

## Lesson 8T ~ Recursive Routines

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

Find the missing values in each sequence. Identify the start value and the operation that must be performed to arrive at the next term.

1. 4, 7, 10, \_\_\_\_\_, 16, \_\_\_\_\_, \_\_\_\_\_

Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

2. 20, 15, \_\_\_\_\_, 5, 0, \_\_\_\_\_, -10, \_\_\_\_\_

Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

3. 3, 7, 11, \_\_\_\_\_, 19, \_\_\_\_\_, \_\_\_\_\_

Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

4. 6, \_\_\_\_\_, 18, \_\_\_\_\_, 30, 36, \_\_\_\_\_, \_\_\_\_\_

Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

5. -9, -2, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, 26, \_\_\_\_\_

Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

6. 0, \_\_\_\_\_, -20, -30, \_\_\_\_\_, \_\_\_\_\_, -60

Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

7. -2, \_\_\_\_\_, -8, -11, \_\_\_\_\_, \_\_\_\_\_, -20

Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

For each sequence below, describe the recursive routine and give the 8<sup>th</sup> term in the sequence.

8. 1, 8, 15, 22, ...

Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

8<sup>th</sup> Term: \_\_\_\_\_

9. 24, 21, 18, 15, ...

Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

8<sup>th</sup> Term: \_\_\_\_\_

10. 2, 2.4, 2.8, 3.2, ...

Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

8<sup>th</sup> Term: \_\_\_\_\_

11. 1, -4, -9, -14, ...

Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

8<sup>th</sup> Term: \_\_\_\_\_

12. 16, 6, -4, -14, ...

Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

8<sup>th</sup> Term: \_\_\_\_\_

13.  $\frac{1}{8}, \frac{1}{4}, \frac{3}{8}, \frac{1}{2}, \dots$

Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

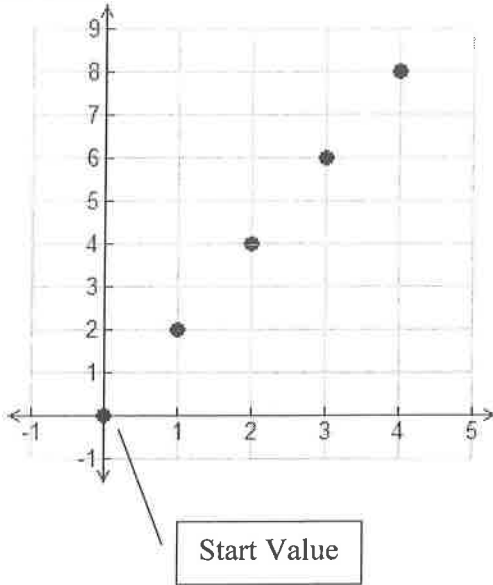
8<sup>th</sup> Term: \_\_\_\_\_

# Lesson 9T ~ Linear Plots

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

Describe the linear relationship given by the  $y$ -coordinates on each linear plot by stating the start value and operation. Create an input-output table showing the ordered pairs on each linear plot.

1.



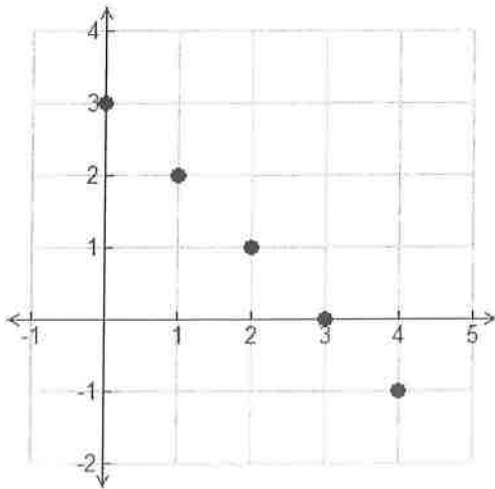
Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

$x$	$y$
0	
1	
2	
3	
4	

The Start Value is the value when  $x$  is 0.

2.



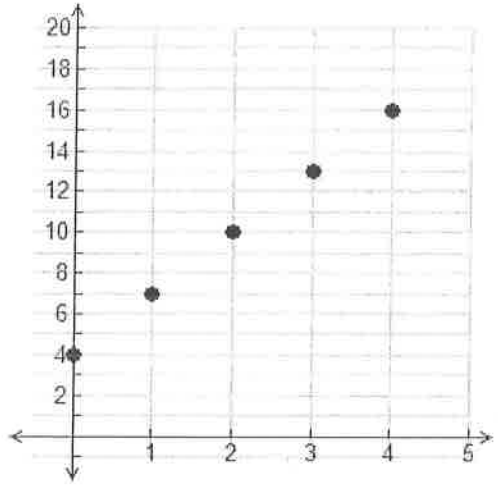
Start Value: \_\_\_\_\_

Operation: \_\_\_\_\_

$x$	$y$
0	
1	
2	
3	
4	

Describe the linear relationship given by the  $y$ -coordinates on each linear scatter plot by stating the start value and operation. Create an input-output table showing the ordered pairs on each linear scatter plot.

