Functions in Point-Slope Form Part 1:

From Graph to Formula

Learning Objective: Given the graph of a linear function, express the function in point-slope form as .

Recall:

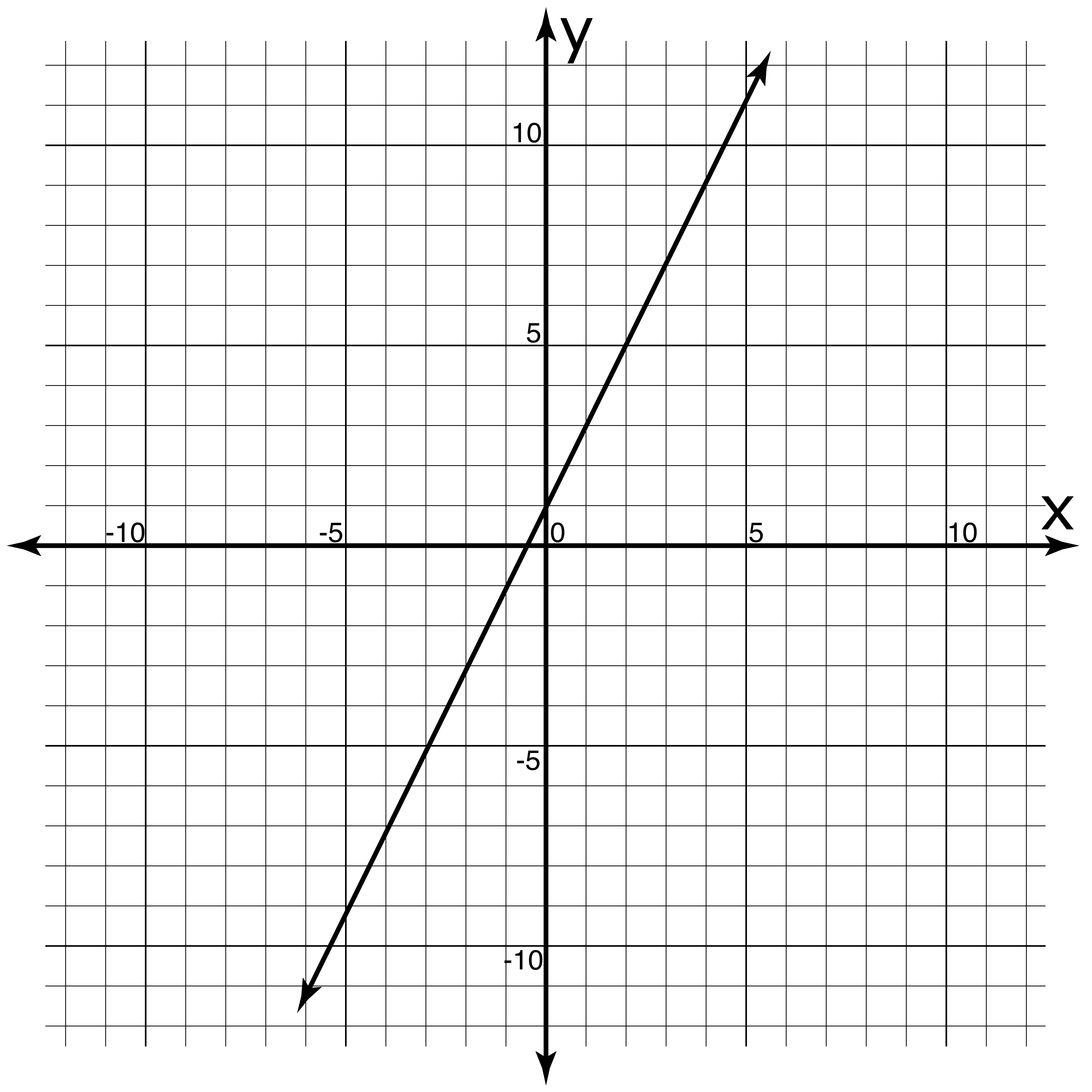
y –y1 = m(x – x1)

where (y1, x1) is a point on the line with slope m.

Activity:

1. Lay your laundry line on the tarp grid so it resembles the graph of Function 1.
2. Select any point on the line. This will be your (y1, x1) in the formula.
3. For each unit of x (horizontal change), how much does the y value of the line change? This is the slope of the function, the m in its formula.
4. Use the formula you found to calculate the y values in Table 1. Place colored chips on your tarp graph to check your work.
5. Repeat steps 1-4 for the functions in Functions 2 and 3.

