Math 8 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Functions Test Review

What is a relation? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Domain: the set of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Range: the set of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A relation can be represented in the following ways:



Example 1:
Consider the relation given by the following ordered pairs: (-2, -3), (-1, 1), (1, 3), (2, -2), and (3, 1)

1. Identify the domain and range:
Domain=
Range =
2. Represent the relation using a graph and a mapping diagram:

 Mapping Diagram

 Input Output

Is the relation a function? Explain.



Function? \_\_\_\_\_\_\_\_ Function? \_\_\_\_\_\_\_\_\_

Example 2:
Consider the relation given by the following ordered pairs: (-4, 3), (-2, 1), (0, 3),
(1, -2), and (-2, -4)

1. Identify the domain and range:
Domain=
Range =
2. Represent the relation using a table and a mapping diagram:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| x |  |  |  |  |  |
| y |  |  |  |  |  |

 Input Output

Example 3:
Is the following relation a function? Why or why not?

Find the indicated values for g(x) = 3x+1

1. g(2) 2. g(0) 3. g(1/3)

4. g(-5) 5. g(-10) 6. g(50)

Find the indicated values by using the graph.

7. h(-4) 8. h(-3) 9. h(-2)

10. h(-1) 11. h(0) 12. h(1)

Graphing Linear Functions

Example: y = 3x – 5

x is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and y is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The ordered pair (x, y) is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an equation if substituting x and y into the equation produces a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* Is the ordered pair (2, 1) a solution of y = 3x – 5?
* Is (-3, 2) a solution of y = x + 1?

Graphing Equations Using Table of Values

|  |  |
| --- | --- |
| x | y |
|  |  |
|  |  |
|  |  |
|  |  |

Graph the equation y = 3x – 5

1. Construct a table of values
2. Plot the points.
3. Connect the points with a line

|  |  |
| --- | --- |
| x | y |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

Graph the equation 

1. Construct a table of values.
2. Choose x-values that would

create integer y-values
3. Connect the points with a line

Graphing Non-Linear Functions$ $

|  |  |
| --- | --- |
| x | y |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

Graph the equation y = $ x^{2}$

1. Construct a table of values
2. Plot the points
3. Connect the points with a U.

|  |  |
| --- | --- |
| x | y |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

Graph the equation x = $ y^{2}$

1. Construct a table of values.
2. Choose y-values.

 Find the x-value.

1. Connect with a sideways U.

Graph the equation xy = $ 6$

|  |  |
| --- | --- |
| x | y |
| -6 |  |
| -3 |  |
| -2 |  |
| 2 |  |
| 3 |  |
| 6 |  |

1. Construct a table of values.
2. Choose y-values.

 Find the x-value.

1. Connect with a sideways U.

Linear Functions can be written in the form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The graph of a linear function is a \_\_\_\_\_\_\_\_\_\_.

Function Notation of a linear function is:

f(x) = mx + b (replace “y” with “f(x)”)

f(x) is read “the value of f at x” or “f of x”

 \*\*This means, what output do you get when you plug in an input of x\*\*

Circle if the relation is linear or non-linear. Then evaluate the function.

1.  f(-4) = \_\_\_\_\_ linear non-linear
2.  f(-4) = \_\_\_\_\_ linear non-linear
3. $f\left(x\right)=x^{2}$ f(-3)= \_\_\_\_\_\_\_\_\_\_ linear non-linear
4. $f\left(x\right)=x^{3}$ f(-2) = \_\_\_\_\_\_\_\_\_ linear non-linear
5. $k\left(x\right)=x^{2}+1$ k(5) = \_\_\_\_\_\_\_\_\_\_ linear non-linear
6. $g\left(x\right)=x^{3}-5$ g(3) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
7. $m\left(x\right)=2$ m(3) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
8. $m\left(x\right)=2x-7$ m(-3) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
9. $m\left(x\right)=$ $\frac{1}{3}x-2$ m(10) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
10. $m\left(x\right)=\frac{1}{4}x-2$ m(40) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
11. $m\left(x\right)=\frac{1}{5}x-2$ m(-50) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
12. $m\left(x\right)=\frac{1}{6}x-2$ m(-18) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
13. $m\left(x\right)=x^{2}-1$ m(-5) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
14. $b\left(x\right)=2x^{2}+1$ b(4) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
15. $m\left(x\right)=-3x^{2}+1$ m(9) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
16. $c\left(x\right)=x^{2}+12$ c(7) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
17. $m\left(x\right)=-4x^{2}-1$ m(-6) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
18. $m\left(x\right)=x^{3}+1$ m(1) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
19. $r\left(x\right)=x^{3}-11$ r(2) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
20. $m\left(x\right)=x^{-1}+1$ m($\frac{1}{2}$) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
21. $m\left(x\right)=x^{-1}-1$ m(3) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear
22. $m\left(x\right)=x^{-1}-10$ m($\frac{1}{3}$)) = \_\_\_\_\_\_\_\_\_\_\_ linear non-linear

Write a paragraph about functions. Use the following words: input, output, range, domain, relation, function, order pairs, graph, linear, equation, non-linear, mapping and table.