Name: Key

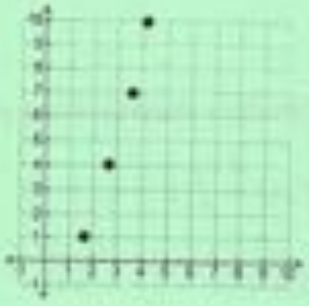
Period: ____

Module 1 & 2 FINAL Review

Match each item on the left with a *different representation* from the *same sequence* on the right.

a 1. 1, 4, 7, 10, ...

a.



d

x	$f(x)$
1	1
2	-3
3	-7
4	-11
5	-15

2.

b. $f(x) = 2 \cdot 3^x$

b 3. $f(1) = 6$
$f(x) = f(x-1) \times 3$

c. $6, 3, \frac{3}{2}, \frac{3}{4}, \frac{3}{8}, \ldots$

C 4. $f(x) = 12 \cdot \left(\frac{1}{2}\right)^x$

d. $f(1) = 1$
$f(x) = f(x-1) - 4$

e 5

e.

x	$f(x)$
1	1
2	1.5
3	2
4	2.5
5	3
.	.
.	.

Name: _____

Period: _____

6. Which recursive function describes the sequence $1, 4, 7, 10, 13, \ldots$?

a. $f(x) = 3x + 1$

b. $f(x) = 3x - 3$

c. $f(1) = 1, f(x) = f(x-1) + 3$

d. $f(1) = -3, f(x) = f(x-1) + 3$

7. Which explicit function describes the sequence $44, 11, \frac{11}{4}, \frac{11}{16}, \frac{11}{64}, \ldots$?

a. $f(1) = 176, f(x) = f(x-1) \times \frac{1}{4}$

b. $f(1) = \frac{1}{4}, f(x) = f(x-1) \div 44$

c. $f(x) = 176 \cdot (4)^x$

d. $f(x) = 176 \cdot \left(\frac{1}{4}\right)^x$

8. Which recursive function best matches the explicit function $f(x) = -2x + 3$?

a. $f(1) = 3, f(x) = f(x-1) \times -2$

b. $f(1) = 3, f(x) = f(x-1) - 2$

c. $f(1) = 1, f(x) = f(x-1) - 2$

d. $f(1) = 1, f(x) = f(x-1) \times -2$

9. Which explicit function best matches the recursive function

$f(1) = 3, f(x) = f(x-1) - 3$?

a. $f(x) = 3x - 3$

b. $f(x) = -3x + 3$

c. $f(x) = -3x$

d. $f(x) = -3x + 6$

10. Which sequence best matches the explicit function $f(x) = 4 \cdot (-2)^x$

a. 8, -16, 32, -64, 128

b. -8, 16, -32, 64, -128

c. 4, -8, 16, -32, 64

d. -2, 8, -32, 128, -512

Name: _____

Period: _____

11. Write the explicit equation given for the given table.

x	y
1	14
2	24
3	34
4	44

+10 $f(x)=10x+4$

12. Find the common ratio of the geometric sequence.

x	1	2	3	4
y	3			24

$3 \cdot x \cdot x \cdot x = 24$

$\frac{3x^3}{3} = \frac{24}{3}$ $x^3 = 8$

$x = 2$

13. Find the common difference of the arithmetic sequence.

x	1	2	3	4
y	12			3

$12 + x + x + x = 3$

$12 + 3x = 3$

$-12 \quad -12$

$\frac{3x}{3} = \frac{-9}{3}$

$x = -3$

14. Using answers a-i, fill in the answers to the table below.

a) Exponential b) Linear c) Neither

d) Arithmetic e) Geometric

f) 2 g) 4 h) 3

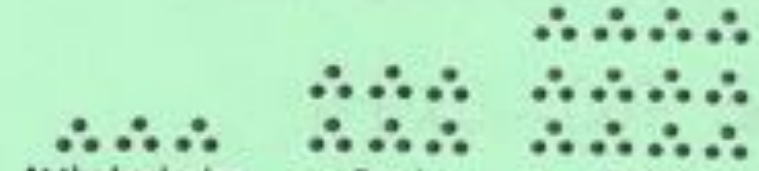
i) No constant rate of change (or multiplying by 2)

Function	$y=2x+3$	$y=4(2)^x$
Type of Function (linear, exponential, or neither)	b) linear	a) exponential
Type of Sequence that corresponds (Arithmetic, Geometric, Neither)	d) Arithmetic	e) Geometric
Rate of Change	f) 2	i) No constant

Name: _____

Period: _____

15.



