Welcome to class!

Join PearDeck

Take out last night's homework (worksheet and textbook problems)

Complete 10 domain and range practice problems HERE

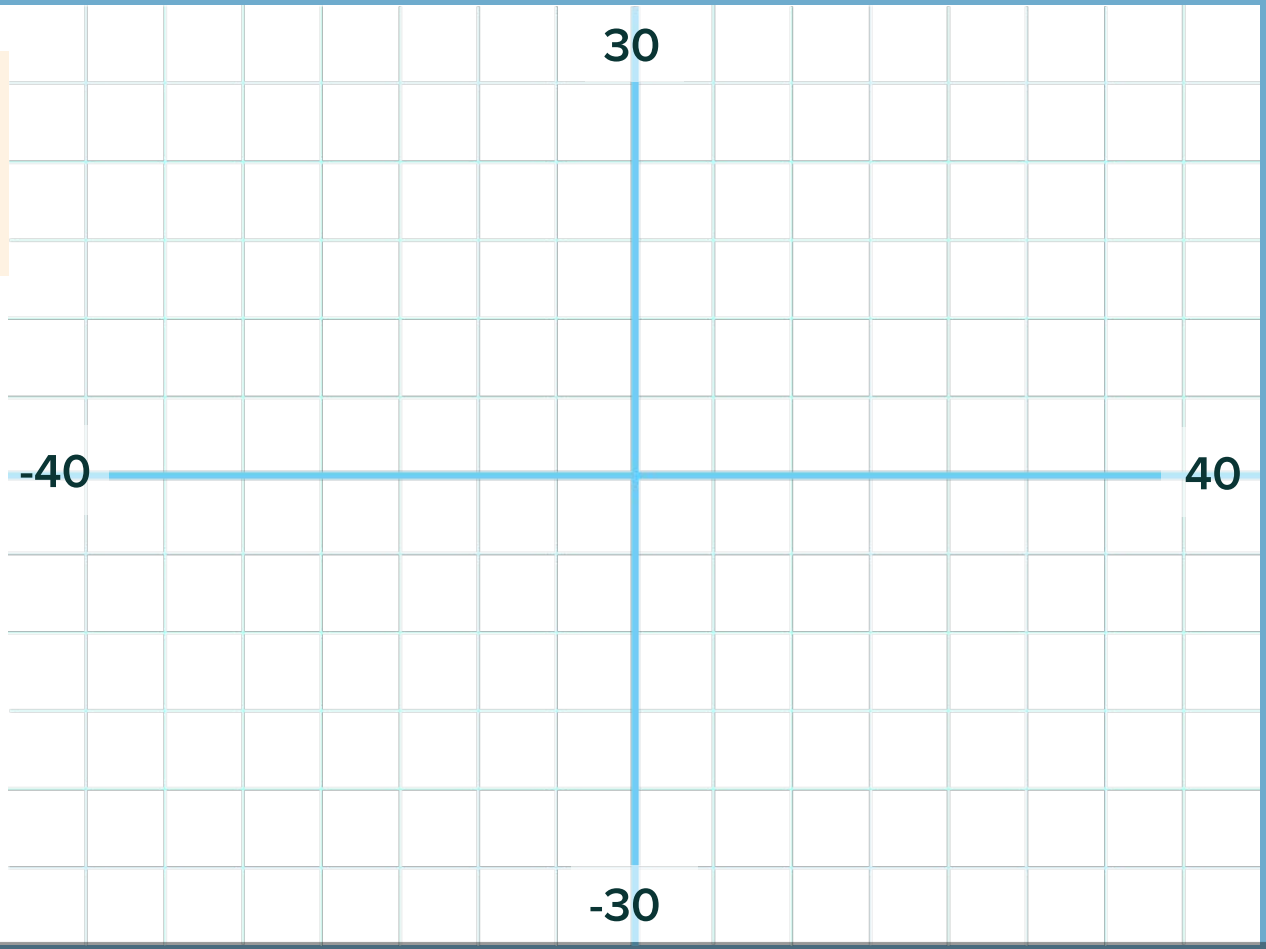
Students browse: www.ixl.com/math/algebra-1/domain-and-range-of-relations

