

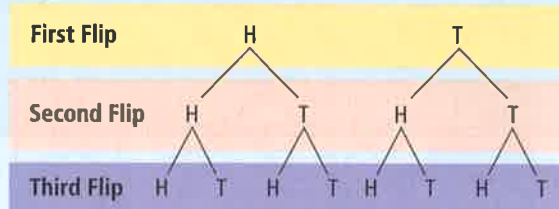
11.1 Probability using tree  
diagrams & tables

Pg 416 - 418

Q# 3-6, 11-13

## Communicate the Ideas

- John flips a coin and rolls a standard six-sided die.
  - What does the notation  $P(H, 3)$  mean?
  - Explain how you could use a tree diagram to determine  $P(H, 3)$ .
- Monique missed class today. Explain to her how you could use this tree diagram to determine the probability of flipping a coin three times and getting exactly two heads and one tail.



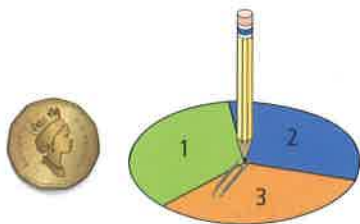
## Check Your Understanding

### Practise

Express all probabilities as a fraction, a decimal, and a percent.

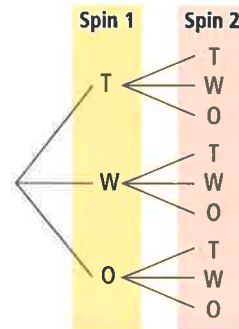
For help with #3 and #4, refer to Example 1 on pages 411–412.

- A spinner is divided into three equal regions as shown. Damien flips a coin and spins the spinner once.



- Draw a tree diagram to represent the sample space.
- List the sample space.
- What is the probability of  $P(H, 2)$ ?

- The following tree diagram represents the sample space for a probability experiment.



- What is the sample space for this experiment?
- What is  $P(T, W)$ ?
- What is the probability that both letters are identical?

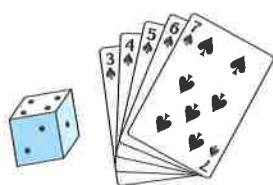
For help with #5 and #6, refer to Example 2 on pages 413–415.

5. Two four-sided dice are each rolled once. Each die is numbered 1, 2, 3, and 4.



- Create a table to represent the sample space.
- What is the probability that the sum is greater than five?
- What is the probability that the same number is the outcome on both dice?

6. Ali draws a card at random from the set of five cards pictured and rolls a standard six-sided die once.



- Create a table to show the sample space.
- What is the probability that the same number is the outcome on both the card and die?
- What is the probability that the sum of the two numbers is even?
- What is the probability that the number on the die is equal to or larger than the number on the card?

### Apply

7. Lucy is jigging for fish through the ice. She has an equal chance of catching a whitefish, a trout, an arctic char, or losing the fish. If she pulls her hook out twice, what might she catch?
- Draw a table showing the results of Lucy's fishing.
  - What is  $P(\text{whitefish, char})$  in either order?
  - What is  $P(\text{char, char})$ ?
  - What is the probability she will catch nothing at all?

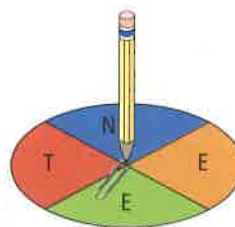
8. The sample space for the flip of a coin and a randomly picked card from five playing cards is (H, 6), (H, 7), (H, 8), (H, 9), (H, 10), (T, 6), (T, 7), (T, 8), (T, 9), and (T, 10).

- Draw a tree diagram to show the sample space.
- Construct a table to show the sample space.
- What is the probability that the result of this experiment includes an even-numbered card?

9. Two babies were born today.

- Construct a table to show the possible genders for the two babies.
- What is the probability that there is one boy and one girl?
- What assumption did you make about the likelihood of a boy or girl being born?

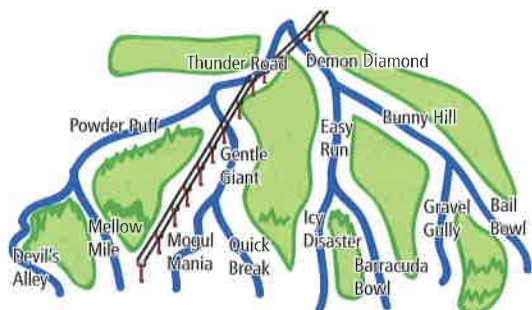
10. A spinner is divided into four equal regions. The spinner is spun twice.



- Create a table to show the sample space.
- What is the probability of spinning a T and then an E:  $P(\text{T then E})$ ?
- What is  $P(\text{E, E})$ ?
- What is  $P(\text{same letter on both spins})$ ?

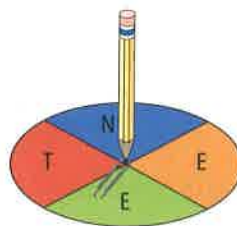
## Extend

11. Nick and Manny are snowboarding in the Rockies. On one run down the mountain, they decide to flip a coin to choose which of two paths they will take at each of the three places where the ski runs branch. They will go down the left ski run if the coin is a head and the right ski run if the coin is a tail.



- What is the probability that they will take Thunder Road?
- What is the probability that Nick and Manny will finish on a run containing the name *Bowl*?
- What is the probability that they will take Thunder Road and Quick Break? Explain your answer.

12. A spinner is divided into four equal regions. The spinner is spun three times.



- Draw a tree diagram to show the sample space.
  - What is the probability of  $P(E, E, E)$ ?
  - What is the probability of spinning three different letters in alphabetical order?
  - What is the probability that one letter appears exactly twice?
13. Alena rolls two standard six-sided dice.
- What is the probability that the difference between the two numbers is two?
  - What is the probability that the sum is a multiple of three?
  - What is the probability that the product is a multiple of four?

## MATH LINK

The stick game uses four flat sticks. One side of each stick is bare and the other side is decorated. The four sticks are tossed in the air and allowed to fall to the ground. The score depends on the number of decorated sides that land facing up.

- Draw a tree diagram or create a table to show the possible outcomes.
- At the end of each branch or in each cell, record the total number of decorated sides showing.
- What is the probability of exactly three sticks landing decorated side up?



### Did You Know?

Originally, rib bones from a buffalo or deer were used for the stick game.