Warm-Up

1) If M and A represent integers, $M + A = A + M$ is an example of which property?
1) commutative
2) associative
3) distributive
4) closure

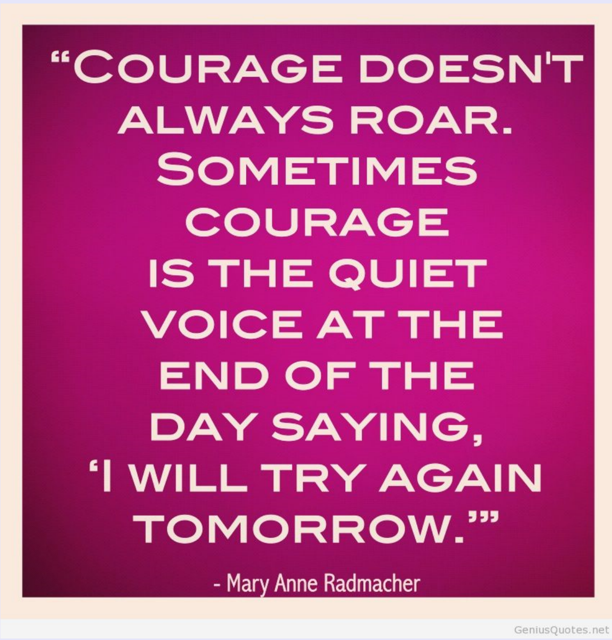
2) Which expression represents "5 less than twice x"?
1) $2x - 5$
2) $5 - 2x$
3) $2(5 - x)$
4) $2(x - 5)$

Oct 13-11:18 AM

Unit #2: Linear Functions

Lesson:

Definition of a Function



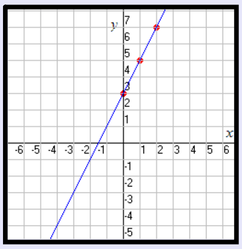
Jan 7-3:52 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

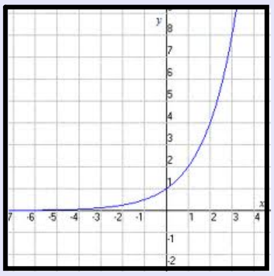
F-IF.A.1, F-IF.A.2

There are four types of Functions we will be learning about throughout the year.

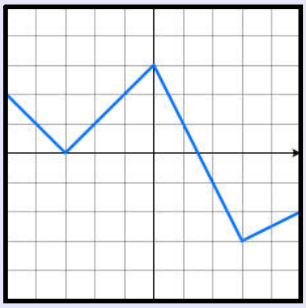
Linear



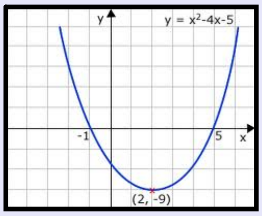
Exponential



Linear Piecewise



Quadratic



Jan 7-5:39 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context. F-IF.A.1, F-IF.A.2

Did you know...

A RELATION is simply a set of ordered pairs. An ordered pair is (x, y). You have plotted several ordered pairs. A RELATION says that for every x- value there is a y-value for it.

Example:

Jan 8-12:30 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context. F-IF.A.1, F-IF.A.2

A **function** is a relation in which each element of the domain is paired with *exactly one* element of the range. Another way of saying it is that there is one and only one output (y) with each input (x).

Just remember:

A function **can not** have 2 of the same x- values!

Ex.: {(2, 4), (2, 6)}

This is not a function because it will not pass the vertical line test!

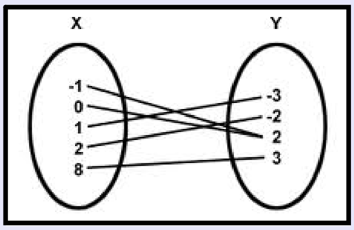
Jan 18-11:05 AM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

Examples: Which of the following represent functions? Explain your answer!

1.



2. {(3,0), (4, 0), (5,0), (6,0)}

3. {(-4, 4), (3, -2), (5, -1), (-4, 0)}

4.

X	0	1	3	5	3	9
Y	8	9	10	6	10	7

Jan 8-4:41 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context. F-IF.A.1, F-IF.A.2

1) Which relation is *not* a function?

1) $\{(1,5),(2,6),(3,6),(4,7)\}$
2) $\{(4,7),(2,1),(-3,6),(3,4)\}$
3) $\{(-1,6),(1,3),(2,5),(1,7)\}$
4) $\{(-1,2),(0,5),(5,0),(2,-1)\}$

2) Which set of ordered pairs represents a function?

1) $\{(0,4),(2,4),(2,5)\}$
2) $\{(6,0),(5,0),(4,0)\}$
3) $\{(4,1),(6,2),(6,3),(5,0)\}$
4) $\{(0,4),(1,4),(0,5),(1,5)\}$

3) Determine which relation is a function.

[A]

x	6	4	6	−1
y	0	3	2	−2

[B]

x	−2	0	1	2
y	0	−2	−3	−4

[C]

x	3	3	2	0
y	1	4	5	−3

[D]

x	0	0	0	0
y	0	1	2	3

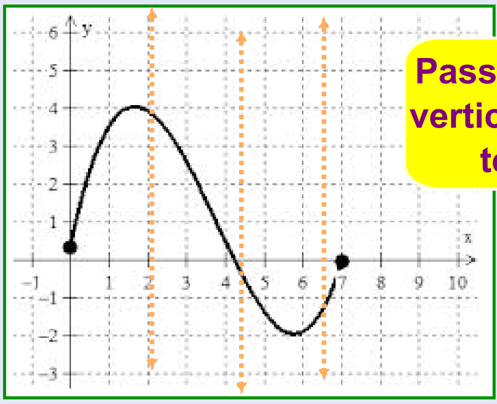
Jan 8-4:41 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

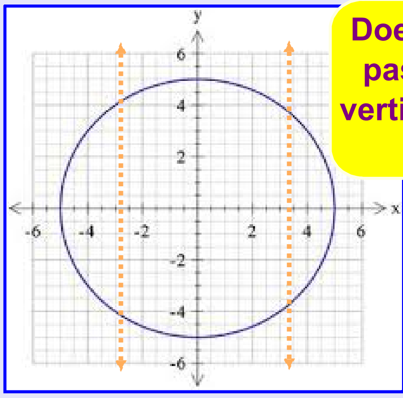
F-IF.A.1, F-IF.A.2

Functions:

A graph is a function if it passes the **vertical line test.** (The line does not cross the graph twice).



