

READY, SET, GO!
Name \_\_\_\_\_
Period \_\_\_\_\_
Date \_\_\_\_\_

**READY**

Topic: Multiplying two binomials

In the previous RSG, you were asked to use the distributive property on two different terms in the same problem. Example: *Multiply and simplify*  $3x(4x + 1) + 2(4x + 1)$ .

You may have noticed that the binomial  $(4x + 1)$  occurred twice in the problem.

Here is a simpler way to write the same problem:  $(3x + 2)(4x + 1)$ .

You will use the distributive property twice. First multiply  $3x(4x + 1)$ ; then multiply  $+2(4x + 1)$ . Add the like terms. Write the  $x^2$  term first, the  $x$ -term second, and the constant term last.

$$3x(4x + 1) + 2(4x + 1) \rightarrow (12x^2 + 3x) + (8x + 2) \rightarrow 12x^2 + \underbrace{[3x + 8x]}_{\text{like terms}} + 2 \rightarrow \underbrace{12x^2 + 11x + 2}_{\text{Simplified form}}$$

**Multiply the two binomials.** (Your answer should have 3 terms and be in this form  $ax^2 + bx + c$ .)

- |                        |                       |                       |
|------------------------|-----------------------|-----------------------|
| 1. $(x + 5)(x - 7)$    | 2. $(x + 8)(x + 3)$   | 3. $(x - 9)(x - 4)$   |
| 4. $(x + 1)(x - 4)$    | 5. $(3x - 5)(x - 1)$  | 6. $(5x - 7)(3x + 1)$ |
| 7. $(4x - 2)(8x + 10)$ | 8. $(x + 6)(-2x + 5)$ | 9. $(8x - 3)(2x - 1)$ |

1.3 set HW

**SET**

Topic: Distinguishing between linear and quadratic patterns

**Use first and second differences to identify the pattern in the tables as linear, quadratic, or neither. Write the recursive equation for the patterns that are linear or quadratic.**

10.

x	y
-3	-23
-2	-17
-1	-11
0	-5
1	1
2	7
3	13

a. Pattern: Linear  
 b. Recursive equation:  $y = 6x - 5$

11.

x	y
-3	4
-2	0
-1	-2
0	-2
1	0
2	4
3	10

a. Pattern:  $y = x^2$   
 b. Recursive equation:  $y = ax^2 + bx + c$   
 $y = 1x^2 + 1x - 2$

12.

x	y
-3	-15
-2	-10
-1	-5
0	0
1	5
2	10
3	15

a. Pattern:  $y = 5x$   
 b. Recursive equation:

13.

x	y
-3	24
-2	22
-1	20
0	18
1	16
2	14
3	12

- a. Pattern:  
 b. Recursive equation:

14.

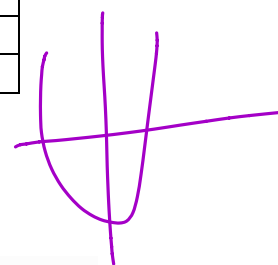
x	y
-3	48
-2	22
-1	6
0	0
1	4
2	18
3	42

- a. Pattern: Quadratic  
 b. Recursive equation:

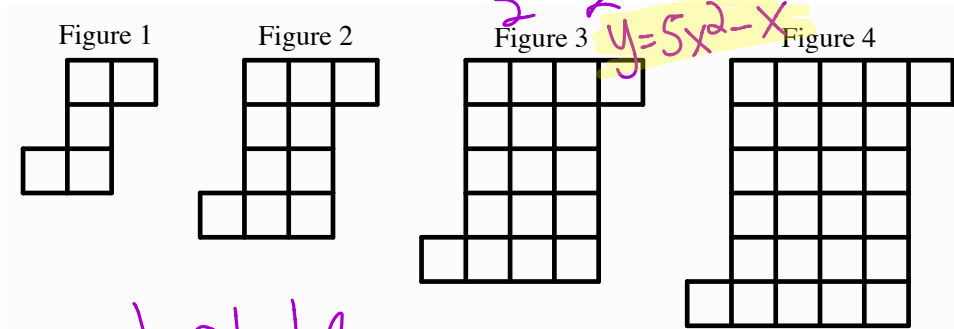
15.

x	y
-3	4
-2	1
-1	0
0	1
1	4
2	9
3	16

- a. Pattern:  
 b. Recursive equation:



16.



table

Figure 5

x	y
1	5
2	10
3	17
4	26

- a. Draw figure 5.  
 b. Predict the number of squares in figure 30. Show what you did to get your prediction.

