

REVIEW QUESTIONS

1. Probability is a measure of how likely an event is to occur. Match each of the probabilities below with one of the statements (a) – (d).

0 0.0002 0.5 1

- a. Not playing the lottery but still winning.
- b. Drawing a black card (club or spade) from a shuffled deck of 52 playing cards.
- c. The sun will come up tomorrow morning (even if it is cloudy and you can't see it).
- d. Getting struck by lightning in your lifetime.

2. Amanda writes a letter to her local television station telling them to fire their meteorologist. Her evidence was that out of the ten days that the weather reporter stated there would be a 70% chance of rain, it only rained five times. She had carried an umbrella to work on all ten days expecting that with such a high probability, it definitely was going to rain.

- a. Explain to Amanda why a 70% chance of rain does not mean that it will definitely rain.
- b. It only rained 5 out of 10 days that the weather reporter forecasted a 70% chance of rain. Was Amanda right that the meteorologist was doing a poor job of predicting the weather? Explain.

3. A perfectly balanced spinner is pictured in Figure 18.5. When you spin the spinner, it can stop on any sector: 1, 2, 3, 4, or 5. In Figure 18.5, the spinner has landed on sector 4.

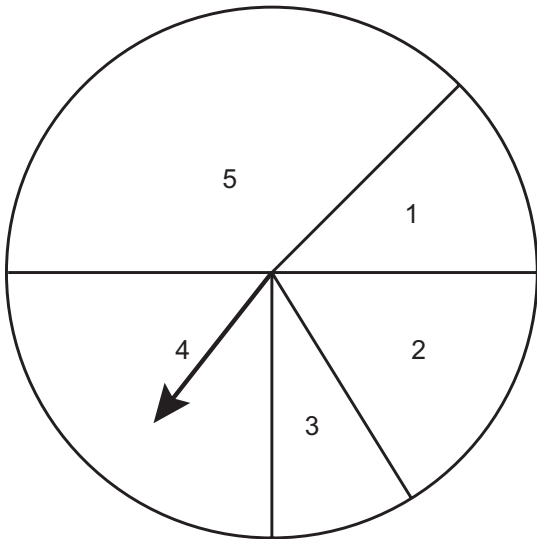


Figure 18.5. Perfectly balanced spinner.

Answer questions that follow. Explain how you arrived at each of your answers.

- Imagine spinning the spinner shown in Figure 18.5. On which number is it most likely to land?
- Suppose you spin the spinner 1000 times. How many times would you expect it to land in sector 4? Do you think that what you expect to get would be exactly what you would get if you performed this experiment?
- Approximately how many times more likely is it for the spinner to land on sector 2 than on sector 3?
- Estimate the probability of landing on an even number.

4. Each year the study *Monitoring the Future: A Continuing Study of American Youth* surveys students on a wide range of topics, including family background. One of the questions on the survey, including the possible responses, follows.

Did your mother have a paid job (half-time or more) during the time you were growing up?

- No
- Yes, some of the time when I was growing up
- Yes, most of the time
- Yes, all or nearly all of the time

The survey was administered to a large sample of 12th grade students. Care was taken to ensure the sample was representative of all 12th grade students. Responses to this question are summarized in Table 18.3.

Response	Frequency	Probability
No	1845	
Yes/Some	2637	
Yes/Most	2648	
Yes/Nrly All	7148	

Table 18.3. Survey results to question on mother's job.

- How many students answered this question?
- Use the data in Table 18.3 to estimate the probabilities associated with mothers' job patterns. Round your estimates to four decimals. Enter your probabilities into a copy of Table 18.3.
- What is the sum of the probabilities?
- A randomly selected 12th grade student is asked to answer this question. What is the probability that the student will give a response different from No? Explain how you determined your answer.