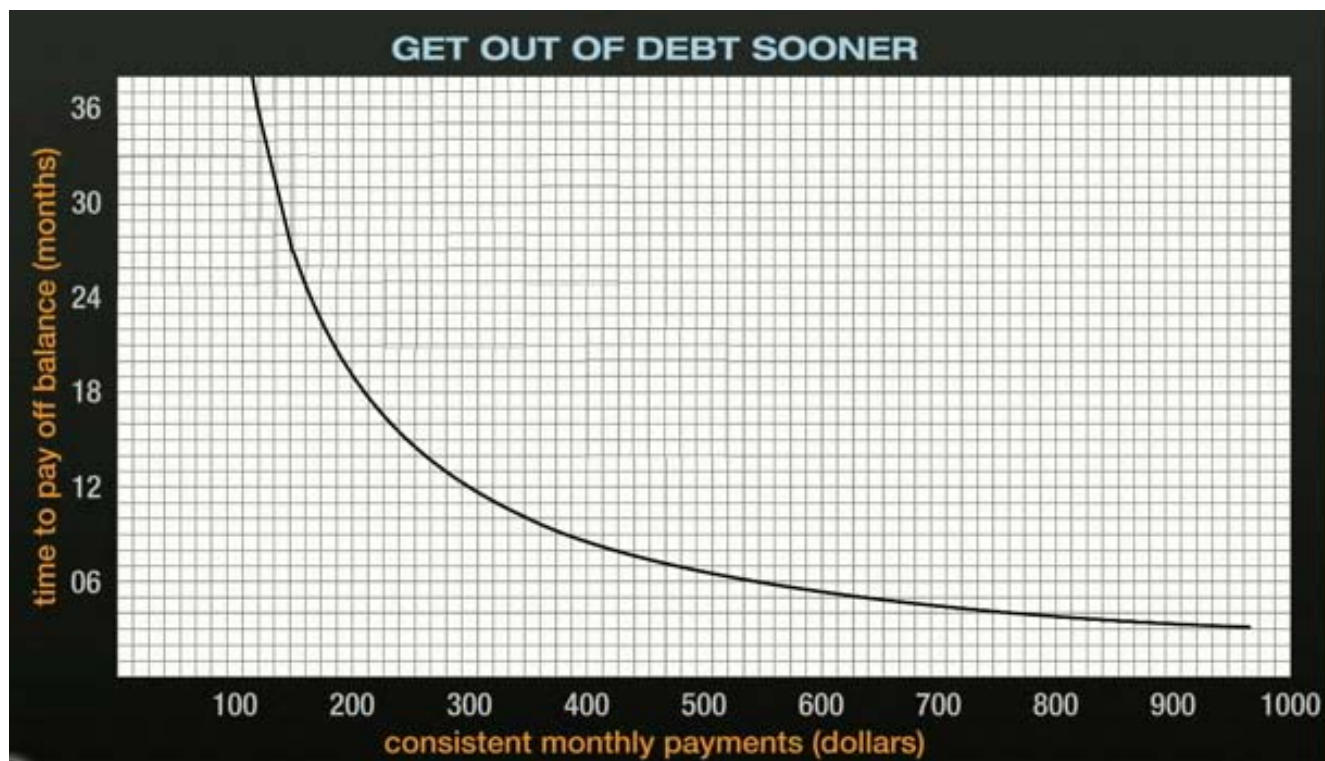1. Study the following graph from the video. Describe the relationship between the consistent monthly payments and the time it takes to pay off the balance.



**GET OUT OF DEBT SOONER**

a. The larger the consistent monthly payments the less time it takes to pay off the credit card balance. This relationship results in a decreasing graph, that is one that goes down to the right.

b. As the payment increases, the amount of time decreases at a decreasing rate. This results in a concave up graph.

Note: If a relationship is inversely proportional, for any point on the graph the x-value multiplied by the y-value will equal a constant. Due to rounding both the time to the nearest month and payments to the nearest dollar, this relationship is not evident with the graph.

