

What is the value of the expression when $x = 4$ and $y = -2$?

$$\frac{x^2}{2} + xy^3$$

Warm-up
Warm-up
Warm-up
Warm-up
Warm-up

The names of 17 high school students are written on same-size pieces of paper and placed in a hat for a drawing. Eight of the students whose names are placed in the hat are seniors, four are juniors, and five are sophomores.

What is the probability that the first slip of paper drawn from the hat does not have the name of a sophomore student written on it?

What is the experimental probability that there will be a tie between Carlos and Amanda?

Carlos and Amanda played a game. This table shows the results.

Game Results

Result	Frequency
Carlos wins	4
Amanda wins	5
Tie	3

What is the value of the expression when $x = 4$ and $y = -2$?

$$\frac{x^2}{2} + xy^3 \quad -2 \cdot -2 \cdot -2$$

$$\begin{aligned} \frac{(4)^2}{2} + (4)(-2)^3 &= \frac{16}{2} + (-32) \\ &= 8 - 32 \\ &= -24 \end{aligned}$$

Warm-up

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The names of 17 high school students are written on same-size pieces of paper and placed in a hat for a drawing. Eight of the students whose names are placed in the hat are seniors, four are juniors, and five are sophomores.

What is the probability that the first slip of paper drawn from the hat does not have the name of a sophomore student written on it?

$$\text{total} = 17$$

$$S = 8$$

$$J = 4$$

$$So = 5$$

$$8 + 4 + 5 = 17 - 5 = 12$$

$$\frac{12}{17}$$

$$12:17$$

What is the experimental probability that there will be a tie between Carlos and Amanda?

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Warm-up

$$4 + 5 + 3 = 12$$

$$\frac{3}{12} = \frac{1}{4}$$

Equations and their Graphs

Getting more in depth about lines.

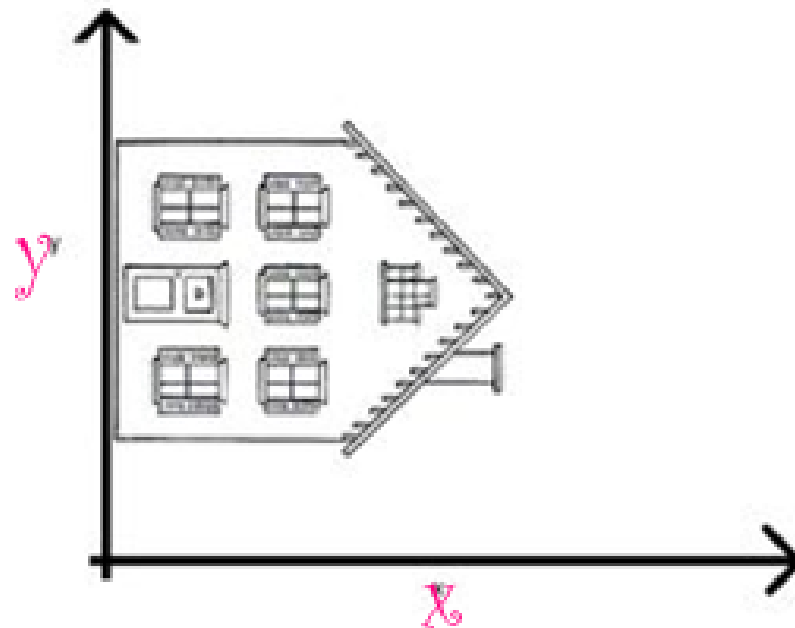
Goals aligned to common core standards:

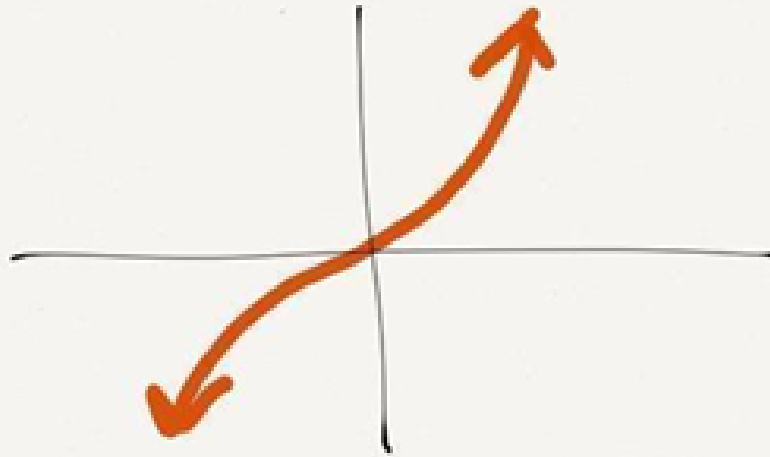
- You will graph lines and write equations using tables.
- You will describe the domain and range.
- You will be able to use function notation, evaluate, and interpret statements.

