

## Exercise 76

A cell phone company offers two plans for minutes.

- Plan A: \$15 per month and \$2 for every 300 texts
- Plan B: \$25 per month and \$0.50 for every 100 texts

How many texts would you need to send per month for plan B to save you money?

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### Solution

The cost in Plan A is

$$C_A(x, m) = 15m + \frac{2}{300}x,$$

and the cost in Plan B is

$$C_B(x, m) = 25m + \frac{0.50}{100}x,$$

where  $x$  is the number of texts sent and  $m$  is the number of months the plan is bought for. Find where Plan A is more expensive than Plan B.

$$C_A(x, d) > C_B(x, d)$$

$$15m + \frac{2}{300}x > 25m + \frac{0.50}{100}x$$

$$\frac{2}{300}x - \frac{0.50}{100}x > 25m - 15m$$

$$\frac{1}{600}x > 10m$$

$$x > 6000m$$

This inequality says that if more than  $6000m$  texts are sent during the time the plan is bought for, it's best to get Plan B. Divide both sides by  $m$  to get the number of texts per month.

$$\frac{x}{m} > 6000$$

Therefore, if the number of texts sent per month is greater than 6000, it's best to get Plan B.