2. Name scenarios that result in an inversely proportional relationship.

An inversely proportionate relationship between two quantities means one quantity increases as the other decreases proportionately. Here are some examples:

a. The faster you travel at a constant rate of speed the less time it takes to travel a given distance.

b. The better gas mileage you get the fewer gallons you will burn going a given distance.

c. The larger the size of a unit of measurement the fewer number of units needed to measure a given attribute of an item.

d. The more people or machines working at a constant rate the less time it takes to complete a job.

e. The more people who equally share an inheritance the less money each person will get.

MakingSense

**PROBLEM SOLVED**

MAKING SENSE OF MATHEMATICS

3. The following table gives the gas mileage for a variety of vehicles. You are going to take a 1500-mile trip. Approximately how many gallons of gas would you need for the different vehicles?

a. Complete the following table:

| Vehicle | Ford Fiesta | Mazda2 | Rolls-Royce Phantom Couple | Ford F-250 Lariat | Chevrolet Volt Electric | Toyota Tacoma | Smart Fortwo Electric Drive Coupe |
|---|---|---|---|---|---|---|---|
| Gas Mileage (mpg) | 40 | 35 | 18 | 10 | 90 | 25 | 79 |
| Gallons for 1500-mile trip | 37.5 | 42.857 | 83.333 | 150 | 16.667 | 60 | 18.897 |

b. Plot the points from the above table:
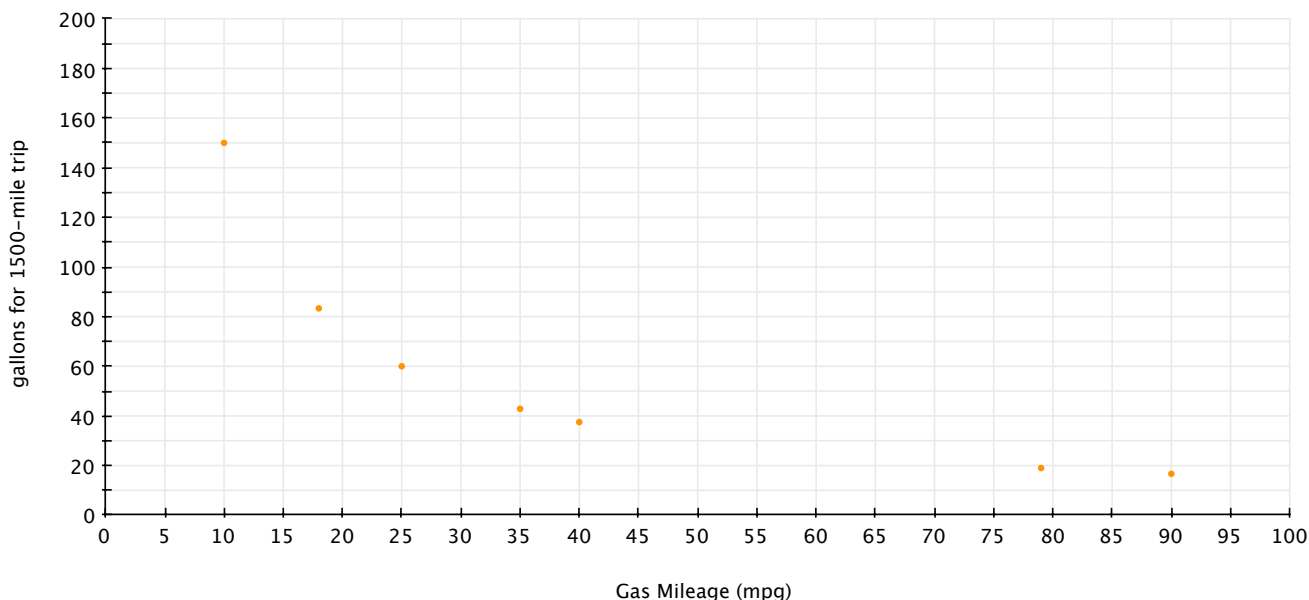


c. Write an equation that relates the gas mileage (*m*) to the gallons of gas (*g*) it would take to travel 1500 miles.

$$g = \frac{1500}{m}$$

d. Explain how you know this is an inversely proportional relationship.
As the gas mileage increases, the gallons to travel 1500 miles decreases at a decreasing rate. If you multiple x and y, you get the same constant, 1500.

MakingSense