Percent bars can help you keep track of values in a problem involving percents. You can also use a percent table to organize the information in a percent problem. Latasha used a percent table to solve the same problem.

Ticket Price

Percent	8% (tax)	1%	100% (original ticket price)	108% (total price)
Dollars	1	0.125	■	■

- How are percent tables and rate tables similar? How are they different?
- How can Latasha find the missing values in the table?

3.1 Commissions, Markups, and Discounts

Proportions With Percents

Salespeople who sell cars, houses, and fancy jewelry often work on commission. Typically, a **commission** is a percentage of the sale price of an item.

Alternatively, a commission may be a percentage of the item's markup. The **markup** is the difference between the *buying price*, the cost for a store or dealer to buy an item, and the *selling price*, the price the store or dealer sets for their customers.

Did You Know?

Car dealerships buy cars at a certain cost. Then, they mark up the price of the car. They do this so that they can pay their salespeople and make any repairs to the used cars, but still make a profit. To make a profit, the *selling price* must be higher than the *buying price*.

Problem 3.1

Huan sells cars at Carla's Used Cars. Recently he received a job offer from Otto's Used Autos. In this Problem, you will decide whether Huan should work for Carla or for Otto.

A At Carla's Used Cars, Huan earns a commission that is 25% of the markup on the car. Huan recently sold the cars below.

1. For each car, what was Huan's commission in dollars? Explain how you found the commissions.
2. At Carla's, the markup on a car is 10% of the buying price, the price at which Carla bought the car.
   a. For each car, what was Carla's buying price? Explain.
   b. For each car, what was the selling price? Explain.
3. a. Carla buys a minivan for $20,500. She writes a proportion to find the selling price S.

$$\frac{S}{110} = \frac{20{,}500}{100}$$

   Is Carla's method correct? Explain.

   b. Use the same four numbers as the proportion above. Write the proportion in a different way. Explain how you chose the positions of the numbers in this proportion.

Problem 3.1 continued

c. Huan checks the selling price Carla found. He uses M to represent the markup.

$$\frac{M}{10} = \frac{20{,}500}{100}$$

Is Huan's method correct? Explain.

d. A customer wants to buy the minivan. Her budget is $23,000. The selling price plus 5% sales tax goes over the customer's budget. What maximum selling price can the customer afford? Explain.

B At Otto's, the markup is 15% of the buying price. The commission at Otto's is 20% of the markup. Huan wonders whether he will get higher commissions at Carla's or at Otto's.

1. Otto also bought a minivan for $20,500. At which dealership would Huan make a higher commission on the minivan? Explain.
2. In this Unit, you have compared quantities in many ways. Write two statements comparing Huan's commission on the minivan if he works for Carla to his commission if he works for Otto.

C Huan takes the job at Otto's Used Autos. Otto has a luxury sedan for sale at a selling price of $20,700.

1. What was Otto's buying price for the luxury sedan? Explain.
2. Otto offers a discount on his cars.

Huan says that if Otto takes 15% off the $20,700 luxury sedan, the discounted selling price will be the same as the buying price. There will be no markup, so Huan will not get a commission. Do you agree with Huan's reasoning? Explain.

ACE Homework starts on page 71.