

<p>Linear: Sequence: Recursive equation:</p> <p>Explicit equation: $y = 2x + 4$</p> <p>1st Difference:</p> <p>2nd Difference:</p>	<p>Table:</p> <table border="1"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>0</td><td>4</td></tr> <tr><td>1</td><td>6</td></tr> <tr><td>2</td><td>8</td></tr> <tr><td>3</td><td>10</td></tr> <tr><td>4</td><td>12</td></tr> </tbody> </table>	x	y	0	4	1	6	2	8	3	10	4	12	<p>Graph:</p>
x	y													
0	4													
1	6													
2	8													
3	10													
4	12													
<p>Exponential: Sequence: Recursive equation:</p> <p>Explicit equation: $y = 3 \cdot 2^x$</p> <p>1st Difference:</p> <p>2nd Difference:</p>	<p>Table:</p> <table border="1"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>0</td><td>3</td></tr> <tr><td>1</td><td>6</td></tr> <tr><td>2</td><td>12</td></tr> <tr><td>3</td><td>24</td></tr> <tr><td>4</td><td>48</td></tr> </tbody> </table>	x	y	0	3	1	6	2	12	3	24	4	48	<p>Graph:</p>
x	y													
0	3													
1	6													
2	12													
3	24													
4	48													
<p>Quadratic: Sequence: Recursive equation:</p> <p>Explicit equation: $y = x^2$</p> <p>1st Difference:</p> <p>2nd Difference:</p>	<p>Table:</p> <table border="1"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>-2</td><td>4</td></tr> <tr><td>-1</td><td>1</td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>4</td></tr> </tbody> </table>	x	y	-2	4	-1	1	0	0	1	1	2	4	<p>Graph:</p>
x	y													
-2	4													
-1	1													
0	0													
1	1													
2	4													

Sep 4-7:32 AM

Name _____ Date _____ Period _____

All things Linear, Exponential, and Quadratic

What do each of the following look like for the given type of function:

<p>Linear: Sequence: Arithmetic Recursive equation: $f(x) = f(x-1) + 2$</p> <p>Explicit equation: $f(x) = 2x + 4$</p> <p>1st Difference: $+2$</p> <p>2nd Difference: \emptyset</p>	<p>Table:</p> <table border="1"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>0</td><td>4</td></tr> <tr><td>1</td><td>6</td></tr> <tr><td>2</td><td>8</td></tr> <tr><td>3</td><td>10</td></tr> <tr><td>4</td><td>12</td></tr> </tbody> </table>	x	y	0	4	1	6	2	8	3	10	4	12	<p>Graph:</p>		
x	y															
0	4															
1	6															
2	8															
3	10															
4	12															
<p>Exponential: Sequence: geometric Recursive equation: $f(x) = f(x-1) \cdot 2$ $f(1) = 3$</p> <p>Explicit equation: $f(x) = 3 \cdot 2^x$</p> <p>1st Difference: $\cdot 2$</p> <p>2nd Difference: \emptyset</p>	<p>Table:</p> <table border="1"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>0</td><td>3</td></tr> <tr><td>1</td><td>6</td></tr> <tr><td>2</td><td>12</td></tr> <tr><td>3</td><td>24</td></tr> <tr><td>4</td><td>48</td></tr> </tbody> </table>	x	y	0	3	1	6	2	12	3	24	4	48	<p>Graph:</p>		
x	y															
0	3															
1	6															
2	12															
3	24															
4	48															
<p>Quadratic: Sequence: Recursive equation: $f(x) = f(x-1) + 2x$ $f(1) = 1$</p> <p>Explicit equation: $f(x) = x^2 + 0$</p> <p>1st Difference: $f(x) = 2x + 1$</p> <p>2nd Difference: $+2$</p>	<p>Table:</p> <table border="1"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>-2</td><td>4</td></tr> <tr><td>-1</td><td>1</td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>4</td></tr> <tr><td>3</td><td>9</td></tr> </tbody> </table>	x	y	-2	4	-1	1	0	0	1	1	2	4	3	9	<p>Graph:</p>
x	y															
-2	4															
-1	1															
0	0															
1	1															
2	4															
3	9															

Aug 28-9:28 AM

QUADRATIC FUNCTIONS - 1.1

1.1 Something to Talk About

We skipped this task, just homework ;)
 A Develop Understanding Task

Cell phones often indicate the strength of the phone's signal with a series of bars. The logo below shows how this might look for various levels of service.




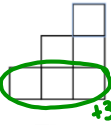
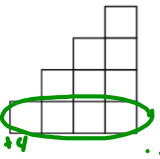
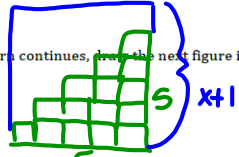
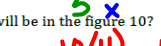








Figure 1 Figure 2 Figure 3 Figure 4 ... + x

- Assuming the pattern continues, draw the next figure in the sequence.
 
