LESSON MAKER PRO

Count the Choices

List, multiply, or split into cases.

HIGH SCHOOL · FM.AC.A.6

FM.AC.A.6 "Use multiple representations and methods for counting objects and developing more efficient counting techniques."

NAME _____ DATE _____

CHOOSE A COUNTING METHOD

When you make one choice and then another, multiply the numbers of options. When you choose from separate cases that cannot overlap, count each case and add. A list or table can help you check your count.

WORKED EXAMPLE

Use the table to count the possible opener-closer pairs for a playlist.

PLAYLIST CHOICES

Song position	Choices
Opener	3
Closer	5

1. Choose an opener in 3 ways.
2. For each opener, choose a closer in 5 ways.
3. Multiply: 3 × 5 = 15.

Answer: 15 opener-closer pairs

PRACTICE 4 problems

1 A code uses A or B, followed by 0 or 1. List every code. How many are there?

ANSWER _____

2 A lunch has 4 mains and 6 sides. Write a product and find the number of lunches.

ANSWER _____

3 An app icon is one of 6 animals or one of 8 plants. How many icons can you choose?

ANSWER _____

4 A badge has 4 shapes, 6 colors, and 2 sizes. How many badges are possible?

ANSWER _____

APPLY IT Show your work

1 At a gaming event, a pass is for one of 4 solo games or 6 team games. Each game has 2 time slots. How many game-slot passes are possible?

WORK SPACE

ANSWER _____

2 You choose two different songs from 7 songs for a short setlist. The order matters. How many setlists can you make?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A code uses two different letters from A, B, C, D and one digit from 0 to 6. The digit goes first or last. How many codes are possible? Explain why your cases do not overlap.

WORK SPACE AND ANSWER

ANSWER KEY

Count the Choices

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A code uses A or B, followed by 0 or 1. List every code. How many are there?	**A0, A1, B0, B1; 4 codes**
2	A lunch has 4 mains and 6 sides. Write a product and find the number of lunches.	**4 × 6 = 24 lunches**
3	An app icon is one of 6 animals or one of 8 plants. How many icons can you choose?	**14 icons**
4	A badge has 4 shapes, 6 colors, and 2 sizes. How many badges are possible?	**48 badges**

PART 2 · APPLY IT

1. **20 passes** Count the separate cases and add: 4 × 2 + 6 × 2 = 20.
2. **42 setlists** There are 7 choices for the first song and 6 remaining choices for the second, so 7 × 6 = 42.

CHALLENGE

168 codes. With the digit first, there are 7 × 4 × 3 = 84 codes. The digit-last case also has 84. Add to get 168; a code cannot have its only digit in both positions.

Accept equivalent products or case counts. For the challenge, students must account for both digit positions without counting any code twice.