Week of Tuesday November 13th - Thursday, November 15th Guided Notes: Functions & Slope

**> Do Now:**

1. Identify the x and y coordinates for the ordered pair: (-5, 7)
2. Where is the x-axis – horizontal or vertical?
3. Where is the y-axis – horizontal or vertical?
4. Write anything you know about slope.

**>Functions**

* **Function:** A relationship between an **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**
	+ Most functions correspond to a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
	+ Each time you **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**
* **Linear Function:** A function that is a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**
	+ When you think of functions as a machine, there is always something you put in to get your product.
	+ Think of what youput in as the INPUT. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**
	+ Think of what you get out of the machine as the OUTPUT. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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* The definition of a function states that each x value has exactly 1 y value.
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**> Example Problems: Function or Not?**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |
| --- | --- |
| **X Value** | **Y Value** |
| -2 | -4 |
| -1 | -2 |
| 0 | 0 |
| 1 | 2 |
| 2 | 4 |

1)  |

|  |  |
| --- | --- |
| **X Value** | **Y Value** |
| Brandon | Blue |
| Josh | Green |
| Dasha | Blue |
| Khylee | Purple |
| Darius | Green |

2)  |
| 3)

|  |  |
| --- | --- |
| **X Value** | **Y Value** |
| 1 | -7 |
| 2 | -3 |
| 3 | 5 |
| 4 | 7 |
| 5 | -3 |

 | 4)

|  |  |
| --- | --- |
| **X Value** | **Y Value** |
| -10 | 10 |
| -2 | 2 |
| -1 | 1 |
| 10 | 10 |
| 2 | 2 |

 |
|

|  |  |
| --- | --- |
| **X Value** | **Y Value** |
| 0 | 5 |
| 1 | 5 |
| 2 | 5 |
| 3 | 5 |
| 0 | 5 |

5)  |

|  |  |
| --- | --- |
| **X Value** | **Y Value** |
| -3 | 3 |
| -3 | 5 |
| -2 | 2 |
| -2 | -2 |
| -1 | 5 |

6) |
|

|  |  |
| --- | --- |
| **X Value** | **Y Value** |
| -2 | 1 |
| -3 | 1 |
| -1 | 6 |
| 4 | 5 |
| -3 | 1 |

7) |

|  |  |
| --- | --- |
| **X Value** | **Y Value** |
| -2 | 3 |
| -2 | 4 |
| -1 | 5 |
| 0 | 6 |
| 1 | 7 |

8) |
| 9) Does the following represent a function?{ (-9,8), (10,12), (9, 7), (8,7), (-5,3), (4, 3) } | 10) Does the following represent a function?{ (5,7), (6,7), (8, 7), (9,7), (10,7), (11, 7) } |
| 11) Does the following represent a function?{ (-3,4), (-4,5), (-4, 4), (-5, 5), (-6,7), (-7, 7) } | 12) Does the following represent a function?{ (2,5), (3,6), (4, 3), (5, 5), (6,7), (7, 7) } |
| 13) Does the following represent a function?{ (8,7), (9,6), (4, 3), (2, 5), (10,7), (-7, 7) } | 14) Does the following represent a function?{ (3,7), (7,6), (2, 3), (1, 5), (10,7), (-7, 7) } |
| 15) Does the following represent a function?{ (5,7), (7,6), (12, 3), (26, 8), (8,26), (-7, 12) } | 16) What coordinate could be added to the group to make it a function?{ (-5,3), (6, 7), (10, 12), (8, 2) }1. (-3, 7)
2. (6, 4)
3. (-5, 7)
4. (6, 8)
 |
| 17) What coordinate could be added to the group to make it a function?{ (8,12), (-6, 15), (6, 15,), (6, 42) }1. (8, 12)
2. (-6, 7)
3. (6, 4)
4. (6, 8)
 | 18) What coordinate could be added to the group to make it a function?{ (9,13), (4, 1), (2, 6), (8, 2) }1. (8, 12)
2. ( 7, 5)
3. (2, 1)
4. (8, 8)
 |
| 19) What coordinate could be added to the group to make it a function?{ (7, 10), (-4, 5), (8, 6), (14, 3) }1. (8, 12)
2. ( 7, 5)
3. (2, 1)
4. (8, 8)
 | 20) What coordinate could be added to the group to make it a function?{ (14, 6), (3, 8), (2, 9), (11, 5) }1. (6, 8)
2. ( 3, 5)
3. (2, 1)
4. (14, 8)
 |

**>Functions: The Vertical Line Test**

* We said a function can only have 1 y value for each x value, therefore, if we look at a graph and more than one y value corresponds to an x value, the graph is not a function.
* The vertical line test states: if you draw a vertical line (up and down) through the graph and it

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**>Vertical Line Test Examples: Are the graphs functions? Yes or No.**

|  |  |
| --- | --- |
| 21)  | 22)  |
| 23)  | 24) |
| 25) | 26) |

**Wednesday, November 14th**

|  |  |
| --- | --- |
| **X** | **Y** |
| -2 | -4 |
| 0 | 0 |
| 2 | 4 |
| 4 | 8 |

**> Do Now:**

1. Is the table to the right a function?
2. Write a definition of a function.
3. Is the graph to the right a function?
4. Create a set of coordinates that represent a function.

