

# Learn About

## Determining Probability and Averages: Probability

**Probability** is the chance that a certain event will occur. The probability of an event occurring is found by comparing a favourable outcome to the total number of possible outcomes. Probability can be represented as a fraction or a percentage.

A board game consists of several shuffled cards. To find the probability of picking a card that involves moving forward one or more spaces, first find the total number of cards. Then divide the number of cards that involve moving forward one or more spaces by the total number of cards.

Move forward 3 spaces	1 card
Move forward 2 spaces	5 cards
Move forward 1 space	10 cards
Do not move	8 cards
Move backward 1 space	10 cards
Move backward 2 spaces	5 cards
Move backward 3 spaces	1 card

### Fraction:

Number of cards: 40

Total number of cards that involve moving one or more spaces: 16

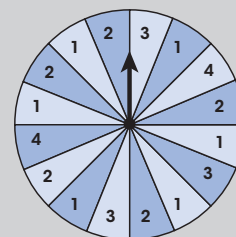
Probability:  $\frac{16}{40} = \frac{2}{5}$

### Percentage:

$$\frac{2}{5} = 2 \div 5 = 0.4$$

$$0.4 \times 100 = 40\%$$

Neil is playing a game with his friends. The game uses the spinner shown here. What is the probability of the spinner stopping on a 2? Write the probability as a fraction.



There are 16 spaces in all, and 5 spaces have a 2.

The probability of the spinner stopping on a 2 is  $\frac{5}{16}$ .



**Probability** is the chance that a certain event will occur. The probability of an event occurring is found by comparing a favourable outcome to the total number of possible outcomes.

*Look at the answer choices for each question.  
Read why each answer choice is correct or  
not correct.*

**1. What is the probability of Isaac choosing a blue M&M from the bag?**

Ⓐ  $\frac{2}{9}$

This is not correct. There are 12 blue M&M's and a total of 45 M&M's in the bag. The probability is  $\frac{12}{45} = \frac{4}{15}$ , not  $\frac{2}{9}$ .

●  $\frac{4}{15}$

This is correct. There are 12 blue M&M's and a total of 45 M&M's in the bag. The probability is  $\frac{12}{45} = \frac{4}{15}$ .

Ⓒ  $\frac{1}{3}$

This is not correct. There are 12 blue M&M's and a total of 45 M&M's in the bag. The probability is  $\frac{12}{45} = \frac{4}{15}$ , not  $\frac{1}{3}$ .

Ⓓ  $\frac{11}{15}$

This is not correct. There are 12 blue M&M's and a total of 45 M&M's in the bag. The probability is  $\frac{12}{45} = \frac{4}{15}$ , not  $\frac{11}{15}$ .

**2. What is the mean number of M&M's for each colour, rounded to the nearest whole number?**

Ⓐ 12 M&M's

This is not correct. The mean is found by dividing the total number of M&M's by the number of colours.

$(15 + 10 + 12 + 8) \div 4 = 11.25$ , which rounds to 11, not 12.

● 11 M&M's

This is correct. The mean is found by dividing the total number of M&M's by the number of colours.  $(15 + 10 + 12 + 8) \div 4 \approx 11$ .

Ⓒ 10 M&M's

This is not correct. The mean is found by dividing the total number of M&M's by the number of colours.

$(15 + 10 + 12 + 8) \div 4 \approx 11$ , not 10.

Ⓓ 9 M&M's

This is not correct. The mean is found by dividing the total number of M&M's by the number of colours.

$(15 + 10 + 12 + 8) \div 4 \approx 11$ , not 9.

# Lesson

# 4

*Read the passage.  
Then do Numbers 1–5.*

## Hockey Selection

The town of Flowerdale is forming a youths' hockey team. There are 27 children signed up to join the team. There will be 12 members on Team A, and the remaining children will be on Team B. Team A is chosen by placing all of the children's names in a box and selecting one name at a time. All of the children are very excited about the upcoming hockey season.



1. What is the probability that a child will be chosen to be on Team A?

- Ⓐ  $\frac{1}{27}$
- Ⓑ  $\frac{12}{15}$
- Ⓒ  $\frac{27}{12}$
- Ⓓ  $\frac{4}{9}$

2. What is the probability that a child will end up on Team B?

- Ⓐ  $\frac{1}{27}$
- Ⓑ  $\frac{15}{12}$
- Ⓒ  $\frac{27}{15}$
- Ⓓ  $\frac{5}{9}$

# Lesson 13

Read the passage.  
Then do Numbers 1–5.

## Paul's Pooch Parade

Paul has started a dog walking service in his neighbourhood. He walks dogs before and after school. Paul charges \$1 for each walk, which requires a trip around the block and lasts about 10 minutes. Some customers use his service only once a day—in the morning or afternoon—and others use it twice a day. If a customer has more than one dog, he or she must pay \$1 for each dog being walked, even if all the dogs are walked at the same time. The line plot helps Paul keep track of his earnings.



**Paul's Pooch Parade**

	X		X		X
A.M.	X	X	X	X	X
	X	X	X	X	X
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	X				X
P.M.	X	X	X		X
	Mon.	Tues.	Wed.	Thurs.	Fri.

X = 1 dog walked

1. What is the average number of dogs Paul walked per day during this week? Round your answer to the nearest whole number.

- Ⓐ 19 dogs
- Ⓑ 6 dogs
- Ⓒ 5 dogs
- Ⓓ 4 dogs

2. What is the mode number of dogs walked per day during this week?

- Ⓐ 2 dogs
- Ⓑ 3 dogs
- Ⓒ 4 dogs
- Ⓓ 5 dogs

# Self-Assessment 2

Lessons 6–10

*Answer these questions after you have completed Lessons 6–10. Before you begin, re-read what you wrote in Self-Assessment 1.*

## **FOCUS on Determining Probability and Averages, Book G**

Name \_\_\_\_\_ Date \_\_\_\_\_

1. Rate your work in Lessons 6–10. Circle your answer.

successful

somewhat successful

needs improvement

2. Did any of the questions give you trouble? \_\_\_\_\_

If so, what kind of trouble did you have?

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Is this the same kind of trouble you had in Lessons 1–5? \_\_\_\_\_

3. Did you find the questions easier or more difficult than those in Lessons 1–5?

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Why do you think this is so?

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4. Did you meet the goal you set for yourself for Lessons 6–10? \_\_\_\_\_

Why or why not?

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5. What is your goal for Lessons 11–15?

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Cut along the dotted line.