GO

Topic: Interpreting recursive equations to write a sequence

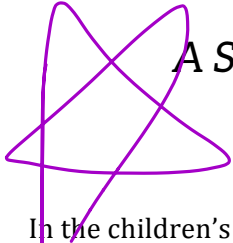
$y = x^2 + 2x + 2$        $(30)^2 + 2(30) + 2$   
 962

Write the first five terms of the sequence.

17.  $f(0) = -5; f(n) = f(n - 1) + 8$       18.  $f(0) = 24; f(n) = f(n - 1) - 5$

19.  $f(0) = 25; f(n) = 3f(n - 1)$       20.  $f(0) = 6; f(n) = 2f(n - 1)$

# 1.5 The Tortoise and The Hare



## A Solidify Understanding Task



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In the children’s story of the tortoise and the hare, the hare mocks the tortoise for being slow. The tortoise replies, “Slow and steady wins the race.” The hare says, “We’ll just see about that,” and challenges the tortoise to a race. The distance from the starting line of the hare is given by the function:

$$d = t^2 \text{ (} d \text{ in meters and } t \text{ in seconds)}$$

Because the hare is so confident that he can beat the tortoise, he gives the tortoise a 1 meter head start. The distance from the starting line of the tortoise including the head start is given by the function:

$$d = 2t \text{ (} d \text{ in meters and } t \text{ in seconds)}$$

1. At what time does the hare catch up to the tortoise?

2 seconds

2. If the racecourse is very long, who wins: the tortoise or the hare? Why?

Turtle • They approach the y-axis the fastest (largest rate of change)

3. At what time(s) are they tied?

At 2 and 4 seconds

4. If the racecourse were 15 meters long who wins, the tortoise or the hare? Why?

y, rabbit

# 1.6 How Does It Grow?

## A Practice Understanding Task



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For each relation given:

- a. Identify whether or not the relation is a function; *VLT, not repeat x-values*
- b. Determine if the function is linear, exponential, quadratic or neither; *table*
- c. Describe the type of growth *quadratic*
- d. Create one more representation for the relation. *table*

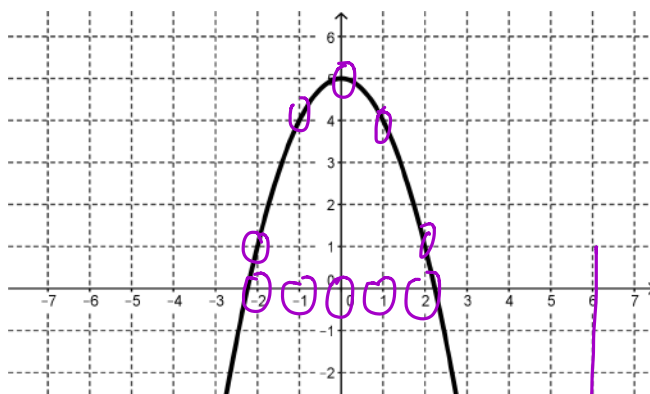
*e) equation*

1. A plumber charges a base fee of \$55 for a service call plus \$35 per hour for each hour worked during the service call. The relationship between the total price of the service call and the number of hours worked.

$$C = 35h + 55$$

x	y
1	90
2	125
3	160
4	195
5	230

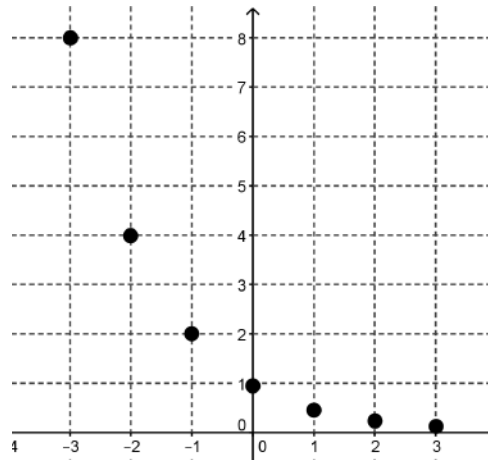
- 2.



x	y
-2	0
-1	1
0	4
1	5
2	4

*a*  
*b*  
*c*  
*d*  
*e*

3.



