

**Quiz 3**  
**Mathematics 1040-2, Summer 2008**

Name: \_\_\_\_\_

You have 20 minutes for this quiz.

1. (15 points) The gas mileage of an automobile first increases and then decreases as the speed increases. Suppose that this relationship is very regular, as shown by the following data on speed (miles per hour) and mileage (miles per gallon):

<b>Speed</b>	30	40	50	60	70
<b>MPG</b>	24	28	30	28	24

Make a scatterplot of mileage versus speed. It turns out that the correlation between speed and MPG is  $r = 0$ . Explain why the correlation is zero even though there is a strong relationship between speed and mileage.

2. (15 points total) In the previous problem, the least-squares line for predicting MPG from speed is

$$\text{MPG} = 26.8 + (0 \times \text{speed}).$$

- (a) (5 points) Draw this line on your scatterplot.

- (b) (10 points) The correlation between MPG and speed is  $r = 0$ . What does this say about the usefulness of the regression line in predicting MPG?