Problem-Based Task: Supply and Demand

Coaching Sample Responses

a. What is the rate of change of the supply function?

The supply function is $f(x) = 0.3x + 100$, and is written in $f(x) = mx + b$ form.

The rate of change of the function is the coefficient of x, or 0.3.

b. What is the y-intercept of the supply function?

The y-intercept of the supply function is the constant term, 100.

c. What is the rate of change of the demand function?

To determine this, choose two points from the table.

Let (100, 490) be (x_1, y_1) and (600, 190) be (x_2, y_2).

Substitute the coordinates into the slope formula.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{(190) - (490)}{(600) - (100)}$$
$$= \frac{-300}{500}$$
$$= \frac{-3}{5} = -0.6$$

The rate of change for this function is –0.6.

d. What is the y-intercept of the demand function?

The y-intercept is not listed in the table.

Calculate the y-intercept using one of the points from the table and the rate of change.

Let (100, 490) be (x_1, y_1) and $(0, y_2)$ be (x_2, y_2).

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$(-0.6) = \frac{y_2 - (490)}{(0) - (100)}$$

$$-0.6 = \frac{y_2 - 490}{-100}$$

$$60 = y_2 - 490$$

$$550 = y_2$$

The y-intercept of the demand function is 550.

e. How does the rate of change of the supply function compare to the rate of change of the demand function?

The rate of change of the supply function is a positive value of 0.3, whereas the demand function is a negative value of –0.6. That is, the supply function is increasing as the demand function is decreasing.

f. How does the y-intercept of the supply function compare to the y-intercept of the demand function?

The y-intercept of the supply function, 100, is less than the y-intercept of the demand function, 550.

g. When graphing both functions, what does the x-axis represent?

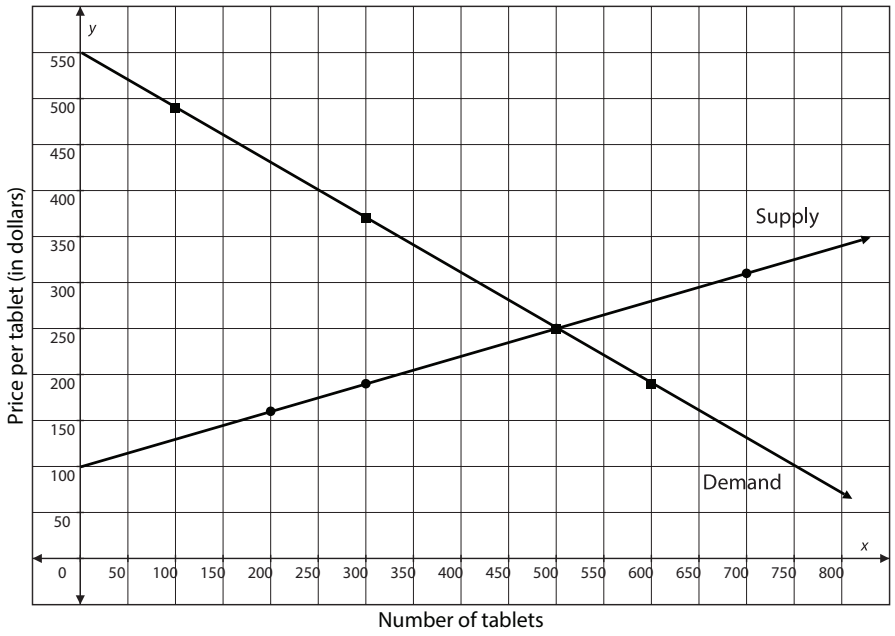
The x-axis represents the number of tablets.

h. What does the y-axis represent?

The y-axis represents the price per tablet.

i. At what point are the supply and demand functions equal?

Graph each function using the information from parts a–h.



From the graph, we can see that the lines intersect at the point (500, 250).

At this point, the number of tablets demanded by the buyers is equal to the number of tablets the seller has.

When priced at $250, it can be expected that 500 tablets will be sold.

j. For what value of x does the supply function exceed the demand function?

For $x > 500$, the supply function exceeds the demand function.

After that, the number of tablets that are available is greater than the number of tablets demanded by the buyers.

Recommended Closure Activity

Select one or more of the essential questions for a class discussion or as a journal entry prompt.