3.



Start Value: \_\_\_\_\_  
 Operation: \_\_\_\_\_

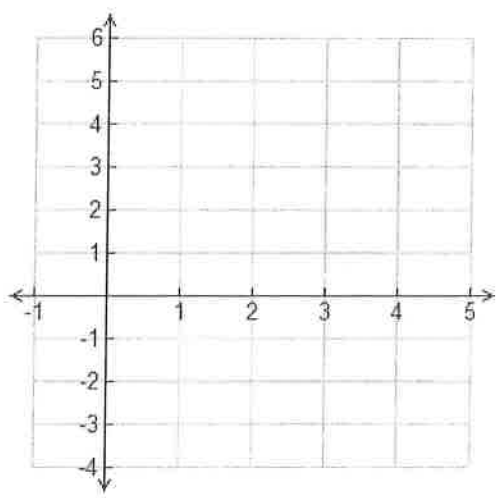
$x$	$y$

4. Fill in a table and create a scatter plot for the recursive routine given below. Use input values from 0 to 4.

Start Value: 5

Operation: Subtract 2

$x$	$y$
0	
1	
2	
3	
4	



# Lesson 10T ~ Recursive Routine Applications

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

1. Seth owns 8 baseball cards. Each week he plans to add 4 cards to his collection.

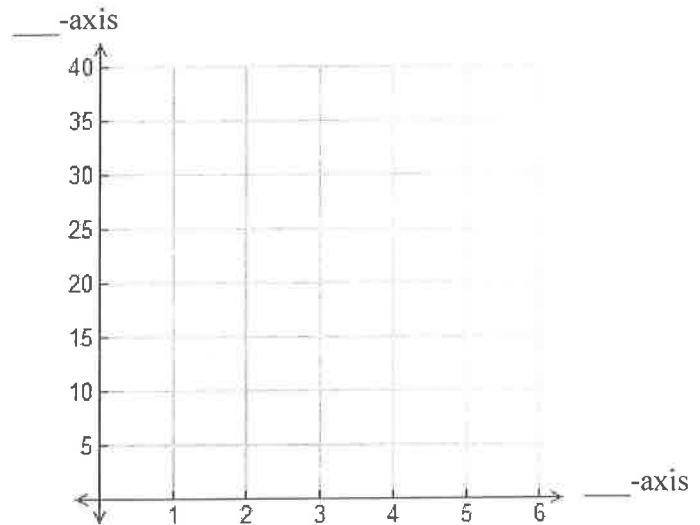
- a. Write a recursive routine (start value and operation) that describes the total number of baseball cards Seth will own based on the number of weeks he has been collecting cards.

Start Value: \_\_\_\_\_ Operation: \_\_\_\_\_

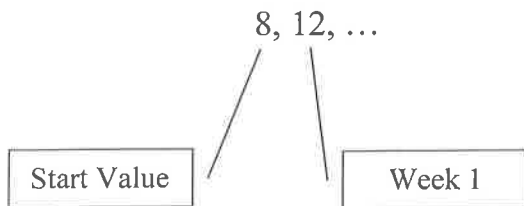
- b. Create an input-output table that shows the number of cards in his collection over the first five weeks.

<i>Weeks</i> <i>x</i>	<i>Cards</i> <i>y</i>
0	
1	
2	
3	
4	
5	

- c. Create a scatter plot that shows the number of cards in Seth's collection over the first five weeks. Label both axes.



- d. Determine how many weeks it will take before Seth has 60 cards in his collection.



Use a recursive routine and your calculator to find the week where Seth has 60 cards.

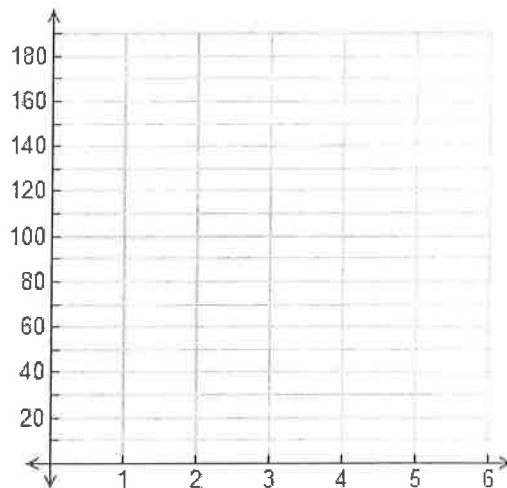
Answer: \_\_\_\_\_

2. Hector had 180 texts per month on his cell-phone plan. Each day, Hector sent 10 texts.
- a. Write a recursive routine that describes how many texts Hector has left based on the number of days he has been texting.

- b. Create an input-output table that shows the texts Hector has left over the first five days.

<i>Days</i> <i>x</i>	<i>Texts Left</i> <i>y</i>
0	
1	
2	
3	
4	
5	

- c. Create a scatter plot that shows how many texts Hector has left over the first five days. Label both axes.



- d. Hector wants to make sure he has 50 texts left for the day of his birthday party. After how many days will Hector have 50 texts left?