Name _____ **NOTES** _____ Date **2/21**
Block _____

Scenario 1:

Bond Market

Table with 14 values *5pts*

A years	B money
0	$1500
1	$1614
2	$1736.66
3	$1868.65
4	$2010.67
5	$2163.48
6	$2327.90
7	$2504.82
8	$2695.19
9	$2900.02
10	$3120.43
11	$3357.58
12	$3612.76
13	$3887.32
14	$4182.76

a_1, a_2, a_3

multiply by 1.076

recursive formula:

column A:
$$a_n = a_{n-1} + 1, \quad a_1 = 0$$

column B:
$$a_n = a_{n-1} \cdot 1.076, \quad a_1 = 1500$$

Explicit Formula:

2 column B: $a_n = a_1 \cdot r^{n-1}$
$$a_n = 1500(1.076)^{n-1}$$

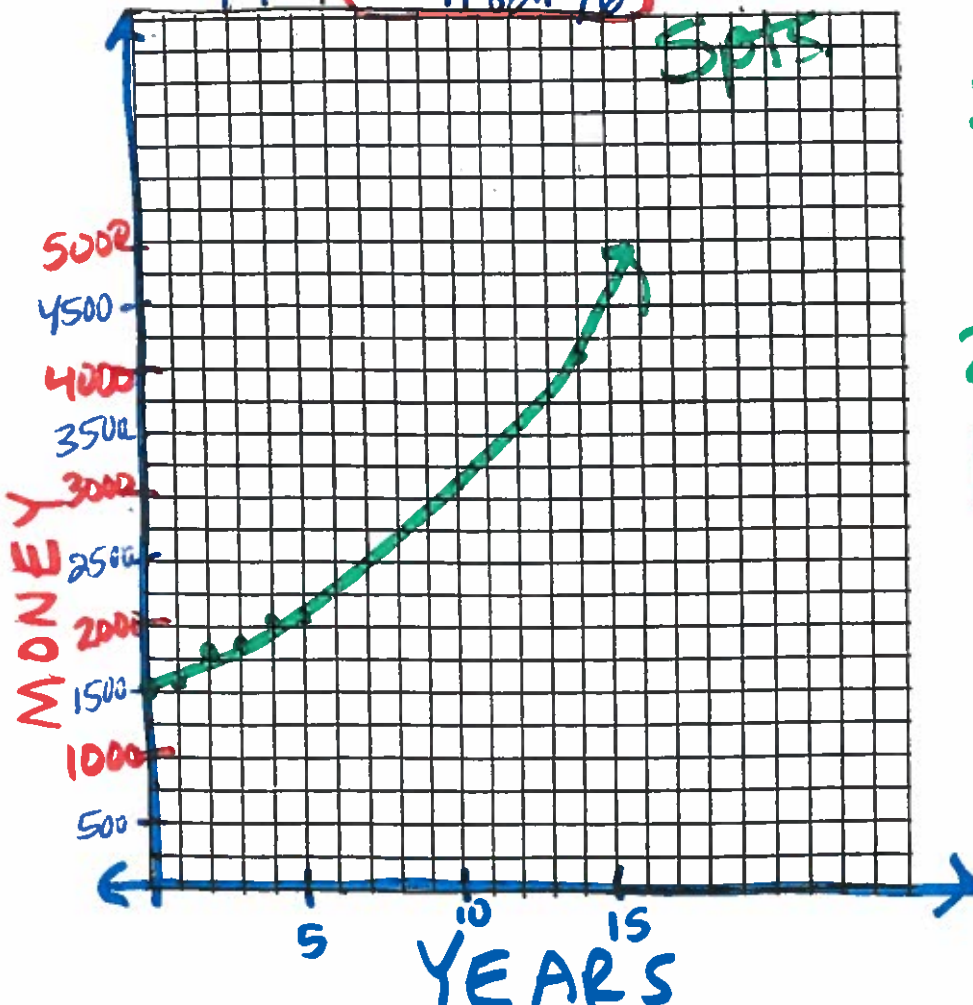**Type of Sequence:**
Geometric
$$(r = 1.076)$$

2 **Domain:** Why?
$[0, \infty)$ you can invest as long as your alive.

2 **Range:** Why?

$[1500, \infty)$

the longer the money is in, the more you make.

5pts

Graph: MONEY (y-axis: 500, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000) vs YEARS (x-axis: 5, 10, 15)

