LESSON 12·5

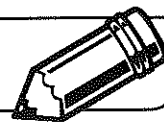## Solving Ratio Problems with Cross Multiplication

Cross multiplication is a strategy for solving ratio problems that is based on the quick common denominator.

Example:

Josie tosses a penny 32 times.
It lands heads up 5 out of 8 times.
How many times does the penny land heads up?

Number Model: $\dfrac{5}{8} = \dfrac{x}{32}$

Cross multiply:

$$8 * x = 5 * 32$$

Solution: $8 * x = 160$
             $x = 20$

Answer: $\underline{\quad 20 \text{ times} \quad}$
                     (unit)

Use cross multiplication to solve the following problems. Let the variable x represent the missing number in each problem.

1. Jeremy received 3 votes for every 5 votes cast. If he received 18 votes, how many votes were cast?

   Number model: _____   Solution: _____

   Cross multiply: _____   Answer: _____
                                                        (unit)

2. The restaurant at the mall sold 324 lunches. For every 9 lunches served, 3 were fish plates. How many fish plates were served?

   Number model: _____   Solution: _____

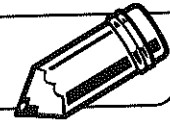   Cross multiply: _____   Answer: _____
                                                        (unit)

3. The Nature Center has a total of 87 amphibians on display. For every 6 amphibians, 2 are types of salamanders. How many salamanders are there?

   Number model: _____   Solution: _____

   Cross multiply: _____   Answer: _____
                                                        (unit)

4. Write a ratio number story for your partner to solve using cross multiplication.

362

LESSON 12·5 | Solving Ratio Number Stories

Write a number model for each problem. Include key words for the numerators and denominators. Then solve the problem.

1. Of the 90 fifth-grade girls at Lincoln School, 1 out of 6 reported that they jumped rope 3 times last week. How many girls jumped rope 3 times last week?

   Number model: _____

   Answer: _____
   (unit)

2. The 175 seniors at Kennedy High School voted for the color of caps and gowns they would wear at the graduation ceremony. Six out of 7 voted for silver. How many students voted for silver?

   Number model: _____

   Answer: _____
   (unit)

3. Melissa's brother, Sidney, was explaining his college food budget to her. He told Melissa that he budgeted $160 a month for restaurants, but he spent 3 out of every 4 dollars at the campus pizza parlor. How much did he spend at the pizza parlor?

   Number model: _____

   Answer: _____
   (unit)

4. A survey was conducted at Sidney's college to find out how the 640 students budgeted their food money. Five out of 8 students reported that they spent less than $160 a month on food. How many students spent less than $160 on food?

   Number model: _____

   Answer: _____
   (unit)