

Chance Choice Lab

Build a sample space, then find the chance.

GRADE 5 • 5.PS.3.a

5.PS.3.a "Determine the probability of an outcome by constructing a sample space (with a total of 24 or fewer equally likely possible outcomes), using a tree diagram, list, or chart to represent and determine all possible outcomes."

NAME _____

DATE _____

MAP EVERY OUTCOME

When each choice is equally likely, list every possible outcome with a tree, list, or chart. Probability = favorable outcomes / total outcomes. Simplify the fraction when you can.

WORKED EXAMPLE

A cafe lets you choose 1 soup, tomato, bean, or vegetable, and 1 bread, roll or pita. What is the probability of choosing bean soup?

1. List the outcomes: tomato-roll, tomato-pita, bean-roll, bean-pita, vegetable-roll, vegetable-pita.
2. There are 6 total outcomes.
3. Bean soup appears in 2 outcomes, so $\frac{2}{6} = \frac{1}{3}$.

Answer: $\frac{1}{3}$

PRACTICE 5 problems

- 1** Choose 1 sticker, cat, dog, fish, or owl, and 1 marker color, red, blue, green, or yellow. Use a chart. What is $P(\text{cat and blue})$?

ANSWER _____

- 2** A spinner has 5 equal sections labeled A, A, B, C, and D. Write the sample space. What is $P(A)$?

ANSWER _____

- 3** Choose 1 letter card, A, B, C, or D, and 1 shape card, circle, square, triangle, star, or heart. Use a chart. What is $P(B \text{ and heart})$?

ANSWER _____

- 4** A hiking app randomly pairs 1 trail, North, East, South, or West, with 1 snack from 5 choices. What is $P(\text{East trail})$?

ANSWER _____

- 5** A code uses 1 letter from A, B, C, or D and 1 symbol from star, heart, circle, square, or triangle. Use a chart. What is $P(C \text{ and circle})$?

ANSWER _____

APPLY IT Show your work

- 1** In a game design club, Leo randomly chooses 1 avatar from Nova, Pixel, Orbit, and Blaze and 1 badge from lightning, rocket, crown, leaf, and paw. What is the probability he chooses Nova or the lightning badge, or both?

WORK SPACE

ANSWER _____

- 2** At a book fair, Jada randomly chooses 1 comic series from 4 choices and 1 bookmark design from 5 choices. What is the probability of choosing the mystery comic and the striped bookmark?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A digital pet maker randomly chooses 1 pet type from cat, dog, dragon, and rabbit and 1 accessory from hat, wings, glasses, cape, ball, and crown. What is the probability of getting a cat or wings, or both? Explain how you avoid counting one outcome twice.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Choose 1 sticker, cat, dog, fish, or owl, and 1 marker color, red, blue, green, or yellow. Use a chart. What is $P(\text{cat and blue})$?	$1/16$
2	A spinner has 5 equal sections labeled A, A, B, C, and D. Write the sample space. What is $P(A)$?	Sample space: A, A, B, C, D; $P(A) = 2/5$
3	Choose 1 letter card, A, B, C, or D, and 1 shape card, circle, square, triangle, star, or heart. Use a chart. What is $P(B \text{ and heart})$?	$1/20$
4	A hiking app randomly pairs 1 trail, North, East, South, or West, with 1 snack from 5 choices. What is $P(\text{East trail})$?	$5/20 = 1/4$
5	A code uses 1 letter from A, B, C, or D and 1 symbol from star, heart, circle, square, or triangle. Use a chart. What is $P(C \text{ and circle})$?	$1/20$

PART 2 • APPLY IT

- $8/20 = 2/5$** A chart has 20 outcomes. There are 5 Nova outcomes and 4 lightning outcomes, but Nova-lightning is counted twice, so $5 + 4 - 1 = 8$ favorable outcomes.
- $1/20$** There are $4 \times 5 = 20$ equally likely pairs. Only 1 pair has both the mystery comic and the striped bookmark.

CHALLENGE

$9/24 = 3/8$. There are 6 cat outcomes and 4 wings outcomes. The cat-with-wings outcome is in both groups, so subtract it once: $6 + 4 - 1 = 9$.

Accept equivalent unsimplified fractions when the favorable and total counts are correct. Students may organize the sample spaces with a tree, list, or chart.