At the beginning Day 1 Day 2

a. Write a recursive rule for the situation above.

$f(x) = f(x-1) \cdot 2, f(0) = 9$

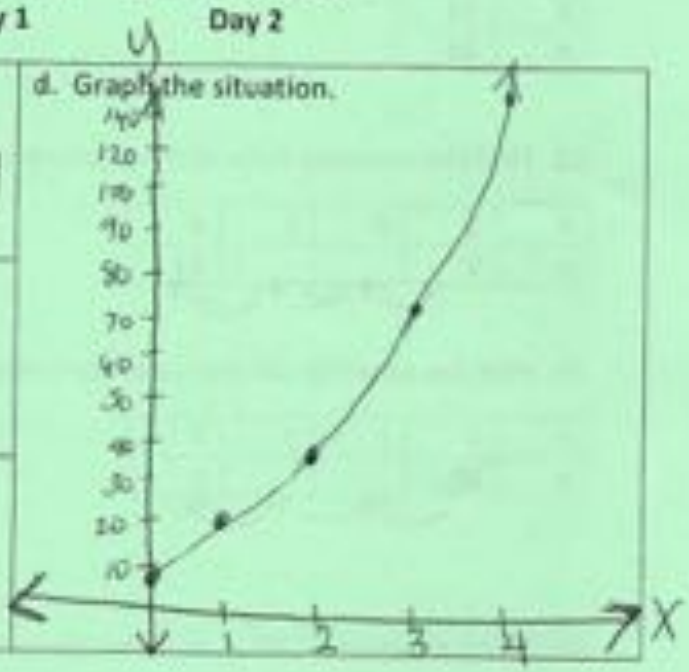
b. Write an explicit rule for the situation above.

$f(x) = 9 \cdot (2)^x$

c. If the pattern continues for 5 days, how many dots will there be on day 5?

$f(5) = 9(2)^5 = 288$

d. Graph the situation.



16. Given the patterns below, write the recursive and explicit formulas.

a. $\frac{1}{3}, 1, 3, 9, 27, 81, \ldots$

Explicit: $f(x) = \frac{1}{9}(3)^x$

Recursive: $f(x) = f(x-1) \cdot 3$, $f(1) = \frac{1}{3}$

b. $-14, -8, -2, 4, 10, \ldots$

Explicit: $f(x) = 6x - 20$

Recursive: $f(x) = f(x-1) + 6$, $f(1) = -14$

c. $7, 3, -1, -5, -9, \ldots$

Explicit: $f(x) = -4x + 11$

Recursive: $f(x) = f(x-1) - 4$, $f(1) = 7$

d. $-64, 16, -4, 1, -\frac{1}{4}$

Explicit: $f(x) = 256(-1/4)^x$

Recursive: $f(x) = f(x-1) \cdot -1/4$, $f(1) = -64$

Name _____ Date _____

Inequality Word Problems

1. Sara goes to Fredonia University. She has $900 in her savings account. She needs to buy a small laptop computer before the next semester. The laptop costs $600. Every 2 weeks she withdraws $60 from her savings account for food. How many times can Sara withdraw money for food? Write an inequality to explain.

$600 \leq 900 - 60x$ $\quad 5 \geq x$

$-900 \quad -900$

$\frac{-300}{-60} \leq \frac{-60x}{-60}$ $\quad x \leq 5$

2. You want to rent a limousine for a trip to the city. The limo costs $700 for the night and $0.15 per mile. You have $750 to spend. Write an inequality that represents this scenario. How many miles can the limo travel?

