

Combo Chance Lab

Find the probability of two or more choices happening together.

GRADE 7 • NY-7.SP.8.a

NY-7.SP.8.a "Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs."

NAME _____

DATE _____

COUNT COMBINED OUTCOMES

A compound event combines outcomes from two or more choices. When all combined outcomes are equally likely, probability = favorable combined outcomes / total combined outcomes. You can use an organized list, a table, or a tree diagram to count the outcomes.

WORKED EXAMPLE

A spinner has 5 equal sections, including orange. After spinning, you choose 1 card from cards numbered 1 through 7. What is $P(\text{orange and } 6)$?

1. Total combined outcomes = $5 \times 7 = 35$.
2. Only one outcome is orange and 6.
3. $P(\text{orange and } 6) = 1/35$.

Answer: 1/35

PRACTICE 6 problems

- 1** A fair coin is flipped and a fair number cube labeled 1 through 6 is rolled. What is $P(\text{heads and an even number})$?

ANSWER _____

- 2** A prize code combines 1 drink and 1 fruit cup. The drinks are tea, juice, and milk. The fruit cups are peach, apple, berry, and melon. What is $P(\text{tea and peach})$?

ANSWER _____

- 3** Use an organized list. A robot chooses a letter from A, B, C, D and a digit from 1, 2, 3. What is $P(\text{the letter is a vowel and the digit is greater than 1})$?

ANSWER _____

- 4** Two fair number cubes are rolled. What is $P(\text{the sum is } 9)$?

ANSWER _____

- 5** A game randomly combines one pet, cat or dog, with one accessory, hat, cape, or glasses. What is $P(\text{dog and an accessory that begins with c})$?

ANSWER _____

- 6** A code uses first one symbol from ▲, ●, ■ and then one number from 2, 4, 6, 8. How many favorable outcomes are there for circle and a number less than 6, and what is the probability?

ANSWER _____

APPLY IT Show your work

1

An online outfit generator independently chooses 1 of 4 hoodies and 1 of 4 sneaker pairs. Two hoodies are graphic hoodies, and two sneaker pairs are high-tops. Every hoodie-sneaker outfit is equally likely. What is the probability that the generator makes an outfit with a graphic hoodie and high-tops?

WORK SPACE

ANSWER _____

2

At a gaming club, an app randomly selects one game mode and one team banner from the choices shown. What is the probability that it selects a cooperative mode and a blue-toned banner?

GAMING CLUB APP CHOICES

Game mode	Type	Team banner	Color group
Co-op Quest	cooperative	Blue Lightning	blue-toned
Co-op Build	cooperative	Navy Wave	blue-toned
Solo Race	solo	Sky Shield	blue-toned
		Gold Star	other

ANSWER _____

CHALLENGE One step up

A profile maker independently selects 1 of 3 avatars, 1 of 4 backgrounds, and 1 of 2 sound effects. Two avatars are animals, two backgrounds are nature scenes, and one sound effect is a chime. Every profile is equally likely. What is $P(\text{animal avatar, nature background, and chime})$? Explain by stating the total number of profiles and the number of favorable profiles.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A fair coin is flipped and a fair number cube labeled 1 through 6 is rolled. What is $P(\text{heads and an even number})$?	$1/4$
2	A prize code combines 1 drink and 1 fruit cup. The drinks are tea, juice, and milk. The fruit cups are peach, apple, berry, and melon. What is $P(\text{tea and peach})$?	$1/12$
3	Use an organized list. A robot chooses a letter from A, B, C, D and a digit from 1, 2, 3. What is $P(\text{the letter is a vowel and the digit is greater than 1})$?	$1/6$
4	Two fair number cubes are rolled. What is $P(\text{the sum is 9})$?	$1/9$
5	A game randomly combines one pet, cat or dog, with one accessory, hat, cape, or glasses. What is $P(\text{dog and an accessory that begins with c})$?	$1/6$
6	A code uses first one symbol from $\blacktriangle, \bullet, \blacksquare$ and then one number from 2, 4, 6, 8. How many favorable outcomes are there for circle and a number less than 6, and what is the probability?	2 favorable outcomes; $1/6$

PART 2 • APPLY IT

- $1/4$** There are $4 \times 4 = 16$ possible outfits. There are $2 \times 2 = 4$ graphic-hoodie, high-top outfits, so the probability is $4/16 = 1/4$.
- $1/2$** There are $3 \times 4 = 12$ mode-banner pairs. There are 2 cooperative modes and 3 blue-toned banners, so $2 \times 3 = 6$ pairs are favorable and $6/12 = 1/2$.

CHALLENGE

There are 24 total profiles and 4 favorable profiles, so the probability is $4/24 = 1/6$.

Accept equivalent fractions, such as $3/12$ for problem 1 and $4/36$ for problem 4. For problem 6, accept an organized list that shows the two favorable outcomes, $\bullet 2$ and $\bullet 4$.