Passes the vertical line test



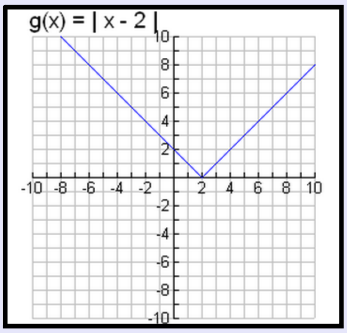
Does NOT pass the vertical line test

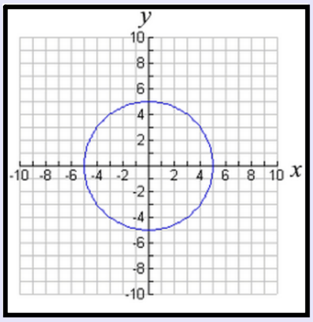
Jan 18-11:05 AM

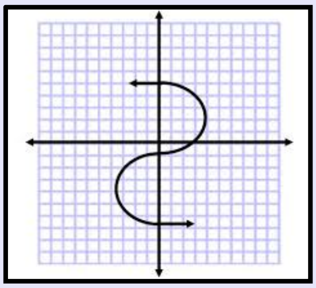
Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

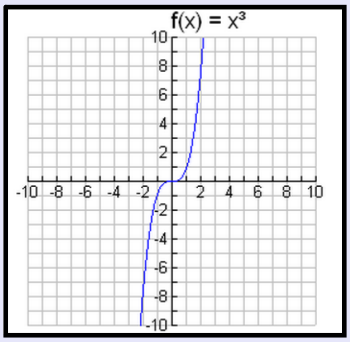
F-IF.A.1, F-IF.A.2

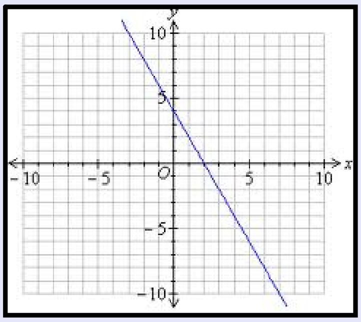
Are these graphs functions?











Jan 18-11:11 AM

Homework:

1) Which relation represents a function?

1) $\{(0,3),(2,4),(0,6)\}$
2) $\{(-7,5),(-7,1),(-10,3),(-4,3)\}$
3) $\{(2,0),(6,2),(6,-2)\}$
4) $\{(-6,5),(-3,2),(1,2),(6,5)\}$

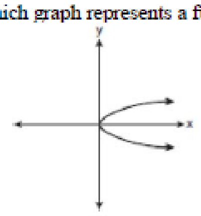
2) Which set of ordered pairs is *not* a function?

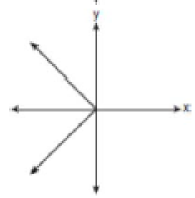
1) $\{(3,1),(2,1),(1,2),(3,2)\}$
2) $\{(4,1),(5,1),(6,1),(7,1)\}$
3) $\{(1,2),(3,4),(4,5),(5,6)\}$
4) $\{(0,0),(1,1),(2,2),(3,3)\}$

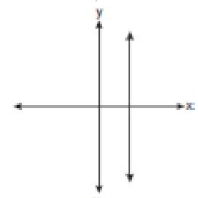
3) Which relation is a function?

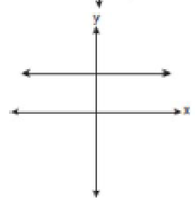
1) $\{(2,1),(3,1),(4,1),(5,1)\}$
2) $\{(1,2),(1,3),(1,4),(1,5)\}$
3) $\{(2,3),(3,2),(4,2),(2,4)\}$
4) $\{(1,6),(2,8),(3,9),(3,12)\}$

4) Which graph represents a function?


1)


2)


3)

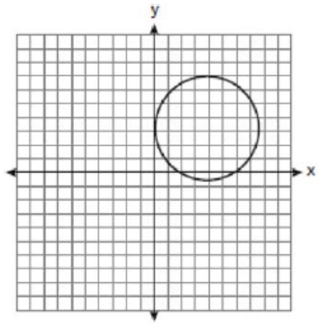

4)

Oct 13-11:09 AM

Warm-up

1) Evaluate: $3x^2 + 4x - 2$
when $x = -2$

2) Which statement is true about the relation shown on the graph below?



1) It is a function because there exists one x-coordinate for each y-coordinate.
2) It is a function because there exists one y-coordinate for each x-coordinate.
3) It is *not* a function because there are multiple y-values for a given x-value.
4) It is *not* a function because there are multiple x-values for a given y-value.

Oct 9-2:40 PM

Unit #2: Linear Functions

Lesson:
Domain and Range

Oct 9-2:40 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context. F-IF.A.1, F-IF.A.2

When you graph (or are given) a function, there is always a DOMAIN and RANGE for the function.

Domain: any possible x-values that exist for the function.

