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Lesson 7.2: Graphing Linear Relationships

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Learning Goal: We are learning to create a table of values from a linear equation and use that table to create a list of ordered pairs that can be plotted on a coordinate grid.

Once again, we will begin with some new vocabulary:

Independent Variable

– the x variable
– this affects the outcome

– the input

→ distance to target

Dependent Variable

– the y variable
– the result or output

→ bullet travel time.

Linear Relationship

– a relationship between the independent and dependent which results in a line.

Table of Values

– a chart which organizes the x and y variables into ordered pairs.

The goal for today's lesson is to graph a linear relationship using this algorithm:

1. **Rearrange the equation so it is dependent variable = everything else (or y=_____)**
2. **Create a Table of Values and choose an appropriate set of x-coordinates.**
3. **Use that set and calculate the corresponding y-coordinates.**
4. **Create the point (x,y).**
5. **Plot the points.**
6. **Draw a line through the points (do not just connect them).**

our input is
2, 1, 0, -1, -2.

Sometimes, we scale it up:

4, 2, 0, -2, -4
8, 4, 0, -4, 8
10, 5, 0, -5, -10

Your table of values should look like this:

x	y	(x,y)
Set of x-coordinates	Corresponding y-coordinates	Set of points to plot

Examples:

1. $y = x - 3$

X	Y = X - 3	(X, Y)
2	(2) − 3 = −1	(2, −1)
1	(1) − 3 = −2	(1, −2)
0	(0) − 3 = −3	(0, −3)
−1	(−1) − 3 = −4	(−1, −4)
−2	(−2) − 3 = −5	(−2, −5)
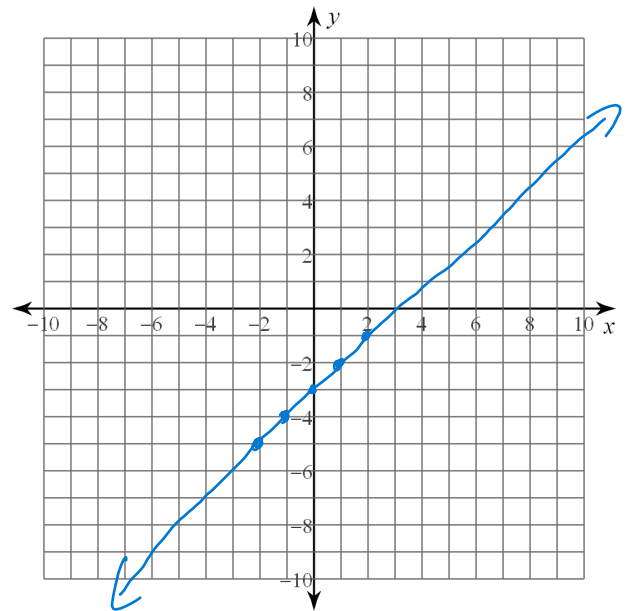
2. $x + y = 5$

