

Name: _____

Date: _____

Modeling with Linear Functions Algebra 1 Homework

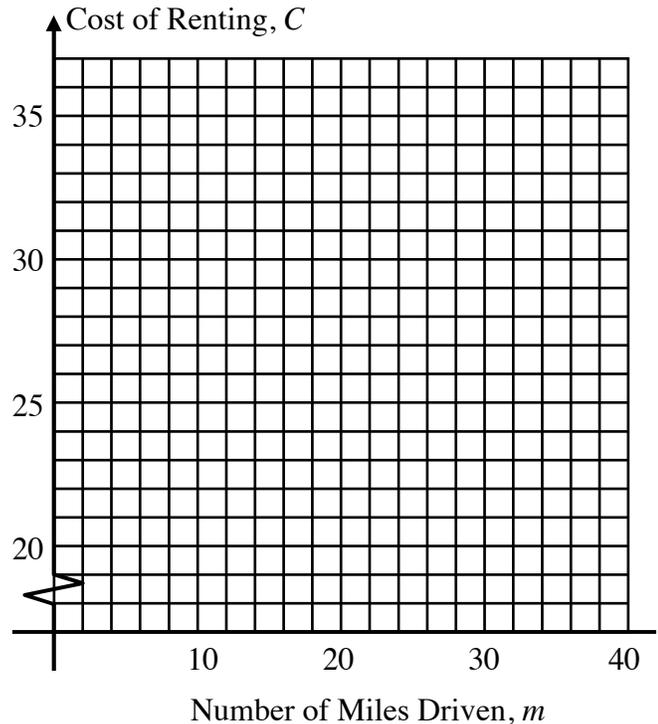
Applications

1. Hamal Rental Cars charges a flat-fee of \$25 per day to rent a new Chevy Impala, plus a mileage charge of \$0.25 per mile.

(a) Write a linear equation to represent the cost, C_1 , of renting an Impala as a function of the number of miles driven, m .

(b) On the grid to the right, graph and label the linear function you created in part (a).

(c) Ike's Rentals charges a flat fee of \$20 per day to rent an Impala plus a mileage charge of \$0.50 per mile. As in (a), write a linear equation to represent the cost, C_2 , of renting an Impala from Ike's and graph this function on the grid at the right.



(d) For what number of miles, m , will the rental costs be equal for the two places?

2. Kael wants to install a new toilet. Luigi the plumber charges \$100 for the cost of the toilet plus an additional \$75 per hour.

(a) Write an linear equation that gives the cost, C_1 , as a function of the hours, h , that Luigi works.

(b) Being very exact with his hours, Luigi charges Kael \$750. Determine, to the nearest *tenth of an hour*, how long Luigi worked on this job. Justify your answer using algebra or tables in your calculator. If you justify using a table, write at least three rows from your table.

3. Javier is trying to find a linear equation for the cost of his cell-phone plan. The first month he talks for only 32 minutes and is charged \$14.10. The second month he talks for 420 minutes and is charged \$33.50.

(a) Write two ordered pairs, where the minutes are the independent variable and the charge is the dependent variable, that model the information given in the problem.

(b) Using these two points, write a linear equation that gives Javier's charge, C , as a function of the number of minutes, m , that he talks.

(c) What does the slope of this linear function represent?

4. Miguel is driving towards New York City at a constant rate of speed. After 2 hours he notices that he is 127 miles away and after 3 hours he notices that he is 69 miles away.

(a) Write the information above as two ordered pairs, with time being the independent variable and the distance from New York City being the dependent variable.

(b) Using your ordered pairs from part (a), write a linear equation in which the distance Miguel is away, D , as a function of the time he has been driving, t .

(c) Why is the slope of your linear equation from part (b) negative? Explain in terms of the real-life scenario that the linear equation is modeling.

(d) How far from NYC was Miguel when he started his trip at $t = 0$ hours? Justify.