Function 1



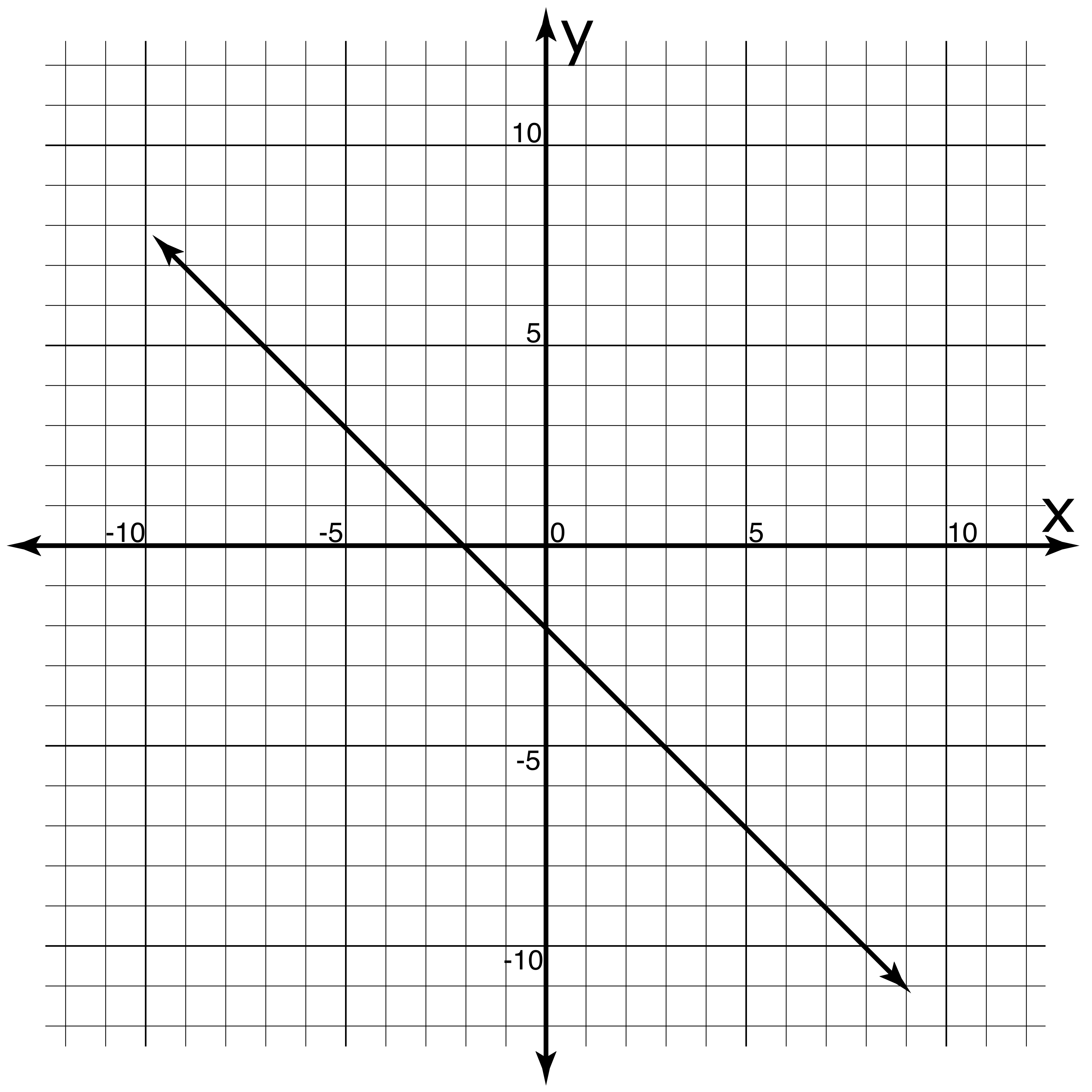
Graph of Function 1:

Function 1 formula:

y - \_\_= \_\_(x - \_\_)

|  |  |
| --- | --- |
| x | y |
| -10 | \_\_\_ |
| -2 | \_\_\_ |
| 0 | \_\_\_ |
| 5 | \_\_\_ |
| 20 | \_\_\_ |