Kindness Expectation

Last Night’s Homework

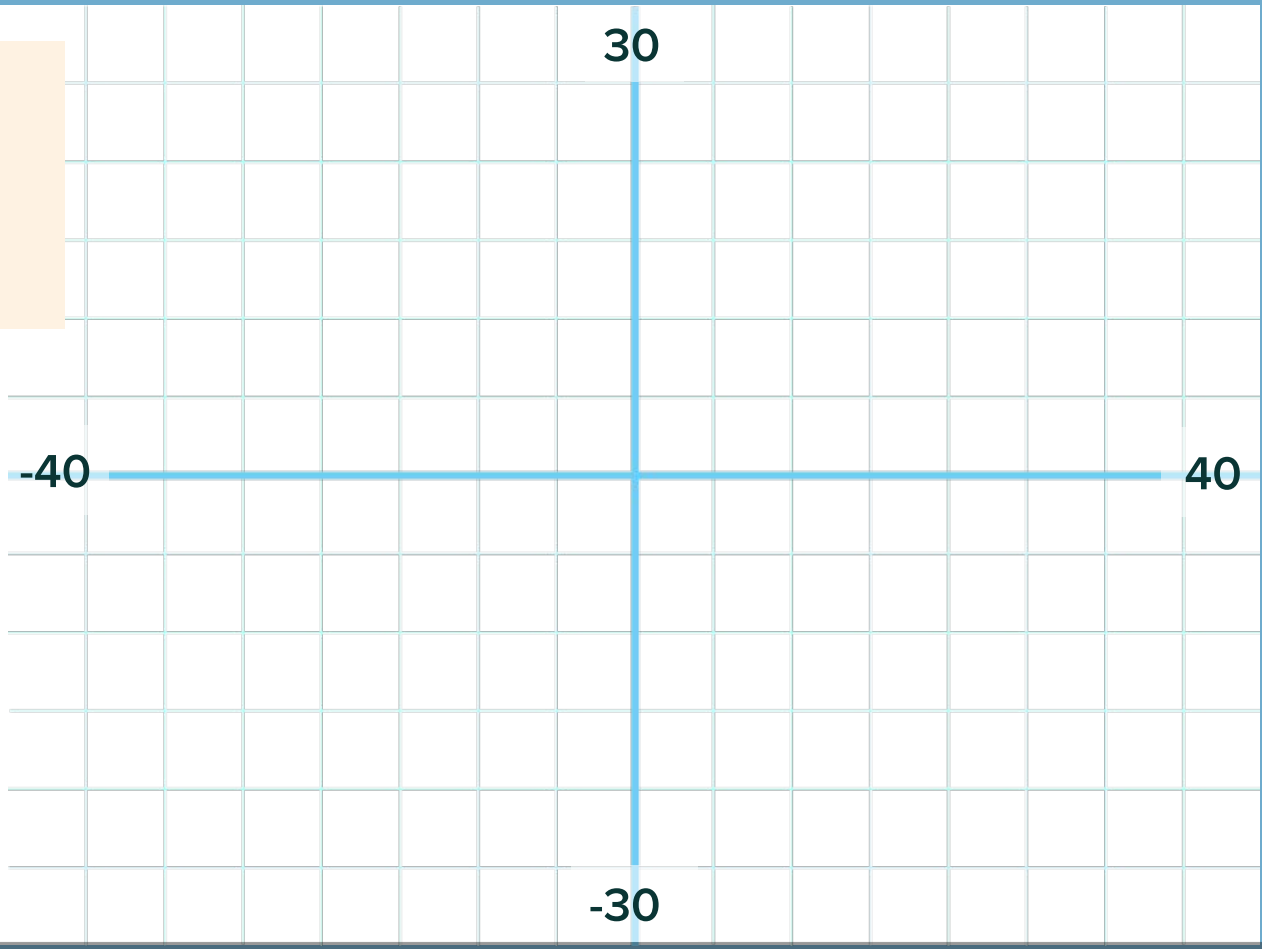
How did you feel about last night's homework?

1. $f(x) = x$



Students, draw anywhere on this slide!

