CHAPTER 13

1 Probability Lines

Goal **Use a probability line to compare the probability of events.**

1. Use words to describe the probability of each event.

A I will eat soup for lunch tomorrow.

Answers will vary.

B I will stay up until midnight tonight.

Answers will vary.

C I will see a dinosaur walk past the school tomorrow.

impossible

D I will watch TV tonight.

Answers will vary.

E I will brush my teeth before going to bed tonight.

Answers will vary.

F I will see a dog in the next week.

Answers will vary.

At-Home Help

We use probability words in our everyday language.

When we are sure something will happen, we say **certain** or **always**.

When we are sure something will not happen, we say **never** or **impossible**.

Many events fall in between never and always. For these events, we use words such as **very unlikely**, **unlikely**, **possible**, **likely**, and **very likely**.

2. Place the letter for each event on the probability line.

C Answers will vary.

impossible **certain**

3. Create 3 of your own events and place their letters on the probability line.

G Answers will vary.

H Answers will vary.

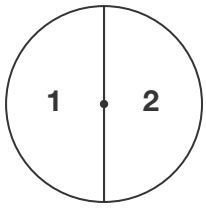
I Answers will vary.

CHAPTER 13

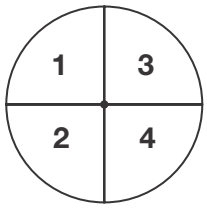
2 Experimenting with Spinners

Goal **Make predictions and experiment with spinners with equal sections.**

1. Gen is at a fun fair. She will win a prize if she spins a 1 on Spinners A and B. Gen spun one of the spinners 20 times. Her results were: 1, 2, 1, 2, 3, 4, 3, 4, 2, 2, 1, 4, 3, 1, 4, 4, 3, 2, 3, 4.



Spinner A



Spinner B

At-Home Help

When a spinner has sections that are equal in size, the probability of landing on each section is equal. Each section has an equal chance of being spun.

a) Which spinner did Gen spin? Spinner B

b) Did Gen pick the right spinner to win as many prizes as she could in 20 spins? Explain. No, the 1 section takes up more space on Spinner A than on Spinner B.

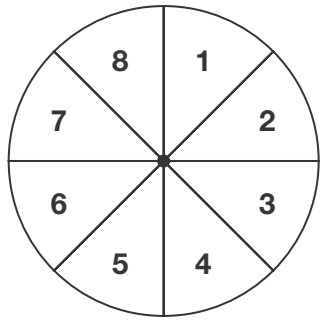
2. Predict the number of times Spinner X will spin an even number in 20 spins. 10

3. Use probability words to describe the probability of each spin on Spinner Y.

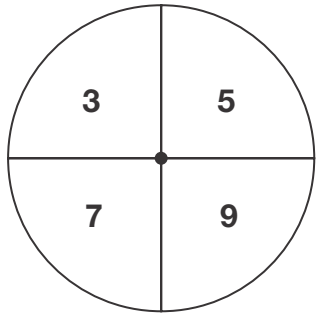
a) spinning an even number impossible

b) spinning an odd number certain

4. Is spinning odd numbers more probable on Spinner X or Spinner Y? Explain. Spinner Y because it is certain that an odd number will be spun on this spinner.



Spinner X



Spinner Y

CHAPTER 13

3 Making Predictions

Goal **Make predictions and design and carry out experiments.**

1. a) Cut out 10 strips of paper. Write a boy's name on each of 5 strips. Write a girl's name on each of the other 5 strips. Put the 10 strips in a paper bag.

b) Predict the number of girls' names and boys' names you will draw in 20 draws.

girls' names 10 boys' names 10

c) Draw a strip from the bag. Use the tally chart to record whether the strip has a boy's name or a girl's name. Put the strip back in the bag.

d) Repeat part c) 19 times.

e) Compare your results to your prediction.

Answers will vary.

2. In another experiment with 10 strips of names in a bag, you want drawing
- a boy's name to be very probable
- a girl's name to be very improbable

a) Decide how many boys' names and how many girls' names you will use. Then make the strips to match what you decided. Put the 10 strips in a paper bag.

Answers will vary. For example, 7, 8, or 9 boys.

b) Repeat parts b) to e) from Question 1.

girls' names _____ boys' names _____

c) Did your bag meet the conditions? _____

Answers will vary.

At-Home Help

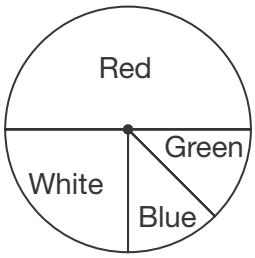
The probability of a boy's name or a girl's name being drawn from a bag is related to how many of each are in the bag. The more girls' names there are, the higher the probability that a girl's name will be drawn.

Draw	Question 1 boy or girl	Question 2 boy or girl
1	Answers	will vary.
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

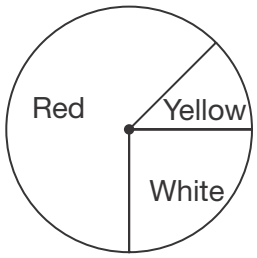
CHAPTER 13

4 Comparing Probabilities

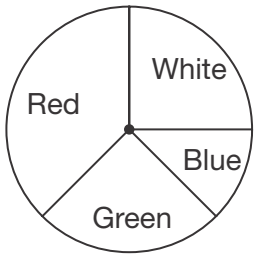
Goal **Make predictions and experiment with spinners with unequal sections.**



Spinner A



Spinner B



Spinner C

At-Home Help

The probability of landing on a spinner section is related to the size of the section. The larger the section, the more probable it will be to land on it.

