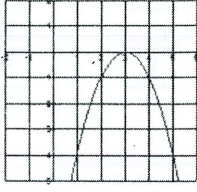
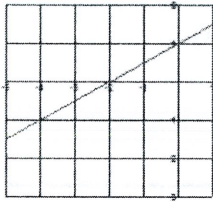
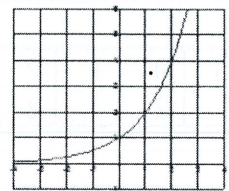


Name: _____

Date: _____

<p>A.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">x</td> <td style="padding: 2px;">0</td> <td style="padding: 2px;">1</td> <td style="padding: 2px;">2</td> <td style="padding: 2px;">3</td> </tr> <tr> <td style="padding: 2px;">y</td> <td style="padding: 2px;">4</td> <td style="padding: 2px;">12</td> <td style="padding: 2px;">20</td> <td style="padding: 2px;">28</td> </tr> </table> <p style="text-align: center; color: purple;">↖ ↗ ↘ +8 +8 +8</p>	x	0	1	2	3	y	4	12	20	28	<p>B.</p> 	<p>C.</p> <p>This type of function has a constant rate of change.</p>	<p>D.</p> <p>Two Forms: $y = ax^2 + bx + c$ or $y = a(x - h)^2 + k$</p>																				
x	0	1	2	3																													
y	4	12	20	28																													
<p>E.</p> <p>This type of function has an asymptote.</p>	<p>F.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">x</td> <td style="padding: 2px;">0</td> <td style="padding: 2px;">y</td> <td style="padding: 2px;">1</td> </tr> <tr> <td style="padding: 2px;">1</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">2</td> <td style="padding: 2px;">x²</td> </tr> <tr> <td style="padding: 2px;">2</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">4</td> <td style="padding: 2px;">x²</td> </tr> <tr> <td style="padding: 2px;">3</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">8</td> <td style="padding: 2px;">x²</td> </tr> <tr> <td style="padding: 2px;">4</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">16</td> <td style="padding: 2px;">x²</td> </tr> </table>	x	0	y	1	1		2	x ²	2		4	x ²	3		8	x ²	4		16	x ²	<p>G.</p> <p>$y = ab^x$</p>	<p>H.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">x</td> <td style="padding: 2px;">1</td> <td style="padding: 2px;">2</td> <td style="padding: 2px;">3</td> <td style="padding: 2px;">4</td> </tr> <tr> <td style="padding: 2px;">y</td> <td style="padding: 2px;">500</td> <td style="padding: 2px;">100</td> <td style="padding: 2px;">20</td> <td style="padding: 2px;">4</td> </tr> </table>	x	1	2	3	4	y	500	100	20	4
x	0	y	1																														
1		2	x ²																														
2		4	x ²																														
3		8	x ²																														
4		16	x ²																														
x	1	2	3	4																													
y	500	100	20	4																													
<p>I.</p> 	<p>J.</p> <p>This type of function has a vertex and axis of symmetry</p>	<p>K.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">x</td> <td style="padding: 2px;">0</td> <td style="padding: 2px;">1</td> <td style="padding: 2px;">2</td> <td style="padding: 2px;">3</td> </tr> <tr> <td style="padding: 2px;">y</td> <td style="padding: 2px;">26</td> <td style="padding: 2px;">29</td> <td style="padding: 2px;">30</td> <td style="padding: 2px;">29</td> </tr> </table> <p style="text-align: center; color: purple;">↖ ↗ ↘ +3 +1 -1 then x then i</p>	x	0	1	2	3	y	26	29	30	29	<p>L.</p> 																				
x	0	1	2	3																													
y	26	29	30	29																													
<p>M.</p> <p>Arithmetic Sequence $a_n = a_1 + d(n-1)$</p>	<p>N.</p> <p>Slope - Intercept $y = mx + b$</p>	<p>O.</p> <p>This type of function has a common Ratio</p>	<p>P.</p> <p>Geometric Sequences $a_n = a_1(r)^{n-1}$</p>																														

Write the letters of the functions or characteristics under the appropriate category.

