TAYLOR

Solve the following problems. Assume that each situation can be described by a linear function.

1. The prom committee asked a local restaurant to cater the senior prom. The restaurant charges $1700 for a buffet for 100 people. It charges $2450 for a buffet for 150 people and $15 for each additional person after 150 people.
   a. Write a linear function to describe this situation.
   b. Find the cost of a buffet for 175 people.

2. An electrician charged $90 for a two-hour job and $140 for a four-hour job. At this rate, how much would be charged for an eight-hour job?

3. The relationship between hours spent studying and the average grade on an algebra exam was found to be a linear function. The average grade for students who spent 1 hour studying was 76, and it was 88 for students who spent 3 hours studying.
   a. What was the average grade for students who spent 4 hours studying?
   b. How many hours of studying would have resulted in an average grade of 80?

Solve the following. Assume that each relationship is linear.

4. Complete fossils have shown that certain plants with 2 mm wide stems were 36 mm tall, while plants with 3 mm stems were 51 mm tall. If a fragment of a plant is found with a 5 mm wide stem, how tall would you expect the plant to be?

5. When 30 students were asked about attending a school concert, 20 said they would go. From a different group of 45 students, 25 responded positively. How many will probably attend the concert if the total school population is 1170?

Choose a variable to represent an unknown number, and then write an equation to describe the given situation.

6. Two planes took off from a Chicago airport flying in opposite directions. One plane traveled 30 mi/h faster than the other. They were 1500 miles apart after two hours.

7. Juan's model racer is designed to travel at two-thirds the speed of Raul's racer. If the cars start in the same place, but travel opposite directions, they are 75 cm apart after 5 seconds. What is the rate of each racer?