- How many blocks will be in the figure 10?

$$\frac{10(11)}{2} = \frac{110}{2} = 55$$

- Examine the sequence of figures and find a rule or formula for the number of tiles in any figure number.

$$\frac{x(x+1)}{2} \quad \text{test: } \frac{4(4+1)}{2} = \frac{4(5)}{2} = \frac{20}{2} = 10 \checkmark$$

$$f(4) = 10 \checkmark$$



Sep 14-4:19 PM

SECONDARY MATH II // MODULE 1

QUADRATIC FUNCTIONS - 1.1

1.1

READY, SET, GO! Name Period Date

READY
 Topic: Distributive Property
 Simplify the following expressions

- $3(2x + 7)$
- $-12(5x - 4)$
- $5a(-3a + 13)$
- $9x(6x - 2)$
- $\frac{2x}{3}(12x + 18)$
- $\frac{4a}{5}(10a - 25b)$
- $\frac{-4x}{11}(121x + 22)$

$\frac{2x}{3}(12x + 18) = \frac{2x}{3} \cdot 12x + \frac{2x}{3} \cdot 18 = 8x^2 + 12x$

Linear (+ or -)
 $y = mx + b$

Exponential (x or ÷)
 $y = b \cdot r^x$

Aug 24-8:38 AM

Warm up #8

8. Linear, exponential, or a new kind of function?

a.

x	f(x)
6	64
7	128
8	256
9	512
10	1024

Type and characteristics?
exponential

Explicit equation:
 $f(x) = 2^x = 64(2)^{x-6}$

Recursive equation:
 $2^x = 2 \cdot 2^{(x-1)}$
 $f(x) = f(x-1) \cdot 2$
 $f(6) = 64$

b.

x	f(x)
6	36
7	49
8	64
9	81
10	100

Type and characteristics?
Quadratic

Explicit equation:
 $y = x^2$

Recursive equation:
 $f(x) = f(x-1) + (2x-1)$

c.

x	f(x)
6	11
7	13
8	15
9	17
10	19

Type and characteristics?
Linear

Explicit equation:
 $f(x) = 2x - 1 = 2(x-6) + 11$

Recursive equation:
 $f(x) = f(x-1) + 2$ change
 $f(6) = 11$ starts

→ SAME!

Aug 24-8:38 AM

9. Linear, exponential, or a new kind of function?

d.

x	f(x)
-2	-17
-1	-12
0	-7
1	-2
2	3

Type and characteristics?

Explicit equation:

Recursive equation:

e.

x	f(x)
-2	1/25
-1	1/5
0	1
1	5
2	25

Type and characteristics?

Explicit equation:

Recursive equation:

f.

x	f(x)
-2	9
-1	6
0	5
1	6
2	9

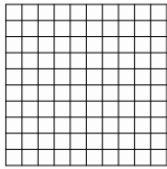
Type and characteristics?
Quadratic

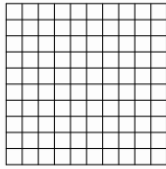
Explicit equation: $y = x^2 + 5$

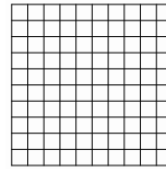
Recursive equation:
 $f(x) = f(x-1) + (2x-1)$
 $f(0) = 5$

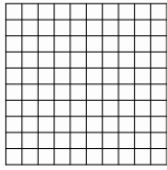
Aug 24-8:38 AM

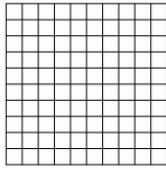
10. Graph the functions from the tables in #8 and #9. Add any additional characteristics you notice from the graph. Place your axes so that you can show all 5 points. Identify your scale. Write your explicit equation above the graph.


a. Equation: 

b. Equation: 

c. Equation: 

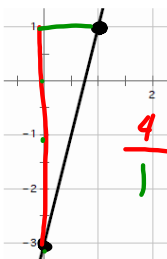
d. Equation: 

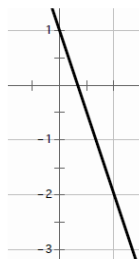
e. Equation: 

f. Equation: 

Aug 24-8:39 AM

Topic: Rates of Change
Identify the rate of change in each of the representations below.

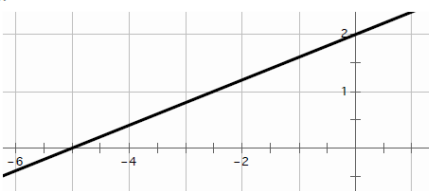
11. 

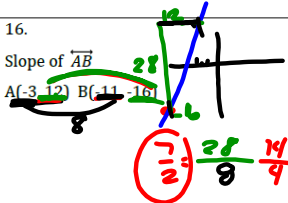
12. 

13.

x	f(x)
25	65
26	68
27	71
28	74

14. $f(0) = 7; f(n + 1) = f(n) + 5$

15. 

16. 

17. George is loading freight into an elevator. He notices that the weight limit for the elevator is 1000 lbs. He knows that he weighs 210 lbs. He has loaded 15 boxes into the elevator. Each box weighs 50 lbs. Identify the rate of change for this situation.

18.

Independent variable	4	5	6	7	8
Dependent variable	5	5.5	6	6.5	7

19. $f(-4) = 24$ and $f(6) = -36$

Aug 25-10:55 AM