2. $y = x^2$



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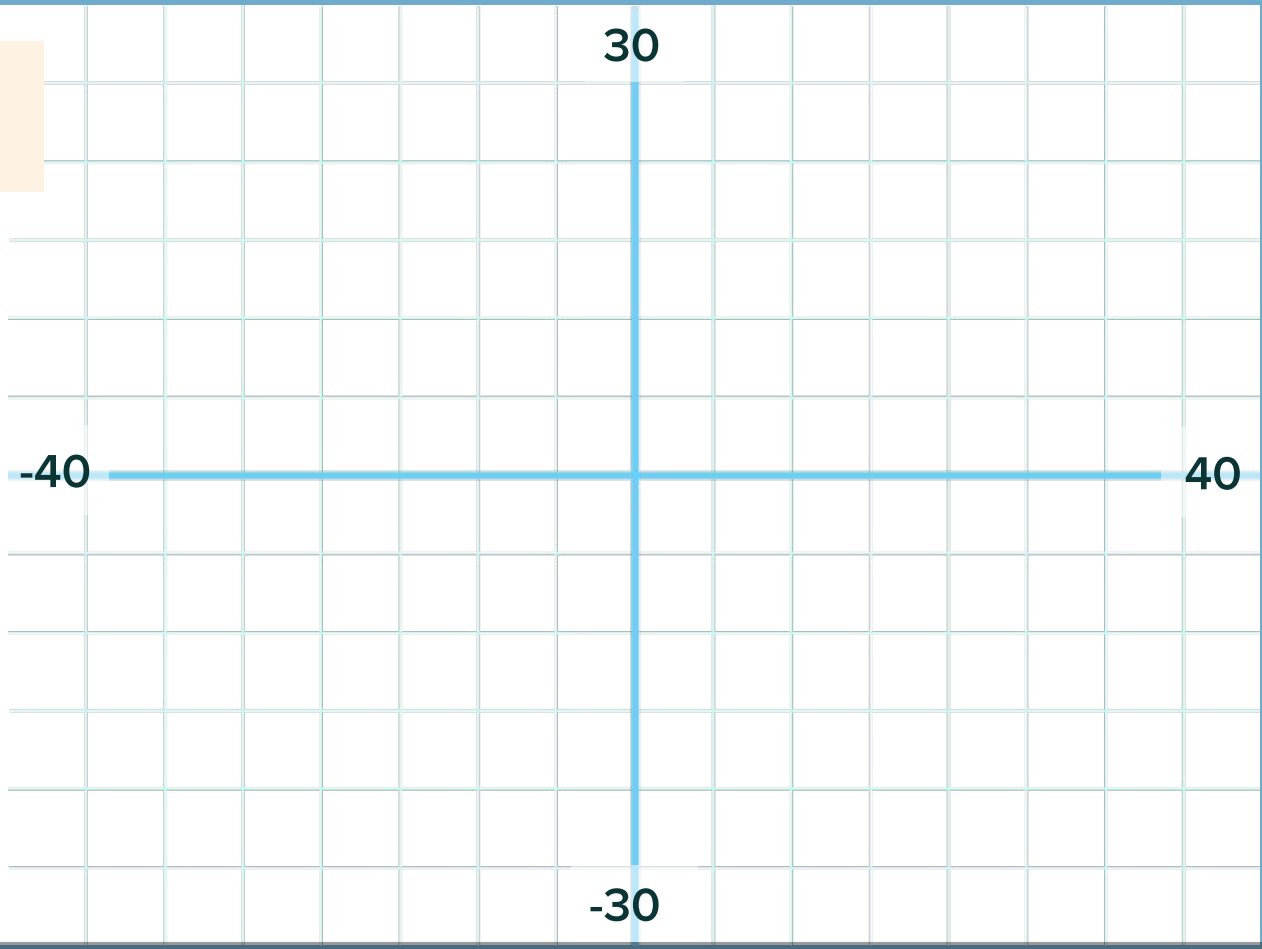
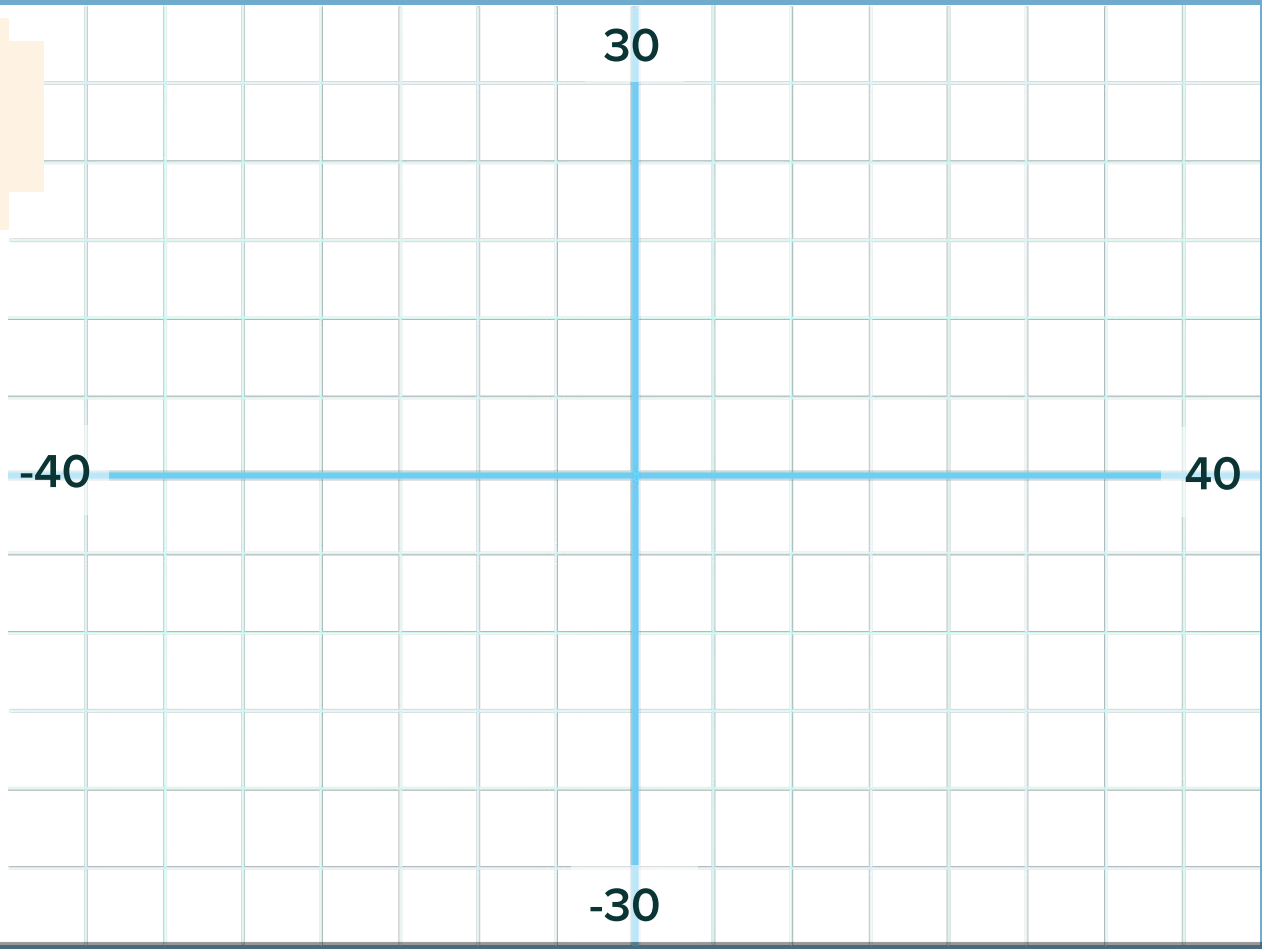