Domain and Range

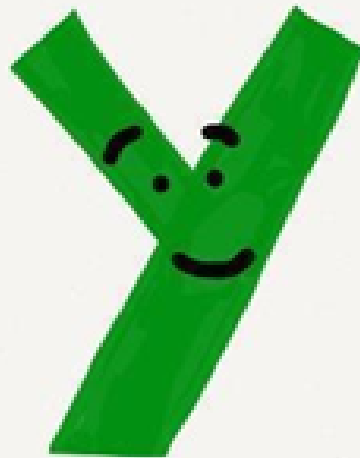
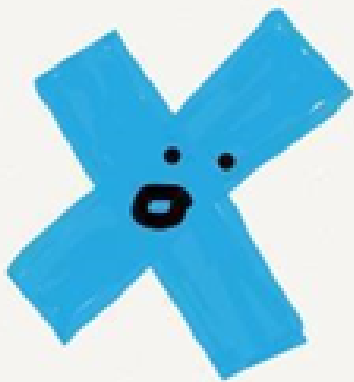
Domain: the x-values

Range: the y-values





and in that moment, I swear we were infinite

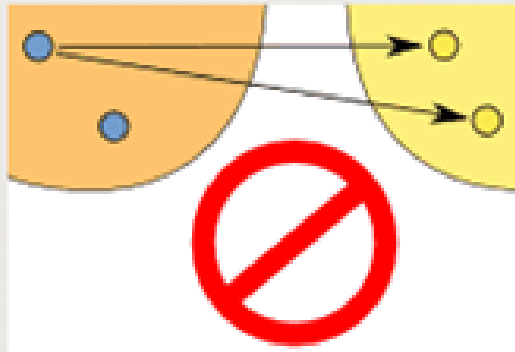


Function Notation

For an equation in x and y , $f(x)$ replaces y and is read "f of x."

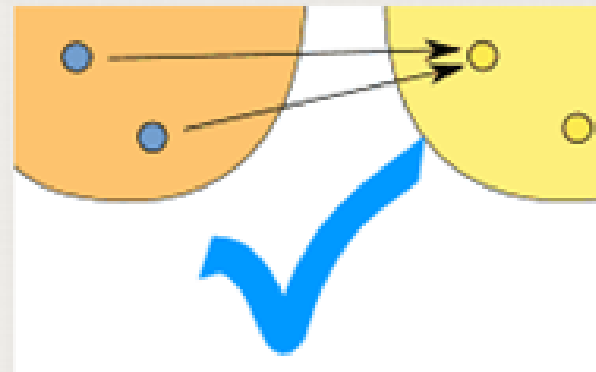
Function

A relationship between the input and the output such that for each input there is one and only one output.



(one-to-many)

This is **NOT** OK in a function



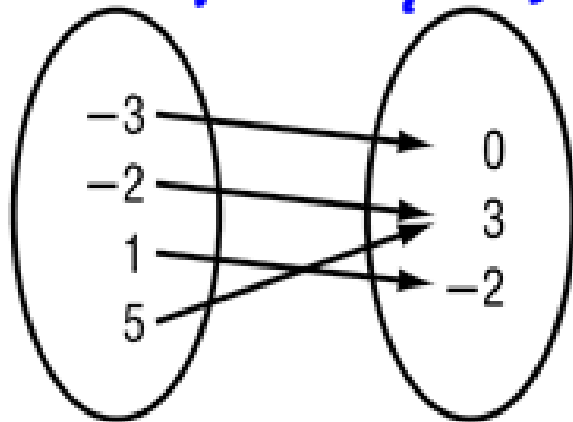
(many-to-one)

But this **is** OK in a function

To determine if a relation is a function, each input (x) can have exactly one output (y).

Are these functions??