**>Slope**

* **Slope:** A number that shows how much the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Often referred to as **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* Slope (m) is determined by calculating **the change in (Δ) two y values divided by the change in (Δ) two x values.**

**y2 – y1 = Δy = rise
x2 – x1 Δx run**

**Examples:**

|  |
| --- |
| 1) What is the slope of a line that passes through (2, -5) and (6, -2)?\*Remember\*: slope is the Δy divided by the Δx.* y2 – y1 = (-2 - -5) = 3 = 0.75

 x2 – x1 (6 – 2) 4* It doesn’t matter if you do y2 – y1 or y1 – y2, just as long as you use the same order of x coordinates.
* **Look at this to understand:**
* y1 – y2 = (-5 - -2) = -3 = 0.75

 x1 – x2 (2 – 6) -4 |
|

|  |  |
| --- | --- |
| **x** | **y** |
| -1 | 1 |
| 0 | 3 |
| 1 | 5 |

2) The table shows the coordinates of three points contained in the graph of a line. What is the slope of the line? |
| 3) What is the slope of the line that passes through the points (6, 13) and (10, 21)? |
| 4) What is the slope of the line that passes through (-4, 2) and (6, -4)? |
| 5) What is the slope of a line that passes through (-4, 2) and (0, 0)? |
| 6) What is the slope of a line that passes through (7, 5) and (1, 3)? |
|

|  |  |
| --- | --- |
| **x** | **y** |
| -6 | -4 |
| 0 | -2 |
| 6 | 0 |

7) The table shows the coordinates of three points contained in the graph of a line. What is the slope of the line? |
|

|  |  |
| --- | --- |
| **x** | **y** |
| 7 | 8 |
| 10 | 9 |
| 13 | 15 |

8) The table shows the coordinates of three points contained in the graph of a line. What is the slope of the line? |
|

|  |  |
| --- | --- |
| **x** | **y** |
| 5 | -4 |
| 9 | 7 |
| 14 | -12 |

9) The table shows the coordinates of three points contained in the graph of a line. What is the slope of the line? |
| 10) What is the slope of the line that passes through the points (8, 15) and (8, 19)? |
|

|  |  |
| --- | --- |
| **x** | **y** |
| 7 | 10 |
| 2 | 9 |
| 1 | 6 |

11) The table shows the coordinates of three points contained in the graph of a line. What is the slope of the line? |
| 12) What is the slope of the line that passes through the points (10, 6) and (7, 4)? |

**Thursday, November 15th**

|  |  |
| --- | --- |
| **x** | **y** |
| 12 | 7 |
| 14 | 5 |
| 15 | -3 |

**> Do Now:**

1. What is the slope of a line that passes through the points (3,12), and (10, 2)?
2. What is the slope of the line with the points given in the table to the right?

>Determining Slope From A Graph:

* In order to determine the slope of a graph, you must determine what the rise is and put it over whatever the run is.
1. **Pick 2 points on the graph.**
	* Pick points where the line is on the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. **Determine the rise by going up on the graph until you reach the level of your next point.**
	* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or your rise.**
3. **Determine the run by going left or right on the graph until you reach the next point.**
	* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or your run.**
4. **Put your rise over your run and that is your slope.**

**>Examples:**

|  |  |
| --- | --- |
| 32.tiff1) Determine the slope of the line graphed below. | 2) Determine the slope of the line graphed below.33.tiff |
| 3) Determine the slope of the line graphed below.**34.tiff** | 35.tiff4) Determine the slope of the line graphed below.  |
| 5) Determine the slope of the line graphed below.36.tiff | 6) Determine the slope of the line graphed below.C:\Users\IT\AppData\Local\Temp\graph_20111113_133247.png |
| 7) Determine the slope of the line graphed below.C:\Users\IT\AppData\Local\Temp\graph_20111113_133524.png | 8) Determine the slope of the line graphed below.C:\Users\IT\AppData\Local\Temp\graph_20111113_135115.png |
| 9) Determine the slope of the line graphed below.C:\Users\IT\AppData\Local\Temp\graph_20111113_135856.png | 10) Determine the slope of the line graphed below.C:\Users\IT\AppData\Local\Temp\graph_20111113_140134.png |
| 11) Determine the slope of the line graphed below.C:\Users\IT\AppData\Local\Temp\graph_20111113_140459.png | 12) Determine the slope of the line graphed below.C:\Users\IT\AppData\Local\Temp\graph_20111113_140934.png |
| 13) Determine the slope of the line graphed below.C:\Users\IT\AppData\Local\Temp\graph_20111113_141228.png | 14) Determine the slope of the line graphed below.C:\Users\IT\AppData\Local\Temp\graph_20111113_141548.png |
| 15) Determine the slope of the line graphed below.C:\Users\IT\AppData\Local\Temp\graph_20111113_142454.png | 16) What is the slope of a line that passes through (-10, 5), (20, 10)? |
| 17) What is the slope of the line given the table?

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| --- | --- |
| **X** | **y** |
| 5 | 12 |
| 7 | 15 |
| 9 | 20 |

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