**Unit 2 – What’s My Function? - Algebra Review Sheet**

**Function Notation**

* replaces y
* is the name of the function
* Use substitution to evaluate a function
* is the input; is the output

**Relations and Functions**

**🡪Relation** – a set of input and output values listed in ordered pairs

* Describes a relationship between two different sets of information

**🡪Function** – a relation in which each element of the domain has one and only one element of the range associated with it

* For each there is *one and only one*
* For each input there is *one and only one* output

**Domain and Range**

🡪The **domain** is the set of the first elements in the ordered pairs

* Input
* -value
* Independent variable

🡪The **range** is the set of the second elements in the ordered pairs

* Output
* -value
* Dependent variable

**Vertical Line Test**

If any vertical line can be drawn through the graph and **pass through more than one point**, then your graph is **NOT a function.**

If any vertical line can be drawn through the graph and **pass through only one or no points**, then your graph **IS a function**.

**Ordered Pair (point)**

two numbers written in a specific order that show the relationship between two different sets of information

* On a graph, an ordered pair shows the position on a graph
* First number is the horizontal coordinate
* Second number is the vertical coordinate

During this unit, we looked at three different ways to model functions: tables, mapping diagrams, and graphs. All three are displayed below for the function with a domain of

|  |  |  |
| --- | --- | --- |
| **Table** | **Mapping Diagram** | **Graph** |
| Tables are always set up with the same three columns. Domain goes on the left and range goes on the right.   |  |  |  | | --- | --- | --- | |  | *The rule* |  |  |  |  |  | | --- | --- | --- | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |  |  |  | | Mapping diagrams are used to show the relationship between the domain and range. Domain is listed in one box and range is listed in the other. Arrows are drawn to connect each domain to its range.  Domain Range | Ordered pairs are plotted on the coordinate plane. The first number gives us the horizontal coordinate and the second number gives the vertical coordinate. |

**Translating Functions**

**🡪g(x) = f(x) + h**

* Adding a value **OUTSIDE** the function slides the function **UP** k units

**🡪g(x) = f(x) – h**

* Subtracting a value **OUTSIDE** the function slides the function **DOWN** k units

**🡪g(x) = f(x + k)**

* Adding a value **INSIDE** the function slides the function **LEFT** k units

**🡪g(x) = f(x – k)**

* Subtracting a value **INSIDE** the function slides the function **RIGHT** k units

**🡪g(x) = af(x) when**

* When a is larger than 1, the graph becomes **THINNER**

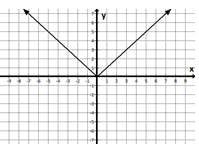
**🡪g(x) = af(x) when**

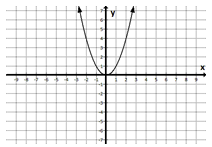
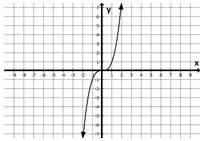
* When a is between 0 and 1, the graph becomes **WIDER**

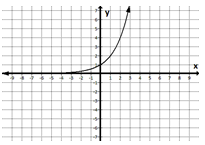
**🡪g(x) = -f(x)**

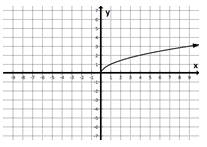
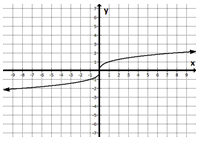
* A negative in front of the function **reflects** the function over the **X-AXIS**

**Parent Functions**



**Great Things to Study** ☺

Graded warm-up, functions quiz, Part 1: pages 7, 9, 22, 31, 32

Part 2: pages 2, 3, 5, 10

**Describing Graphs of Functions Vocabulary**

**maximum** – the highest POINT on a graph

**minimum** – the lowest POINT on a graph

**domain** – the set of all of x-values (LEFT to RIGHT on a graph)

**range** – the set of all of y-values (DOWN to UP on a graph)

**increasing** – the INTERVAL where the x-values have a positive slope

**decreasing** – the INTERVAL where the x-values have a negative slope

**turning point** – where a graph changes slopes

**-intercept** – the point where the graph crosses the -axis

**-intercept** – the point where the graph crosses the -axis

**zeros** –the -coordinate of the -intercept

**linear** – a graph that makes a straight line

**non-linear** – a graph that does not make a straight line

**axis of symmetry** – The two sides of a graph on either side of the axis of symmetry look like mirror images of each other.

**slope/rate of change** – change in y-values divided by the change in x-values

**end behavior** – how a graph begins or ends (EX: as x increases, y decreases)

**asymptote**: a line that a graph approaches but will never touch

**What are they asking for?!?**

**Remember: is really !!!!!!**

**EX:**

Given the function find:

🡪

What this means... FIND y

(or ) when x = 3

So…

This could also be written as: find the RANGE when the DOMIAN is 3

🡪

What this means… FIND x when y = 5

So… 🡪 🡪

This could also be written as: find the DOMAIN when the RANGE is 5