$d: \{-3, -2, 1, 5\}$



yes

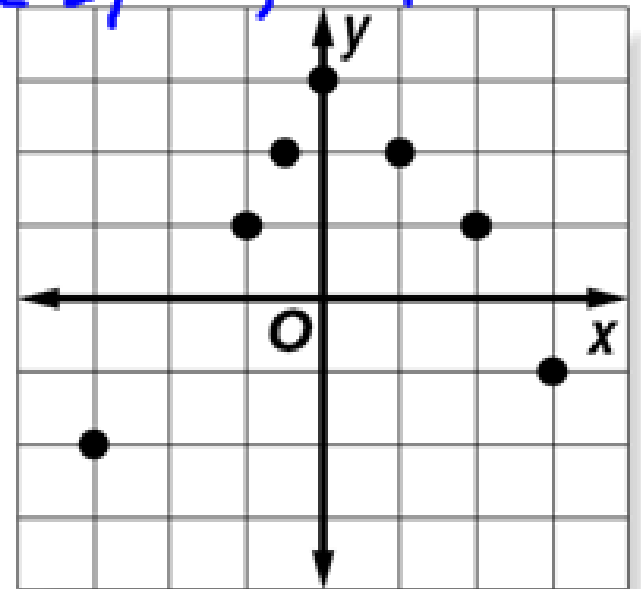
$d: \{-4, 1, 7\}$

$r: \{-5, -2, 3, 6\}$

x	y
1	-5
-4	3
7	6
1	-2

no

$(-3, -2), (-1, 1)$



$(-5, 2), (0, 3), (1, 2), (2, 1), (3, 4)$

$r: \{-2, 0, 3\}$

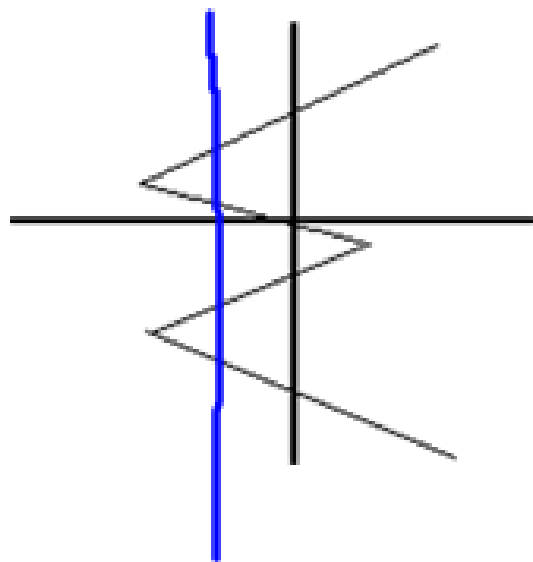
What is the domain?

Range?

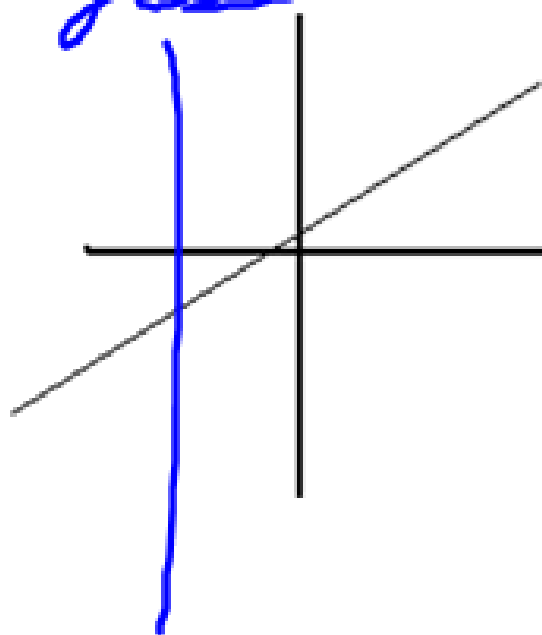
To determine if a graph is a function, draw a vertical line. If your line will always touch exactly one point on the graph, then it is a function.

Are these functions??

