

Day 2 - Creating Function Rules

Name: Key
 Date: _____ Block: _____

Practice Assignment

1. Complete the input-output table. Then write the function rule.

In	3	4	5	7	10
Out	7	8	9	11	14

$3 + 4 = 7$

$4 + 4 = 8$

$5 + 4 = 9$

$f(x) = x + 4$

In	5	6	8	10	15
Out	14	15	17	19	24

$5 + 9 = 14$

$6 + 9 = 15$

$8 + 9 = 17$

$f(x) = x + 9$

2. Create a function rule to describe the table below.

x (in)	2	9	14	17
y (out)	0	7	12	15

$2 - 2 = 0$

$9 - 2 = 7$

$f(x) = x - 2$

3. Elaine is in the business of repairing home computers. She charges a base fee of \$45 for each visit and \$25 per hour for her labor.

a. What are the independent and dependent quantities and variables?

independent: # of hours

dependent: total cost

b. Write a function rule that represents the total cost $c(x)$ for one home visit and x hours of labor.

$c(x) = 45 + 25x$

4. A mail order company charges \$5 to place an order and then \$2 per item in the order, up to a maximum of 4 items.

a. Write a function rule relating the total cost and number of items ordered.

$f(x) = 2x + 5$

b. What is a reasonable domain for this situation? (max of 4 items)

Domain {0, 1, 2, 3, 4}

Range {5, 7, 9, 11, 13} If I substitute the values in the domain, I get the values for the range.

5. A rental car owner charges a \$25 fee to rent a car and \$0.20 per mile driven.

a. Write a function rule relating the total cost and the number of miles driven.

$f(x) = 25 + .20x$

b. Find the value of $F(121)$. Explain what it means in terms of the problem scenario.

$F(121) =$ number of miles driven

$F(121) = 25 + .20(121)$
 $= \$49.20$

If the person drives 121 miles, he will spend \$49.20.

c. How many miles did a customer drive if his total bill was \$215.00?

$215 = 25 + .20x$
 $\frac{-25 \quad -25}{190 = .20x}$
 $\frac{.20 \quad .20}{.20} = \frac{.20x}{.20}$

$x = 950$ miles

6. Fiona has a long distance cell phone plan with AT&T. The cost of a long-distance cell phone call is \$0.50 to make a phone call and \$0.10 for each minute that Fiona talks. If x is the number of minutes that Fiona talks on her cell phone and y is the total dollar cost of the phone call, then y is a function of x . Let's name this function C , for cost function.

a. What are the independent and dependent variables in this scenario?

independent: # of minutes
dependent: total cost

b. Make a table of values to record the costs of a call that lasts 1, 2, 3, 4, 5, and 6 minutes.

x (minutes)	1	2	3	4	5	6
C(x) (cost)	\$0.60	\$0.70	\$0.80	\$0.90	\$1.00	\$1.10

c. Write a formula showing how the cost of a long distance call depends on the number of minutes that Fiona talks on her cell phone. (Assume that the company does NOT round up to the nearest minute).

$$C(x) = .50 + .10x$$

d. What is $C(2)$? What does it mean? Explain how you can use the table and the formula to compute $C(2)$.

$$C(2) = .50 + .10(2) = \$0.70$$

If I talk for 2 minutes, my cost is \$0.70.

Table - look to see what the output is when $x=2$.

Formula - Substitute $x=2$ in for the x in the formula.

e. What is $C(x) = \$1.00$? Explain how you can use the table and formula to compute $C(x) = \$1.00$.

$$1.00 = .50 + .10x$$

$$\begin{array}{r} 1.00 = .50 + .10x \\ -.50 \quad -.50 \\ \hline .50 = .10x \end{array}$$

$$\frac{.50}{.10} = \frac{.10x}{.10}$$

$x=5$
minutes

Table - I can look at the output when it is a \$1.00 to see how many minutes it would be

Formula - Set the formula equal to a \$1.00 and solve for x .

7. The Martin family is comparing the costs of two different cable companies. Direct TV charges a \$100 setup fee and \$50 per month. Comcast charges a \$45 setup fee and \$60 per month. m : # of months

a. Write the function rule for DirectTV.

$$D(m) = 100 + 50m$$

b. Write the function rule for Comcast.

$$C(m) = 45 + 60m$$

c. Decide which company is cheaper after 12 months.

$$D(12) = 100 + 50(12)$$

$$D(12) = 700$$

$$C(12) = 45 + 60(12)$$

$$C(12) = 765$$

After 12 months with DirectTV, you will have paid \$700. After 12 months with Comcast, you will have paid \$765. DirectTV is cheaper after 12 months.