

MIXED REVIEW of Problem Solving



Make sense of problems and persevere in solving them.



The Puerto Rican crested toad is at risk of extinction.

1. **MULTI-STEP PROBLEM** There are 5743 known amphibian species in the world. Of these, 1856 species are judged to be at risk of extinction, and another 113 species may already be extinct.

- a. Find the probability that an amphibian species chosen at random is at risk of extinction.
- b. Find the probability that an amphibian species chosen at random may already be extinct.

2. **MULTI-STEP PROBLEM** You are ordering an omelet with two ingredients. You can choose from the following list: cheese, mushrooms, onions, tomatoes, peppers, sausage, ham, and steak.

- a. Make an organized list of all the possible omelets that you can order.
- b. Use a permutation or combination formula to find the number of possible omelets.

3. **MULTI-STEP PROBLEM** In NCAA women's basketball tournaments from 1982 to 2003, teams seeded, or ranked, number one have won 283 games and lost 71 games in the tournament. Suppose a team is chosen at random from all those that have been seeded number one.

- a. What is the probability that the team won a game in the tournament?
- b. What are the odds in favor of the team's having won a game in the tournament?

4. **SHORT RESPONSE** A meteorologist reports that there is a 15% chance of snow tomorrow. What are the odds in favor of snow tomorrow? *Explain* how you found your answer.

5. **OPEN-ENDED** Describe a real-world situation in which the number of possible arrangements is given by ${}_{10}P_2$.

6. **EXTENDED RESPONSE** A survey asked a total of 400 students, 100 male students and 100 female students who were 13 and 15 years old, about their eating habits. The table shows the numbers of students who said that they eat fruit every day.

	13 years old	15 years old
Male	60	53
Female	61	58

- a. Find the probability that a female student, chosen at random from the students surveyed, eats fruit every day.
 - b. Find the probability that a 15-year-old student, chosen at random from the students surveyed, eats fruit every day.
 - c. You select a student at random from the students surveyed. Find the odds against the student's eating fruit every day. *Explain* your reasoning.
7. **GRIDDED ANSWER** A music club gives you 6 free CDs for joining. You would like to own 11 of the free CDs that are offered. How many combinations of 6 CDs from the 11 CDs can you choose?