Function 2



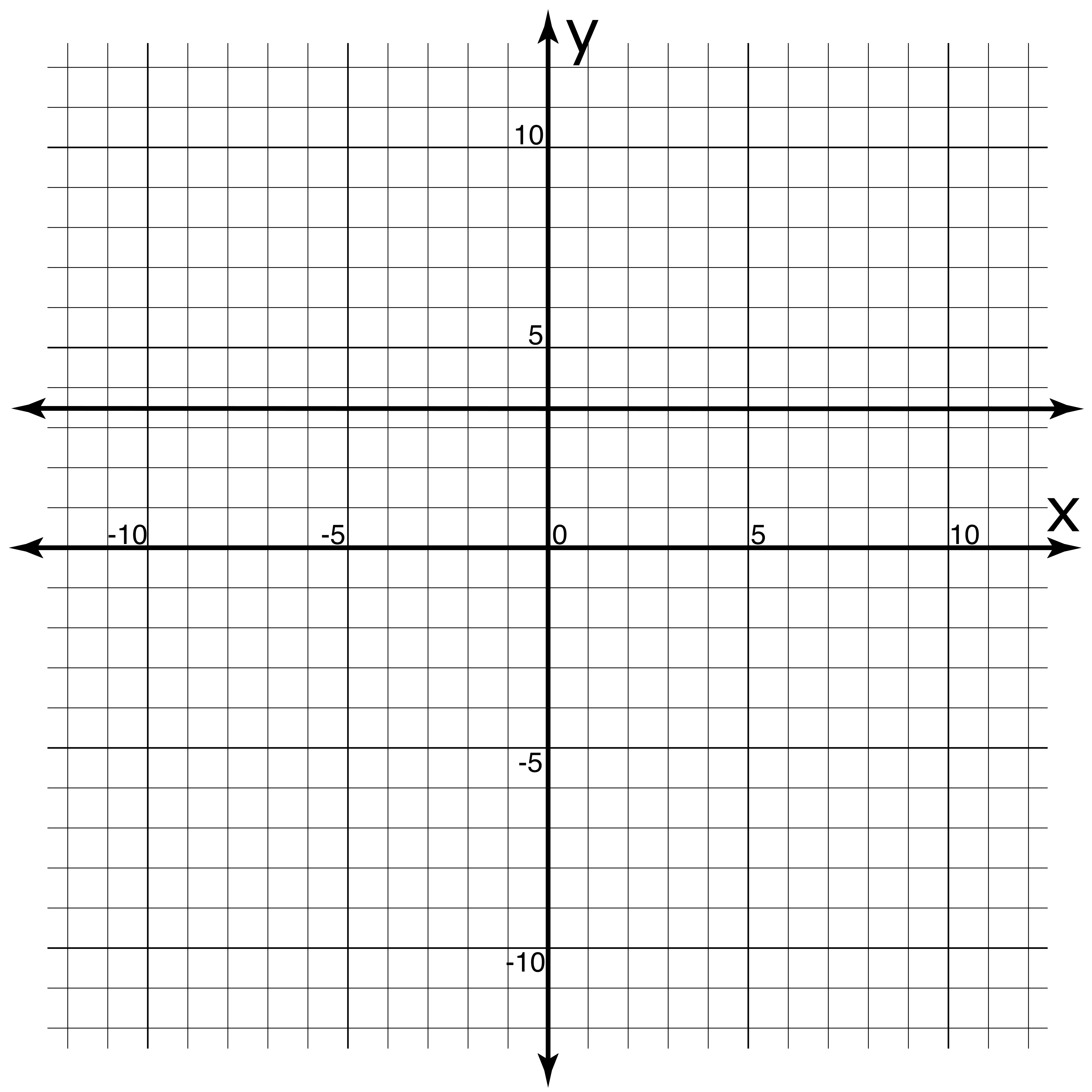
Graph of Function 2:

Function 2 formula:

y - \_\_= \_\_(x - \_\_)

|  |  |
| --- | --- |
| x | y |
| -8 | \_\_\_ |
| -4 | \_\_\_ |
| 0 | \_\_\_ |
| 3 | \_\_\_ |
| 7 | \_\_\_ |

Function 3



Graph of Function 3:

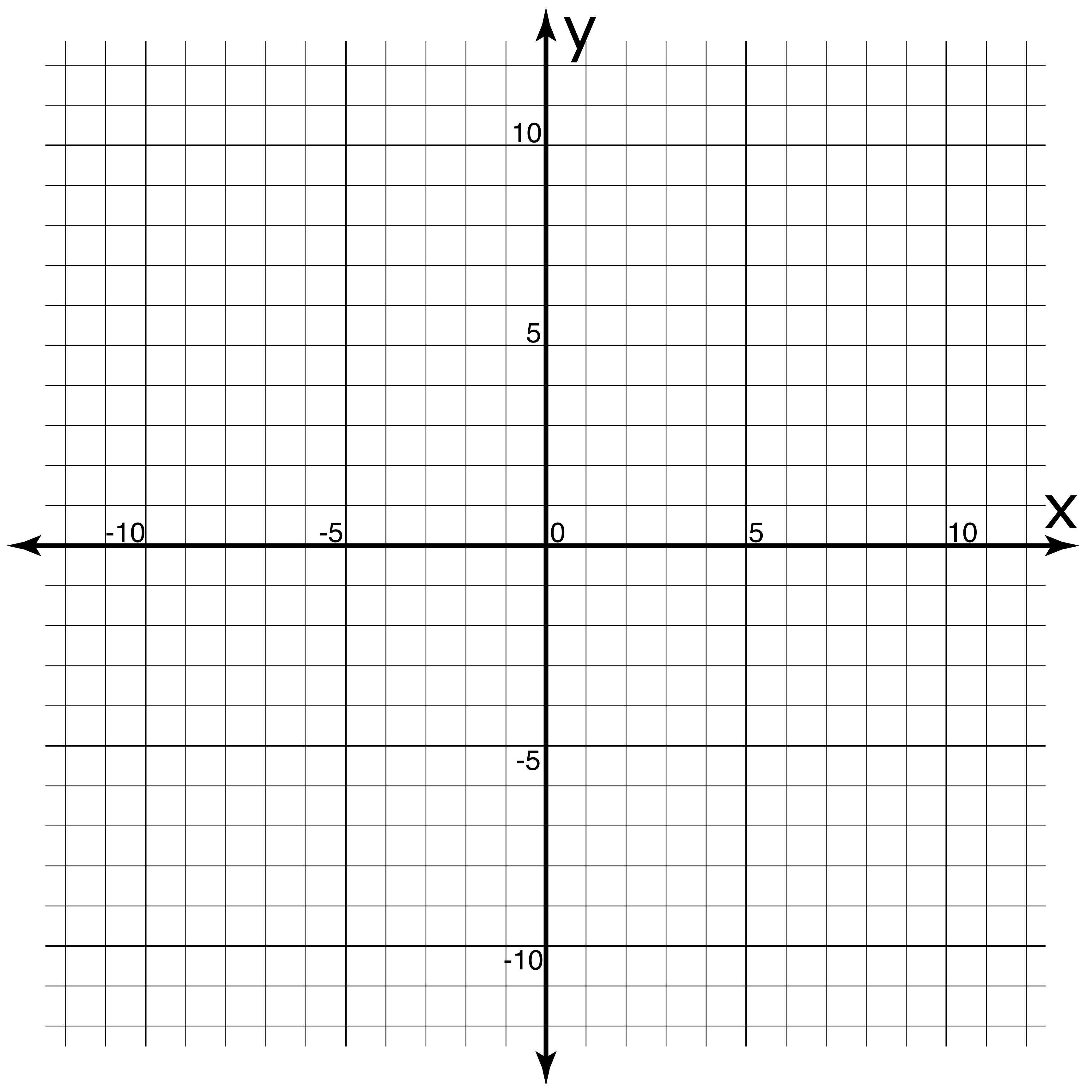
Function 3 formula:

y - \_\_= \_\_(x - \_\_)

|  |  |
| --- | --- |
| x | y |
| -15 | \_\_\_ |
| -0.5 | \_\_\_ |
| 0 | \_\_\_ |
| 6 | \_\_\_ |
| 19 | \_\_\_ |

Extension:

* Graph a linear function of your choosing on the grid below.
* Select x-values in the table below.
* Exchange this sheet with another group.
* As you did for Functions 1-3, create the graph on your tarp, find the formula for each other’s functions, and complete the tables of values.



Graph of Your Function:

The function’s formula (for partner group to fill out):

y - \_\_= \_\_(x - \_\_)

|  |  |
| --- | --- |
| x | y |
| \_\_\_ | \_\_\_ |
| \_\_\_ | \_\_\_ |
| \_\_\_ | \_\_\_ |
| \_\_\_ | \_\_\_ |
| \_\_\_ | \_\_\_ |

Functions in Point-Slope Form Part 2:

From Formula to Graph

Learning Objective: Given the formula of a linear function in slope-intercept form as , create a graph of that function.

