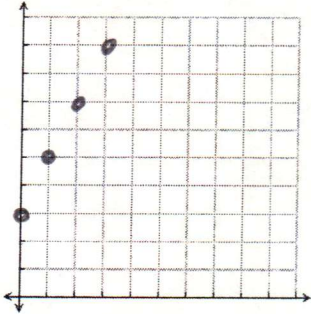


**DEFINITION:** A pattern that changes by adding or subtracting a number repeatedly.

**COMMON DIFFERENCE:**  
The number that is repeatedly added or subtracted

**GRAPH:**



**Arithmetic Sequence**

**TABLE:**

x	y
0	3
1	5 $\downarrow +2$
2	7 $\downarrow +2$
3	9 $\downarrow +2$
4	11 $\downarrow +2$

**RULE / FORMULAS :**

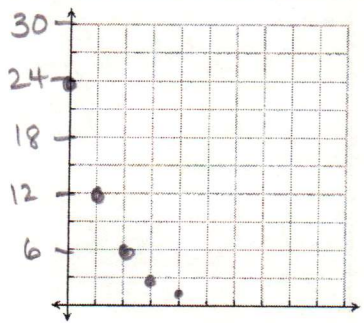
**RECURSIVE:**  $f(n) = f(n-1) + 2$   
 $f(0) = 3$

**EXPLICIT:**  $f(n) = 2n + 3$   
 $\downarrow$   
 $n=0$

**DEFINITION:** a pattern that changes by repeatedly multiplying

**COMMON RATIO:**  
the number that is repeatedly multiplied

**GRAPH:**



**Geometric Sequence**

**TABLE :**

x	y
0	24
1	12 $\downarrow \cdot \frac{1}{2}$
2	6 $\downarrow \cdot \frac{1}{2}$
3	3 $\downarrow \cdot \frac{1}{2}$
4	1.5 $\downarrow \cdot \frac{1}{2}$

**RULE / FORMULAS :**

**RECURSIVE:**  $f(n) = \frac{1}{2} \cdot f(n-1)$   
 $f(0) = 24$

**EXPLICIT:**  $f(n) = 24 \left(\frac{1}{2}\right)^n$   
 $\downarrow$   
 $n=0$

1. -4, 3, 10, 17, ...

a) Is this arithmetic or geometric?

b) Recursive:

$$f(n) = f(n-1) + 7$$

$$f(0) = -4$$

c) Explicit:  $f(n) = 7n - 4$

2.

a) Is this arithmetic or geometric?

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

$$f(1) = 2$$

c) Explicit:

$$f(n) = \frac{2}{5}(5)^n$$

x	f(x)
0	2
1	10
2	50
3	250
4	

↑ · 5  
↓ · 5

3. Max has \$25 in his piggy bank. Each week he saves another \$5.

a) Is this arithmetic or geometric?

b) Recursive:  $f(n) = f(n-1) + 5$

$$f(0) = 25$$

c) Explicit:  $f(n) = 5n + 25$

d) How much will he have after 17 weeks?

$$f(17) = 5(17) + 25 = \$110$$

4. Fill in the missing terms for the given arithmetic sequence, then write the recursive and explicit equations.

x	1	2	3	4	5
g(x)	5	-2	-1	-4	-7

$$-7 - 5 = -12 \div 4 = -3$$

Recursive:  $f(n) = f(n-1) - 3$  Explicit:  $f(n) = -3n + 8$

$$f(1) = 5$$

5. Fill in the missing terms for the given geometric sequence, then write the recursive and explicit equations.

x	1	2	3	4	5
g(x)	4	12	36	108	324

$$324 \div 4 = 81$$

$$\sqrt[4]{81} = 3$$

Recursive:  $f(n) = 3 \cdot f(n-1)$  Explicit:  $f(n) = \frac{4}{3}(3)^n$

$$f(1) = 4$$

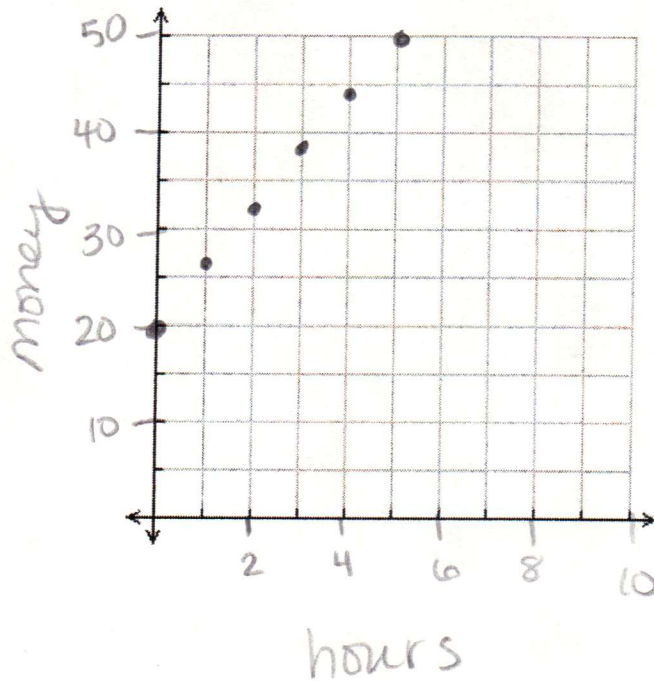
6. You have accepted a job nannying your neighbors kids for \$6 per hour. They agreed to pay you an extra \$20 to work on a holiday. Show how much money you will make based on hours worked.

Table:

hours $h$	money $m$
0	20
1	26
2	32
3	38
4	44
5	50

Equation:  $m = 6h + 20$

Graph:



How much money will you have earned if you worked for 55 hours?

$$m = 6(55) + 20 = \$350$$