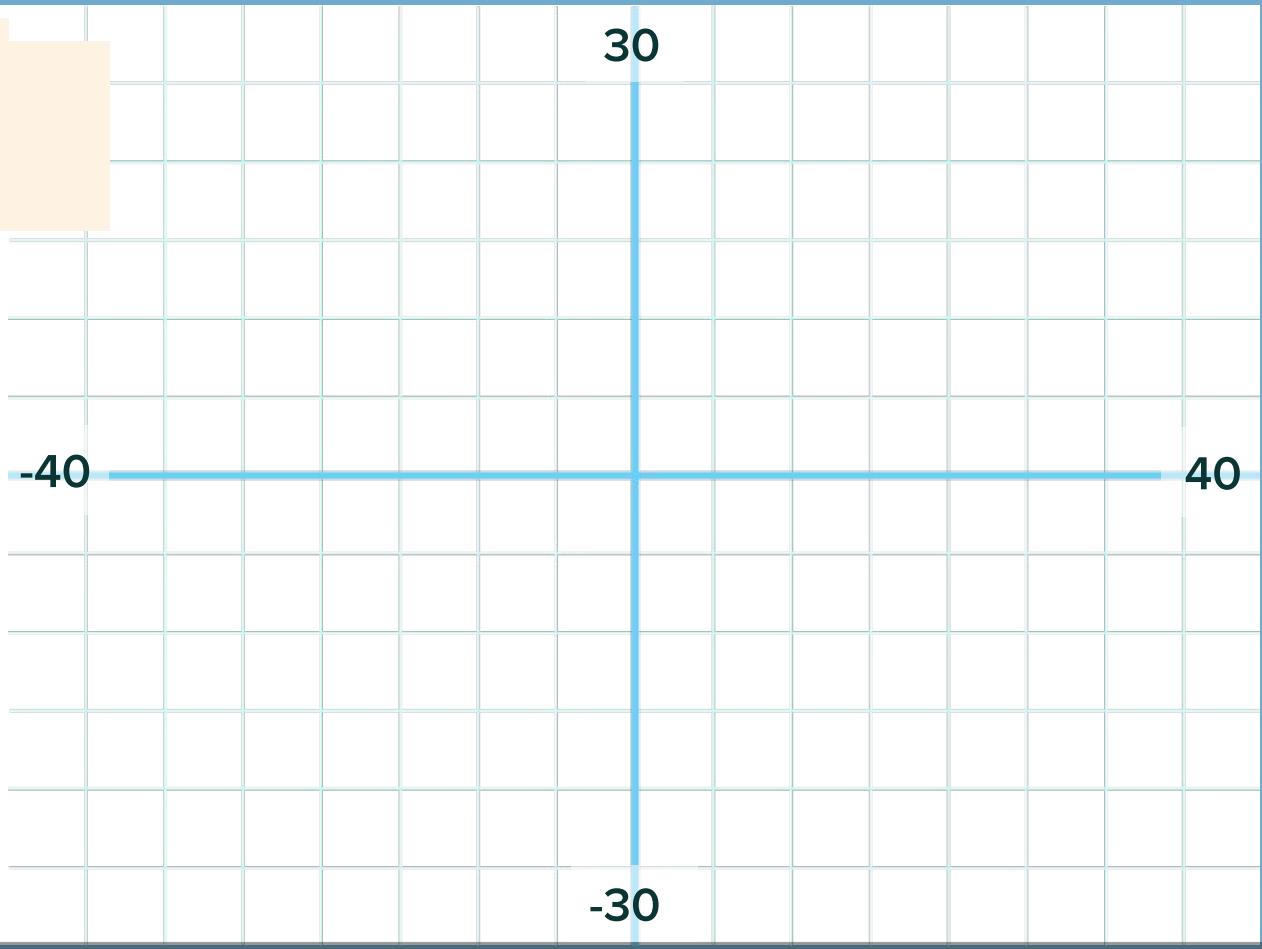
Students, draw anywhere on this slide!

