# Conducting a Simulation

How to design a simulation:

- Identify the possible outcomes and decide how to simulate them, using coins, number cubes, cards, spinners, color-coder objects, or a random number generator.
- Describe what a trial for the simulation will look like.
- Make sure you do enough trials to ensure that the experimental probability gets close to the theoretical probability.
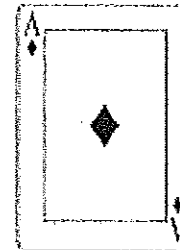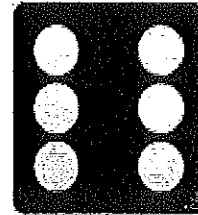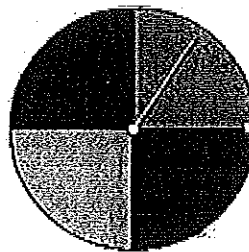
Simulation (Use month-of-the-year cards):

If there is a group of 7 people, what is the probability at least two people have the same birth-month?

1) Identify how a birth-month for one person is going to be simulated. Use the cards with the months of the year.

_____

_____

2) How will you simulate one trial of seven birth-months?

_____

_____

3) How is success determined for your simulation?

A success would be if there was at least _____ match/es in the

seven.

4) Repeat the simulation 20 times, count the number of successes, and

divide it by _____ to get the estimated probability of having a least

one birth-month match in a group of seven people.

5) Record your 20 experimental trials here:

1) _____, _____, _____, _____, _____, _____, _____

2) _____, _____, _____, _____, _____, _____, _____

3) _____, _____, _____, _____, _____, _____, _____

4) _____, _____, _____, _____, _____, _____, _____

5) _____, _____, _____, _____, _____, _____, _____

6) _____, _____, _____, _____, _____, _____, _____

7) _____, _____, _____, _____, _____, _____, _____

8) _____, _____, _____, _____, _____, _____, _____

9) _____, _____, _____, _____, _____, _____, _____

10) _____, _____, _____, _____, _____, _____, _____

11) _____, _____, _____, _____, _____, _____, _____

12) _____, _____, _____, _____, _____, _____, _____

13) _____, _____, _____, _____, _____, _____, _____

14) _____, _____, _____, _____, _____, _____, _____

15) _____, _____, _____, _____, _____, _____, _____

16) _____, _____, _____, _____, _____, _____, _____

17) _____, _____, _____, _____, _____, _____, _____

18) _____, _____, _____, _____, _____, _____, _____

19) _____, _____, _____, _____, _____, _____, _____

20) _____, _____, _____, _____, _____, _____, _____

6) The theoretical probability:

      favorable outcome = 89%   unfavorable outcome = 11%

7) Tally the favorable outcomes of your 20 experimental trials.

Number of birth-month matches	experimental		theoretical
0	tally marks:	fraction = % =	11%
1 or more	Tally marks:	fraction = % =	89%

8) How did your experimental probability compare with the theoretical probability?