

Key

## Sept. 8 Worksheet

1. Find the domain and range of the following.

$$f(x) = 2x + 7$$

$$d: (-\infty, \infty) \quad r: (-\infty, \infty)$$

$$f(x) = (\sqrt{x-8}) + 3$$

$$d: [8, \infty) \quad r: [3, \infty)$$

2. Is the relation between a person and their birthday a function? What are the inputs and outputs?


yes it is a function

input: person's name

output: their birthday

3. Are the following equations functions? Make a small sketch.

$$3x - 4y = 8$$

yes 

$$y^2 - x^2 = 10$$

no 

4. A migraine medicine is made for \$8 per unit. The total cost to produce 100 units is \$2,100.

What is the cost function equation?

$$C(x) = 8x + 1300$$

Using this information, find the fixed costs.

\$1300

5. From question 4, find the average cost to produce 100 compared to 1000 units.

100 units: \$21 per unit

1000 units: \$9.3 per unit



6. The Tillie Truffle factory has a weekly fixed cost of \$25,000. It costs \$2.50 to produce each box of truffles. A box of these truffles sells for \$4.25.

- find the cost function to produce  $x$  boxes of truffles

$$C(x) = 2.5x + 25000$$

- find the revenue function from selling  $x$  boxes of truffles

$$R(x) = 4.25x$$

- find the profit function on  $x$  boxes of truffles

$$P(x) = 1.75x - 25000$$

7. Sales. The following function represents projected sales (in thousands of dollars) for a small company for the next 10 years.

$$S(x) = 0.5x^4 - 0.2x^3 + 1.5x^2 + 5x + 50$$

- What are the project sales for the current year?

$$\$50,000$$

- What sales are expected for year 5? Year 8?

$$\text{Year 5: } \$400,000$$

$$\text{Year 8: } \$2,131,600$$