, 4), R(2, 1), S(8, 4)$

Slope MN: $1/2$

Slope RS: $1/2$

2. $M(-1, 3), N(0, 5), R(2, 1), S(6, -1)$

Slope MN: 2

Slope RS: $-1/2$

If you do not show all work as modeled in class, you will not get credit. These are just solutions to help you. If you find an incorrect solution, I will give you candy ☺

3. $M(-1, 3), N(4, 4), R(3, 1), S(-2, 2)$

Slope MN: $1/5$

Slope RS: $-1/5$

4. $M(0, -3), N(-2, -7), R(2, 1), S(0, -3)$

Slope MN: 2

Slope RS: 2

Find the slope of $\overleftrightarrow{MN}$ and the slope of any line perpendicular to $\overleftrightarrow{MN}$.

~~7~~. $M(2, -4), N(-2, -1)$
5)

Slope of $\overleftrightarrow{MN}$: $-3/4$

$\perp$ slope: $4/3$

~~8~~. $M(1, 3), N(-1, 5)$
6.)

Slope of $\overleftrightarrow{MN}$: -1

$\perp$ slope: 1

7.) Write the equation of a line in slope intercept and point slope form which pass through the points A(-4,8) and B(-7,-1)

Slope intercept

1.) Find Slope:

$\frac{-1-8}{-7--4} = \frac{-9}{-3} = \boxed{3=m}$

2.) Find b: $y=mx+b$

$8=3(-4)+b$

$8=-12+b$

$\boxed{20=b}$

3) Equation

$\boxed{y=3x+20}$

Point-Slope

1.) slope is already found :)

$\boxed{m=3}$

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

$y+1=3(x+7)$

8.) Write the equation of a line in slope intercept AND point-slope form which is parallel to $y + 3x = -2$ and passes through the point (-1,-2).

Slope intercept

1.) Find // slope

$y+3x=-2$

$-3x \quad -3x$

$y=-3x-2$

2.) $m=-3$ $\boxed{m_{//}=-3}$

3.) Solve for b

$y=mx+b$

$-2=-3(-1)+b$

$-2=3+b$

$-3 \quad -3$

$\boxed{-5=b}$

4) $y=mx+b$

$\boxed{y=-3x-5}$

Point-Slope

1.) $m=-3$

2.) $m_{//}=-3$

3.) $y-y_1=m(x-x_1)$

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

$\boxed{y+2=-3(x+1)}$

9.) Write the equation of a line in slope intercept AND point-slope form which is perpendicular to $2x + y = 5$ and passes through the point (2,-2).

$x_1 \; y_1$

Slope intercept

1.) Find m

$2x+y=5$

$y=-2x+5$

$m=-2$

2) $m_\perp=\frac{1}{2}$

2.) Find b

$y=mx+b$

$-2=\frac{1}{2}(2)+b$

$-2=1+b$

$-1 \quad -1$

$-3=b$

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

Point-Slope

1.) $m=-2$

2.) $m_\perp=\frac{1}{2}$

3.) $y-y_1=m(x-x_1)$

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

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