

Functions of Two Variables

1. A Cost Functions with Two Inputs

A company makes two kinds of chocolate bars, plain, and with almonds. Fixed production costs are \$10,000 and it costs \$1.10 to make a plain chocolate bar and \$1.25 to make one with almonds.

(a) Express the cost of making x plain bars and y bars with almonds as a function of two variables $C = f(x, y)$

(b) Find $f(2000, 1000)$ and interpret it.

(c) What is the domain of f ?

2. Graphing a linear function of two variables.

Sketch the graph of the function $f(x, y) = 6 - 3x - 2y$.

3. Find the values of the following function.

$$f(x, y) = 1 + 4xy - 3y^2$$

a) $f(6, 2)$

b) $f(-1, 4)$

c) $f(0, -3)$

d) $f(x, 2)$

4. **Joint Cost Function**

A company makes three sizes of cardboard boxes: small, medium, and large. It costs \$2.50 to make a small box, \$4.00 for a medium box, and \$4.50 for a large box. Fixed costs are \$8000.

- a) Express the cost of making x small boxes, y medium boxes, and z large boxes as a function of three variables $C = f(x, y, z)$

- b) Find $f(3000, 5000, 4000)$ and interpret it.

- c) What is the domain of f ?