



## Problem of the Week

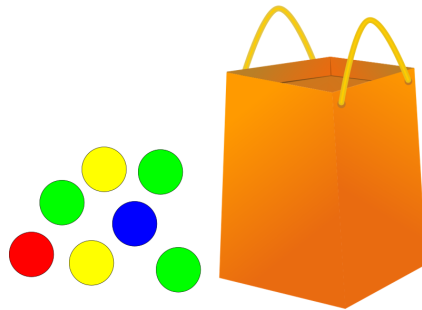
### Problem B

#### Equally Likely or A Sure Thing?

- (a) Imagine you are drawing marbles one at a time from a bag which contains 1 red, 1 blue, 2 yellow, and 3 green marbles. You draw a marble without looking, record the colour, and return it to the bag. Suppose that each marble is equally likely to be drawn.

Which of the following events are equally likely to occur?

- (i) You draw a red marble.
- (ii) You draw a blue marble.
- (iii) You draw a yellow marble.
- (iv) You draw a green marble.
- (v) You draw a red OR a blue marble.



Justify your answers by comparing the theoretical probabilities of the events.

- (b) Suppose you have two unusual six-sided dice (number cubes), one with the even numbers 2, 4, 6, 8, 10, and 12 on its faces, and the other with the odd numbers 1, 3, 5, 7, 9, and 11 on its faces. When you roll the dice together, you find the sum of the two top faces. What is the probability of each of the following events?
- (i) The sum is odd.
  - (ii) The sum is 7.
  - (iii) The sum is 25.
- (c) Which of the events in part (b) can be called *certain*? Which of the events in part (b) can be called *impossible*?