Fun: yes

table  
in calc

exp

$$y = .5^x$$

4.

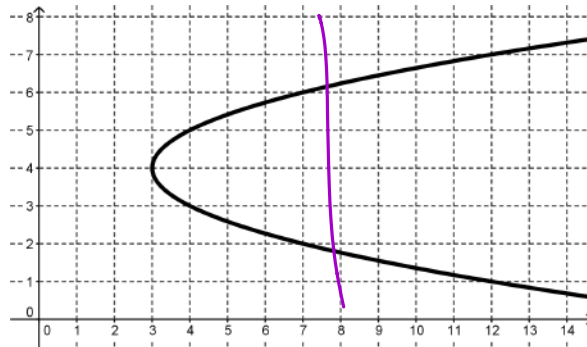
$$y = \frac{1}{3}(x - 2)^2 + 4$$

$x^2$

table in calc  
Quadratic

~~3x~~  
~~9x~~

5.



No

6.  $y = \frac{1}{3}(x - 2) + 4$

Linear

table

$5x$   $x^2$   $3x$

7. The relationship between the speed of a car and the distance it takes to stop when traveling at that speed.

Speed (mph)	Stopping Distance (ft)
10	12.5
20	50
30	112.5
40	200
50	312.5
60	450
70	612.5

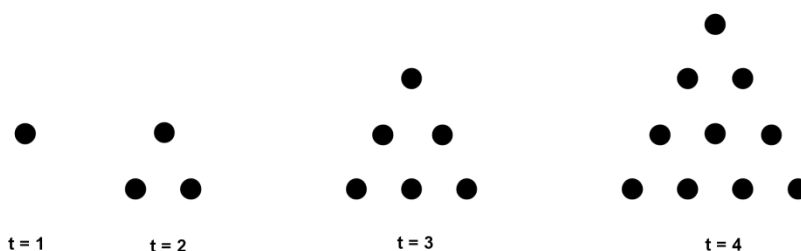
1 | 2  
 37.5 | 25  
 62.5 | 25  
 87.5 | 25  
 112.5 | 25  
 137.5 | 25  
 162.5 | 25

$y = .125x^2$

Quad

rep

8. The relationship between the number of dots in the figure and the time,  $t$ .



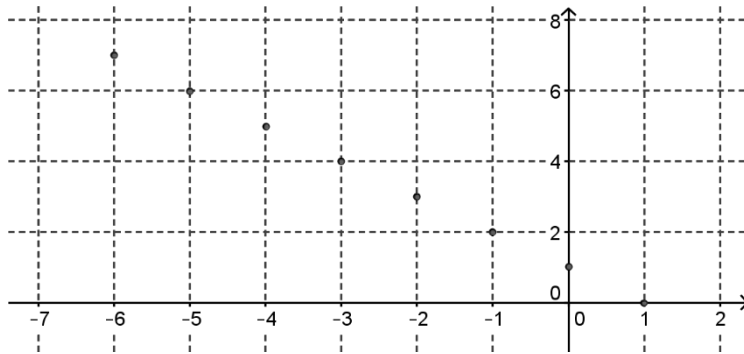
1 | 2  
 3 | 3  
 6 | 4  
 10

Quad  $\frac{1}{2}x^2 + .5x$

9. The rate at which caffeine is eliminated from the bloodstream of an adult is about 15% per hour. The relationship between the amount of caffeine in the bloodstream and the number of hours from the time the adult drinks the caffeinated beverage if the initial amount of caffeine in the bloodstream is 500 mg.

$$y = 0.85^x + 500$$

10.



11.  $y = (4x + 3)(x - 6)$

12. Mary Contrary wants to build a rectangular flower garden surrounded by a walkway 4 meters wide. The flower garden will be 6 meters longer than it is wide.

a. The relationship between the width of the garden and the perimeter of the walkway

b. The relationship between the width of the garden and area of the walkway.

13.  $y = \left(\frac{1}{3}\right)^{x-2} + 4$

exponential

14.

