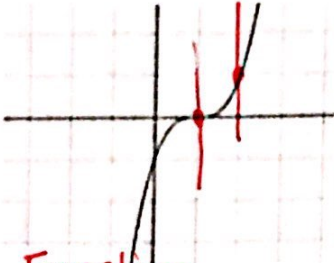
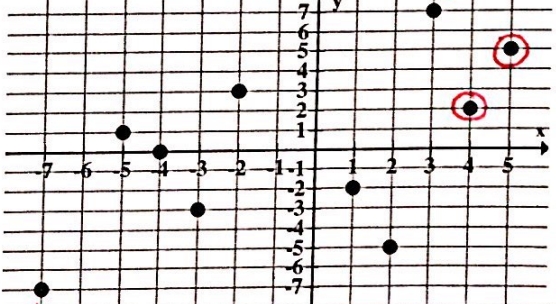


Unit 4: Functions Review Guide

What you need to know & be able to do	Things to remember	Examples																															
1. Determine if a relation is a function.	Every input only has one output (each 'x' only has one 'y')  Use the vertical line test on graphs.	1. Determine if the graph is a function.    Function	2. Determine if the table represents a function.  <table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td>4</td> </tr> <tr> <td>0</td> <td>5</td> </tr> <tr> <td>2</td> <td>6</td> </tr> <tr> <td>-1</td> <td>7</td> </tr> </tbody> </table>  Not a function	x	y	-1	4	0	5	2	6	-1	7																				
x	y																																
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0	5																																
2	6																																
-1	7																																
2. Create an input-output table for a function.	"x-y chart" - choose the x-values & plug them in	3. Create an input-output table for the function $f(x) = 2x - 3$ . Use $x = -2, -1, 0, 1,$ and $2$ .  <table border="1"> <thead> <tr> <th>x</th> <th><math>f(x) = 2x - 3</math></th> <th><math>f(x)</math> only</th> </tr> </thead> <tbody> <tr> <td>-2</td> <td><math>f(-2) = 2(-2) - 3</math></td> <td>-7</td> </tr> <tr> <td>-1</td> <td><math>f(-1) = 2(-1) - 3</math></td> <td>-5</td> </tr> <tr> <td>0</td> <td><math>f(0) = 2(0) - 3</math></td> <td>-3</td> </tr> <tr> <td>1</td> <td><math>f(1) = 2(1) - 3</math></td> <td>-1</td> </tr> <tr> <td>2</td> <td><math>f(2) = 2(2) - 3</math></td> <td>1</td> </tr> </tbody> </table>	x	$f(x) = 2x - 3$	$f(x)$ only	-2	$f(-2) = 2(-2) - 3$	-7	-1	$f(-1) = 2(-1) - 3$	-5	0	$f(0) = 2(0) - 3$	-3	1	$f(1) = 2(1) - 3$	-1	2	$f(2) = 2(2) - 3$	1	4. Create an input-output table for the function $f(x) = 6$ . Use $x = -2, -1, 0, 1,$ and $2$ .  <table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-2</td> <td>6</td> </tr> <tr> <td>-1</td> <td>6</td> </tr> <tr> <td>0</td> <td>6</td> </tr> <tr> <td>1</td> <td>6</td> </tr> <tr> <td>2</td> <td>6</td> </tr> </tbody> </table>	x	y	-2	6	-1	6	0	6	1	6	2	6
x	$f(x) = 2x - 3$	$f(x)$ only																															
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3. Evaluate functions.	f(x) function notation f(2) means you must substitute a '2' for every 'x' in the function!	5. Evaluate $f(4)$ .  $f(x) = x^2 + 3x - 1$ $f(-4) = (-4)^2 + 3(-4) - 1$ $f(-4) = 16 - 12 - 1$ $f(-4) = 3$	6. Find the value of $f(x) = 4x - 2$ when $x = -1$ .  $f(-1) = 4(-1) - 2$ $f(-1) = -4 - 2$ $f(-1) = -6$																														
		7. a. Find $f(5)$ . $f(5) = 5$  b. Find the value of x for $f(x) = 2$ . $f(4) = 2$  c. What is the maximum and minimum? Write in function notation.  $\text{min: } f(-7) = -6$ $\text{max: } f(3) = 7$																															

4. Write a function.

8.

Time Worked (h)	1	2	3	4
Amount Earned f(h)	5	10	15	20

$$h = f(h)$$

$$1 \cdot 5 = 5$$

$$2 \cdot 5 = 10$$

$$3 \cdot 5 = 15$$

$$4 \cdot 5 = 20$$

$$f(h) = 5h$$

9.

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

$$x = f(x)$$

$$1 - 3 = -2$$

$$2 - 3 = -1$$

$$3 - 3 = 0$$

$$4 - 3 = 1$$

$$f(x) = x - 3$$

5. Create a function & use it to solve a problem.

10. You join a kickboxing class at a local gym. The cost is \$5 per class plus \$30 for the initial membership fee. Write a rule for the total cost of the class as a function of x. How much will it cost if you attend 7 classes?

total cost ←  $f(x) = 30 + 5x$  → # of classes

$$f(7) = 30 + 5(7)$$

$$f(7) = 65$$

For 7 classes, the cost is \$65.

11. Air Force One can travel 630 miles per hour. Let h be the number of hours traveled. Write a function rule that represents the total number of miles traveled. Then, determine how hours Air Force One flew if f(h) = 5040.

total miles traveled ←  $f(h) = 630h$  → # of hours

$$5040 = 630h$$

$$\frac{5040}{630} = \frac{630h}{630}$$

$$8 = h$$

After 8 hours, Air Force One flew 5040 miles

Swine flu is attacking Porkopolis. The function below determines how many people have swine where t = time in days and S(t) = the number of people in thousands.

4 days people ←  $S(t) = 9t - 4$  ← # of days

a. Find S(4).

$$S(4) = 9(4) - 4$$

$$S(4) = 32$$

b. What does S(4) mean?

After 4 days, 32,000 people had swine flu.

c. Find t when S(t) = 23.

$$23 = 9t - 4$$

$$\begin{array}{r} 23 = 9t - 4 \\ + 4 \quad + 4 \\ \hline 27 = 9t \\ 3 = t \end{array}$$

d. What does S(t) = 23 mean?

After 3 days, 23,000 people had swine flu.