Relations Notes

Relation: **Any set of ordered pairs (x,y) for each first member (x-domain) there may be many second members (y-range)**

 **EX: {(1,2)(1,3)(2,2)(2,3)}**

Domain: **The set of all input values for the independent variable (x) in a given situation**

 **EX: {(1,2)(1,3)(2,2)(2,3)}**

**Domain {1,2}**

Range: **The set of all output values for the dependent variable(y) in a given situation**

 **EX: {(1,2)(1,3)(2,2)(2,3)}**

**Range {2,3}**

Function: **A relation in which there is one and only one second member for each first member**

**\*the domain can repeat but the range cannot**

**\*All functions are relations but only SOME relations are functions**

**\*on a graph, a function is any curve (including straight lines) such that any vertical line would pass through only once**

 **EX: {(1,2)(1,3)(1,4)(1,5)}**

**Function because there is only one y for each x.**

**EX: {(2,2)(3,2)(4,1)(5,1)}**

**Not a function because the y-value of 2 goes with the x-values 2 and 3. The y-value 1 goes with x-values 4 and 5**

Rule: **Rules that relate elements in two sets can be represented by word sentences, equations, tables of values, graphs, or illustrated pictorially.**

 **EX: **

**2 times some number increased by 4 will equal y.**

**Practice:**

Words: **John went to midnight bowling. Shoe rental was $6 and each game cost $3.**

Rule from words:  **Johns total cost (y) = 3 per game (x) plus 6 for shoes **

Table of values: **for rule above x 3x + 6 y**

Graph: **for rule above**

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Label the input and output of the following equation: 

Label the independent variable & dependent variable in the following equation: 

Make a table for the following function  using the following *x-values* 

|  |  |  |  |
| --- | --- | --- | --- |
| X  |  | Y | (x,y) |
| -1 |  |  |  |
| 0 |  |  |  |
| 2 |  |  |  |
| 4 |  |  |  |

Write a function for the following situation:

A yoga instructor charges a one-time enrollment fee of $15 plus $5 for each class. If Asia spent $45 for enrollment and classes, how many classes did she take?

Function ( x will represent \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) ( y will represent \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

Find the number of classes taken if she spent $45.

Shawn used an equation to make the following function table. Which equation could he have used to create the table?

|  |  |
| --- | --- |
| *x* | *y* |
|  -4 | 2 |
|  -2 | 3 |
| 0 | 4 |
| 4 | 6 |
| 6 | 7 |

 A) 

 B) 

C) 

 D) 

Which table contains only pairs that satisfy the equation 

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | -1 | 0 | 2 | 3 |
| y | -10 | -6 | 2 | 6 |

A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | -2 | 0 | 1 | 2 |
| y | 6 | -6 | -2 | 1- |

B)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | -3 | -2 | 1 | 2 |
| y | 18 | 10 | 2 | 2 |

 C)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | -1 | 1 | 3 | 5 |
| y | -2 | -10 | -18 | -26 |

 D)

Graph the following function: 

|  |  |  |  |  |  |  |  |  |  |
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Which table contains only values that satisfy the following?

 

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

A)

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

B)

Use the Vertical Line Test to answer the following question:

