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

1. In the equation $7x - 4y = -13$, what is the value of the slope? ____________

2. In the equation $Ax + By = C$, what is the value of the slope? ____________

3. In the linear equation $3x + 9y = 27$, what is the x-intercept? ___________ y-intercept? ___________

4. Lines that are parallel have the same ____________.

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

6. Solve the system of equations:

$$\begin{cases} 3x - 2y = -17 \\ x + 6y = 21 \end{cases}$$

7. Find the equation of the line having the following properties.
   a) $m = -\frac{7}{4}$, passing through (-2, 5)
   b) Passing through (2, -5) and (7, -2)

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

$$\begin{cases} y = -3x + 4 \\ y = 4x - 8 \end{cases}$$

Determine if the following pairs of lines cross in one point, are parallel, or are the same line.

9. $\begin{cases} 2x - 7y = -3 \\ 7x - 2y = -3 \end{cases}$

10. $\begin{cases} 3x + 4y = 25 \\ 12x + 16y = 100 \end{cases}$

11. $\begin{cases} 2x - 10y = 18 \\ 8x - 40y = 90 \end{cases}$
12. Under Elisabeth’s health care plan, she pays $150 of an emergency room (ER) visit and 10% of any charges above the $150. Let \( A(x) \) represent the amount of money Elisabeth must pay to an ER whose total bill is “\( x \)” dollars.

a) What is the rate of change of the amount she pays to the total bill?

b) What is the flat fee she has to pay regardless of the total bill?

c) Find the equation \( A(x) \).

d) If the total bill from an ER visit is $1200, how much will Elisabeth pay for the visit?

e) Elisabeth notices that she has paid a total of $247.20 for an ER visit. What was her total bill?

13. Sarah Jane is on a business trip across England. She first drives from her house to the nearest motorway and then continues on the motorway until she reaches her destination. She noticed that two hours after she got onto the motorway, she had driven 140 miles; and after 5 hours on the motorway, she had driven 332 miles. Let \( d(x) \) represent the distance Sarah Jane has traveled so far after \( x \) hours on the motorway.

a) What is her average speed on the motorway?

b) How many miles had she already traveled when she got onto the motorway? (ie., from her house to the motorway.)

c) Find the equation \( d(x) \).

d) How far on the motorway will she have gone after 3.5 hours?

e) If her destination is 426 miles from home, for how many hours will she be driving on the motorway?

14. The function given by \( c(x) = 849x + 5960 \) can be used to estimate the number of U.S. acres planted with organic cotton, where \( x \) represents the number of years after 2006.

a) How many more acres are planted with organic cotton per year?

b) How many acres were planted with organic cotton in 2006?

c) About how many acres in the U.S. were planted with organic cotton in 2010?

d) During what year is it expected that 17,846 acres will be planted with organic cotton?