4. $f(x) = |x|$

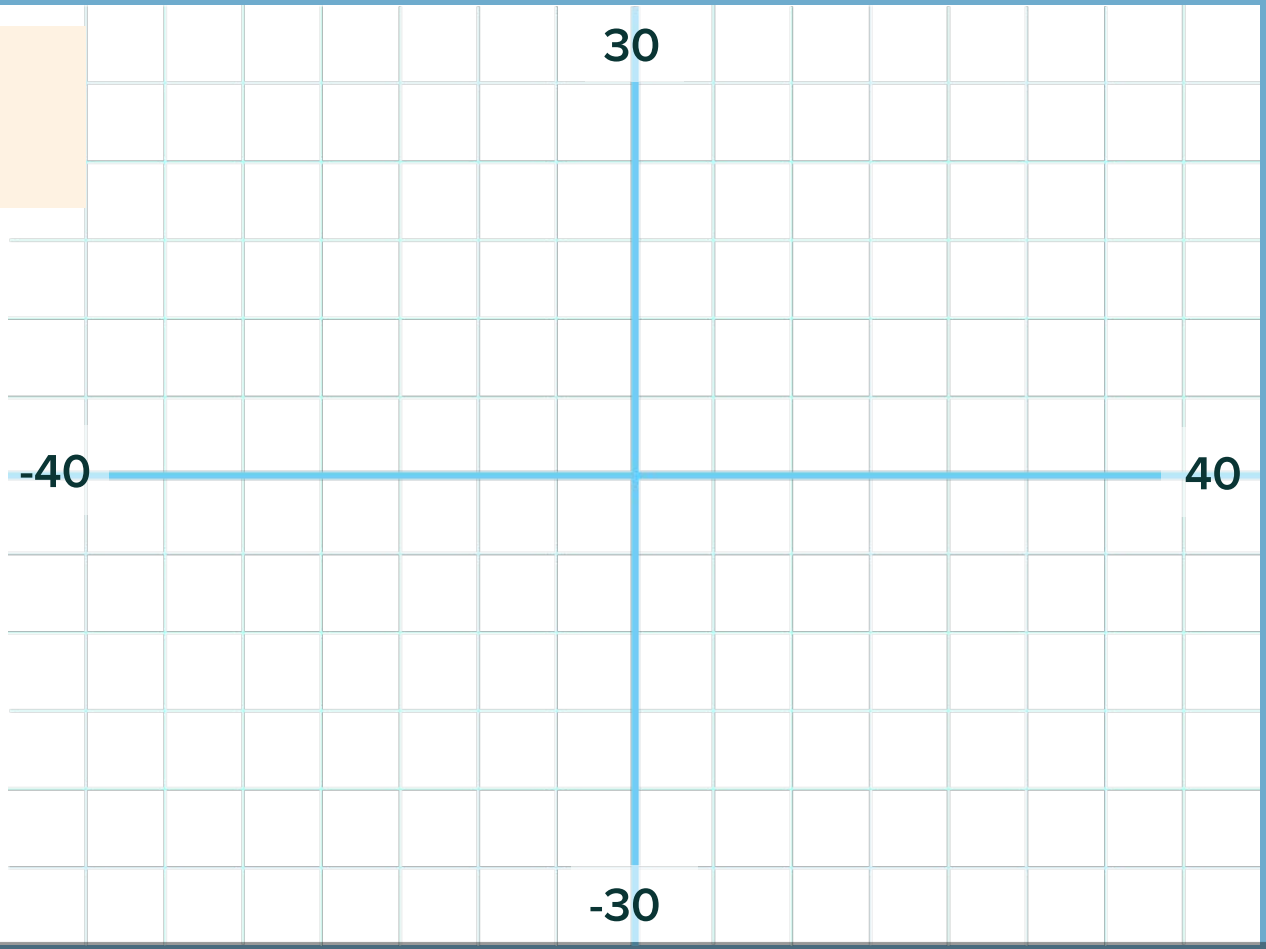


Students, draw anywhere on this slide!

5. $y = \sqrt{x}$



6. $y = \frac{1}{x}$



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See Problem 1.

The cost C, in dollars, for pencils is a function of the number n of pencils purchased. The length L of a pencil, in inches, is a function of the time t, in seconds, it has been sharpened. Graph the function shown by each table below. Tell whether the function is *linear* or *nonlinear*.

6.

Pencil Cost					
Number of Pencils, n	6	12	18	24	30
Cost, C	\$1	\$2	\$3	\$4	\$5

7.

Pencil Sharpening						
Time (s), t	0	3	6	9	12	15
Length (in.), L	7.5	7.5	7.5	7.5	7.4	7.3

Graph the function shown by each table. Tell whether the function is *linear* or *nonlinear*.

8.

x	y
0	5
1	5
2	5
3	5

9.

x	y
0	−4
1	−3
2	0
3	5

10.

x	y
0	0
1	1
2	−5
3	8

11.

x	y
0	0
1	3
2	6
3	9

See Problem 2.

