

Chance Quest

Find compound probabilities in several ways.

GRADE 7 • 7.SP.C.8

CCSS.Math.Content.7.SP.C.8 "Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation."

NAME _____

DATE _____

COUNT THE COMBINATIONS

For equally likely outcomes, probability = favorable outcomes / total outcomes. Use a list, table, or tree to count combinations. In a simulation, use successful trials / total trials.

WORKED EXAMPLE

A spinner has 7 equal sections labeled P through V. You spin once and toss a coin. What is $P(R \text{ and tails})$?

1. Pair each spinner letter with heads and tails.
2. There are 14 equally likely pairs.
3. Only R, tails is favorable.

Answer: 1/14

PRACTICE 5 problems

- 1** A fair number cube is rolled and a coin is tossed. What is $P(\text{rolling a 5 and tossing heads})$?

ANSWER _____

- 2** A spinner has 8 equal sections numbered 1 to 8. A number cube is rolled. What is $P(\text{spinning an even number and rolling a number greater than 4})$?

ANSWER _____

- 3** A bag has 3 black and 5 white tokens. Choose one token, replace it, then roll a fair number cube. What is $P(\text{white and an odd roll})$?

ANSWER _____

- 4** In a simulation of 50 turns, 8 turns showed a red space followed by a star. Estimate $P(\text{red, then star})$.

ANSWER _____

- 5** Roll two fair number cubes. What is $P(\text{the sum is 9})$?

ANSWER _____

APPLY IT Show your work

- 1** At an after-school game club, a prize wheel has 9 equal spaces. Two spaces show headphones. A fair coin is tossed after the spin. What is $P(\text{headphones and tails})$?

WORK SPACE

ANSWER _____

- 2** A student designs a phone wallpaper by choosing 1 of 5 colors and 1 of 3 icons, each choice equally likely. The colors are blue, green, red, purple, and black. The icons are lightning, star, and soccer ball. What is $P(\text{blue or green, and lightning})$?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A media club has 4 movie cards, 3 music cards, and 2 game cards. Two cards are drawn without replacement. What is $P(\text{drawing one movie card and one game card})$? Show both possible orders.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A fair number cube is rolled and a coin is tossed. What is $P(\text{rolling a 5 and tossing heads})$?	1/12
2	A spinner has 8 equal sections numbered 1 to 8. A number cube is rolled. What is $P(\text{spinning an even number and rolling a number greater than 4})$?	1/6
3	A bag has 3 black and 5 white tokens. Choose one token, replace it, then roll a fair number cube. What is $P(\text{white and an odd roll})$?	5/16
4	In a simulation of 50 turns, 8 turns showed a red space followed by a star. Estimate $P(\text{red, then star})$.	4/25
5	Roll two fair number cubes. What is $P(\text{the sum is 9})$?	1/9

PART 2 • APPLY IT

1. **1/9** There are 2 favorable wheel spaces out of 9 and 1 favorable coin result out of 2. Multiply $2/9 \times 1/2 = 1/9$.
2. **2/15** There are 15 color-icon pairs. Blue-lightning and green-lightning are the 2 favorable pairs.

CHALLENGE

2/9, because movie then game or game then movie are favorable.

Accept equivalent fractions. For the simulation item, accept 8/50 as well as 4/25; it is an experimental estimate.