Linear:

A, I, C, N, M

Quadratic:

K, B, J, D

Exponential:

F, H, L, E, O, G, P

Write the **equation** for each of the tables (A, F, H, & K).

A: $y = nx + b$ $a_n = a_1 + d(n-1)$
 $y = 8x + 4$ $= 12 + 8(n-1)$
 $= 12 + 8n - 8 = 8n + 4$

F: $a_n = 2(2)^{n-1}$ or $a_n = a_0(r)^n$
 $a_n = 1(2)^n$

H: $a_n = 500(\frac{1}{5})^{n-1}$ $a_n = 2500(\frac{1}{5})^n$

K: $y = -(x-2)^2 + 30$

Comparing Functions

Tell whether the table of values represents a linear, exponential, or quadratic function.

1-3-5
2-6-10

1.

X	-1	0	1	2	3
Y	15	5	-1	-3	-1

Quadratic

2.

X	-3	-2	-1	0	1
Y	11	8	5	2	-1

Linear

3.

X	-1	0	1	2	3
Y	16	8	4	2	1

Exponential

Write an equation to represent #2 and #3 from above.

2. $y = -3x + 2$

3. $a_n = 4\left(\frac{1}{2}\right)^{n-1}$ $a_n = 8\left(\frac{1}{2}\right)^n$

4. Describe and correct the error in writing an equation for the function represented by the ordered pairs: (-1,1), (0,2), (1,4), (2,8), (3,16)

X	-1	0	1	2	3
Y	1	2	4	8	16

The ordered pairs represent an exponential function.

$y = mx + b$

$y = 2x + 2$

Match the scenario to the type. You may not use all types.

- | | |
|---|--|
| <p>5. Each year, Jane records the number of tulips in her garden. The first year, she counted 5 tulips. She noticed that the tulips triple each year.</p> <p>6. Coach Merrill kicks a soccer ball into the air. The height of the ball is measured over the next several seconds. After 3 seconds, it reaches a maximum height of 100 feet.</p> <p>7. A taxi driver charges an \$8 minimum, plus \$0.10 per mile driven.</p> <p>8. Ms. Wiggins starts with 100 pencils on the first day of school. Each week, her supply decreases by 6 pencils.</p> <p>9. Dr. Jones starts with 6000 bacteria in the lab. Each hour, the amount decreases by half.</p> <p>10. You take out a loan for \$5000, and each month, you pay off \$100.</p> | <p>A. Increasing Linear Function</p> <p>B. Decreasing Linear Function</p> <p>C. Exponential Growth</p> <p>D. Exponential Decay</p> <p>E. Quadratic Function</p> <p>F. Arithmetic Sequence</p> <p>G. Geometric Sequence</p> |
|---|--|

Charts

Linear: as x changes by 1, y changes by the same amount being added

Exponential: as the x changes by 1, y changes by the same amount being multiplied

Quadratic: Follows the -3-5 rule or the y -values go up and down

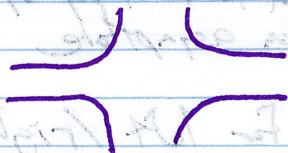
$$y = 3x^2 + 5$$

x	y
-2	$\frac{1}{2}$
-1	$\frac{1}{3}$
0	1
1	3
2	9

Graphs

Linear: It's a straight line

Exponential:



Quadratic:



3	4	5	6
4.15	5.17	6.19	7.21

~~a) $y = 3x + 6$~~

b) $y = 2x + 9$

c) $y = 5x + 7$

~~d) $y = 2x + 4$~~

Equations

Linear: $y = mx + b$

$$y = 3x + 7$$

No exponents

Quadratic: $y = ax^2 + bx + c$

$$y = a(x-h)^2 + k$$

Power of 2

Exponential: $y = a \cdot b^{x-h} + k$

Power of x