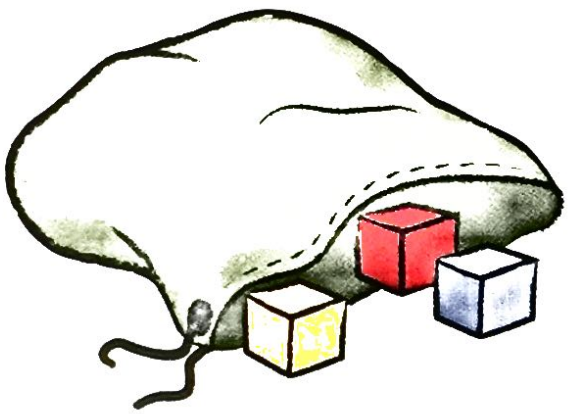
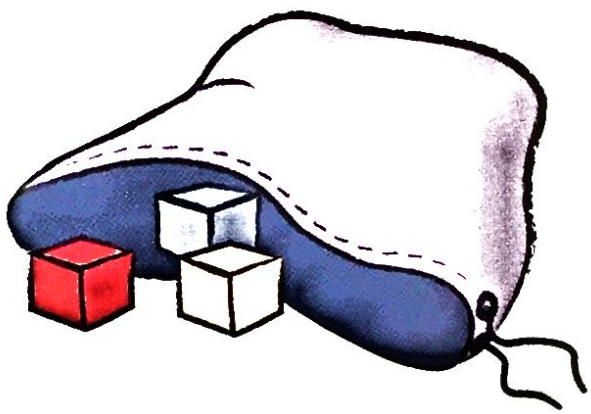
2.4 Winning the Bonus Prize

Using Strategies to Find Theoretical Probabilities

All the winners from the *Gee Whiz Everyone Wins!* game show have the opportunity to compete for a bonus prize. Each winner chooses one block from each of two bags. Each bag contains one red, one yellow, and one blue block. This bonus game consists of two events, which can also be called a **compound event.**





The contestant must predict which color she or he will choose from each of the two bags. If the prediction is correct, the contestant wins a $10,000 bonus prize!

- What color choice gives you the best chance of winning?

Problem 2.4

A 1. Conduct an experiment with 36 trials for the situation above. Record the pairs of colors that you choose.

2. Find the experimental probability of choosing each possible pair of colors.

B 1. Find all of the possible color pairs that can be chosen. Are these outcomes equally likely? Explain your reasoning.

2. Find the theoretical probability of choosing each pair of colors.

3. How do the theoretical probabilities compare with your experimental probabilities? Explain any differences.

C 1. Brelynn and Akimi change the rules of the game. Each contestant must predict which color combination will result from choosing a block from each bag. Brelynn and Akimi make the following predictions for this game.

> Akimi: I predict 2 reds.
>
> Brelynn: I predict 1 blue and 1 red, in either order.

Who has the better chance of winning? Explain.

2. Does a contestant have a chance to win the bonus prize? Is it likely a contestant will win the bonus prize? Explain.

3. If you play this game 18 times, how many times do you expect to win?