

Probability Replay

Find chances across repeated trials.

GRADE 8 • MA.8.DP.2.2

MA.8.DP.2.2 "Find the theoretical probability of an event related to a repeated experiment."

NAME _____

DATE _____

MULTIPLY INDEPENDENT TRIALS

In a repeated experiment, if each trial is independent, multiply the probabilities when events must happen in a stated order or on every trial. When an event can happen in different orders, count or add the probabilities for all possible orders.

WORKED EXAMPLE

A spinner has 13 equal sections. Nine sections are gold. It is spun twice. What is the theoretical probability of landing on gold both times?

1. $P(\text{gold on one spin}) = 9/13$.
2. Multiply for two independent spins:
 $9/13 \times 9/13$.
3. $9/13 \times 9/13 = 81/169$.

Answer: 81/169

PRACTICE 6 problems

- 1** A fair coin is tossed 3 times. What is the theoretical probability of getting tails on all 3 tosses?

ANSWER _____

- 2** A fair number cube is rolled twice. What is the theoretical probability of rolling an even number on both rolls?

ANSWER _____

- 3** A spinner has 10 equal sections, and 2 sections have stars. What is the theoretical probability of spinning a star on both of 2 spins?

ANSWER _____

- 4** A bag has 12 tokens. Five are orange. A token is selected, returned, and then another token is selected. What is the theoretical probability of selecting orange, then not orange?

ANSWER _____

- 5** A random digit from 0 through 5 is selected, recorded, and returned. This happens twice. What is the theoretical probability of selecting 0 both times?

ANSWER _____

- 6** A fair coin is tossed 4 times. What is the theoretical probability of getting exactly 3 heads?

ANSWER _____

APPLY IT Show your work

- 1** A music app has a playlist of 15 songs, and 6 are by your favorite artist. A song is selected, returned to the playlist, and then another song is selected. What is the theoretical probability that both selected songs are by your favorite artist?

WORK SPACE

ANSWER _____

- 2** A mobile game prize wheel has 20 equal slots. Eight slots award a limited-edition avatar item. A player spins the wheel twice. What is the theoretical probability of winning the avatar item on both spins?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A fair coin is tossed 5 times. What is the theoretical probability of getting exactly 2 heads? Explain how you counted the possible orders.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A fair coin is tossed 3 times. What is the theoretical probability of getting tails on all 3 tosses?	1/8
2	A fair number cube is rolled twice. What is the theoretical probability of rolling an even number on both rolls?	1/4
3	A spinner has 10 equal sections, and 2 sections have stars. What is the theoretical probability of spinning a star on both of 2 spins?	1/25
4	A bag has 12 tokens. Five are orange. A token is selected, returned, and then another token is selected. What is the theoretical probability of selecting orange, then not orange?	35/144
5	A random digit from 0 through 5 is selected, recorded, and returned. This happens twice. What is the theoretical probability of selecting 0 both times?	1/36
6	A fair coin is tossed 4 times. What is the theoretical probability of getting exactly 3 heads?	1/4

PART 2 • APPLY IT

- 4/25** The probability on each selection is $6/15$. Multiply $6/15 \times 6/15$ and simplify to get $4/25$.
- 4/25** The probability of the item on one spin is $8/20$. Multiply $8/20 \times 8/20$ and simplify to get $4/25$.

CHALLENGE

5/16. There are 10 orders with exactly 2 heads, and 32 equally likely outcomes.

Accept equivalent fractions and correct unsimplified products. For events described as exactly a number of outcomes, accept work that accounts for every possible order.