**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* |
| **Value of Term** | 6 | 12 | 18 | 24 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Position** | 5 | 6 | 7 | 8 | *n* |
| **Value of Term** | -3 | -2 | -1 | 0 |  |

**3.**

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

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

**4. 5.**

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

**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.

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

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**1.**

|  |  |  |
| --- | --- | --- |
| **Input, *x*** | **4*x* – 8** | **Output, *y*** |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

**2. Rule:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Twelfth term: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**3. Rule:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Twelfth term: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |
| --- | --- | --- | --- |
| **Weeks, *x*** |  |  |  |
| **Total money, *y*** |  |  |  |

**7.**

**8.**



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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Input (*x*)** | ***x* ÷ 7** | **Output (*y*)** |  | **Input (*x*)** | **5*x* – 2**  | **Output (*y*)** |
|  |  | 3 |  |  | 3 |
|  |  | 5 |  |  | 13 |
|  |  | 7 |  |  | 23 |

**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.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**Function Rule: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**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, \_\_\_\_\_\_, \_\_\_\_\_\_ How the next term is found: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**13.** Find the missing number in this sequence.

22.2, 15.9, \_\_\_\_\_\_, 6, -0.3 …

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

 Ordered Pairs:

**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…

An example of an arithmetic sequence is…

An example of a geometric sequence is…