NOTES

Scenario 2:
Bribe

Table with 14 values

Subtract $6.50

A weeks	B money
0	80
1	73.50
2	67
3	60.50
4	54
5	47.50
6	41
7	34.50
8	28
9	21.50
10	15
11	8.50
12	2
13	-4.50
14	

recursive formula:

column A:
$$a_n = a_{n-1} + 1, \quad a_1 = 0$$

column B:
$$a_n = a_{n-1} - 6.50, \quad a_1 = 80$$

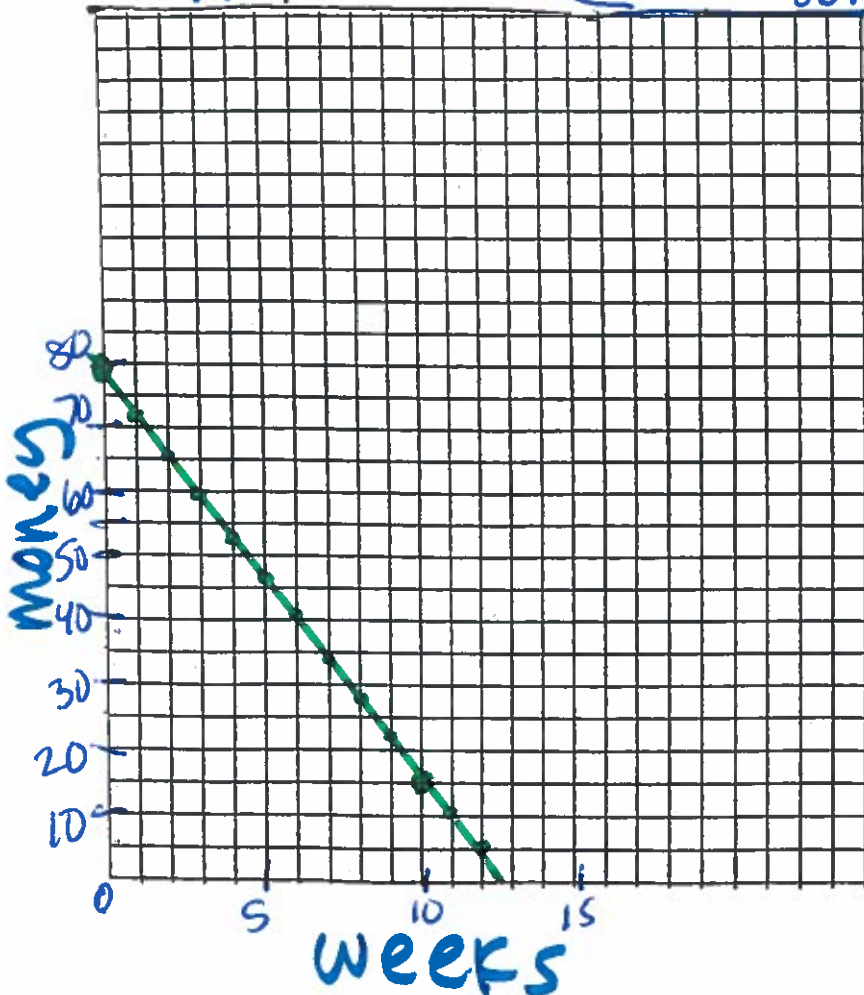Explicit Formula:

$$a_n = a_1 + d(n-1)$$

column B:
$$a_n = 80 + {}^-6.50(n-1)$$
$$= 80 + {}^-6.50n + 6.50$$

$$a_n = {}^-6.50n + 86.50$$

Type of Sequence:
Arithmetic
$$d = {}^-6.50$$

Domain: why?

[0, 12] can only afford to pay for 12 weeks

Range: why?

[0, 80]
only had $80 to start with + gave away money until I had nothing left

Notes:

Making Connections Between Sequences and Mathematical Models
NOTES

- *Scenario 1*: Suppose you invest $1500 in the bond market. The investment grows at a rate of 7.6 percent per year.

- *Scenario 2*: Suppose that you hold a superball 200 centimeters above the ground. You let go of the ball, and it bounces many times. On each bounce, it returns to a height that is 80 % of the height from which it started.

- Create a spreadsheet for each scenario. For each, put the independent variable in column A and the dependent variable in column B. For all columns use a recursive that can be filled down.

- What recursive formula is used for column A?

- What recursive formula is used for column B? Both scenarios?
  Scenario 1
  Scenario 2

- What type of sequence are these? Why?

- What is the domain? Why?

- Use your spreadsheet to graph these functions. What shape is the function?

- Attach a copy of your spreadsheet and graph.

Name: _____

Assignment

Making Connections Between Sequences and Mathematical Models

A CW:

- *Scenario 1*: A fifty-gallon bathtub is empty. You turn the faucet, and the tub fills at a rate of 3.4 gallons a minute.

NOTES

- *Scenario 2*: Suppose that you have $80 saved in your drawer at home. You have no other income, and you need to pay your little brother $6.50 each week as a bribe.

must contain 14 values

- Create a __table__ for each scenario. For each, put the independent variable in column A and the dependent variable in column B. For all columns use a recursive that can be filled down.

- What recursive formula is used for column A?

- What recursive formula is used for column B? Both scenarios?
    Scenario 1   *Explicit 1:*
    Scenario 2   *Explicit 2:*

- What type of sequence are these? Why?

- What is the domain? Why?
    Scenario 1

    Scenario 2

- Use your spreadsheet to graph these functions. What shape is the function? *(examples: line, parabola, absolute value,....)*

- Attach a copy of your ~~spreadsheet~~ *table* and graph.

