

Problem 3.2:

An **inverse variation** is a relationship between two non-zero integers if

$$y = \frac{k}{x} \text{ or } xy = k \text{ where } k \text{ is a constant that is not } 0$$

Part A

1. Calculate the average speed in miles per hour for each trip. Record the results in the table below.

Cordova's Baltimore Trips

Travel time (hr)					
Ave. Speed (mph)					

2. Plot your data from the table above on the grid below. Then, draw a line or curve that seems to model the pattern in the data.

As the travel time increases, the average speed _____.

3. Write an equation for the relationship between travel time x and average speed y .
4. Use your equation to find the average speed for 500 mile trips that take:
 - 6 hours
 - 8 hours
 - 12 hours

16 hours

5. Add the (travel time, average speed) data from part (4) to your graph. Do the new points fit the graph model you sketched for the original data?

Part B

Travel times for different speeds

Ave speed (mph)	30	40	50	60	70
Travel time (hr)	10	7.5	6	5	4.3

1. How far is it from Detroit to Mackinac Island?

2. What equation relates travel time x to average speed y ?

3. As the average speed increases, the travel time _____.
How would that pattern appear in a graph of the data?

How is it shown by your equation?

4. Predict the travel times if the Cordovas drive at average speeds of:
45 mph

65 mph

Part C Suppose Mr. Cordoa decides to aim for an average speed of 50 mph for the trip to Mackinac Island.

1.

Travel time (hr)	1	2	3	4	5	6
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Thinking with Mathematical Models

Distance (mi)						
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2. Write an equation for the distance d the family travels in t hours.
3. As time passes, the distance _____.
4. Compare the (time, distance traveled) graph and equation with the (time, average speed) graphs and equations in Part A and B.