Recall:

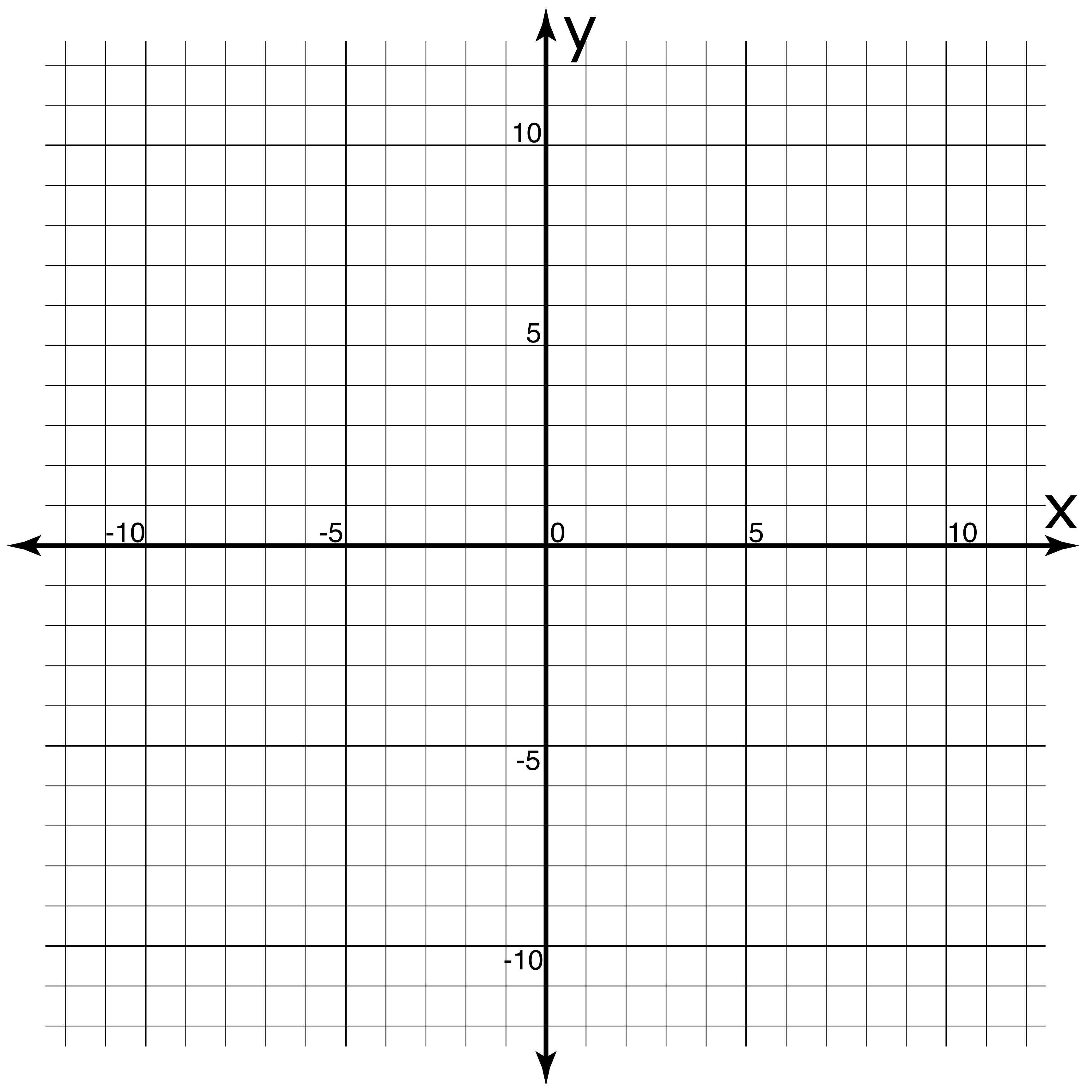
y –y1 = m(x – x1)

where (y1, x1) is a point on the line with slope m.

Activity:

1. One person stands on the tarp at (y1, x1) as given by the formula.
2. Lay a yardstick at your feet, on point (y1, x1), so that for each x horizontal unit away, the y value changes by m, the function’s slope.
3. Sketch the resulting graph on the small grid provided below. You may need to lay multiple yardsticks end-to-end.
4. On the tarp, walk along your graph to find the y-values to complete the table. Verify them algebraically.
5. Repeat steps 1-4 for the functions in Functions 2 and 3.

