Pre-Algebra

Worksheet 9 - Graphing – Solutions

1 Worksheet

1. There are an infinite number of answers for each of these. The point is to create a plot that makes sense given the situation and for each student to be able to explain what they plotted.
   a) The trip to the grocery store, since it is uphill will take longer than the trip from the grocery store. Also your distance increase as you go to the grocery store and it decreases on your way home. There is no distance change while you are at the grocery store.

   b) The kid's velocity should increase steadily as they go down the hill.

   c) The amount of corn in the stand will probably increase in the morning hours from picking the corn. The amount of corn then there will be a sudden drop in the amount of corn after 5pm, hopefully reaching zero by 7pm when the stand closes.

   d) Here the plot should start at -50,000 since the company owes money. By the end of the year, it should be above zero. How it gets there is up to your imagination.

   e) In both summer and winter the temperature drops at night and increase during the day, peaking in the afternoon. The winter temperatures should be cooler than the summer temperatures.

2. a) It costs you \$2.00 to travel 50 miles, or $\frac{2}{50}$dollars/mile. So for 10,000 miles you must spend $10,000 \cdot \frac{2}{50} = 400$dollars. Your friend will spend $\frac{2}{20}$dollar per mile. At 10,000 miles your friend will have spent $10,000 \cdot \frac{2}{20} = 1000$ dollars.

   b) Including the cost of the car, you will have spent \$20,000+\$400= $20,400$dollars. Your friend will have spent \$19,000.

   c) See Figure 1.

   d) The slope comes from rise over run. So your rise is total cost (dollars) divided by distance (miles). For your car is $\frac{400}{10000} = \frac{4}{100} = \frac{1}{25}$ dollars/mile. The slope for your friends car is $\frac{1000}{10000} = \frac{1}{10}$ dollars/mile. The y-intercept is the initial cost of the car. That is the amount you paid after having traveled no distance at all. So your y-intercept is \$20,000 and your friends is \$18,000.

   e) Reading the plot, the two lines cross at about 33,200 miles.

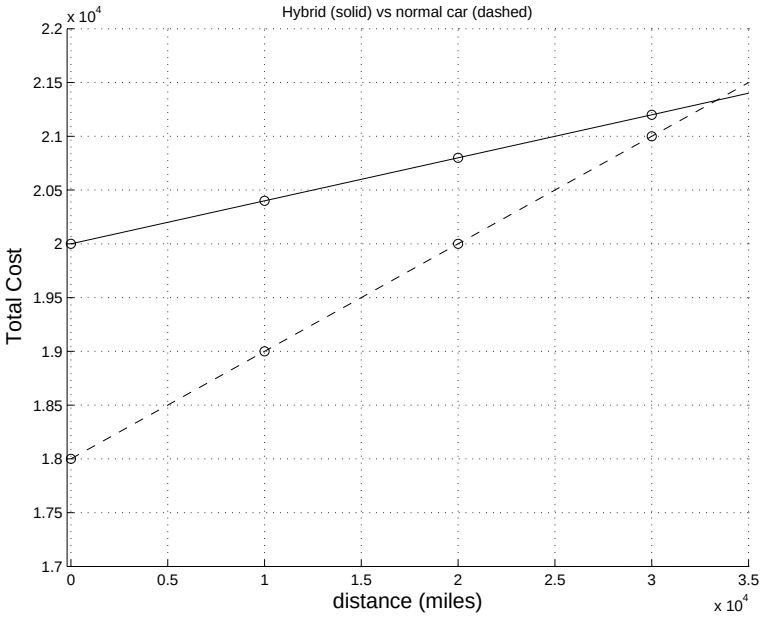

Figure 1: Plot of Hybrid vs normal car for problem 2c.