Range: any possible y-values that exist for the function.

Jan 13-8:00 AM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context. F-IF.A.1, F-IF.A.2

An easy way to *determine the DOMAIN* is to figure out the lowest possible x- value and the highest possible x value. You would do this same process to determine the range. If the function is not given and only a set of points are listed, simply list all x values for the domain and all y- values for the range.

For example, given the function below, can you determine the domain and range?

{(-4, 5), {-3, 6), (-2, 7), (-1, 8)}

Jan 13-8:00 AM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

#1. What are the domain and range for the function below?

{(1,2), (2, 4), (3, 5), (2, 6), (1.5, -3)}

#2. What are the domain and range for the function below?

{(-2, 5.1), (0, 5) (3, 3), (4, 6)}

Jan 13-8:00 AM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

REGENT QUESTION!!

The function f has a domain of {1, 3, 5, 7} and a range of {2, 4, 6}.

Could f be represented by {(1,2), (3,4), (5,6), (7,2)}?

Justify your answer.

Oct 13-5:46 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

REGENT QUESTION!!

Officials in a town use a function, C, to analyze traffic patterns. $C(n)$ represents the rate of traffic through an intersection where n is the number of observed vehicles in a specified time interval. What would be the most appropriate domain for the function?

(1) $\{\ldots -2, -1, 0, 1, 2, 3, \ldots\}$

(2) $\{-2, -1, 0, 1, 2, 3\}$

(3) $\left\{0, \frac{1}{2}, 1, 1\frac{1}{2}, 2, 2\frac{1}{2}\right\}$

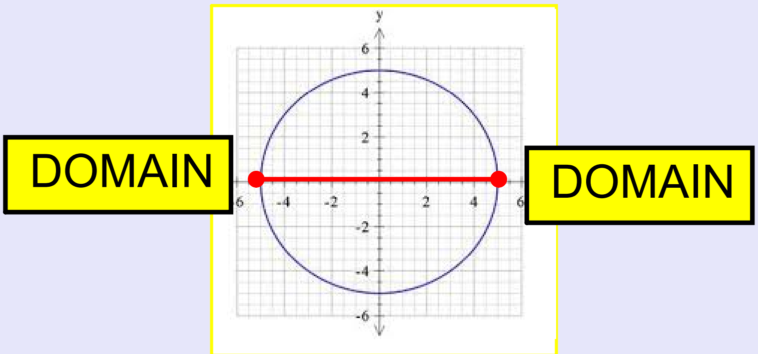
(4) $\{0, 1, 2, 3, \ldots\}$

Jan 20-2:41 PM

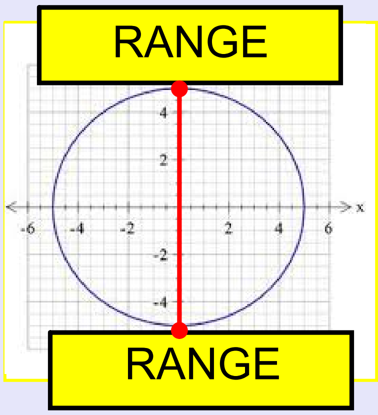
Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

Finding the **Domain** and **Range** of the graph below:



$-5 \le x \le 5$



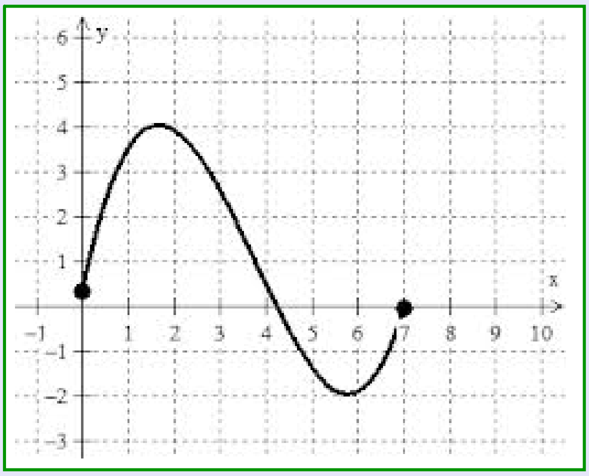
$-5 \le y \le 5$

Jan 20-2:29 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

Ex.: State the **Domain** and **Range** of the function below:



Domain:

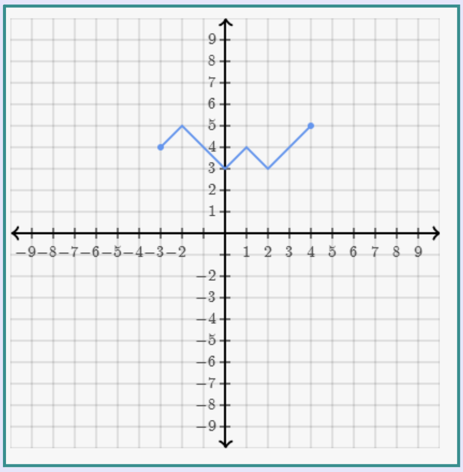
Range:

Jan 20-2:41 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

Ex.: State the **Domain** and **Range** of the function below:



Domain:

Range:

Jan 20-2:41 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

Ex.: If the function, f(x), represents the number of words that Janet can type in x minutes, what is the possible DOMAIN for the function?

1. The set of integers?
2. The set of real numbers?
3. The set of non- negative integers?
4. The set of irrational numbers?

Jan 20-2:41 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

Ex.: If the function, h(x), represents the number of full hours that it takes a person to assemble "x" set of tires in a factory, what is the possible DOMAIN for the function?

1. The set of negative integers?
2. The set of real numbers?
3. The set of non- negative integers?
4. The set of integers?

Jan 20-2:41 PM

Homework

1)

x	2	4	6	8	10
y	1	3	5	7	9

(a) Is it a function?

