



Develop Finding Probabilities of Compound Events with Two Events

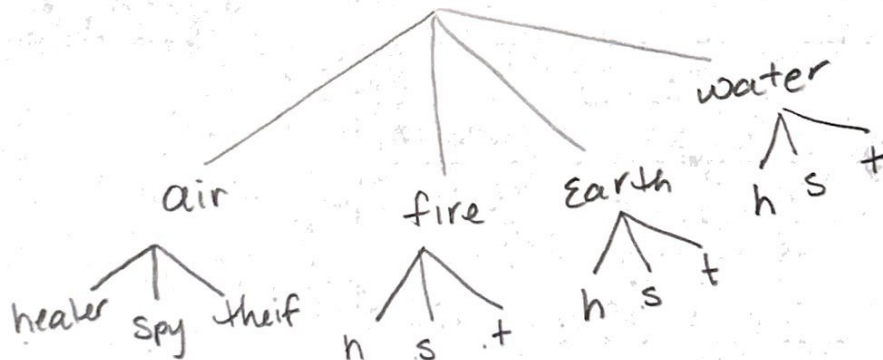
► Read and try to solve the problem below.

For a role-playing game, Nikia selects a team card and a character card at random. The teams are *air*, *fire*, *earth*, and *water*. The characters are *healer*, *spy*, and *thief*. Nikia's favorite team is *air* and her favorite character is the *spy*. What is the probability that Nikia selects at least one of her favorites?

TRY IT



Math Toolkit grid paper, index cards, sticky notes



$$\frac{\text{air}}{12} + \frac{\text{spy}}{12} = \frac{6}{12} = \frac{1}{2}$$

The probability that Nikia selects at least one of her favorites is $\frac{1}{2}$

DISCUSS IT

Ask: How would you explain what the problem is asking in your own words?

Share: The problem is asking ...

DISCUSS IT

continued

- ▶ Explore different ways to represent the sample space for a compound event.

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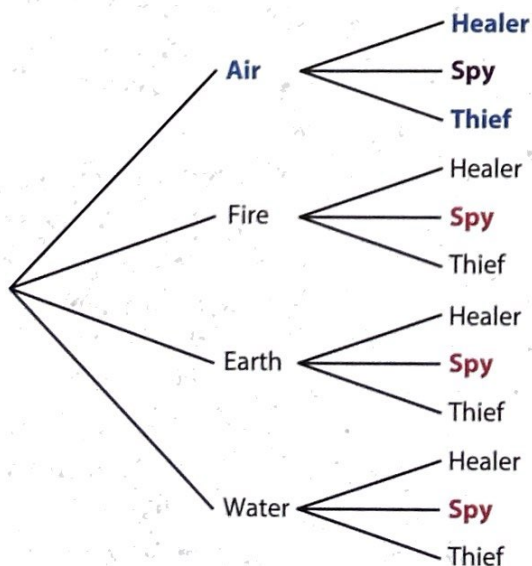
Model It

You can use a table to find the sample space.

	Team			
Character	Air (A)	Fire (F)	Earth (E)	Water (W)
Healer (H)	AH	FH	EH	WH
Spy (S)	AS	FS	ES	WS
Thief (T)	AT	FT	ET	WT

Model It

You can use a tree diagram to find the sample space.



CONNECT IT

- Use this page to deepen your understanding of representing the sample space for a compound event.

1 Talk About It

- a. How many outcomes are there? How many include *air*? How many include *spy*?

12 outcomes 3 air 4 spy

- b. There are 6 outcomes that include *air* or *spy*. Why is that different from the sum of the number of outcomes that include *air* and the number that include *spy*?

One outcome includes air and spy. It would only be counted once when figuring out the probability

2 Show What You Know

- a. The probability that Nikia selects exactly one of her favorites is $\frac{5}{12}$. Explain why this is different from the probability that she selects at least one of her favorites.

You have to eliminate the air/spy combination because they are both her favorite.

- b. How is finding the probability of a compound event the same as finding the probability of a single event? How is it different?

For both you write the favorable outcomes over the possible outcomes.

With compound events, the number of favorable outcomes depends on the outcomes of two individual events, so there may be some overlap that you need to account for.

3 Reflect

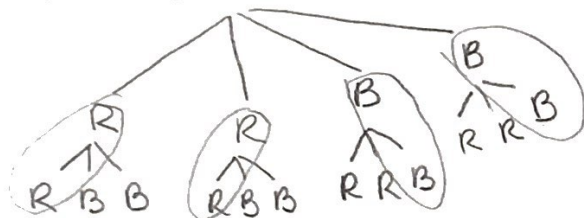
Think about all the models and strategies you have discussed today.

Describe how one of them helped you better understand how to represent the sample space for a compound event and find its probability.

Apply It

► Use what you learned to solve these problems.

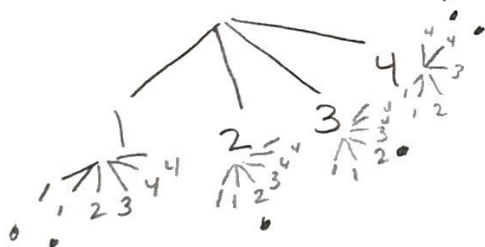
- 4 A bag has 2 red marbles and 2 blue marbles. Amal selects two marbles from the bag at random, one at a time, without returning the first marble back to the bag. What is the probability that both marbles are the same color? Show your work.



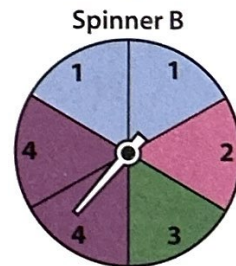
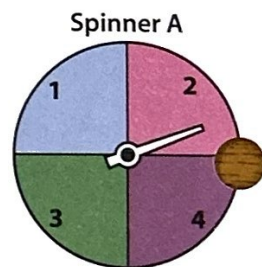
$$\frac{4}{12} = \frac{1}{3}$$

SOLUTION The probability of same color is $\frac{1}{3}$

- 5 Akio spins Spinner A and then spins Spinner B. What is the probability that both spinners land on the same number? Show your work.

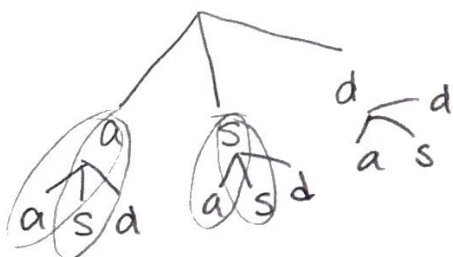


$$\frac{6}{24} = \frac{1}{4}$$



SOLUTION The probability of the same number is $\frac{1}{4}$

- 6 Rachel's family likes to play a game where a player tries to get their team to guess a word by giving clues. On their turn, a player spins a spinner with three equal-size sections to see if they will *act*, *sing*, or *draw* clues. What is the probability that Rachel does not draw clues in her next two turns? Show your work.



$$\frac{4}{9}$$

SOLUTION The probability that Rachel does not draw is $\frac{4}{9}$