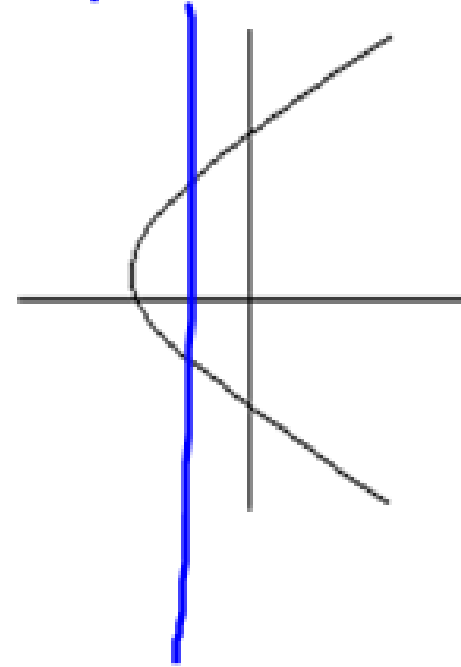
not



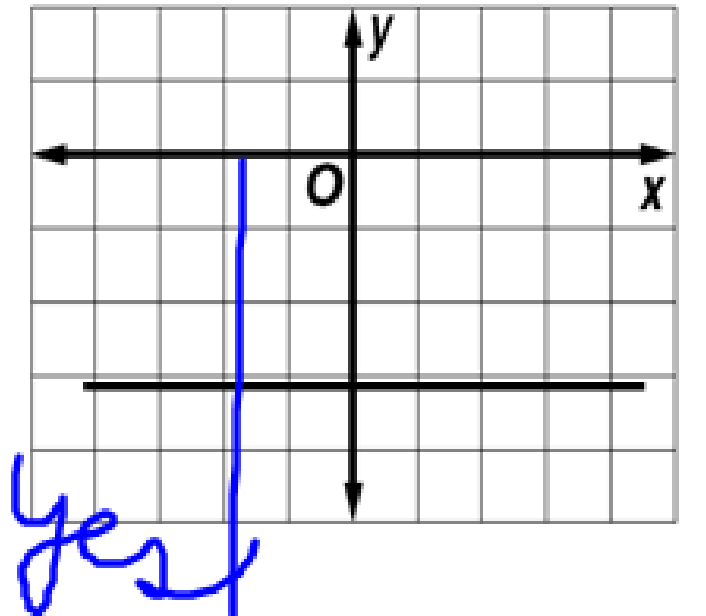
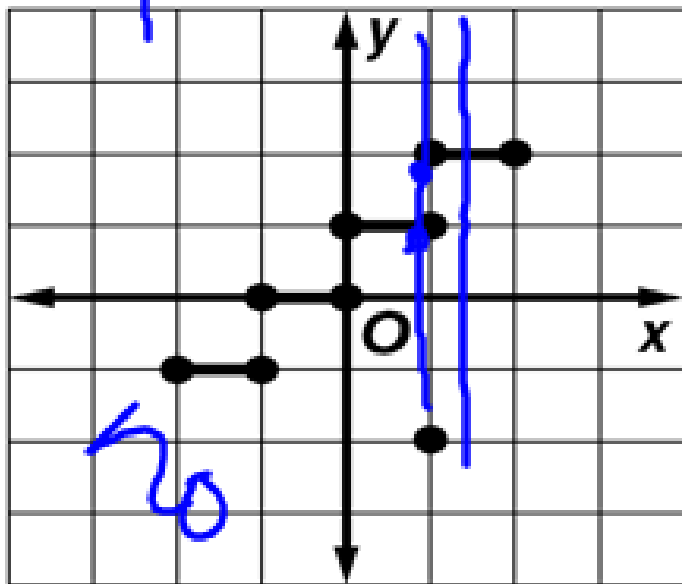
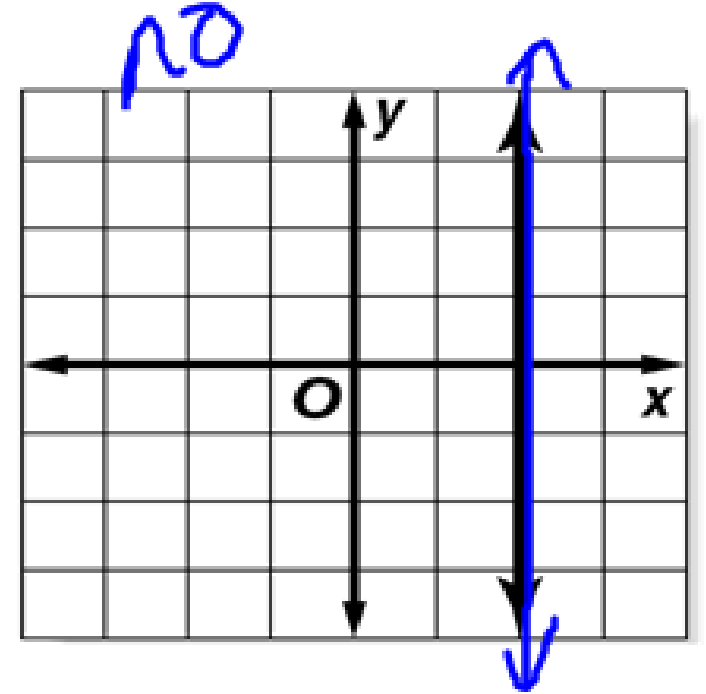
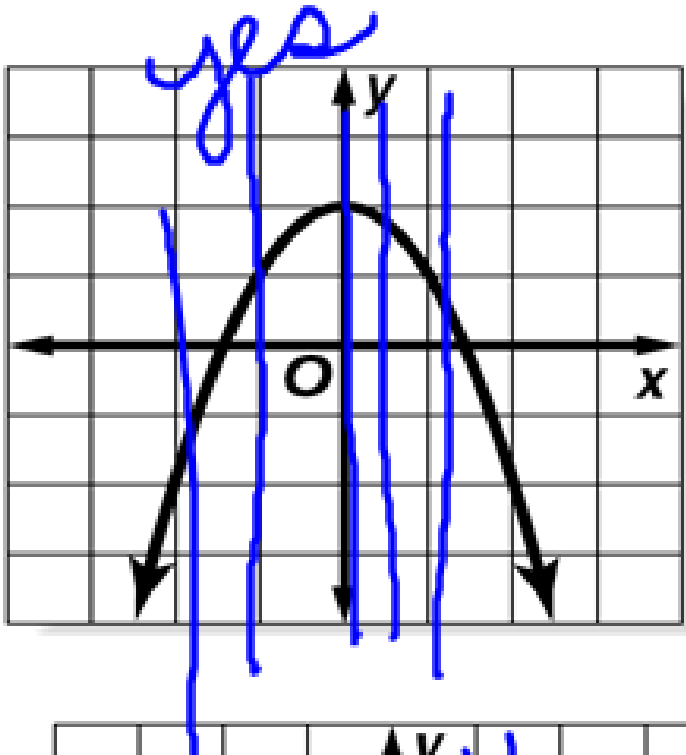
yes



no



Are these functions???