(b) Domain:

(c) Range:

2)

$\{(0,-4),\ (0,2),\ (0,1),\ (0,0)\}$

(a) Is it a function?

(b) Domain:

(c) Range:

3)

$\{(3,-5),\ (8,-6),\ (3,7),\ (5,9)\}$

(a) Is it a function?

(b) Domain:

(c) Range:

4)

x	-4	9	2	-4	6
y	-10	8	2	-3	14

(a) Is it a function?

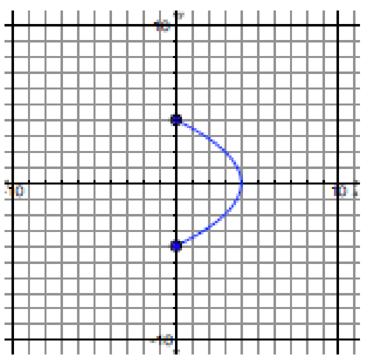
(b) Domain:

(c) Range:

Oct 9-2:28 PM

Homework

5)

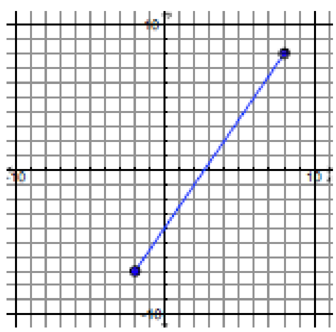


(a) Is it a function?

(b) Domain:

(c) Range:

6)



(a) Is it a function?

(b) Domain:

(c) Range:

Oct 9-2:28 PM

Warm-Up

Match each graph to its function name.

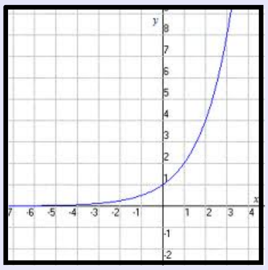
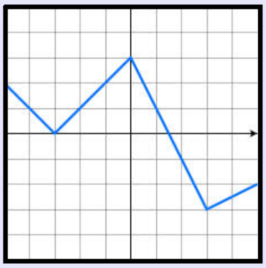
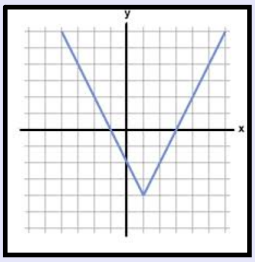
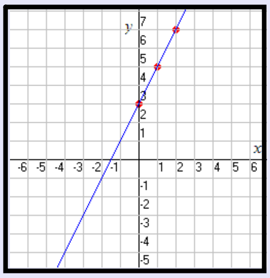
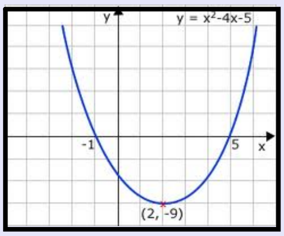
Quadratic

Linear Piecewise

Exponential

Linear

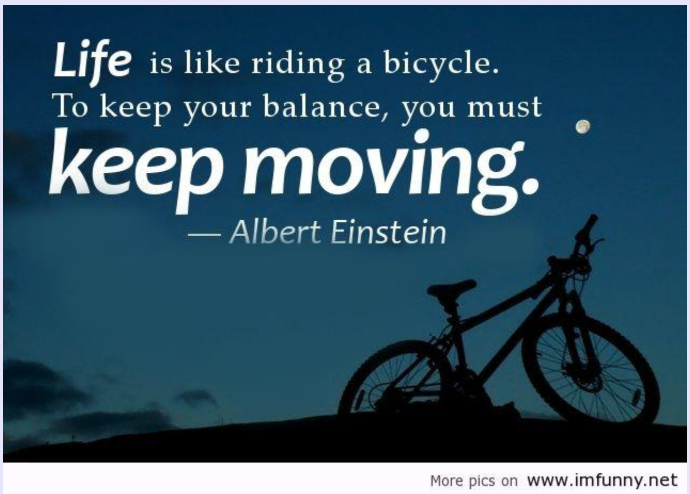
Absolute Value

Oct 9-2:28 PM

Unit #2: Linear Functions

Lesson:
Evaluating Functions



Oct 13-12:19 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

Recall-

A function must pass the vertical line test (no 2 x- values can have the same y-value).

Ex.: Which relation is a function?

1. {(0, -2), (4, 10), (-1, -5), (2, 4)}
2. {(2, 3), (2, 5), (2, 7), (2, 9)}
3. {(4, 8), (2, -3), (1, 1), (2, -1)}
4. {(0, 0), (0, 3), (3, 0), (4, -1)}

We know a little about the definition of a function. Let's talk more about the **notation** we use to represent a function.

Jan 8-3:29 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

Function Notation:

Old: y = 2x + 3

New: f(x) = 2x + 3

All we do is simply replace y with f(x).

- Domain is the values of x for which the function is defined.
- Range is the values of f(x).
- Graph points as (x, f(x)) rather than (x, y).

http://www.youtube.com/watch?v=RZ8yLN46_YQ

Jan 8-3:29 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

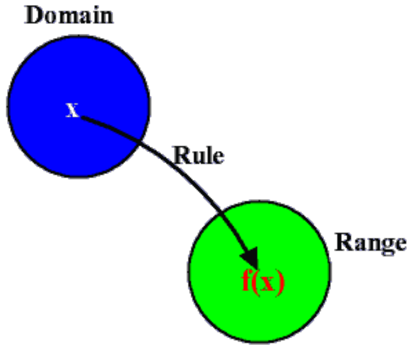
Picture of Functional Notation

Equation

$y = 2x - 3$

Function Notation

$f(x) = 2x - 3$



$f(x) = x + 1$

input (x) — output (x + 1)

Jan 8-3:29 PM

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F-IF.A.1, F-IF.A.2

In order to evaluate a function, we simply substitute in our x value (input) to determine our f(x) (outout) value.