Function 1



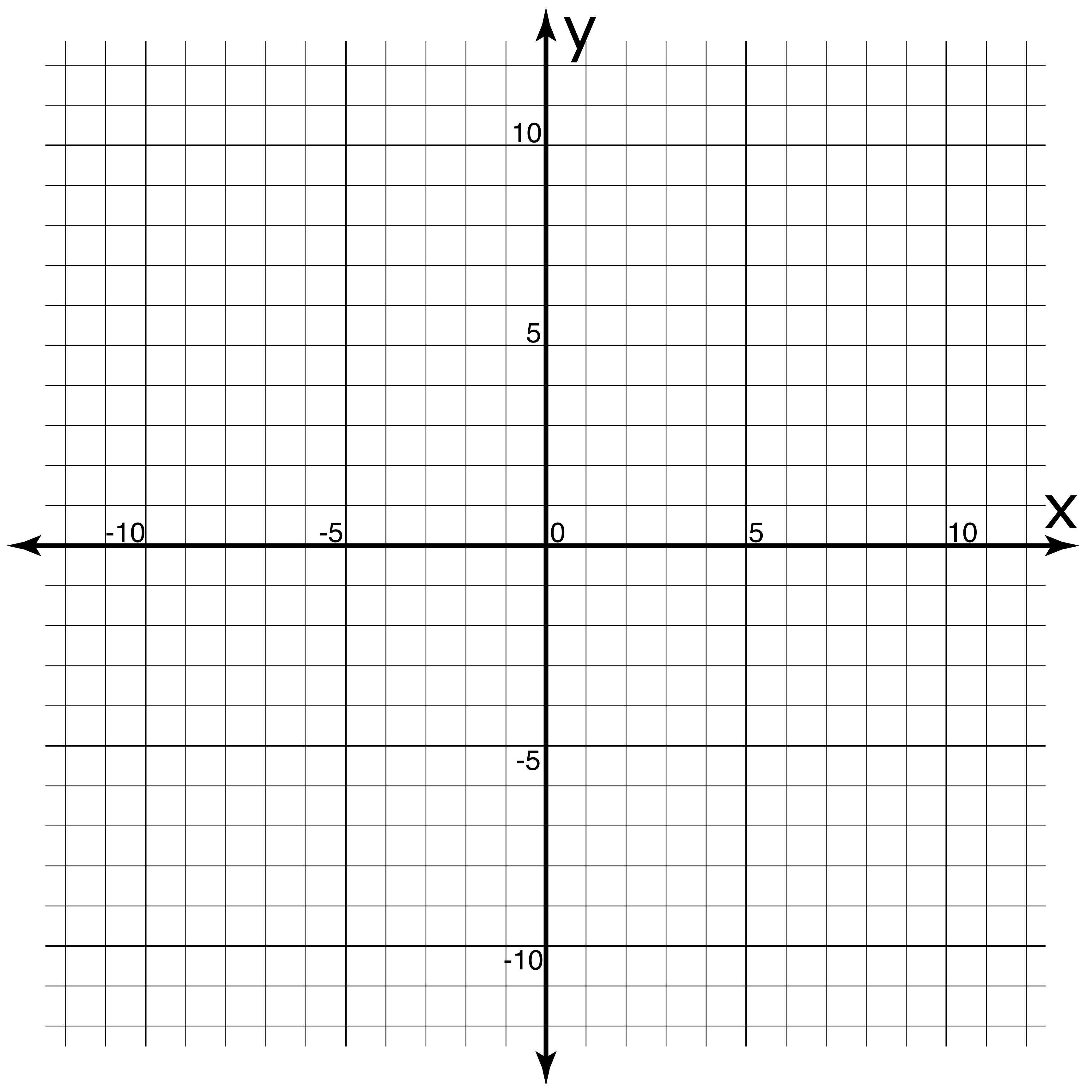
Graph of Function 1:

Function 1 formula:

y - 1= 2(x - 3)

|  |  |
| --- | --- |
| x | y |
| -2 | \_\_\_ |
| -1 | \_\_\_ |
| 0 | \_\_\_ |
| 3 | \_\_\_ |
| 8 | \_\_\_ |