If $f(x) = 2x + 3$, find each value.

$$f(2) = 2(2) + 3 = 7$$

$$f(-1) = 2(-1) + 3 = 1$$

$$f(x) = 5x + 3$$

find $f(9)$

$$\begin{aligned} f(9) &= 5(9) + 3 \\ &= 45 + 3 \end{aligned}$$

$$= 48$$

$$f(x) = 3x^2 + 7$$

find $f(2)$

$$f(x) = x^3 + 2x + 3$$

find $f(3)$

$$\begin{aligned} f(3) &= (3)^3 + 2(3) + 3 \\ &= 27 + 6 + 3 \end{aligned}$$

$$= 33 + 3$$

$$= 36$$

If $f(x) = 5 + 2x^2$, find each value.

$$\begin{aligned} f(-4) &= 5 + 2(-4)^2 \\ &= 5 + 2(16) \\ &= 5 + 32 \\ &= 37 \end{aligned}$$

If $f(x) = x - 2x + 5$, find each value.

$$f(a + 3) = a + 3 - 2(a + 3) + 5$$

$$f(a + 3) = \underline{a + 3} - 2\underline{a} - \underline{6} + \underline{5}$$
$$f(a + 3) = -a + 2$$

How many points are on a line?

$$y = 2x + 7$$

For equation $y = 2x + 7$, what does the graph look like?

How would you normally make the graph?

Find 5 different
points on the line.
 $y = 2x + 7$

input x	output y
-2	3
-1	5
0	7
1	9
2	11

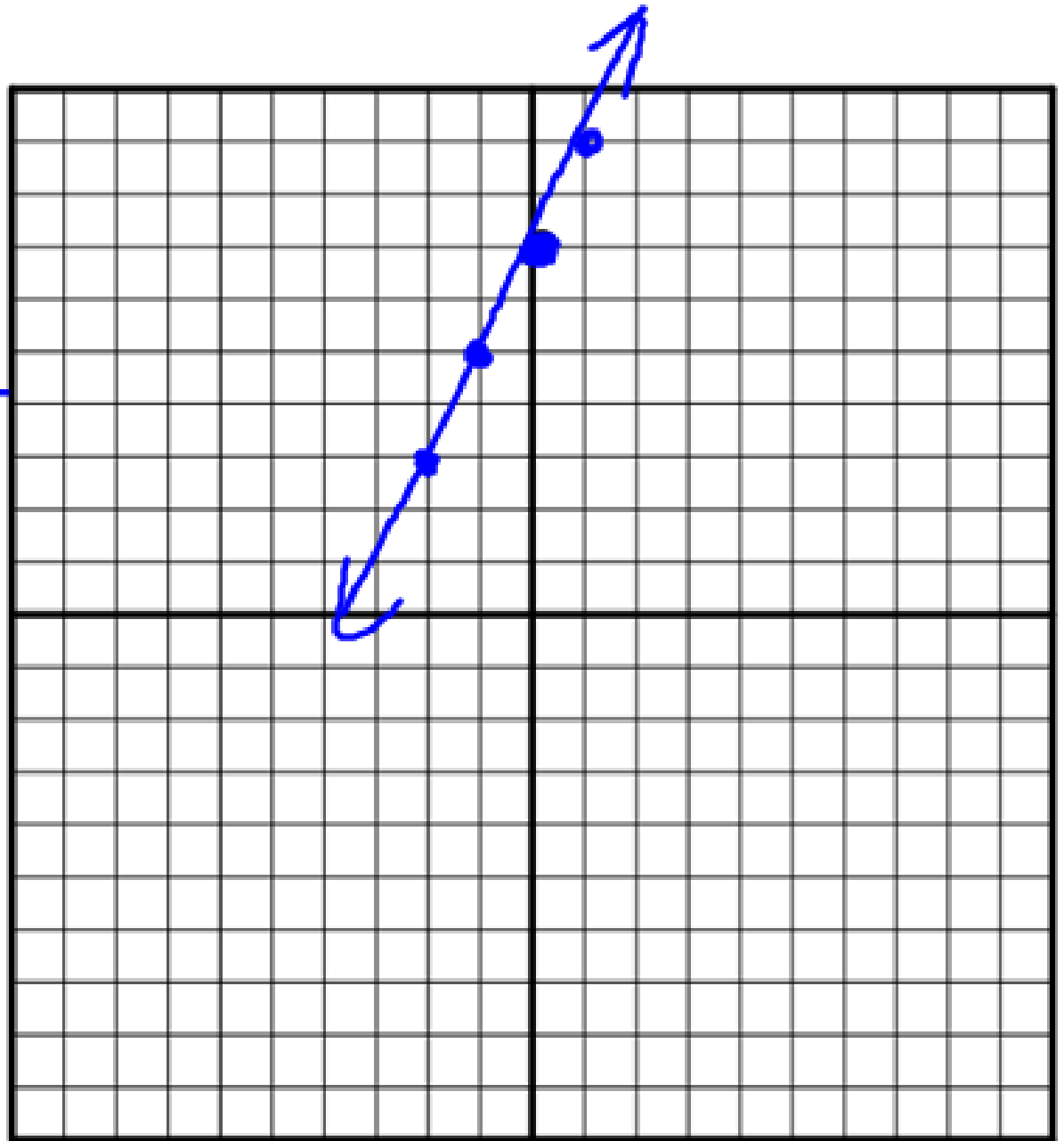
How can you graph this equation?

