

Worksheet 6 - Sequences Review

1. Jenny had \$10 in her savings account. Her mother will give her \$3 allowance every day. She plans to save all the money for her college.

Use $f(n)$ as the amount of money of each day and n as the days:

- Write the function in an explicit rule and a recursive rule.
- Make a table to show the first 5 days' money.
- Graph the function.
- Classify the type of the function
- How much money will Jenny have after 270 days?

Table		Graph									
<table border="1"> <thead> <tr> <th>n</th> <th>f(n)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> </tr> <tr> <td>2</td> <td></td> </tr> <tr> <td>3</td> <td></td> </tr> <tr> <td>4</td> <td></td> </tr> </tbody> </table>	n	f(n)	1		2		3		4		
n	f(n)										
1											
2											
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I know this is a _____ pattern because in the table I noticed _____	I know this is a _____ pattern because in the graph I noticed _____										
<u>Explicit form</u> $f(n) = d(n - 1) + a$ OR $f(n) = a(r)^{(n-1)}$	<u>Recursive form</u> $f(n) = f(n - 1) + d$ $f(1) = a$ OR $f(n) = f(n - 1) \cdot r$ $f(1) = a$										
I know this is a _____ pattern because in the equation I noticed _____	I know this is a _____ pattern because in the equation I noticed _____										

2. A bacteria grows at a **rate** of 2 per day.

Use $f(n)$ as the number of bacterias of each day and n as the number of days:

- Classify the type of function.
- Write the function in an explicit rule and a recursive rule.
- Make a table to show the first five days' bacteria growth.
- Graph the function.
- How many bacterias after 3 weeks?

Table	Graph										
<table border="1" style="margin: 0 auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 30%;">n</th> <th style="width: 70%;">f(n)</th> </tr> </thead> <tbody> <tr><td>1</td><td></td></tr> <tr><td>2</td><td></td></tr> <tr><td>3</td><td></td></tr> <tr><td>4</td><td></td></tr> </tbody> </table> I know this is a _____ pattern because in the table I noticed _____	n	f(n)	1		2		3		4		I know this is a _____ pattern because in the graph I noticed _____
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3. The Chaffey Auditorium plans to use the function $f(1) = 9$, $f(n) = f(n - 1) + 8$ to place seats in rows;

in which $f(n)$ is the number of seats in each row, n is the row number.

A. Use a table to show the number of seats in the first four rows.

B. Write the function in an explicit rule.

C. Graph the function.

D. Classify the type of sequence.

E. Estimate how many seats in the 43th row.

Table		Graph
n	$f(n)$	
1		
2		
3		
4		
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4. What is this function in explicit form? $f(1) = 7$, $f(n) = -3f(n - 1)$

A. $f(n) = -3(n)$

- B. $f(n) = -3(n - 1)$
- C. $f(n) = 7(-3)^{n-1}$
- D. $f(n) = 7(-3)^{(n)}$

5. Select the equivalent recursively defined function. $f(n) = 5n + 3$

- A. $f(1) = 5, f(n) = f(n-1) + 3$
- B. $f(1) = 3, f(n) = f(n-1) + 5$
- C. $f(1) = 8, f(n) = f(n-1) + 5$
- D. $f(1) = 8, f(n) = f(n-1) \cdot 5$

6. A sequence whose first 5 terms are 3, 9, 27, 81, 243. Write a function that defines this

sequence.

Explicit:

Recursive:

7. Write this sequence 6,12,24,48,...,1536 in explicit form and recursive form.

Explicit:

Recursive:

8. State the formulas if your sequence has a first term of 3 and your common difference is 5.

Explicit:

Recursive:

IM 3 Worksheet 7 - Sequences

1. Sara has \$35 savings. She earns \$10 each day (n) for babysitting her neighbor's five-year-old son. Fill out the table to show how much money Sara will have after babysitting by days.

Table		Graph Use desmos.com to graph, then screenshot the picture and paste here.
n	f(n)	
1		

2	
3	
4	
5	
6	

I know this is a _____ pattern because in the table I noticed _____

I know this is a _____ pattern because in the graph I noticed _____

Explicit form (Circle one)

$$f(n) = d(n - 1) + a$$

OR

$$f(n) = a (r)^{(n-1)}$$

Formula:

I know this is a _____ pattern because in the equation I noticed _____

Recursive form (Circle one)

$$f(1) = a$$

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

OR

$$f(1) = a$$

$$f(n) = f(n - 1) \cdot r$$

Formula:

I know this is a _____ pattern because in the equation I noticed _____

2. There were 64 students playing games. Half of the students were eliminated each round (n). The following equation models the game results: $f(n) = 64(\frac{1}{2})^{(n-1)}$

Table	Graph														
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 30%;">n</th> <th style="width: 70%;">f(n)</th> </tr> </thead> <tbody> <tr><td>1</td><td></td></tr> <tr><td>2</td><td></td></tr> <tr><td>3</td><td></td></tr> <tr><td>4</td><td></td></tr> <tr><td>5</td><td></td></tr> <tr><td>6</td><td></td></tr> </tbody> </table> I know this is a _____ pattern because in the table I noticed _____	n	f(n)	1		2		3		4		5		6		Use desmos.com to graph, then screenshot the picture and paste here. I know this is a _____ pattern because in the graph I noticed _____
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Worksheet 8

Choose 2 problems to complete and then explain how you completed each problem in a video/written explanation. There is a vocabulary word bank which is highly recommended to use for the explanations of your work. You do not need to use all of the vocabulary for each explanation.

You will have to use a written response to explain your thinking. When explaining your thinking, please plan on writing 1 paragraph for each question. Hint: You can use Desmos to help with your explanations.

Here are your 4 possible questions:

1. Jimmy decided to go to Vegas because he was feeling lucky. He didn't have much money on him but decided to play a game in Vegas to see if he could win some money. He started off with 4 dollars in his pocket and he won his first, second, third, and fourth game, doubling his money each time(n). Here would be his winnings:
 $f(1) = 4, f(2) = 8, f(3) = 16, f(4) = 32$
2. You and some friends decided to play in a basketball tournament with high school kids in Southern California. There were 64 teams to start the tournament and each round(n), where half of the teams were eliminated. The following equation models the tournaments results: $f(n) = 64(\frac{1}{2})^{(n-1)}$
3. Maria decided to start saving her allowance because she was having a really hard time saving up to buy a video game system she wanted. She only had 50 cents on her but was able to save an additional 4 dollars each week(n). Here is the equation that models her savings: $f(n) = f(n-1) + 4.00, f(1) = 4.50$
4. Henry borrowed 32 dollars to buy some tools to help start his tree trimming business. He will earn 8 dollars every tree(n) he trims. Here is the rate of change which models his business: constant rate of change: 8, $f(1) = -32$

Use the following vocabulary word bank in your explanations:

Arithmetic, Geometric, Quadratic, Term, Recursive, Explicit, Pattern, Slope, Rate of change, Sequence, Common Difference, Common Ratio, Constant, Second Rate of Change, Regression, Exponential Model, Linear Model, Parabolic Model

Scoring Rubric for each problem chosen:

<u>TO GET THIS SCORE</u>	<u>MAKE SURE YOU DO THIS</u>
1	Complete all of the boxes for your chosen problem partially correct
2	Complete all of the boxes for your chosen problem mostly correct with written explanation.
3	Complete all of the boxes for your chosen problem mostly correct with written explanation meeting requirements of assignment.
4	Complete all of the boxes for your chosen problem 100 percent correct with written explanation meeting requirements of assignment.

Fill out the following:

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