12. For the diagram below, the table gives the total number of small triangles y in figure number x. What pattern can you use to complete the table? Represent the relationship using words, an equation, and a graph.

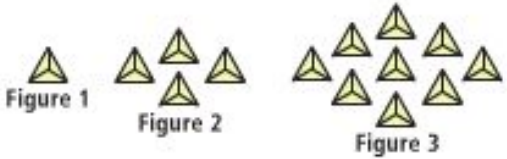

Figure Number, x	Total Small Triangles, y	Ordered Pair (x, y)
1	3	(1, 3)
2	12	(2, 12)
3	27	(3, 27)
4	■	■
5	■	■

Announcements

- Unit 4 Test Date → 10/25/2018 (next Thursday)
- Please double check your grades in PowerSchool and let me know if you think there are any errors! We are nearing the end of Quarter 1.

Let’s review what you should know so far...

- Using Graphs to Relate Two Quantities
  - Independent vs. Dependent Variable
  - Domain vs. Range
- Patterns and Linear Functions
  - How do you know if it’s a function?
  - How do you know if it’s a linear function?
- Patterns and Nonlinear Functions
  - How do you know if it’s a function?
  - How do you know if it’s a nonlinear function?

Graphing a Function Rule

10/18/2018

Right now, the easiest way to graph any function is to make and x and y chart, then graph the points!

x	Function Rule	y

I know that there are other ways, and I am excited to teach them to you later!

Problem 1 Graphing a Function Rule

What is the graph of the function rule $y = -2x + 1$?

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Step 1 Make a table of values.

x	$y = -2x + 1$	(x, y)
-1	$y = -2(-1) + 1 = 3$	$(-1, 3)$
0	$y = -2(0) + 1 = 1$	$(0, 1)$
1	$y = -2(1) + 1 = -1$	$(1, -1)$
2	$y = -2(2) + 1 = -3$	$(2, -3)$

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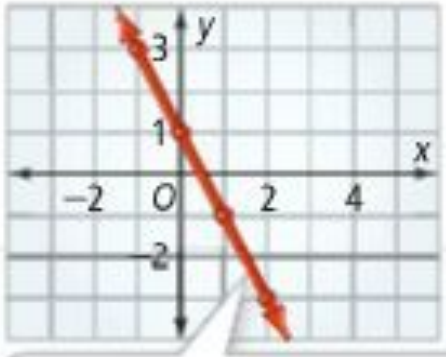
Step 2 Graph the ordered pairs.



Connect the points with a line to represent *all* solutions.

And that’s all there really is to it… for now :)

Make an x and y chart, get some points, and make the graph!

Try graphing the function rule: y = ½ x -1

x	Function Rule	y

Problem 2 Graphing a Real-World Function Rule

Trucking The function rule $W = 146c + 30{,}000$ represents the total weight W, in pounds, of a concrete mixer truck that carries c cubic feet of concrete. If the capacity of the truck is about 200 ft^3, what is a reasonable graph of the function rule?

Problem 2 Graphing a Real-World Function Rule

Trucking The function rule $W = 146c + 30{,}000$ represents the total weight W, in pounds, of a concrete mixer truck that carries c cubic feet of concrete. If the capacity of the truck is about 200 ft^3, what is a reasonable graph of the function rule?

Step 1

Make a table to find ordered pairs (c, W).

The truck can hold 0 to 200 ft^3 of concrete. So only c-values from 0 to 200 are reasonable.

c	$W = 146c + 30{,}000$	(c, W)
0	$W = 146(0) + 30{,}000 = 30{,}000$	(0, 30,000)
50	$W = 146(50) + 30{,}000 = 37{,}300$	(50, 37,300)
100	$W = 146(100) + 30{,}000 = 44{,}600$	(100, 44,600)
150	$W = 146(150) + 30{,}000 = 51{,}900$	(150, 51,900)
200	$W = 146(200) + 30{,}000 = 59{,}200$	(200, 59,200)

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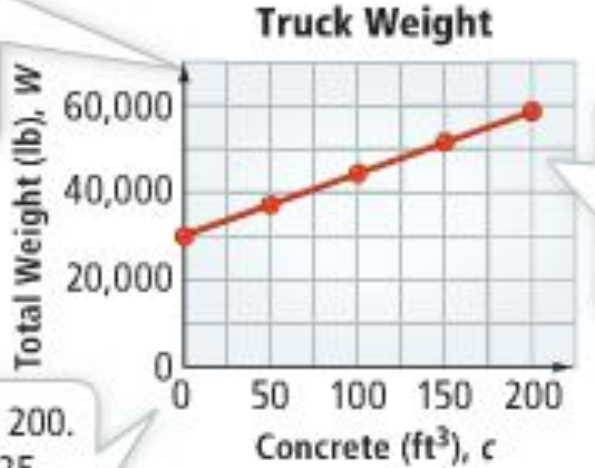
Step 2

Graph the ordered pairs from the table.

W reaches almost 60,000 lb. So *W*-values from 0 to 60,000 in grid increments of 10,000 make sense.