Now graph it!

$$y = 2x + 7$$

input x	output y
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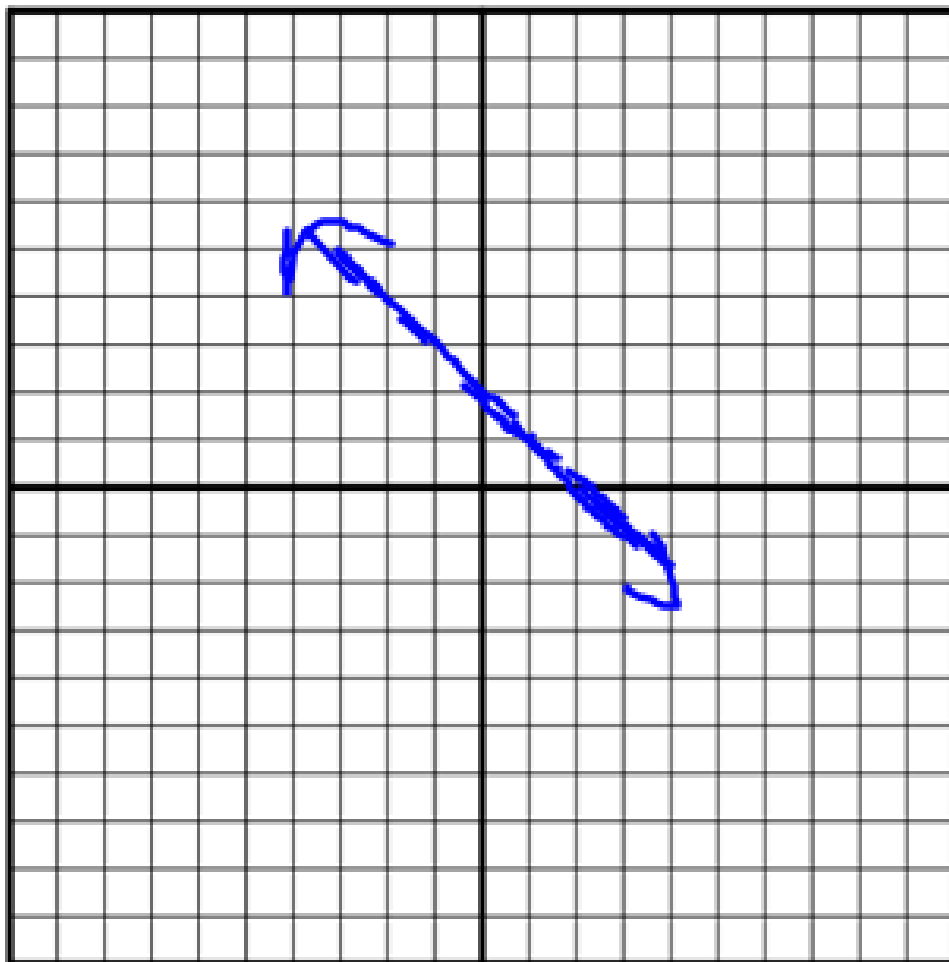
-2	3
-1	5
0	7
1	9
2	11



Find 5 different
points on the line.

$$y = -x + 2$$

Graph.



x	y
-2	4
-1	3
0	2
1	1
2	0

x	y
-4	10
-1	9
2	8
5	7
8	6

Find the slope.

$$-\frac{1}{3}$$

Graph.

Describe the graph.

