

# Functions Study Guide

1. Complete the function table at the right.

Write an **EXPRESSION** to describe the value of each term as a function of its position. Then find the twelfth term in each sequence.

2.

Position	1	2	3	4	$n$ 12
Value of Term	6	12	18	24	72

3.

Position	5	6	7	8	$n$ 12
Value of Term	-3	-2	-1	0	4

Write an **EQUATION** to represent the function.

4.

Input, $x$	1	2	3	4
Output, $y$	-2	-4	-6	-8

$-2$

5.

Input, $x$	0	1	2	3
Output, $y$	-2	2	6	10

$+4$

Use the following information for Exercises 6-9.

**MONEY** James save \$3 each week in his piggy bank.

6. Write an equation to find  $y$ , the total amount of money James has in his piggy bank after each week,  $x$ .

7. Make a table to show the relationship between the number of weeks,  $x$  and the total amount of money,  $y$  for 1, 2, and 3 weeks.

8. Graph the ordered pairs  $(x, y)$  at the right. Label each axis.

$(1, 3)$   
 $(2, 6)$   
 $(3, 9)$

9. How much money will James have after saving for 8 weeks according to the information above (the equation, chart and graph)?

$3(8) = 24$

1.

Input, $x$	$4x - 8$	Output, $y$
3	$4(3) - 8$	4
4	$4(4) - 8$	8
5	$4(5) - 8$	12

2. Rule:  $6n$

Twelfth term: 72

3. Rule:  $n - 8$

Twelfth term: 4

4.  $y = -2x$

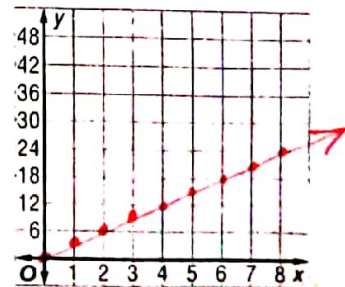
5.  $y = 4x - 2$

6.  $y = 3x$

7.

Weeks, $x$	1	2	3
Total money, $y$	3	6	9

8.



10. Find the input for the function table. Complete the table.

Input (x)	$x \div 7$	Output (y)	Input (x)	$5x - 2$	Output (y)
21	$21 \div 7$	3	1	$5(1) - 2$	$3 + 2 = 5$
35	$35 \div 7$	5	3	$5(3) - 2$	$13 + 2 = 15$
49	$49 \div 7$	7	5	$5(5) - 2$	$23 + 2 = 25$

11. MEASUREMENT There are 24 hours in 1 day. Make a table and write a function rule relating the number of days (x) to the number of hours (y) for 1, 2, 3, and n days. Then find the number of hours in 9 days. Record all the data in the table.

days (x)	1	2	3	n	9
hours (y)	24	48	72	24n	216

Function Rule:  $y = 24x$

12. Determine how the next term in this sequence can be found. Then find the next two terms in the sequence.

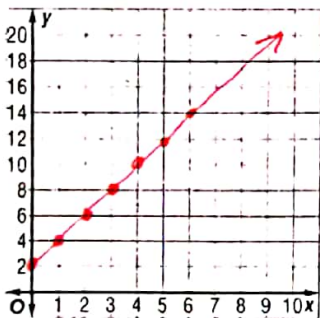
2, 19, 36, 53, 70, 87 How the next term is found: add 17

13. Find the missing number in this sequence.

22, 2, 15, 9, \_\_\_\_\_, 6, -0.3 ...

24.9 18.6 12.3

14. Graph this equation:  $y = 2x + 2$ . List 3 ordered pairs you used to create the graph. Show your work.



Ordered Pairs:

1. (1, 4)
2. (2, 6)
3. (3, 8)

15. Extended Response In your own words, define what a mathematical *sequence* is. Along with your definition, provide examples of an arithmetic *and* a geometric sequence.

A sequence is... a list of #s in a specific order

An example of an arithmetic sequence is... adding 3: 3, 6, 9, 12, 15...

An example of a geometric sequence is... multiply 3: 3, 9, 27, 81...