

NAME: _____

UNIT 3 • LINEAR AND EXPONENTIAL FUNCTIONS

Lesson 5: Comparing Functions

Problem-Based Task 3.5.1: Supply and Demand

Ideal Electronics is determining the price of the newest tablet to hit the market. In an effort to make the most money and sell the most tablets, Ideal Electronics wants to price the tablet appropriately to the product's supply and demand. Supply is the number of tablets that are available and demand is the amount that buyers are willing to pay. The relationship between supply and demand often influences the price of products.

Supply is modeled by the linear function $f(x) = 0.3x + 100$, where $f(x)$ represents the price per tablet in dollars and x represents the number of tablets.

Demand is modeled in the table below, where $g(x)$ represents the price per tablet in dollars and x represents the number of tablets.

| x | $g(x)$ |
|-----|--------|
| 100 | 490 |
| 300 | 370 |
| 500 | 250 |
| 600 | 190 |

Compare the properties of both of the functions described. At what point does the supply of tablets exceed the demand? Explain your reasoning.

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Coaching

- a. What is the rate of change of the supply function?
- b. What is the y -intercept of the supply function?
- c. What is the rate of change of the demand function?
- d. What is the y -intercept of the demand function?
- e. How does the rate of change of the supply function compare to the rate of change of the demand function?
- f. How does the y -intercept of the supply function compare to the rate of change of the demand function?
- g. When graphing both functions, what does the x -axis represent?
- h. What does the y -axis represent?
- i. At what point are the supply and demand functions equal?
- j. At what point does the supply function exceed the demand function?