1. On which spinner(s) is

a) spinning yellow impossible? Spinners A and C

b) spinning green impossible? Spinner B

c) spinning green equally probable as spinning blue? Spinner A

d) spinning blue impossible? Spinner B

2. Which spinner would you choose if spinning red wins a prize? Spinner B

3. Which colour is equally probable on all 3 spinners? white

4. Which colour(s)

a) on Spinner A are impossible on Spinner B? green and blue

b) on Spinner B is impossible on the other spinners? yellow

c) on Spinner A are equally probable? green and blue

d) on Spinner C are equally probable? green and white

5. Complete the probability line for Spinner A.

green
blue white red

impossible **certain**

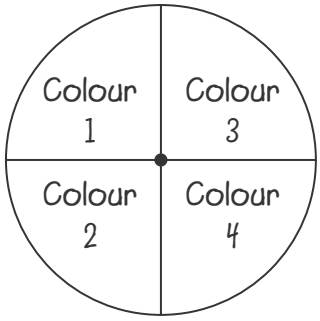
CHAPTER 13

5 Creating Spinners

Goal **Design spinners to meet given conditions and test the spinners.**

1. Make the spinner match the conditions.

a)



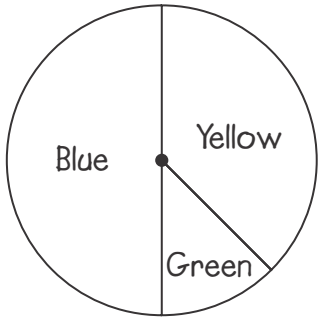
Spinner A

4 colours
all colours
equally probable

At-Home Help

The probability of landing on a spinner section is related to the size of the section. The larger the section, the more probable it will be to land on it.

b)

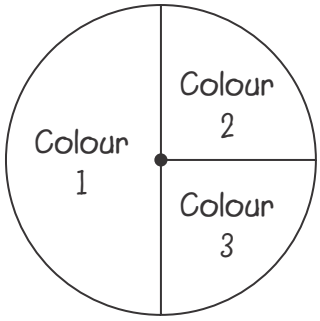


Spinner B

3 colours
red impossible

Answers will vary, but no red.
For example:

c)



Spinner C

3 colours
2 colours equally probable
1 colour more probable

Answers will vary.
For example:

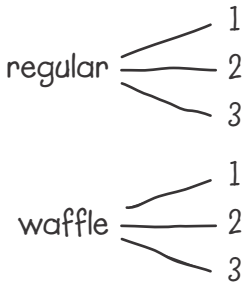
CHAPTER 13

6 Solve Problems Using Tree Diagrams

Goal **Use tree diagrams to find all possible combinations.**

1. The price of an ice-cream cone depends on the type of cone and the number of scoops.
Cone: regular, waffle
Scoops: 1, 2, 3

a) Draw a tree diagram to list all possible combinations.

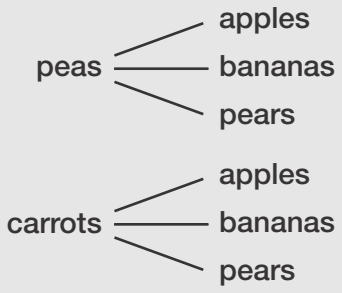


At-Home Help

A **tree diagram** can be used to list all possible combinations.

vegetables: peas, carrots
fruit: apples, bananas, pears

There are 6 possible combinations of 1 type of vegetable and 1 type of fruit.



b) How many different prices of ice-cream cones are there? 6

c) A person orders an ice-cream cone. Which is more probable?
- A: The person orders a waffle cone with 2 scoops.
- B: The person orders a regular cone with any number of scoops.

Explain your choice. B because 3 out of 6 are regular cones with any number of scoops, while only 1 out of 6 is a waffle cone with 2 scoops.

Test Yourself

Circle the correct answer.

1. Which event is certain?

A. It will rain tomorrow.

B. We will have hot dogs for lunch this Wednesday.

C. I will go to school this week.

D. The class will go to the beach for a field trip.

2. Which event is possible, but unlikely?

E. There will be snow in May.

F. A new student will come into our class before the end of the year.

G. July will be hot.

H. The sun will rise tomorrow.

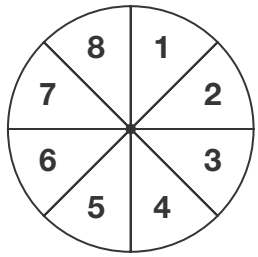
3. For Spinner X, which result is very unlikely for 20 spins?

A. You land on odd numbers 11 times.

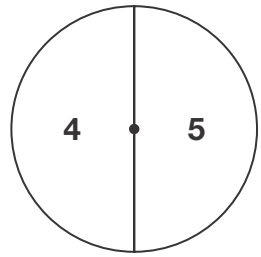
B. You land 3 times on 6.

C. You land 19 times on 8.

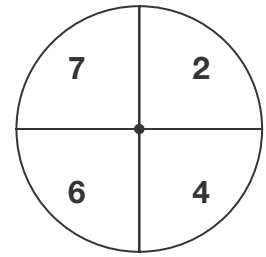
D. You never land on 0.



Spinner X



Spinner Y



Spinner Z

4. For Spinner Z, which result is very likely for 20 spins?

E. You land on odd and even numbers an equal number of times.

F. You land on numbers that can be divided by 2.

G. You land on numbers that are smaller than 5.

H. You land 15 times on 7.

5. Which spinner would you choose if spinning an even number wins a prize?

A. Spinner X **B.** Spinner Y **C.** Spinner Z **D.** Spinner X or Y

6. Which spinner would you choose if spinning an odd number wins a prize?

E. Spinner X **F.** Spinner Y **G.** Spinner Z **H.** Spinner X or Y