Simplify all answers and show your work! You may use MathGV as a tool.

1. Lines that are parallel have the same __________.
2. In the linear equation $3x + 7y = 21$, what is the x-intercept? __________ y-intercept? __________
3. In the equation $7x + 8y = 21$, what is the value of the slope? __________
4. In the equation $Ax + By = C$, what is the value of the slope? __________

Find the equations of the lines with the given properties:

5. Passing through points (4, -2) and (-1, 1).
6. Passing through (3, 5) and having a slope of $\frac{7}{4}$.
7. Passing through (0, 3.8) and having a slope of -1.5.

8. Solve for $x$: $3(x + 5) = 4x + 2(x – 3)$
9. Graph $2x – 3y = 6$

10. Graph the following system of equations.
    and find the point of intersection.

     \[
     \begin{align*}
     y &= x + 3 \\
     y &= 2x - 1
     \end{align*}
     \]

11. Solve the system of equations:

     \[
     \begin{align*}
     2x + y &= -6 \\
     x + 3y &= -13
     \end{align*}
     \]
Determine if the following pairs of lines cross in one point, are parallel, or are the same line.

12. \[ \begin{cases} 3x + 5y = 18 \\ 3x + 5y = -18 \end{cases} \]
13. \[ \begin{cases} x - 3y = 12 \\ 3x - y = 12 \end{cases} \]
14. \[ \begin{cases} 5x + 4y = 21 \\ 15x + 12y = 63 \end{cases} \]

15. A ski run has a snowboard trail that drops 130 feet vertically over a horizontal distance of 520 feet. At the top of the hill, the elevation above sea level is 7900 feet.

a) What is the rate of change of the vertical feet of elevation per foot of horizontal distance?

b) What is the elevation of a person standing on top of the hill?

c) Find the equation of the line “y” that represents the elevation of someone who has gone a horizontal distance of “x” from the top of the hill.

16. A house and property in the Augusta area was valued at $10,000 in 1950. By 2000, the house was valued at $52,000. Assume the value of the house “y” increases linearly with the number of years after 1950 (“x”).

a) What is the rate of change of the value of the house per year?

b) What is the “x” value that corresponds with year 1950?

c) Find the equation of the line.

d) What is the “x” value that corresponds with year 2020?

e) If the trend continues, what will the value of the house be in year 2020?

f) During what year will the value of the house become $75,000?

17. During the real estate bust in the early and mid-1990s, the value of a particular house in San Francisco, California decreased. The value in dollars is given by the formula \( f(x) = -10,000x + 200,000 \), where \( x \) is the years after 1990.

a) How much was the house worth in 1990?

b) How much would the house be worth in 2008?

c) During what year was the house worth $140,000?

d) If this rate were to continue, in what year would the house be worthless?