

Pair It Up

Find every possible outcome from two events.

GRADE 4 • 4.PS.2.b

4.PS.2.b "Model and determine all possible outcomes of a given simple event where there are no more than 24 possible outcomes, using a variety of manipulatives (e.g., coins, two-sided counters, number cubes, spinners)."

NAME _____

DATE _____

MAKE OUTCOME PAIRS

When two events happen, pair each choice from the first event with each choice from the second event. You can make an organized list or table, then multiply the number of choices to check your total.

WORKED EXAMPLE

A spinner has 4 sections labeled W, X, Y, and Z. Flip a coin. What outcomes are possible?

1. Pair each letter with Heads and Tails.
2. List: W-Heads, W-Tails, X-Heads, X-Tails, Y-Heads, Y-Tails, Z-Heads, Z-Tails.
3. There are 4 groups of 2 outcomes.
4. 4 times 2 = 8.

Answer: 8 outcomes

PRACTICE 5 problems

- 1** A spinner has three sections: star, heart, and triangle. Choose one card numbered 1 through 5. List all possible outcomes as (shape, number).

ANSWER _____

- 2** Spin a spinner with dog, cat, and bird sections. Roll a number cube. How many possible outcomes are there?

ANSWER _____

- 3** A video game lets you choose 5 avatars and 3 maps. How many avatar-map pairs can you choose?

ANSWER _____

- 4** A spinner has vanilla, chocolate, and strawberry sections. Then you choose one card numbered 1 through 7. How many possible outcomes are there?

ANSWER _____

- 5** A spinner has music, art, and sports sections. Then you roll a number cube. How many activity-roll outcomes are there?

ANSWER _____

APPLY IT Show your work

- 1** At the school fair, you choose one of 3 robot decals and one of 5 LED colors for a badge. How many different badges can you make?

WORK SPACE

ANSWER _____

- 2** In a skateboard game, choose one of 3 boards, then roll a number cube to find your starting space. How many board-and-roll results are possible?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Noah says a spinner with 3 sections and a number cube have 9 outcomes because $3 + 6 = 9$. Is Noah correct? Explain.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A spinner has three sections: star, heart, and triangle. Choose one card numbered 1 through 5. List all possible outcomes as (shape, number).	(star,1), (star,2), (star,3), (star,4), (star,5), (heart,1), (heart,2), (heart,3), (heart,4), (heart,5), (triangle,1), (triangle,2), (triangle,3), (triangle,4), (triangle,5); 15 outcomes
2	Spin a spinner with dog, cat, and bird sections. Roll a number cube. How many possible outcomes are there?	18 outcomes
3	A video game lets you choose 5 avatars and 3 maps. How many avatar-map pairs can you choose?	15 pairs
4	A spinner has vanilla, chocolate, and strawberry sections. Then you choose one card numbered 1 through 7. How many possible outcomes are there?	21 outcomes
5	A spinner has music, art, and sports sections. Then you roll a number cube. How many activity-roll outcomes are there?	18 outcomes

PART 2 • APPLY IT

1. **15 different badges** Pair each of the 3 decals with each of the 5 colors. There are 3 groups of 5, so there are 15 badges.
2. **18 results** Each board can be paired with each of the 6 roll results. There are 3 groups of 6, so there are 18 results.

CHALLENGE

No. Each of the 3 spinner sections can pair with each of the 6 cube results, so there are 3 groups of 6, or 18 outcomes.

Accept organized lists, tables, tree diagrams, or correct multiplication to show the outcomes. Accept equivalent pair labels when each possible pair is included exactly once.