Name: _____ Date: _____

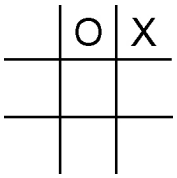
# Chapter 5 Problems of the Week

**1.** Estimate the probability of any three of your classmates being born on the same day of the week.

**2. a)** Sketch a spinner that would give the following probabilities: 50%, 25%, 12.5%, and 12.5%.

**b)** Describe the likelihood of the outcomes on your spinner.

**3.** In a computer game of tic-tac-toe, the goal is to get three Xs in a row before the computer gets three Os in a row.




**a)** If an X is placed in one square, what is the probability of an O being placed next to the X? Explain your thinking.

**b)** If the game continues, and the computer places Os while you place Xs, is it possible for the Xs to win? Explain your thinking using probability.

**4.** The following terms are often used to describe probability: never, sometimes, certain, almost certain, very likely, impossible, 100% chance, zero chance, possible, might happen, even chance, average chance, unlikely, 0.5, very unlikely, nearly always, slim chance, 50:50, highly likely, a good bet, equally likely, rarely, probable, 0, better than average, 0%, no chance, 1, and always.

Create a scale, and use it to order the terms from never to always.

**Hint:** Some terms may share the same meaning.

**5. a)** What is the probability of flipping a fair coin 10 times and landing 10 heads?

**b)** If the events in part a) did happen, what is the probability of landing heads on the next flip?

**c)** If you flip a coin 100 times and land heads each time, predict the probability of landing heads on the next flip.

**d)** If all of the people in the world flipped coins one at a time, predict whether or not at some point, 100 consecutive coin flips would land heads. Explain your thinking.

**6.** A bubble gum company offers a picture of a popular music artist in each package of gum. Assume that each artist has an equal number of pictures, so that when you buy a package of gum you have an equally likely chance of getting each artist.

**a)** Predict how many packages of gum you need to buy to get the complete set of six artists.

**b)** Create a simulation to represent this scenario. Conduct an experiment. Then, compare your results with those of a classmate.

**7. a)** When tossed, do thumbtacks land point up or point down? Predict the number of thumbtacks that will land point up in 100 tosses.

**b)** Toss 10 thumbtacks at a time, and record how many of them land point up. Did your results surprise you?

**c)** Compare your results with those of a classmate. What is the probability that a thumbtack will land point up?