The "old" way	*The "new" way using function notation*
What is y = 2x at x =5	f(x) = 2x f (5) = ?

In both cases, substitute '5' for 'x' and calculate

Solution	**Solution**
y = 2(5) = 10	f(5) = 2(5) = 10

We say that '5' is the input and '10' is the output

www.mathwarehouse.com

Jan 8-3:28 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

f(x)

the name of the function — the input

Ex.: $f(x) = x + 1$

$f(3) = 3 + 1 = 4$

$f(3) = 4$

domain guy — range guy

For every input, there is exactly one output.

This means for each domain (x) there is exactly one range (y).

Jan 8-3:28 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

Ex.: If $f(x) = 3x + 2$, find:

a) f(2)

b) f(-5)

c) f(8)

Jan 8-12:20 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

Evaluate the following expressions given the functions below:

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

$g(x) = -3x + x^3$

h(x) =

$j(x) = 2x + 9$

a) g(10)

b) f(3)

c) h(-2)

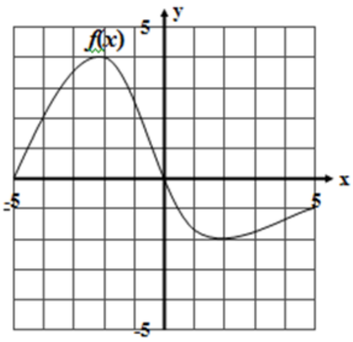
d) j(7)

Jan 8-4:38 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

Given the graph of this function, f(x), find:



a. f(-4)

b. f(0)

c. f(3)

d. f(-5)

e. Find x when f(x) = 2

f. Find x when f(x) = 0

Jan 20-9:35 PM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

Find h(2), when $h(x) = x^2 - x + 3$

Now try this tricky one:

Find h(2g + 3), when $h(x) = x + 3$

Jan 13-8:12 AM

Students can understand that a funcon from one set (called the domain) to another set (called the range) assigns each element of the domain to exactly one element of the range. Students can use funcon notaon, evaluate funcons for inputs in their domains and interpret statements that use funcon notaon in terms of a context.

F-IF.A.1, F-IF.A.2

Ex.: Find f(3h), when $f(x) = x^2 + 3x + 3$

Jan 13-8:10 AM

Homework: *Directions: Solve each functon for the requested value.*

1) Let $g(x) = x^2 - 5x + 2$

Find the following:

a) g(-1)

b) g(-2)

c) g(0)

d) g(5)

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

Find the following:

a) f(-3)

b) f(6)

c) f(-1)

d)f(4)

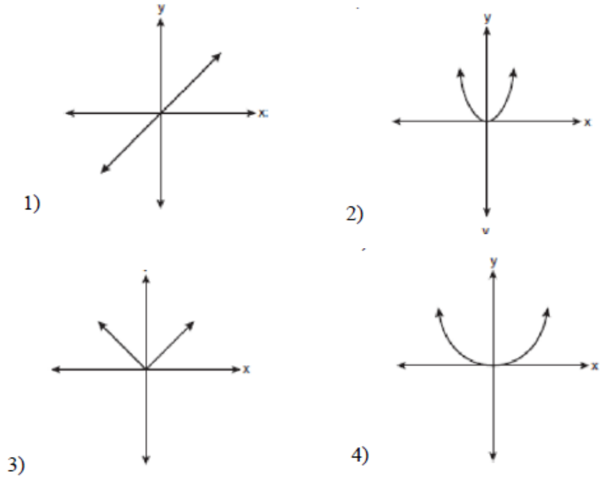
3) Let g(x) = -7x + 4. Find the following

a) g(-5) b) g(2) c) g(-1) d) g(0)

Jan 13-8:10 AM

Warm-Up

1) Which graph represents a linear function?



2) Evaluate:

$h(t) = |t+2| + 3$; Find $h(6)$

Oct 13-1:52 PM

Unit #2: Linear Functions

Leson:

Arithmetic Sequence

Oct 9-2:21 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.

F-IF.A.3

Find the next 4 terms of each sequence

1) 0, 3, 6, 9,..

2) -8, -5, -2, 1, ...

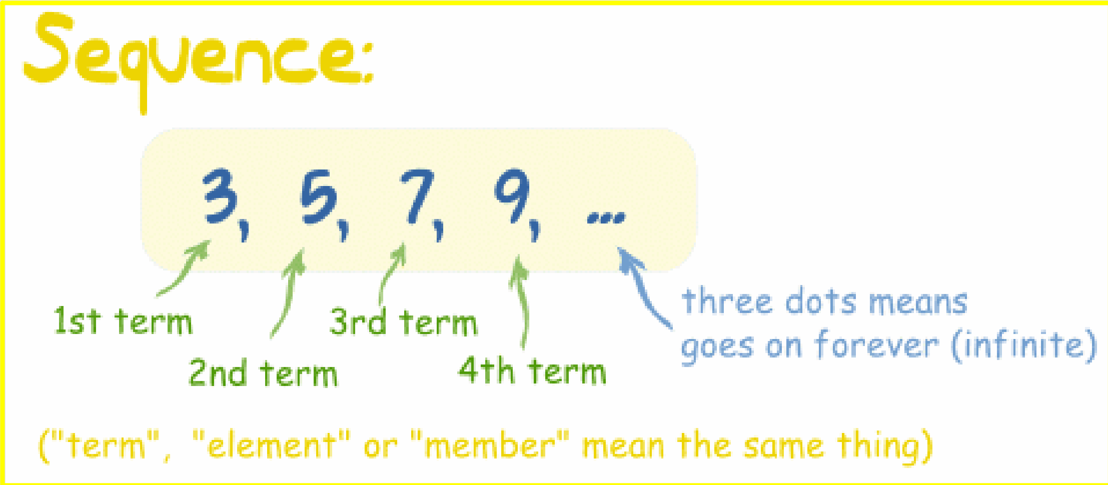
3) 10, 5, 0, -5, -10,...

