Math 8



Relations & Functions:

A point is represented as (x, y) ……alphabetically

Plot Point A (2, 4)

D

Plot Point B (-4, 3)

Plot Point C (1, -6)

E

What are the coordinates of D? \_\_\_\_\_\_\_\_\_

What are the coordinates of E? \_\_\_\_\_\_\_\_\_

We can write the points as a set of ordered pairs. This is called a relation.

{ ( , ), ( , ), ( , ), ( , ), ( , ) }

Domain: (x-values) { }

Range: (y-values) { }

Inverse: { ( , ), ( , ), ( , ), ( , ), ( , ) }

Mapping: Table Form:

|  |  |
| --- | --- |
| x | y |
| -7 | -3 |
| -4 | -10 |
| 2 | 4 |
| 1 | -6 |
| -4 | 3 |

 X Y

-10

-7

-6

-4

-3

2

1

3

4

**Function:** special type of relation in which every x value is paired with **exactly one** y value.

Is our example a function? Why or why not? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| x | y |
| 3 | -1 |
| 4 | -2 |
| 0 | 0 |
| 2 | 2 |

-6

Examples:

-4

1

-7

1. {(1, 2), (2, 3), (-3, 1), (4,2) 2. 3.

0

-4

Classwork:



1. Plot Point A (0, 4)

F

2. Plot Point B (-4, -8)

3. Plot Point C (6, -2)

4. Plot Point D (7, 2)

5. What are the coordinates of E? \_\_\_\_\_\_\_\_\_

E

 What Quadrant is it in? \_\_\_\_\_\_\_\_\_

6. What are the coordinates of F? \_\_\_\_\_\_\_\_\_

 What Quadrant is it in? \_\_\_\_\_\_\_\_\_

7. { (2, -3), (-3, 4 ), (0, 5), (1, 1), (-4, 3) }

What is the domain? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the range? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Function ? \_\_\_\_\_\_\_\_\_\_\_\_

What is the inverse? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| x | y |
| 0 | -1 |
| 5 | -3 |
| 1 | 5 |
| 0 | 4 |
| 2 | 2 |

8. Table: Make a mapping:

What is the domain? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the range? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Function ? \_\_\_\_\_\_\_\_\_\_\_\_

Review: Solve each of the following equations. Show all of your work.

9. 2x – 1 = 17 10. -5x + 7 = -8 11. $\frac{x}{2}-4=12$

12. 3x + 7 < -11 13. $\frac{x}{-3}+14>20$ 14. 3x + 5 = 2x – 9

**Vertical Line Test**: tests a graph to see if it is a function.

1. 2. 3.

   

State the Domain of the Relation State the Domain of the Relation State the Domain of the Relation

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

State the Range of the Relation State the Range of the Relation State the Range of the Relation

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

Is it a Function? \_\_\_\_\_\_\_\_\_\_ Is it a Function? \_\_\_\_\_\_\_\_\_\_ Is it a Function? \_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| x | y |
| 1 | 5 |
| -2 | 4 |
| 3 | -2 |
| -2 | 1 |

-2

-1

4. {(1, 2), (2, 3), (-3, 1), (4,2), (0, 2) 5. 6.

-1

-3

0

4

-6

2

Is it a Function? \_\_\_\_\_\_\_\_\_\_ Is it a Function? \_\_\_\_\_\_\_\_\_\_ Is it a Function? \_\_\_\_\_\_\_\_\_\_

Function Notation: If the graph is a function we can use *f*(x), g(x), h(x) instead of y

**If *f*(x) = 2x + 1 If *g*(x) = x2 + 3**

Find *f*(3) \_\_\_\_\_\_\_\_\_\_ Find *g*(2) \_\_\_\_\_\_\_\_\_\_

Find *f*(-2) \_\_\_\_\_\_\_\_\_\_ Find *g*(-1) \_\_\_\_\_\_\_\_\_\_

Find *f*(a) \_\_\_\_\_\_\_\_\_\_ Find *g*(4) \_\_\_\_\_\_\_\_\_\_

Classwork:

1. 2. 3.

   

 Graph #3 above {(1, -3), (0, -5), (2, 1), (-3, 1)}

State the Domain of the Relation State the Domain of the Relation State the Domain of the Relation

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

State the Range of the Relation State the Range of the Relation State the Range of the Relation

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

Is it a Function? \_\_\_\_\_\_\_\_\_\_ Is it a Function? \_\_\_\_\_\_\_\_\_\_ Is it a Function? \_\_\_\_\_\_\_\_\_\_

4. Given the points { (-3, 5), (2, 7), (-1, -1), (0, 4) } Add a point so this is not a function. \_\_\_\_\_\_\_\_\_\_

 State the inverse of #4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. **If *h*(x) = x2 + x – 8 6. If *p*(x) = -3x + 4 7. If *f*(x) =** $\frac{1}{2}x+6$

 Find *h*(4) \_\_\_\_\_\_\_\_\_\_ Find *p*(2) \_\_\_\_\_\_\_\_\_\_ Find *f*(2) \_\_\_\_\_\_\_\_\_\_

 Find *h*(0) \_\_\_\_\_\_\_\_\_\_ Find *p*(-1) \_\_\_\_\_\_\_\_\_\_ Find *f*(-4) \_\_\_\_\_\_\_\_\_\_

 Find *h(*-1) \_\_\_\_\_\_\_\_\_\_ Find *p*(a) \_\_\_\_\_\_\_\_\_\_ Find *f*(0) \_\_\_\_\_\_\_\_\_\_

Review:

*l*

8. Solve for x and y if the lines *l* and *m* are parallel

3x + 50⸰

 x = \_\_\_\_\_\_\_\_\_\_

2x + 80⸰

2y⸰

*m*

 y = \_\_\_\_\_\_\_\_\_\_