Name _____   Date _____
Scenario 1:   Block _____

_____

Table with 14 values   recursive formula:
                                 column A:
A _____|_____ B

                                 column B:

                                 Explicit Formula:
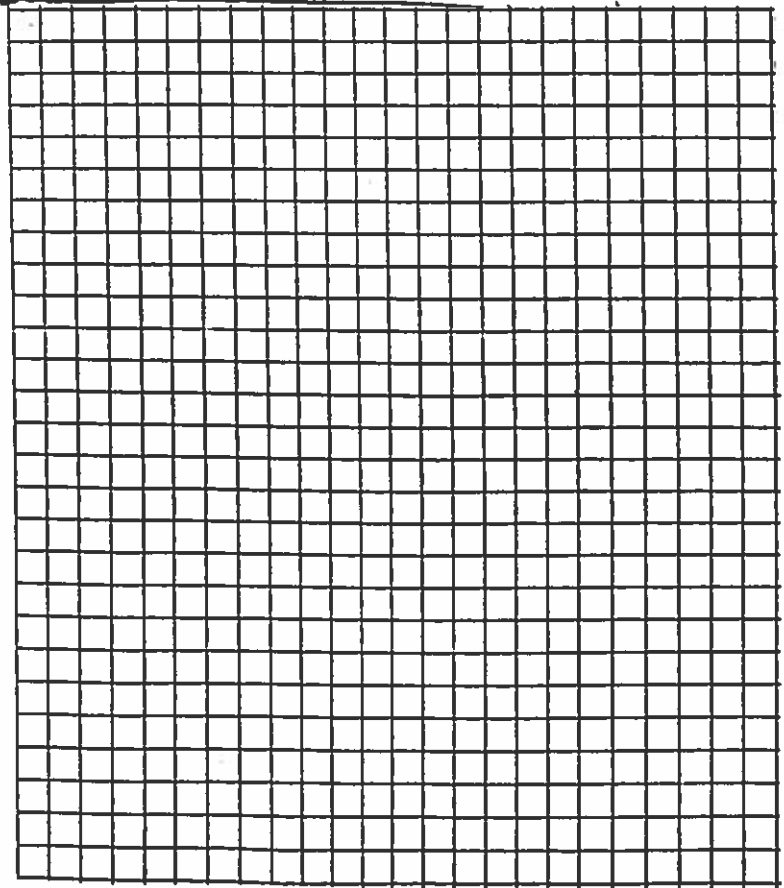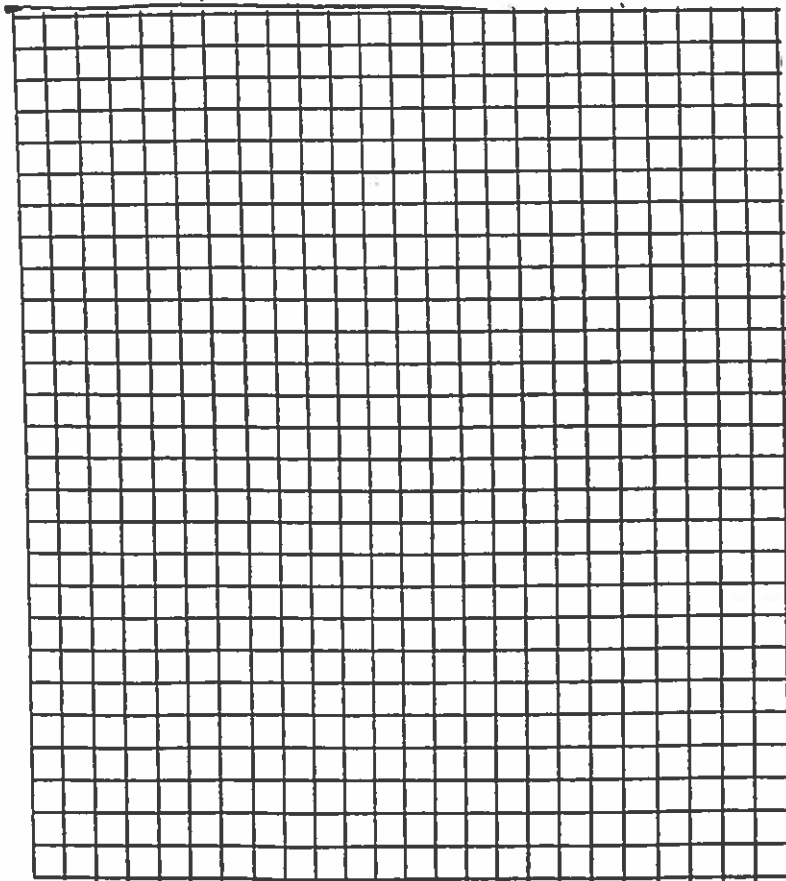   column B:

                                 Type of Sequence:

                                 Domain: Why?

                                 Range: Why?

Scenario 2:

_____

Table with 14 values

A _____|B_____

recursive formula:
column A:

column B:

Explicit Formula:
column B:

Type of Sequence:

Domain: why?

Range: why?