Oct 13-3:51 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.

F-IF.A.3

A sequence is an ordered list of numbers.



Oct 13-3:55 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.

F-IF.A.3

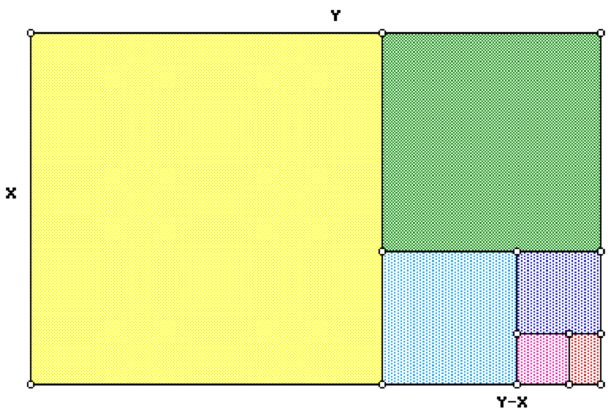
The most famous sequence...

Fi·bo·nac·ci se·ries

noun MATHEMATICS

noun: **Fibonacci sequence**

1. a series of numbers in which each number (*Fibonacci number*) is the sum of the two preceding numbers. The simplest is the series 1, 1, 2, 3, 5, 8, etc.



http://www.youtube.com/watch?v=ahXIMUkSXX0

Dec 19-7:34 AM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

Arithmetic Sequences

ADD

An **arithmetic sequence** goes from one term to the next by adding (or subtracting) the same value.

Arithmetic Sequence	Common Difference, d	
1, 4, 7, 10, 13, 16, ...	$d = 3$	add 3 to each term to arrive at the next term, or...the difference $a_2 - a_1$ is 3.
15, 10, 5, 0, -5, -10, ...	$d = -5$	add -5 to each term to arrive at the next term, or...the difference $a_2 - a_1$ is -5.
$1, \frac{1}{2}, 0, -\frac{1}{2}, \ldots$	$d = -\frac{1}{2}$	add -1/2 to each term to arrive at the next term, or....the difference $a_2 - a_1$ is -1/2.

Oct 13-4:01 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

The **number added (or subtracted)** at each stage of an arithmetic sequence is called the COMMON DIFFERENCE, d, because if you subtract successive terms, you will always get this common value.

Ex.: Find the common difference, d, of the following sequence and find the next term in the sequence:

3, 11, 19, 27, 35

Dec 19-7:34 AM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

Determine if each sequence is an ARITHMETIC Sequence. If so, Find the common DIFFERENCE. Also, find the next 2 terms in each sequence.

1) 4, 7, 10, 13, ...

2) -100, -10, -1, ...

3) -10, -6, -2, 2, ...

4) -11, -14, -17, -20, ...

5) 2, 4, 6, 8, ...

6) 9, 3, 1, 1/3, ...

Oct 13-3:43 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

Consider a sequence generated by the formula given. Starting with **n = 1**, generate the terms f(1), f(2), f(3), f(4), and f(5). The first couple of terms are found for you as an example.

Example #1: f(n) = 6n - 4

Write your terms as a set of ordered pairs (Input, Output) or (x, y).

f(1) = 6(1) - 4 = 2 (1, 2)

f(2) = 6(2) - 4 = 8 (2, 8)

f(3) =

f(4) =

⋮

f(25) =

Dec 19-7:34 AM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

Consider a sequence generated by the formula given. Starting with **n = 1**, generate the terms f(1), f(2), f(3), f(4), and f(5). Write your terms as a set of ordered pairs

Ordered Pairs

(Input, Output) or (x, y)

Example #2: f(n) = 5n + 2

f(1) =

f(2) =

f(3) =

f(4) =

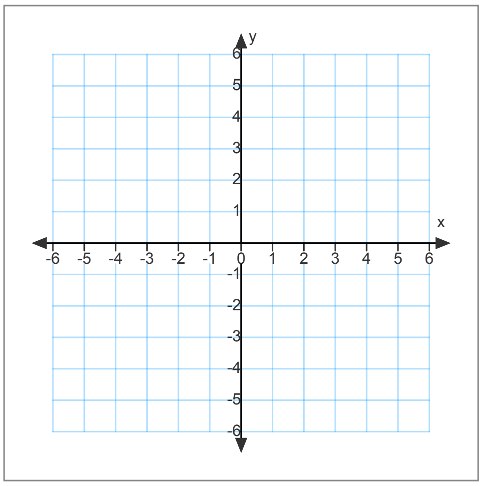
⋮

f(25) =

Dec 19-7:34 AM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

If we use our sequence as a list of coordinate pairs, we can determine what type of function we will get. Let's try an arithmetic sequence: -3, 0, 3, 6, ...



What is the first term?

Second?

Third?

Fourth?

Write them now as ordered pairs:

What function do you get when you plot these points?

Dec 19-7:34 AM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

Consider the formula f(n) = 2n - 2 for a sequence. Find f(1), f(2), f(3), and f(4). Then plot your sequence as a set of ordered pairs.

