

3. Use the Fahrenheit conversion formula, solve for C.

$$F = \frac{9}{5}C + 32$$

Problem Solving with Algebraic Models Examples:

Problem Solving Strategies:

- Draw a diagram
- Look for patterns
- Identify key words
- Guess and check

Verbal model: an equation in words

Algebraic model: conversion of the verbal model to variables, numbers, and symbols

1. You went shopping for batteries. Your bill was \$14.39. How many 9-volt batteries did you purchase at \$2.39 each if AA batteries cost \$1.61 each and you purchased 3 of them?

2. You drove 280 miles using 15 gallons of gas that cost \$2.68 per gallon. If you get 24 mi/gal on the highway and 16 mpg in the city, how much did you spend on city driving? Highway?

3. You are putting on a concert and your goal is to sell \$25,000 in tickets. You plan to charge \$25.25 per adult and expect to sell 800 adult tickets. You need to determine what to charge for child tickets. The total revenue, R , can be modeled by the equation $R = p_1A + p_2C$, where A represents the number of adult tickets that cost p_1 and C is the number of children tickets that cost p_2 .

Solve the equation $R = p_1A + p_2C$ for p_2 .

How much should you charge per child if you expect to sell 200 child tickets? 300 child tickets? 400 child tickets?

4. In your first job as a salesperson your salary is \$25,000 plus a 5% commission on sales. How much must you sell to earn \$30,000 total?

5. You are taking a trip to Mexico and want to exchange \$300 in pesos. The exchange rate is 7.4 pesos to every dollar and the bank charges a 2% exchange fee.

How much money will you need to bring if you want to pay cash for the exchange fee and exchange all \$300?

How many pesos will you receive for \$300?

On your return you have 700 pesos left. When you exchange the pesos to dollars, how much will you have? Assume the exchange fee is taken from different funds.