

Chapter 3 Project

Unleashing Your Earning Potential

An activity to demonstrate the use of formulas and linear inequalities in real life.

Last fall, you started walking dogs as a side gig, initially working for friends and family who paid you \$10 for a 30-minute walk. But now that you're getting new clients, you want to establish a rate of \$20 for a 30-minute walk—while keeping the “friends and family discount” for your original customers.

1. If you are available to work 4 hours each week walking dogs, is it possible to make \$100 a week? If yes, how many hours could you walk dogs for friends and family and how many would you need to spend charging the higher rate? If no, what is the most you can make in a week? (**Hint:** Review Example 2 in Section 3.3 and consider the equation $\text{Revenue} = \text{Rate} \cdot \text{Number of Walks}$.)
2. Could you make more than \$100 per week without having to work more hours? Explain your reasoning.
3. After a month of consistent income, you decide that if you can average making \$100 per week for a 6-week period, you will invest in some marketing to grow your business. The first week you make \$110, and the next week you make \$150, but the following week you only make \$80. If you average \$100 the next two weeks, how much would you need to make the sixth week in order to go through with your plan?
4. For most of your walks, you're able to use a park that has a square path around a small lake.
 - a. If one side of the path is 0.2 miles, how long is one complete trip around the lake?
 - b. One day, the dog you are walking gets loose and runs around the lake, not using the path. Assuming you chased him around a circle with diameter 0.15 miles, what distance did you run, to the nearest hundredth of a mile?
5. Even though your rates are based on how much time you spend walking, you become curious about how much you are making based on the *distance* you walk. One week you decide to only walk around the park where you know the distance, so you spend 4 hours walking on that path in one week. (All spent at a normal walking speed, not running to chase after loose dogs.)
 - a. If you total 10 trips around the park, what is your rate of speed? (**Hint:** Use the formula $d = rt$ and solve for r .)
 - b. Now that you have found your rate of speed, use the equation from part a. to find the distance you travel during your 30-minute walks.