

Day 4 - Creating Function Rules - Practice

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

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

$$\begin{aligned} 3 + 4 &= 7 \\ 4 + 4 &= 8 \\ 5 + 4 &= 9 \end{aligned}$$

$$f(x) = x + 4$$

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

$$\begin{aligned} 5 + 9 &= 14 \\ 6 + 9 &= 15 \\ 8 + 9 &= 17 \end{aligned}$$

$$f(x) = x + 9$$

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

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

$$\begin{aligned} 2 - 2 &= 0 \\ 9 - 2 &= 7 \\ 14 - 2 &= 12 \end{aligned}$$

$$f(x) = x - 2$$

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 for labor
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 the domain and range for this scenario.

Domain: {1, 2, 3, 4} (items)

Range: {7, 9, 11, 13} (total cost for x items)

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

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

$$f(x) = 25 + 0.20x$$

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

$$f(121) = 25 + 0.20(121)$$

$$f(121) = 49.2$$

It costs \$49.20 to drive 121 miles

- c. Find the number of miles driven if $f(x) = 45$.

$$\begin{array}{r} 45 = 25 + 0.20x \\ -25 \quad -25 \\ \hline 20 = 0.20x \end{array}$$

$$\frac{20}{0.20} = \frac{0.20x}{0.20}$$

$x = 100$ miles for \$45

6. 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.

- a. Write the function rule for DirectTV.

$$f(x) = 100 + 50x$$

- b. Write the function rule for Comcast.

$$f(x) = 45 + 60x$$

- c. Decide which company is cheaper after 12 months.

$$\text{Direct TV: } f(12) = 100 + 50(12)$$

$$f(12) = 700$$

$$\text{Comcast: } f(12) = 45 + 60(12)$$

$$f(12) = 765$$

Direct TV is cheaper after 12 months by \$65.