$700 + .15x \leq 750$

$-700 \quad -700$

$\frac{.15x}{.15} \leq \frac{50}{.15}$ $\quad x \leq 333\frac{1}{3}$

3. Jessica is getting ready for college she needs to have an overall grade of 85 in her Math class to qualify for the college that she wished to attend. Her math grade is based solely on her scores on 6 exams. On the first 5 exams her scores were 87, 81, 85, 90, 78. Write an inequality that represents her predicament. What does score does she need to get on her last test to qualify?

$6 \cdot \frac{87+81+85+90+78+x}{6} \geq 85 \cdot 6$

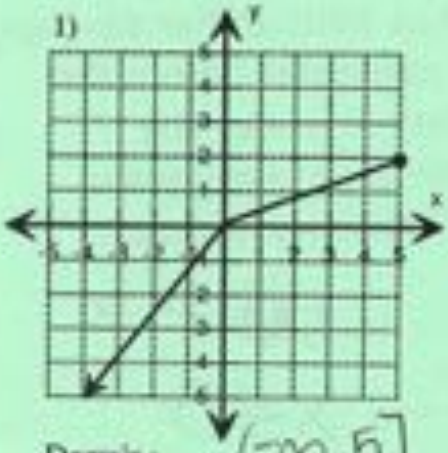
$421 + x \geq 510$

$x \geq 89$

Name: _____ Score: _____

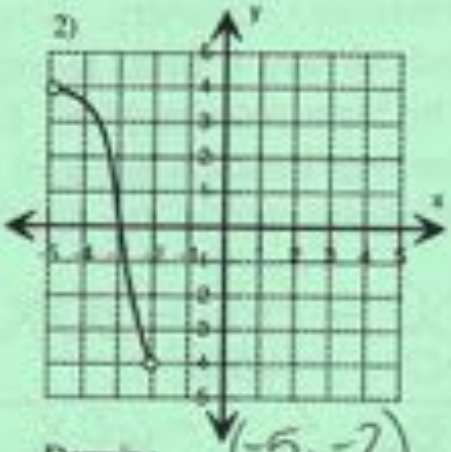
Domain and Range

Find the Domain and Range for each graph.

1) 

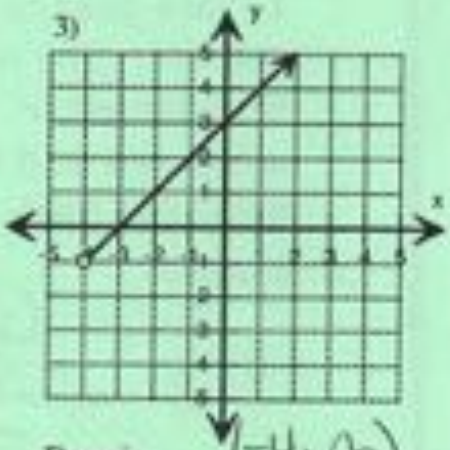
Domain: $(-\infty, 5]$

Range: $(-\infty, 2]$

2) 

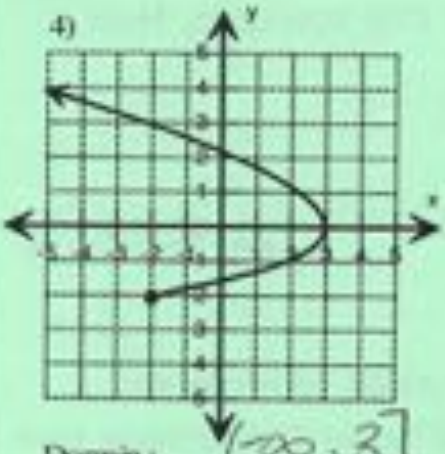
Domain: $(-5, -2)$

Range: $(-4, 4)$

3) 

