

Test Review Unit 1

Skills Required:

- Identify type of sequence
- Determine common difference or ratio
- Write recursive & explicit equations for arithmetic & geometric sequences
- Find arithmetic & geometric means
- Use recursive & explicit equations

Identify the type of sequence and write a recursive and explicit equation.

1.

n	0	1	2	3
$f(n)$	5	20	80	320

$\begin{array}{c} \curvearrowright \quad \curvearrowright \quad \curvearrowright \\ \cdot 4 \quad \cdot 4 \quad \cdot 4 \end{array}$

a) Is this arithmetic or geometric?

b) Recursive: $f(n) = 4 \cdot f(n-1)$
 $f(0) = 5$

c) Explicit: $f(n) = 5(4)^n$

d) Find the value of $f(8)$. $f(8) = 5(4)^8 = 327,680$

2.

0	n	1	2	3	4
10	$f(n)$	6	2	-2	-6

$\begin{array}{c} \curvearrowleft \quad \curvearrowright \quad \curvearrowright \quad \curvearrowright \\ +4 \quad -4 \quad -4 \quad -4 \end{array}$

a) Is this arithmetic or geometric?

b) Recursive: $f(n) = f(n-1) - 4$
 $f(1) = 6$

c) Explicit: $f(n) = -4n + 10$

d) Find the value of $f(31)$.

$$f(31) = -4(31) + 10 = -114$$

3. John started the week with \$300. He spends \$15 per day.

Days	0	1	2	3
\$ left	300	285	270	255

- a) Is this arithmetic or geometric?
- b) Recursive: $f(n) = f(n-1) - 15$

$$f(0) = 300$$

- c) Explicit: $f(n) = -15n + 300$

- d) How much money will he have after 13 days?

$$f(13) = -15(13) + 300 = \$105 \text{ left after 13 days}$$

4. The population of Townsville triples every year. The original population was 3 people (the founding family).

Years	0	1	2	3
Population	3	9	27	81

- a) Is this arithmetic or geometric?
- b) Recursive: $f(n) = 3 \cdot f(n-1)$

$$f(0) = 3$$

- c) Explicit: $f(n) = 3(3)^n$

- d) How many people will be in the town in 7 years?

$$f(7) = 3(3)^7 = 6561 \text{ people after 7 years}$$

5. Fill in the missing terms for the given arithmetic sequence.

x	1	2	3	4	5
$g(x)$	12	19	26	33	40

Explain/show your method.

$$40 - 12 = 28 \div 4 = 7$$

Common difference: +7

6. Fill in the missing terms for the given **geometric** sequence.

n	1	2	3	4
$f(n)$	3	-15	75	225 ← -375

Explain/show your work.

$$\frac{-375}{3} = -125 \qquad \sqrt[3]{-125} = -5$$

7. Write the first 5 terms of the sequence represented by the equation:

$$f(x) = -2x + 8, \text{ starting at } f(1).$$

$$\frac{6}{1}, \frac{4}{2}, \frac{2}{3}, \frac{0}{4}, \frac{-2}{5}$$

Write the recursive equation for the above sequence.

$$f(n) = f(n-1) - 2$$

$$f(1) = 6$$

8. Write the first 5 terms of the sequence represented by the equation:

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

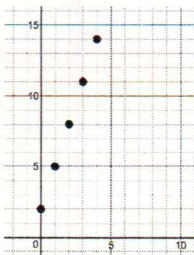
$$\frac{9}{0}, \frac{18}{1}, \frac{36}{2}, \frac{72}{3}, \frac{144}{4}$$

Write the explicit equation for the above sequence.

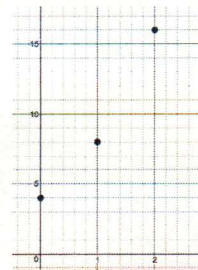
$$f(n) = 9(2)^n$$

9. Match the equation with the graph. a) $f(n) = 3n + 2$ b) $f(n) = 4(2)^n$

Explain how you know which graph it is.



Graph of a because
it is going
up by 3
each time



Graph of b because
it is doubling
between points