Function 2



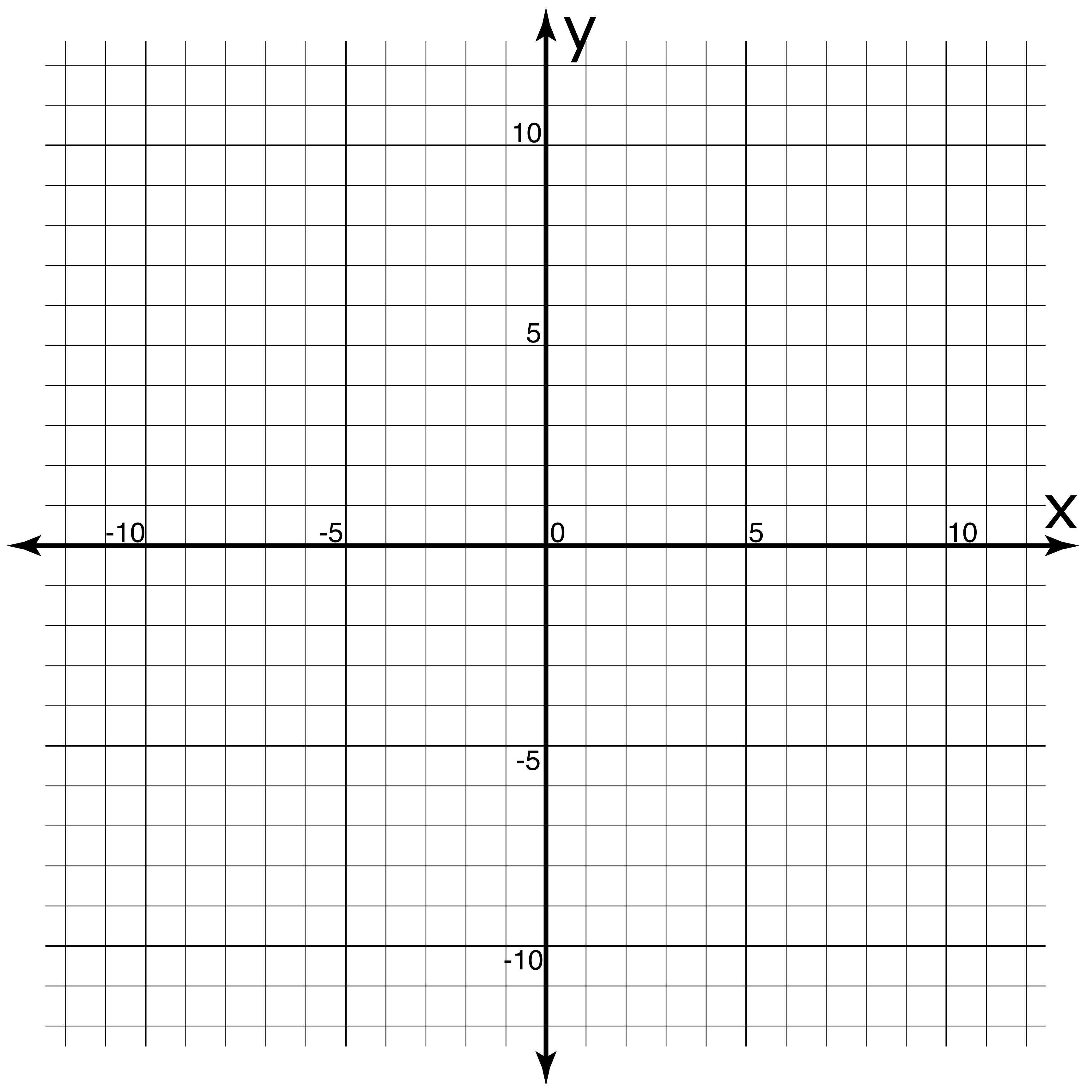
Graph of Function 2:

Function 2 formula:

y = 0.5(x - 4)

|  |  |
| --- | --- |
| x | y |
| -8 | \_\_\_ |
| -4 | \_\_\_ |
| 0 | \_\_\_ |
| 3 | \_\_\_ |
| 7 | \_\_\_ |

Function 3



Graph of Function 3:

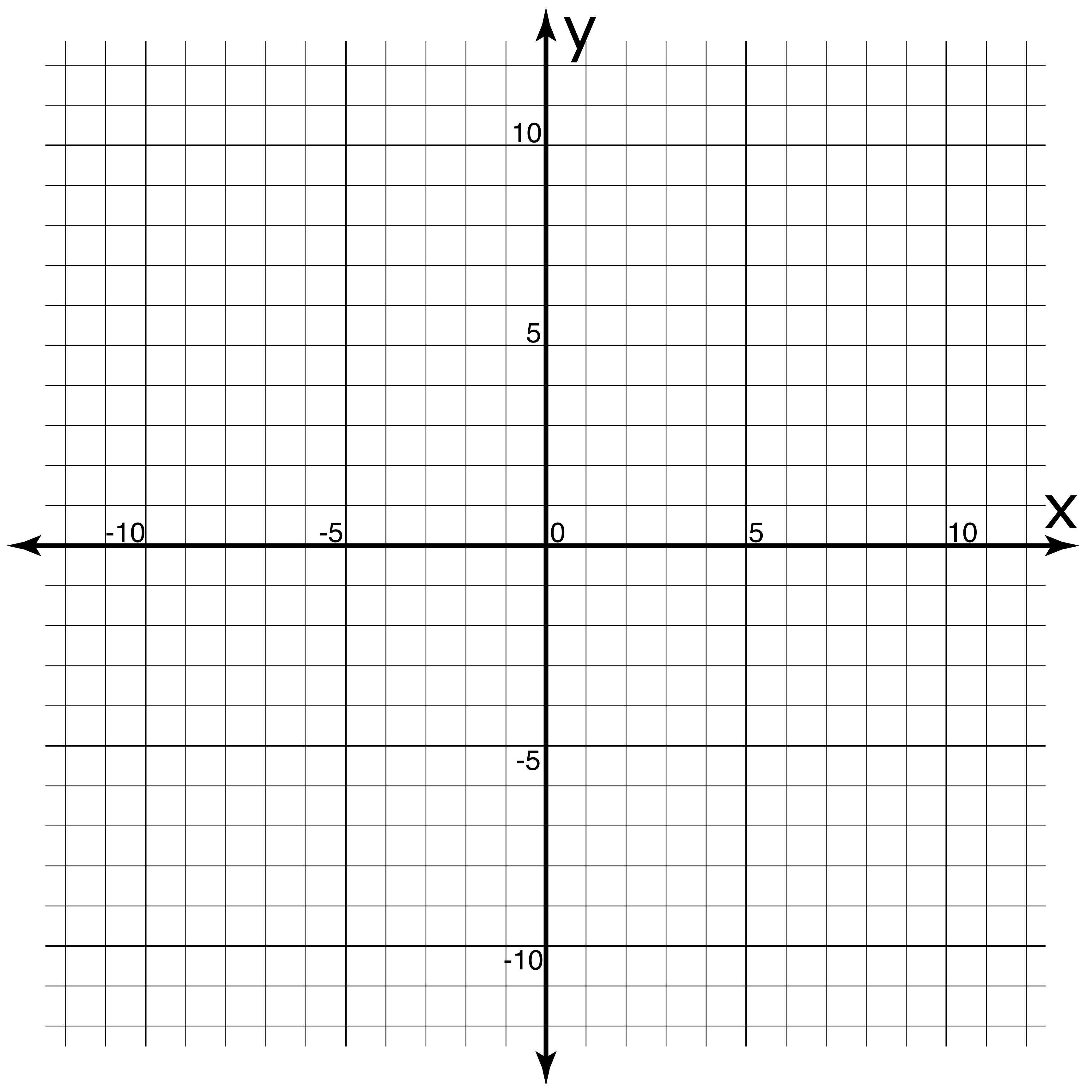
Function 3 formula:

y - 3= -x

|  |  |
| --- | --- |
| x | y |
| -10 | \_\_\_ |
| -3 | \_\_\_ |
| 0 | \_\_\_ |
| 4 | \_\_\_ |
| 7 | \_\_\_ |

Extension:

* Write the formula for a linear function of your choosing in the blanks below.
* Select x-values in the table below.
* Exchange this sheet with another group.
* As you did for Functions 1-3, create the graph on your tarp, sketch is on the blank grid below, and complete the tables of values.



Graph of Your Function (partner group to fill out):

The function’s formula:

y - \_\_= \_\_(x - \_\_)

|  |  |
| --- | --- |
| x | y |
| \_\_\_ | \_\_\_ |
| \_\_\_ | \_\_\_ |
| \_\_\_ | \_\_\_ |
| \_\_\_ | \_\_\_ |
| \_\_\_ | \_\_\_ |