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3.1 3.2 3.3 3.4

3.1 Visit to Wild World
Equations With One Operation

On the last day of the Ocean Bike Tours trip, the riders will be near Wild World Amusement Park. They want to plan a stop there.

- What variables would affect the cost of the amusement park trip?

- How would those variables affect the cost?

Malcolm finds out that it costs $21 per person to visit Wild World. Liz suggests that they make a table or graph relating admission price to the number of people. However, Malcolm says there is a simple rule for calculating the cost:

The cost in dollars is equal to 21 times the number of people.

He wrote the rule as the statement:

$$cost = 21 \times number\ of\ people$$

Liz shortens Malcolm's statement by using single letters to stand for the variables. She uses c to stand for the cost and n to stand for the number of people:

$$c = 21 \times n$$

Note on Notation When you multiply a number by a letter variable, you can leave out the multiplication sign. So, $21n$ means $21 \times n$.

You can shorten the statement even more:

$$c = 21n$$

So, $21n$ is an **expression** for the total cost C. You obtain the total cost by multiplying 21, the cost per person, by n, the number of people. The fact that C and $21n$ are equal gives the **equation** $C = 21n$. Here, the number 21 is called the **coefficient** of the variable n.

The equation $c = 21n$ involves one calculation. You multiply the number of customers n by the cost per customer, $21. Many common equations involve one calculation.
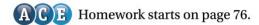
Problem 3.1

A Theo wants to attract customers for the bike tour. He suggests a discount of $50 off the regular price for early registration.

1. What is the discounted price if the regular tour price is is $400? $500? $650?

2. Write an equation that represents the relationship of discounted price D to regular tour price P.

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PRICE DISCOUNT
$50 *off regular price*
Early Registration!

B When the Ocean Bike Tours partners set a price for customers, they need to find the 6% sales tax.

1. What is the sales tax if the tour price is $400? $500? $650?

2. Write an equation that represents the relationship of the amount of sales tax T to tour price P.

C Suppose a professional cyclist sustained a speed of about 20 miles per hour over a long race.

1. About how far would the cyclist travel in 2 hours? 3 hours? 3.5 hours?

2. At a speed of 20 miles per hour, how is the distance traveled d related to the time t (in hours)? Write an equation to represent the relationship.

3. Explain what information the coefficient of t represents.

D The trip from Williamsburg, Virginia, to Atlantic City, New Jersey, is about 350 miles.

1. How long will the trip take if the average speed of the van is 40 miles per hour? 50 miles per hour? 60 miles per hour?

2. Write an equation that shows how total trip time t depends on average driving speed s.

A C E Homework starts on page 76.