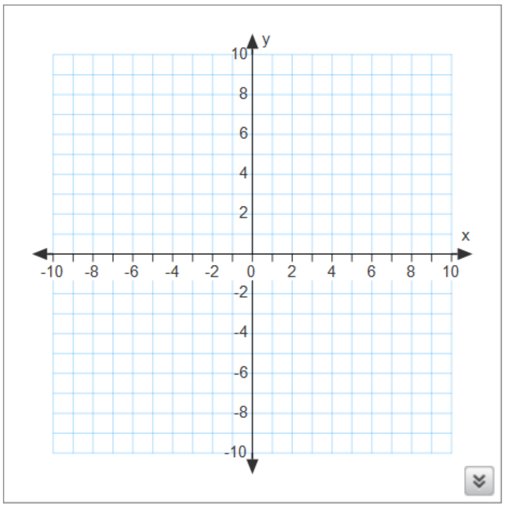
Ordered pairs:

f(1) =

f(2) =

f(3) =

f(4) =



What type of function do you get when you graph the points?

Dec 19-7:34 AM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

What can we conclude about Arithmetic Sequences:

Tomorrow, we will practice how to find the equation of a linear function given an arithmetic sequence

Oct 14-7:04 PM

Homework

Determine if the sequence is arithmetic. If it is, find the common difference.

1) 35, 32, 29, 26, ...

2) −3, −23, −43, −63, ...

3) −34, −64, −94, −124, ...

4) −30, −40, −50, −60, ...

Given the explicit formula for an arithmetic sequence find the first five terms and the term named in the problem.

7) $a_n = -11 + 7n$
Find a_{34}

8) $a_n = 65 - 100n$
Find a_{39}

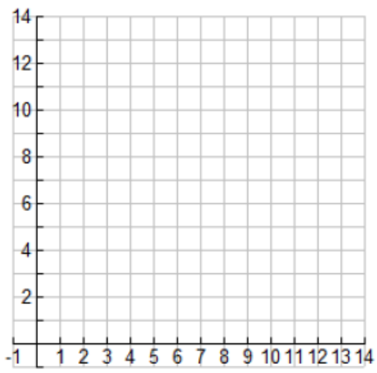
Oct 13-4:34 PM

Homework

Graphing Sequences

1. Graph the arithmetic sequence 2, 4, 6, 8, 10, 12

Subscript	Term	Coordinates
1	2	(1,2)
2		
n		



a) Describe the type of graph represented by this sequence.

Oct 13-4:34 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers. F-IF.A.3

Warm-Up

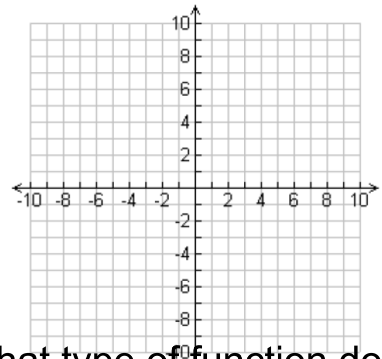
Given the sequence: -2, 0, 2, 4,...

a)Find the common difference

b)Find the next 3 terms

c) Write as coordinate pairs

d) Graph the points



e) What type of function do you get when you graph the points?

Oct 9-2:29 PM

Unit # 2: Linear Functions

Lesson:

Arithmetic Sequence

(Day 2)

Oct 9-2:29 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

What if we are given a sequence and we are asked to find the 100th term?

We don't really want to find all 100 terms in our sequence, do we?

We could find a formula for the sequence and then just **substitute** into that formula.

Dec 19-7:34 AM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

If we create a list (in our calculators) and determine a formula for the sequence, then we could substitute and determine any n^{th} term.

Here's an **arithmetic sequence**:

3, 5, 7, 9, 11,...

- What is the first term?
- The second?
- Third?

Dec 19-7:34 AM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

Let's determine a formula for this **arithmetic sequence** and then determine the 100th term.

3, 5, 7, 9, 11, ...

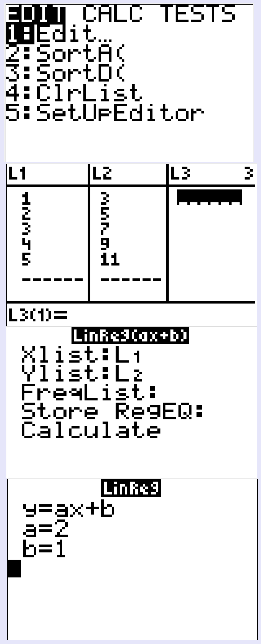
Go to STAT in your calculators.

For L1, type 1, 2, 3, 4, ... (however many terms you have in your sequence)

For L2, type your sequence.

Hit STAT CALC and use Linear Regression (#4)

Hit ENTER until you get to the equation of your line.



Dec 19-7:34 AM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

Using our a and b from the calculator (a = 2, b = 1), write the formula (don't forget to use an "n" and not an "x")

3, 5, 7, 9, 11, ...

$f(n) = 2n + 1$

Find the 100th term of this arithmetic sequence:

$f(100) = 2(100) + 1 = 201$

Dec 19-7:34 AM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

For each problem, find the formula for the sequence given (remember "4" for linear regression- arithmetic). Then find the 15th term of the sequence.

1. 3, 5, 7, 9, ...

2. -2, -4, -6, -8, ...

3. -10, -20, -30, -40, ...

4. 12, 9, 6, 3, ...

Dec 19-7:34 AM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

Classwork:

For each problem, with your partner, find the formula for the sequence given (remember "4" for linear regression- arithmetic). Then find the 10th term of the sequence.

1. 5, 10, 15, 20, ...

2. -2, 0, 2, 4, ...

3. -50, -48, -46, -44,...

4. 25, 21, 17, 13, ...

Dec 19-7:34 AM

Tomorrow we will apply these arithmetic sequences to real life situations and find the formula.

To be continued.....

