3. Discuss setting up a simulation for this problem. How many different outcomes should be possible in the simulation? Why?

A simulation for this problem needs to have only two different outcomes. This is because whatever model is chosen needs to model Amy's game. Any simulation with only two outcomes will do. For example, tossing a coin or using the game on page 677 whose outcomes are 0 and 1.

4. The table on page 677 shows a simulation for the game using 0 and 1 randomly. Discuss what 0 and 1 can represent in the basketball game.

The 0 can represent missing the basket and 1 can represent making the basket.

5. Discuss how to use the random table to determine the answer to the question in the problem.

Look at each row of the random table for consecutive 1's and see how many times out of 20 that happens.

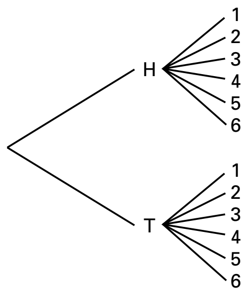
6. What are the benefits of using a simulation? Discuss what other simulations might be possible.

A simulation enables you to not require Amy to play the game. Other simulations might include flipping a coin or tossing a coin into a cup.

The following are complete worked out solutions to selected exercises in the student textbook. These solutions are provided to you so that you can help your child with their homework. Your child's classroom notes, example problems in the text, and these worked out solutions are all useful tools to help you and your child work through their assignment.

Lesson 13.3

5.



There are 12 branches on the tree, so there are 12 possible choices.

14. $4 \cdot 3 \cdot 5 \cdot 6 = 360$ ways

18. There are 10 choices for each digit, so there are $10 \cdot 10 \cdot 10 \cdot 10 = 10{,}000$ possible phone numbers.

21. Possible arrangements are: *rat*, *rta*, *art*, *atr*, *tar*, *tra*. There are 6 ways to arrange the letters in the word rat.

Lesson 13.4

20. B covers 70 of the 100 units.

$P(B) = \frac{70}{100} = \frac{7}{10}$

The probability of B occurring is $\frac{7}{10}$, or 70%.

24. The common numbers between List 1 and 2 are 5 and 7. From List 1, the probability of selecting 5 is $\frac{1}{4}$, of selecting 7 is $\frac{1}{4}$. From List 2, the probability of selecting 5 is $\frac{1}{3}$, of selecting 7 is $\frac{1}{3}$.

$$\begin{aligned} P(5 \text{ and } 5) &= P(5 \text{ from List 1}) \cdot P(5 \text{ from List 2}) \\ &= \frac{1}{4} \cdot \frac{1}{3} \\ &= \frac{1}{12} \end{aligned}$$

$$\begin{aligned} P(7 \text{ and } 7) &= P(7 \text{ from List 1}) \cdot P(7 \text{ from List 2}) \\ &= \frac{1}{4} \cdot \frac{1}{3} \\ &= \frac{1}{12} \end{aligned}$$

$$\begin{aligned} P(5 \text{ and } 5 \text{ or } 7 \text{ and } 7) &= P(5 \text{ and } 5) + P(7 \text{ and } 7) - P(5 \text{ and } 5 \text{ and } 7 \text{ and } 7) \\ &= \frac{1}{12} + \frac{1}{12} - 0 \\ &= \frac{2}{12} \\ &= \frac{1}{6} \end{aligned}$$

The probability of selecting both the same numbers is $\frac{1}{6}$.

29. Let $P(e)$ represent the probability of selecting an even-numbered chip for the first chip, and $P(o)$ the probability of selecting an odd-numbered chip for the second chip.

$$P(e \text{ and } o) = P(e) \cdot P(o)$$
$$= \frac{2}{5} \cdot \frac{3}{5}$$
$$= \frac{6}{25}$$

The probability of selecting an even-numbered and an odd-numbered chip is $\frac{6}{25}$.

32. Trail 201 is one of 4 possible trails.

$s = 1, n = 4$

$P = \frac{1}{4}$

The probability of selecting trail 201 is $\frac{1}{4}$.

Lesson 13.5

13. Let the numbers 1 to 8 represent the occurrence of rain and the numbers 9 and 10 represent no rain. Generate 2 random numbers, and let the results represent the weather on day 1 and day 2, respectively. Repeat for 10 trials. Divide the number of trials where the rain occurred on at least one day by 10. The quotient is the experimental probability.

16. Use a calculator to generate numbers from 1 to 365; use the command INT(RAND*365) + 1.

20. Use a calculator to generate numbers from 1 to 10; use the command INT(RAND*10) + 1. Let 1, 2, or 3 represent a win. Generate 5 random numbers; record the result. This represents 1 trial. Repeat for 10 trials. Divide the number of trials where there are 2 wins by 10. The quotient is the experimental probability. Students' results may vary.