decreasing,

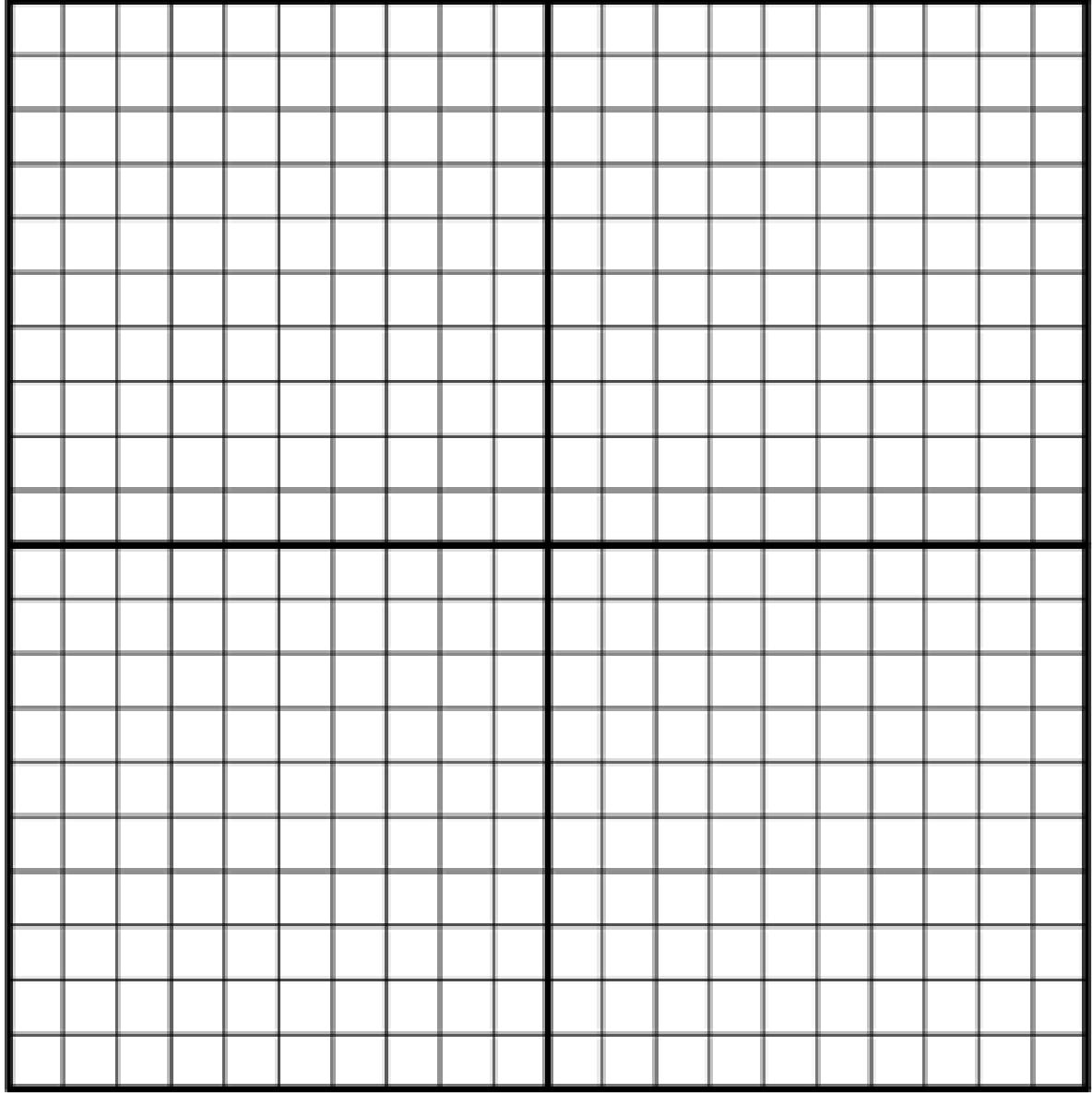
Domain?