All *c*-values from 0 to 200 make sense, so connect the points. Stop at 200 ft³, the capacity of the truck.

The *c*-values go from 0 to 200. 200 is evenly divisible by 25, so use grid increments of 25.

BTW… we can graph nonlinear functions the same way we graph linear functions! Just make another x and y chart!

Problem 4 Graphing Nonlinear Function Rules

What is the graph of each function rule?

A $y = |x| - 4$

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Step 1

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-4	$y = \|-4\| - 4 = 0$	$(-4, 0)$
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0	$y = \|0\| - 4 = -4$	$(0, -4)$
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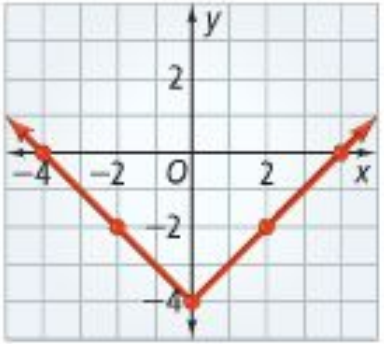
Step 2

Graph the ordered pairs.
Connect the points.



B $y = x^2 + 1$

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Step 1

Make a table of values.

x	$y = x^2 + 1$	(x, y)
-2	$y = (-2)^2 + 1 = 5$	$(-2, 5)$
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0	$y = 0^2 + 1 = 1$	$(0, 1)$
1	$y = 1^2 + 1 = 2$	$(1, 2)$
2	$y = 2^2 + 1 = 5$	$(2, 5)$

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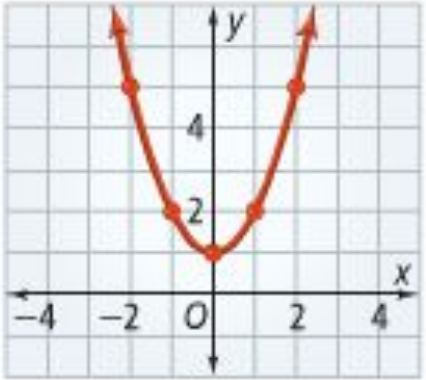
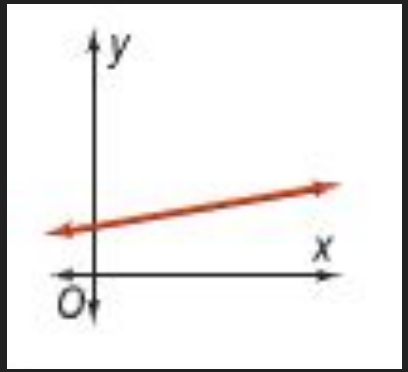
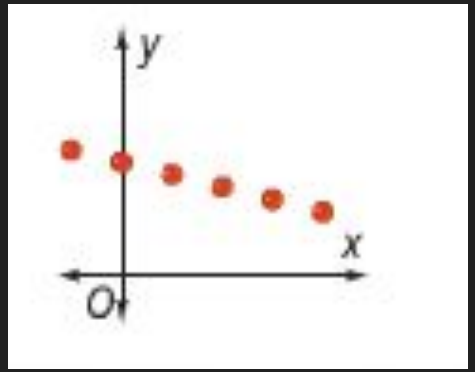


Continuous vs. Discrete Graphs

Continuous - a graph that is unbroken



Discrete - a graph composed of distinct, isolated points



In what real life situations would we need a continuous graph? Talk at your table, then write a response here:

Students, write your response!

In what real life situations would we need a discrete graph? Talk at your table, then write a response here:

Students, write your response!

In what real life situations would we need a continuous vs. discrete graph? Examples

Continuous:

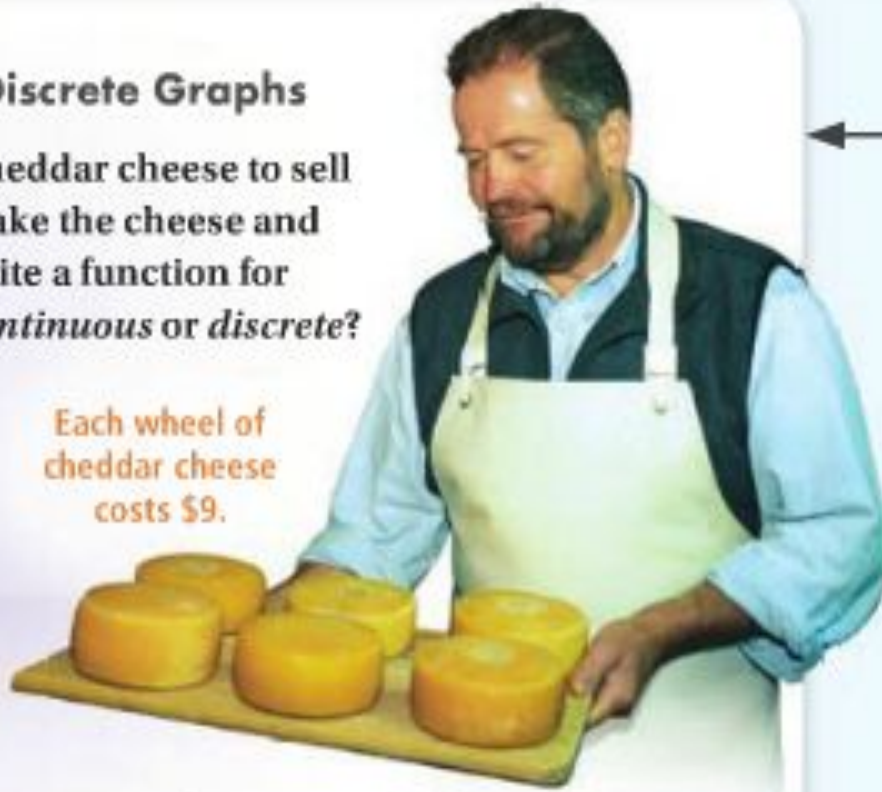
- Money made per hour babysitting
- Plant growth per day

