LESSON MAKER PRO

Chance by Chance

List outcomes, then find the chance.

GRADE 7 · MT.7.SP.8

MT.7.SP.8 "Represent sample spaces for compound events, identify the desired outcomes in the sample spaces, and find probabilities of events using organized lists, tables, tree diagrams, and simulations."

NAME _____ DATE _____

COUNT THE PAIRS

An organized table helps you list every possible outcome once. When all outcomes are equally likely, probability = desired outcomes / total outcomes.

WORKED EXAMPLE

Spin a fair spinner labeled 7, 8, and 9, then flip a fair coin. What is P(8 and T)?

ALL OUTCOMES

Spinner	H	T
7	7H	7T
8	8H	8T
9	9H	9T

1. The table shows 6 possible outcomes.
2. Only 8T is a desired outcome.
3. Probability = 1/6.

Answer: 1/6

PRACTICE 4 problems

1 Flip a fair coin twice. List all outcomes. What is P(exactly one H)?

ANSWER _____

2 Spin a fair spinner labeled 1, 2, 5, and 6, then flip a fair coin. What is P(even number and T)?

ANSWER _____

3 Spin a fair spinner labeled A, B, and C twice. List the matching outcomes. What is P(match)?

ANSWER _____

4 Flip a fair coin, then spin a fair spinner labeled A, B, and C. List outcomes with T or C. What is their probability?

ANSWER _____

APPLY IT Show your work

1 A game randomly picks an avatar and a trail. Use the table to find P(Owl and not Sand).

GAME COMBINATIONS

Trail	Fox	Owl
Ice	Fox-Ice	Owl-Ice
Sand	Fox-Sand	Owl-Sand
Grass	Fox-Grass	Owl-Grass

ANSWER _____

2 A club flips a coin twice to choose a playlist. The table shows 40 simulated trials. Estimate P(exactly one H), then give the theoretical probability.

SIMULATED COIN FLIPS

Outcome	Trials
HH	8
HT	14
TH	10
TT	8

ANSWER _____

CHALLENGE One step up

Spin a fair spinner labeled A, B, and C twice. List the outcomes with at least one A. Explain how your list gives the probability.

WORK SPACE AND ANSWER

ANSWER KEY

Chance by Chance

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Flip a fair coin twice. List all outcomes. What is P(exactly one H)?	**HH, HT, TH, TT; 1/2**
2	Spin a fair spinner labeled 1, 2, 5, and 6, then flip a fair coin. What is P(even number and T)?	**1/4**
3	Spin a fair spinner labeled A, B, and C twice. List the matching outcomes. What is P(match)?	**AA, BB, CC; 1/3**
4	Flip a fair coin, then spin a fair spinner labeled A, B, and C. List outcomes with T or C. What is their probability?	**TA, TB, TC, HC; 2/3**

PART 2 · APPLY IT

1. **1/3** Owl-Ice and Owl-Grass are the 2 desired outcomes among 6 equally likely combinations. Thus, P = 2/6 = 1/3.
2. **Simulation: 3/5; theoretical: 1/2** The simulation gives (14 + 10)/40 = 3/5. In the theoretical sample space, HT and TH are 2 of 4 equally likely outcomes.

CHALLENGE

AA, AB, AC, BA, CA. These are 5 of the 9 equally likely outcomes, so the probability is 5/9. AA appears once because it is one outcome.

Accept equivalent fractions. For lists, accept any order that includes each desired outcome exactly once.