NAME DATE PERIOD

Lesson 2: Favorite Flavors

Solidify Understanding

Learning Focus

Make Venn diagrams, tree diagrams, and two-way tables for data.

Use representations to find probabilities.

What kind of probability statements are easiest to find with each representation?

Open Up the Math

Launch, Explore, Discuss

Amara thinks that chocolate ice cream is the greatest! She cannot even imagine someone saying that bland vanilla is better. She claims that chocolate is the favorite ice cream around the world. Her friend, Isla, thinks that vanilla is much better and more popular. To settle the argument, they created a survey asking people to choose their favorite ice cream flavor between chocolate and vanilla. After completing the survey, the following results came back:

- There were $8{,}756$ teens (ages 13–19) and $6{,}010$ adults (age 20 or older).
- Out of all the adults, 59.73% chose vanilla over chocolate.
- $4{,}732$ teens chose chocolate.

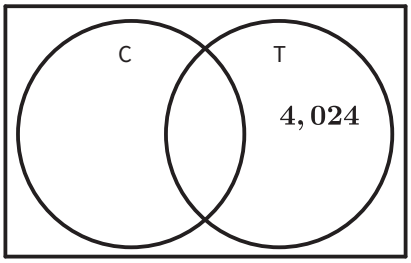
1. Upon first observations, which flavor do you think "won"? Write a sentence describing what you see at first glance that makes you think this.

2. Isla started to organize the data in the following two-way table. Complete the table using counts, not percentages:

NAME DATE PERIOD

	Chocolate	Vanilla	Total
Teens			8,756
Adults			6,010
Total			

3. Organize the same data into the Venn diagram that Amara started.



4. Now, put the same data in a tree diagram:

5. **a.** Find $P(\text{Prefers chocolate})$.

b. Explain how to use the two-way table to find the probability.

c. Explain how to use the Venn diagram.

d. Explain how to use the tree diagram.

NAME DATE PERIOD

6. **a.** Find $P(\text{Prefers chocolate}|\text{Teen})$.

b. Explain how to use the two-way table to find the probability.

c. Explain how to use the Venn diagram.

d. Explain how to use the tree diagram.

7. Find each of these probabilities:

a. $P(\text{Adult}|\text{Prefer chocolate})$

b. $P(\text{Teen and prefer vanilla})$

8. Write statements to describe these probabilities:

a. $\frac{2{,}420}{7{,}152} = P$_____

b. $\frac{2{,}420}{14{,}766} = P$_____

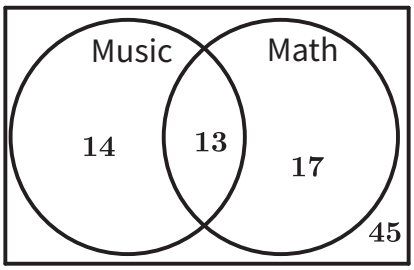
9. Which flavor do you think is actually the favorite? Using your organized data representations, write at least three probabilities that help support your claim regarding the preferred flavor of ice cream. For each probability, write a complete statement that includes probability notation.

NAME DATE PERIOD

Ready for More?

Some studies suggest that students that like math also like music. To test that idea, Luca did a survey of students in his school to find out which math or music courses they were enrolled in. He used his results to create the following Venn diagram:

Some studies suggest that students that like math also like music. To test that idea, Luca did a survey of students in his school to find out which math or music courses they were enrolled in. He used his results to create the Venn diagram shown:



Find the following probabilities:

a. $P(\text{Music}|\text{Math})$

b. $P(\text{Music and Math})$

c. $P(\text{not Math or Music})$

Takeaways

Highlighted (easier to see)	Hidden
Tree diagram	**Tree diagram**
Two-way table	**Two-way table**

NAME DATE PERIOD

Venn diagram	**Venn diagram**

Vocabulary

- Venn diagram

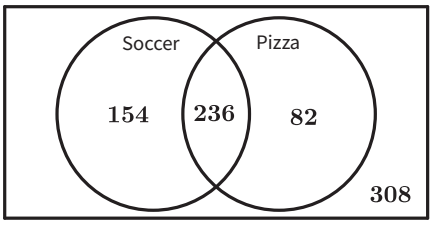
Bold terms are new in this lesson.

Lesson Summary

In this lesson, we learned to use two-way tables and Venn diagrams, along with tree diagrams, to find conditional, compound, and basic probabilities. We compared the representations to understand what information is easy to read from a given representation and what information may not be as evident in a representation, so that we can make choices about the representations we use for a given situation.

Retrieval

For problems 1–4, use the Venn diagram, which represents students' preferred food (pizza or hamburgers) and students' favorite sport (baseball or soccer).



1. How many students said that they prefer soccer?

2. Where do we find the number of students that prefer baseball?

NAME DATE PERIOD

3. How many students prefer baseball?

4. How many total students in the group?

5. What is 20% of 60?

6. What percent is 24 out of 192?