Discrete:

- Cost of beans per can
- Money made per car wash

Problem 3 Identifying Continuous and Discrete Graphs

Farmer's Market A local cheese maker is making cheddar cheese to sell at a farmer's market. The amount of milk used to make the cheese and the price at which he sells the cheese are shown. Write a function for each situation. Graph each function. Is the graph *continuous* or *discrete*?



The weight w of cheese, in ounces, depends on the number of gallons m of milk used. So $w = 16m$. Make a table of values.

The amount a of money made from selling cheese depends on the number n of wheels sold. So $a = 9n$. Make a table of values.

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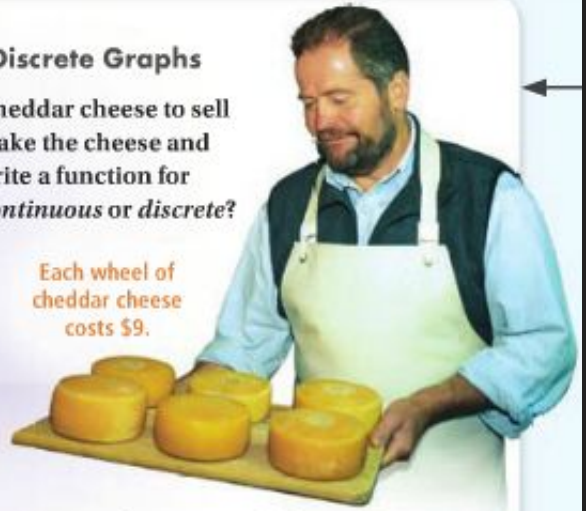

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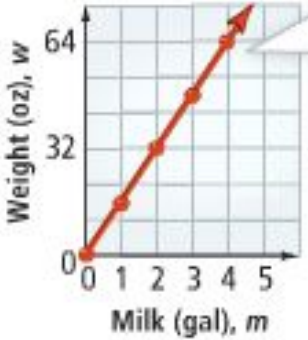
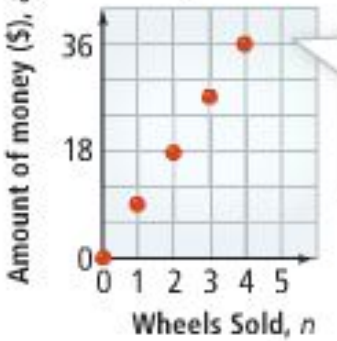
Weight of Cheese



Any amount of milk makes sense, so connect the points. The graph is continuous.

Money Earned



He can only sell whole wheels of cheese. The graph is discrete.

When you walk out of the door today, you should be able to...

- Graph a linear function
- Graph a nonlinear function
- Determine if the graph should be continuous or discrete

Drag your dot to how you are feeling:

Keep going, I understand

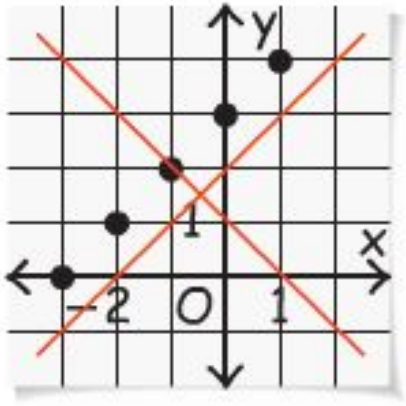
I’m a little confused

Stop, I need help!

Students, drag the icon!

Exit Ticket

Error Analysis Your friend graphs $y = x + 3$ at the right. Describe and correct your friend's error.



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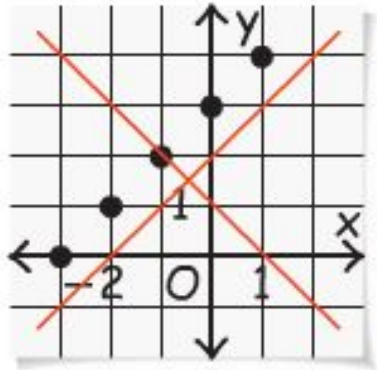

Students, write your response!

Tonight’s Homework

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