

Recognizing Exponential Relationships Practice

1. Carmelita is planning to swim in a charity swim-a-thon. Several relatives said they would sponsor her.
 - a. Decide whether each donation pattern is an exponential function, linear function, or neither. Filling in more of the table will help you recognize the pattern. (Complete table.)
 - b. For each relative, write an equation.
 - c. For each plan, tell how much money Carmelita will raise if she swims 20 laps.

I will give you \$1 if you swim 1 lap, \$3 if you swim 2 laps, \$5 if you swim 3 laps, \$7 if you swim 4 laps, and so on.—**Grandmother**

I will give you \$1 if you swim 1 lap, \$3 if you swim 2 laps, \$9 if you swim 3 laps, \$27 if you swim 4 laps, and so on.—**Father**

I will give you \$2 if you swim 1 lap, \$3.50 if you swim 2 laps, \$5 if you swim 3 laps, \$6.50 if you swim 4 laps, and so on.—**Aunt Josie**

I will give you \$1 if you swim 1 lap, \$2 if you swim 2 laps, \$4 if you swim 3 laps, \$8 if you swim 4 laps, and so on.—**Uncle Sebastian**

WOW! Thanks everyone for your support!—**Carmelita**

# of Laps	Grandmother	Father	Aunt Josie	Uncle Sebastian
1	1	1	2	1
2	3	3	3.50	2
3	5	9	5	4
4	7	27	6.5	8
5				
6				
7				
a. Type of relationship (Circle one)	Linear Exponential Neither	Linear Exponential Neither	Linear Exponential Neither	Linear Exponential Neither
b. Equation (if there is one)				
c. How much will she make for 20 laps? Use your equation.				

For Exercises 2 - 6, study the pattern in each table.

- Tell whether the relationship between x and y is linear, exponential, or neither. **Provide evidence!**
- If the relationship is linear or exponential, write its equation. ***Make sure to test your equation with one or more values from your table.***

2.

x	0	1	2	3	4	5
y	10	12.5	15	17.5	20	22.5

3.

x	0	1	2	3	4
y	1	6	36	216	1,296

4.

x	0	1	2	3	4	5	6	7	8
y	1	5	3	7	5	8	6	10	8

5.

x	0	1	2	3	4	5	6	7	8
y	2	4	8	16	32	64	128	256	512

6.

x	0	1	2	3	4	5
y	0	1	4	9	16	25

7. The king tried to figure out the **total** number of rubas the peasant would receive under Plan 1.

Remember, for Problem 1 we were just calculating how many rubas went on **each square**, not the total number that were on the chess board!

- a. Fill the table up to square 10.

Square Number	Number of Rubas on the square	Total Number of Rubas on the board
1	1	1
2	2	3
3		7
4		
5		
6		
7		
8		
9		
10		

- b. We know that the relationship between the square number and the number of rubas on the square is exponential.

Is the relationship between the square number and the **total number of rubas** on the board exponential? Explain.

- c. We know the equation for the Number of Rubas on a square (look back at Problem 1.2). Use that equation to come up with a new one that will calculate the **total** number of rubas on the board.

- e. Suppose the king gave the peasant the reward she requested. How many Rubas would she receive? (A chessboard has 64 squares!)