

I. Which of the following tables could represent a linear function? Explain.

1.

$t$	1	2	3	4	5
$g(t)$	5	4	5	4	5

2.

$x$	0	5	10	15
$f(x)$	10	20	30	40

II. Identify the vertical intercept and the slope. Explain their meanings in practical terms.

3. A phone company charges according to the formula:  $C(n) = 0.05n + 29.99$ , where  $n$  is the number of minutes, and  $C(n)$  is the monthly phone charge, in dollars.

4. The population of a town can be represented by the formula  $P(t) = 54.25 - \frac{2}{7}t$ , where  $P(t)$  represents the population, in thousands, and  $t$  represents the time, in years, since 1970.

5. The profit of selling  $n$  items is given by the formula,  $P(n) = 0.98n - 3000$ . How many items must the company sell to break even? What does this value represent?

6. Tuition cost  $T$  (in dollars) for part-time students at Stonewall College is given by  $T = 300 + 200C$ , where  $C$  represents the number of credits taken.

- Find the tuition cost for 8 credits.
- How many credits were taken if the tuition was \$1700?
- What does the 300 represent in the formula for  $T$ ?
- What does the 200 represent in the formula for  $T$ ?

7. In a college meal plan, 30 meals cost \$152.50 and 60 meals cost \$250. Assuming the relationship is linear, write a formula for the cost of a meal plan,  $C$ , in terms of the number of meals,  $n$ .

- Explain the slope.
- Explain the  $y$ -intercept.
- Find the cost for 50 meals.
- Determine the maximum number of meals you can buy on a budget of \$300.

8. Margarita is hired by an accounting firm at a salary of \$60,000 per year. Three years later her annual salary has increased to \$70,500. Assume her salary increases linearly.

- Find a linear equation that relates her annual salary  $S$  and the number of years,  $t$ , that she has worked on the firm.
- What do the slope and  $S$ -intercept of her salary equation represent?
- What will her salary be after 12 years with the firm?
- If her salary continues to grow linearly, in how many years would she have to work there to have an income of \$100,000?