$$y = -X + 5$$

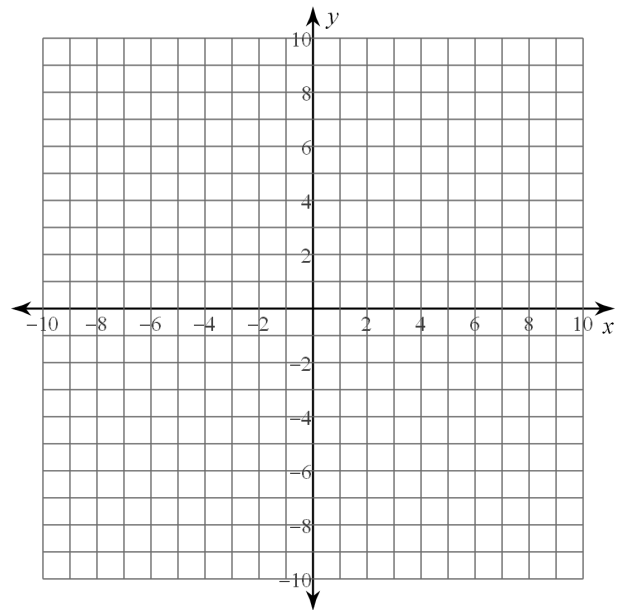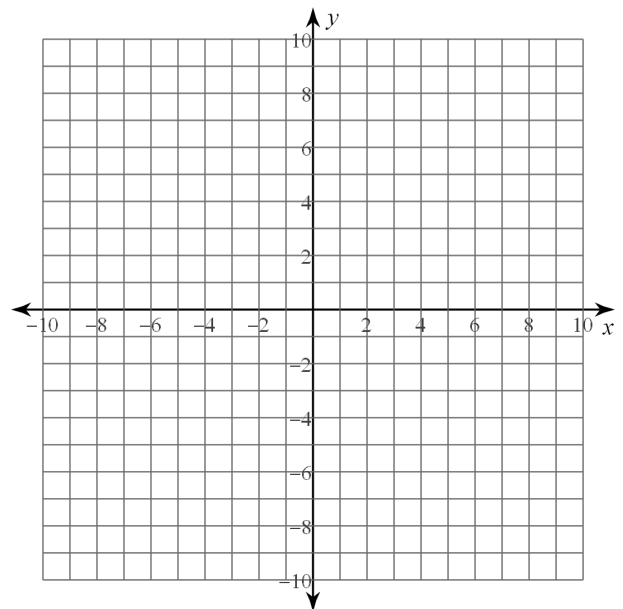| X	Y = −X + 5	(X, Y)
2	−(2) + 5 = 3	(2, 3)
1	−(1) + 5 = 4	(1, 4)
0	−(0) + 5 = 5	(0, 5)
−1	−(−1) + 5 = 6	(−1, 6)
−2	−(−2) + 5 = 7	(−2, 7)
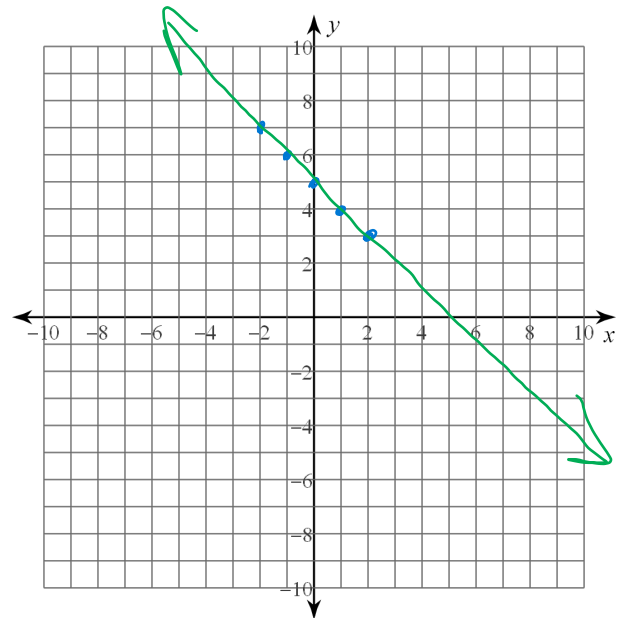
3. $2x - y = 1$
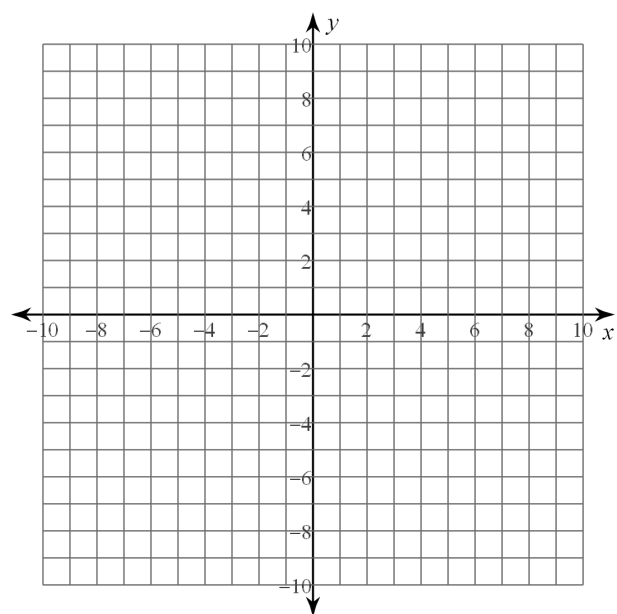
4. $6x + 2y - 10 = 0$
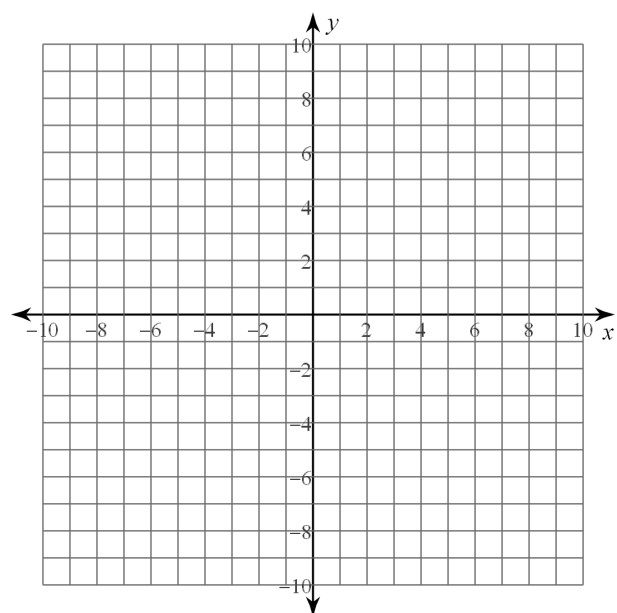
5. $y = \dfrac{1}{2}x - 4$

6. $3x - 4y = 12$

Success Criteria:
- I can rearrange a linear equation so that the "dependent variable = everything else"
- I can create a table of values and choose an appropriate set of x coordinates.
- I can use those x-coordinates to generate a set of y-coordinates
- I can create ordered pairs from the sets of x and y coordinates and graph my ordered pairs on a coordinate grid