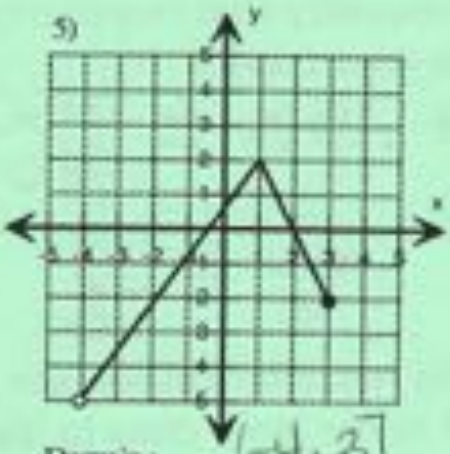
Domain: $(-4, \infty)$

Range: $(-1, \infty)$

4) 

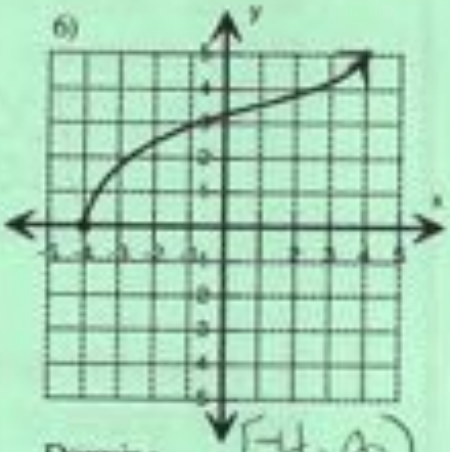
Domain: $(-\infty, 3]$

Range: $[-2, \infty)$

5) 

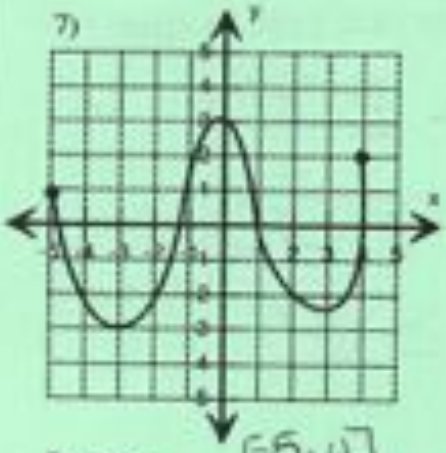
Domain: $(-4, 3]$

Range: $(-5, 2]$

6) 

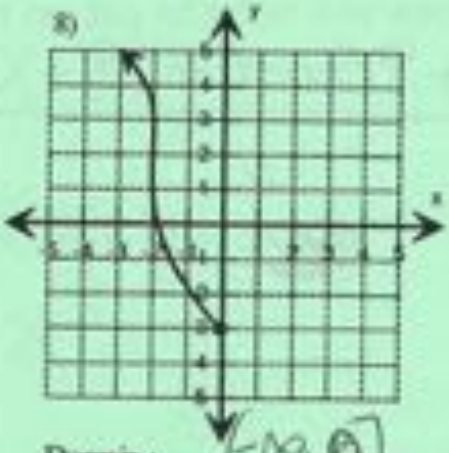
Domain: $[-4, \infty)$

Range: $[0, \infty)$

7) 

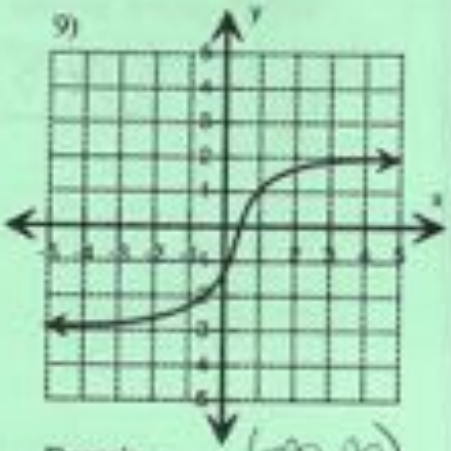
Domain: $[-5, 4]$

Range: $[-3, 3]$

8) 

Domain: $(-\infty, 0]$

Range: $(-3, \infty)$

9) 

Domain: $(-\infty, \infty)$

Range: $(-3, 2)$