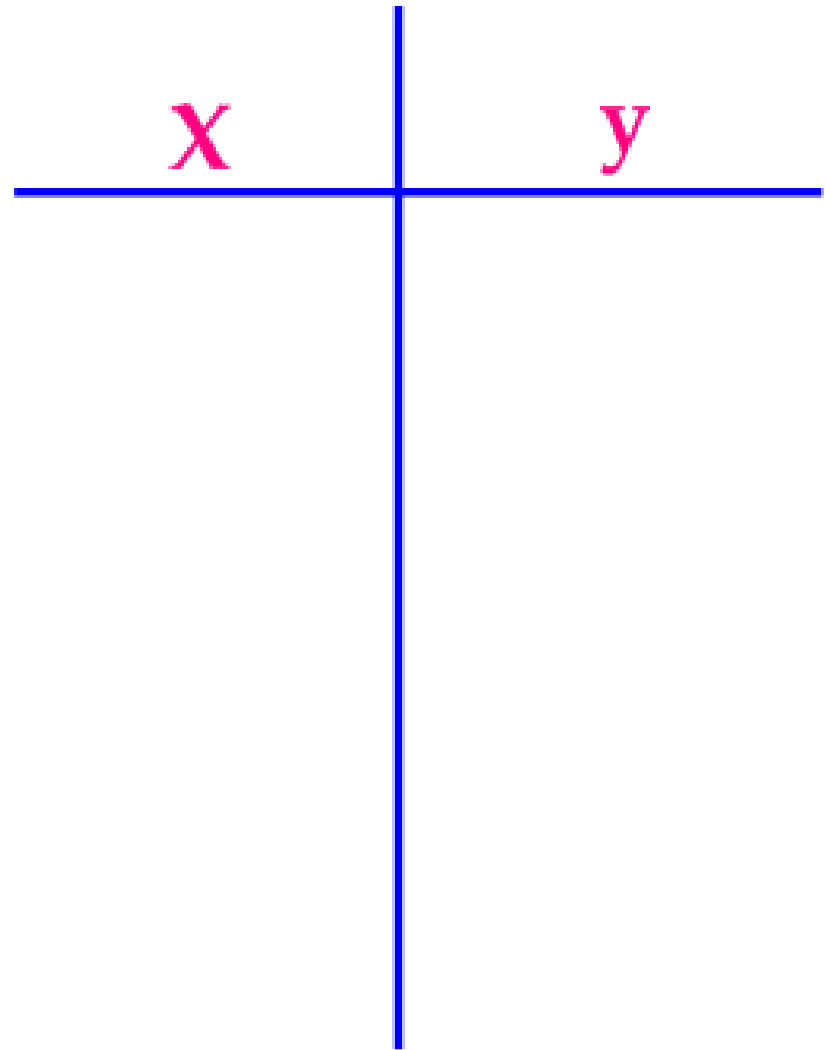
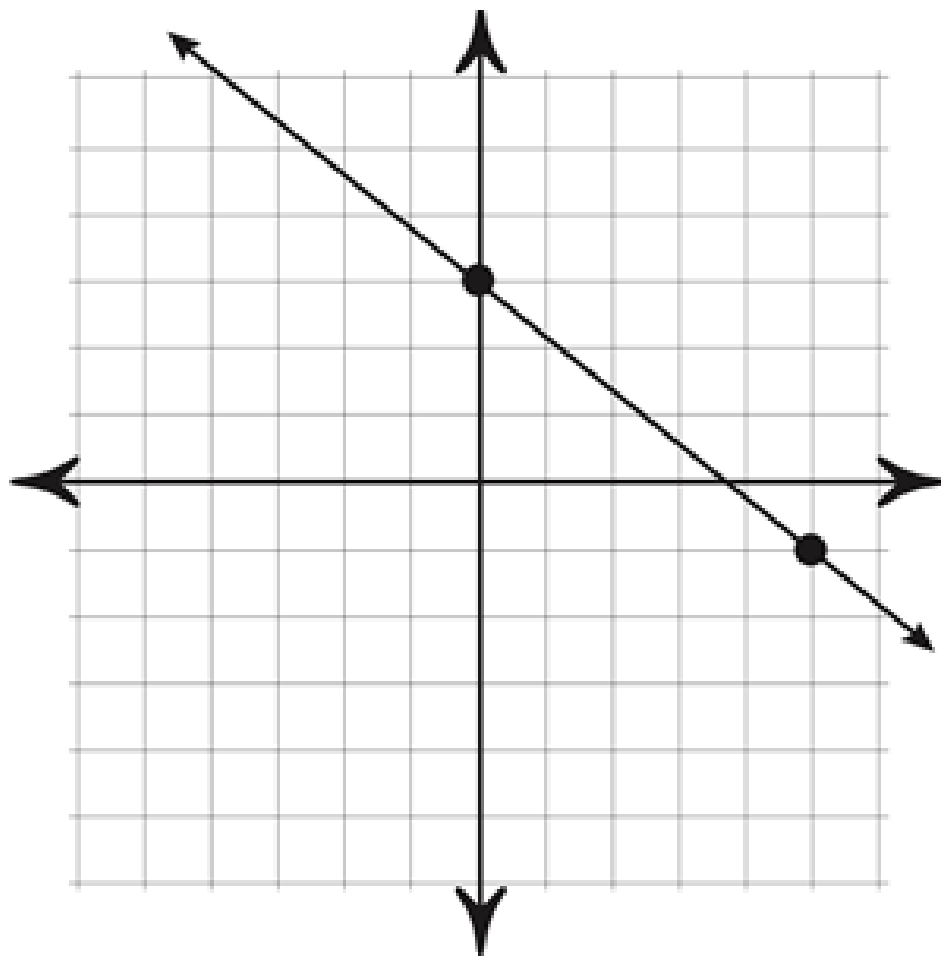
negative

$$\{-4, -1, 2, 5, 8\}$$

Range?

$$\{10, 9, 8, 7, 6\}$$





Find the slope.
Describe the graph.
Domain?
Range?

Number of toppings	Price of pizza
x	y
1	12
2	15
3	18
4	21
5	24
6	27

Rate of change:

Graph description:
positive, negative, zero,
or undefined?

What does the rate of
change represent?

x	y
3	5
3	8
3	11
3	14
3	18

Rate of change:

Graph description:
positive, negative,
zero, or undefined?

Goals aligned to common core standards:

- You can graph lines and write equations using tables.
- You can describe the domain and range.
- You can use function notation, evaluate, and interpret statements.

Classwork: Finding Slope from Tables & Fill in in the Empty Boxes Wkst,

Relations & Functions wkst

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"I START EVERY SONG BY COUNTING 1-2-3-4 BECAUSE IT REMINDS ME OF MATH. MATH DEPRESSES ME AND THAT HELPS ME SING THE BLUES."