Oct 15-5:22 PM

Warm-Up

1) Given the sequence: 1, 3, 5, 7, ...

a) Find the formula

b) Find the 100th term

Oct 14-1:45 PM

Unit #2: Linear Functions

Lesson:
Arthimetic Sequence
(Day 3)

Oct 14-1:42 PM

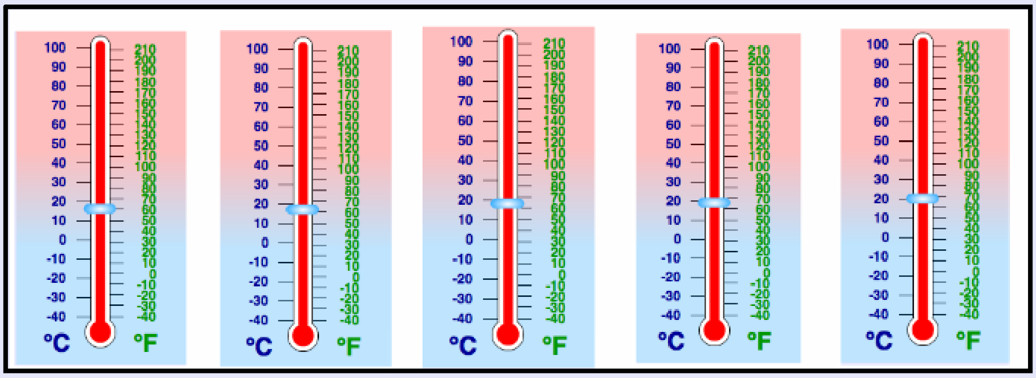
Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

Arithmetic Sequence Situation

Your room is too cold, so you decide to adjust the thermostat. The current temperature of the room is 60° Fahrenheit. In an attempt to get warmer, you increase the temperature to 62° . When this doesn't warm the room enough for you, you decide to increase the thermostat to 64° . This temperature still isn't warm enough, so you continue to increase it in this manner.

Oct 13-7:46 PM

Visual Representation



While it my be difficult to see in the images provided, the temperate is being increased by 2 F each time. This created the arithmetic sequence of 60, 62, 64, 68, 70,...

Oct 13-7:50 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

Now, lets find the formula for the sequence: **60, 62, 64, 68, 70,...**

Just to demonstrate how the formulas work, let's find what the temperature would be if you adjust the thermostat starting at the original temperature 12 times

Oct 13-7:54 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.

F-IF.A.3

A class is going on a field trip to see a play. It costs $150 for a school bus to get them there, and tickets cost $13 a person. How much will it cost for 28 people to attend?

Oct 13-7:54 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.

F-IF.A.3

Silvia bought a new kitchen appliance. She made an initial payment of $25 and paid the remaining amount in 5 monthly installments. If she pays $20 each month and does not need to pay any interest, what is the cost of the kitchen appliance?

Oct 13-7:54 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

A truck rental company charges an initial amount to hire a truck plus additional charges according to the distance traveled. The table below shows the various amounts charged by the company for different distances.

Rental charges

Distance (miles)	5	10	15	20
Amount ($)	33.75	37.50	41.25	45

How much does the company charge for a trip that covers a distance of 30 miles?

Oct 13-7:54 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

A sales representative earns $1000 per month plus a commission of $2.50 on every item she sells. If she makes 160 sales in a month, then what will be her earnings for that month?

Oct 13-7:54 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.
F-IF.A.3

REGENT QUESTION!!

The third term in arithmetic sequence is 10 and the fifth is 26. If the first term is a_1, which is an equation for the *n*th term of this sequence?

1) $a_n = 8n + 10$

2) $a_n = 8n - 14$

3) $a_n = 16n + 10$

4) $a_n = 16n - 38$

Oct 13-5:50 PM

Homework:

1) My movie service charges $5 a month and $2 per video. How much will it cost for 25 videos?

2) A fair charges an entry fee of $5 and $1.50 to play their games. How much will you need to play 10 games? How many games can you play for $35?

Oct 13-6:04 PM

Homework:

3) The table below shows the various costs of renting the loca l community hall based on the number of attendees.

Rental charge

Number of persons	Total cost ($)
10	670
15	970
20	1270
25	1570

Hannah booked the hall for a birthday party and 30 people attend the party. How much does she pay?

4) Rachel is practicing the guitar for a competition. She starts by practicing for 1 hour on the first day and then increases the practice time by 10 minutes each day. If the pattern continues, how many minutes will she spend practicing on the 7th day?

Oct 13-6:04 PM

Students can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of integers.

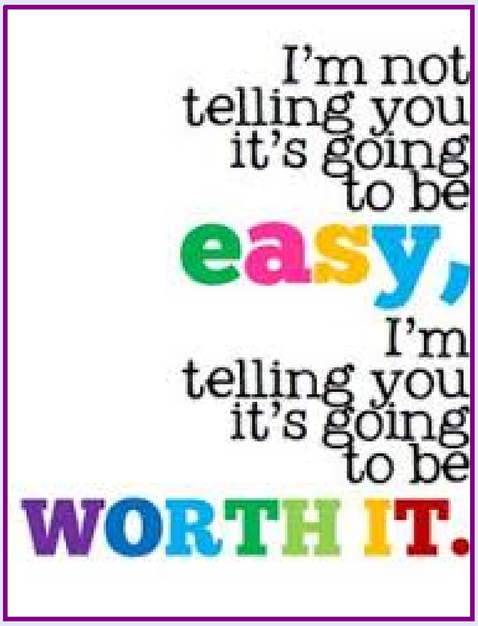
F-IF.A.3

Warm- Up

My cell phone company charges $30 a month and $0.10 per text. How much will it cost for 100 text messages?

Oct 15-5:35 PM

QUIZ TOMORROW!!!!



Oct 13-3:26 PM