



In these activities you will compare estimated probabilities from simulations to theoretical probabilities. After completing the activities, discuss and/or present your findings to the rest of the class.

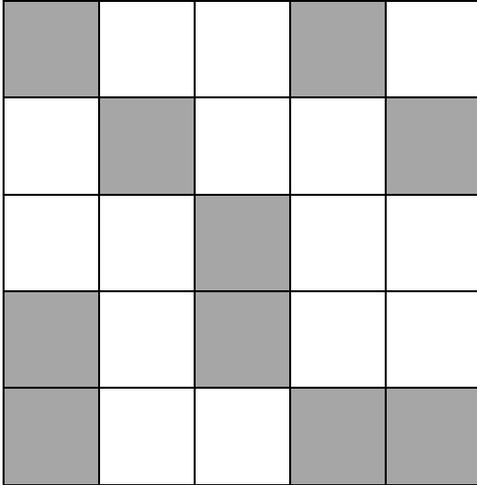


Activity 1 [Page 1.7]

1. It is important that the device used to model the probability of a success in a given situation can actually be adapted to match the probability of the success. Which of the methods do you think will work for simulating the probability of guessing at the answers to multiple choice questions with four options? Explain your thinking in each case.
 - a. toss a coin where heads represents the chance of guessing the right option.
 - b. toss a number cube where 1 represents the correct choice, 2, 3, and 4 incorrect. When a 5 and 6 happen, do not count them.
 - c. spin a spinner where 1 and 2 represent a correct answer, 3 to 8 represent wrong answers and 9 and 0 should be skipped.
 - d. toss a coin twice where two heads represents the correct choice, a head and tails and two tails represent the incorrect choice.



2. A dart board consists of 25 squares. Suppose your chance of hitting any one of the squares is equally likely. You earn a point for each dark square you hit. Each turn is throwing 4 darts.



- What is the chance of hitting a dark square in one throw of the dart?
- Describe a simulation you could use to estimate the probability of getting four points for one turn. Note that menu for both pages 1.5 and 1.7 have Include Numbers as an option. This allows you to not count some of the faces of the number cube or some of the numbers of the spinner when they occur.
- Choose a model, then run the simulation and use it to estimate the probability you will earn three points when it is your turn to shoot darts.
- Use your simulated results to estimate the probability of getting at least 3 points.



Activity 2 [Page 2.6]

1. If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?
 - a. Estimate an answer to the question.
 - b. Use the spinner on page 2.6 to model the probability that 40% of donors have type A blood. Describe how you can set up a simulation to model the situation.
 - c. Use the simulation to estimate the probability that it will take at least 4 donors to find one with type A blood.
 - d. What are the mean and median of your simulated distribution of the number of donors? Explain what each means in the context of the problem.

2. How is the problem above different from the problems in Part 1? Use examples from the problems above to support your thinking.