LESSON MAKER PRO

Count It Out

Use addition or multiplication to count and find probabilities.

HIGH SCHOOL · MA.912.DP.4.9

MA.912.DP.4.9 "Apply the addition and multiplication rules for counting to solve mathematical and real-world problems, including problems involving probability."

NAME _____ DATE _____

CHOOSE THE RULE

Add when choices are separate, or when events cannot happen together. Multiply when each first choice can pair with every second choice, or when independent events both occur.

WORKED EXAMPLE

A snack bar offers 6 drinks and 5 snacks. How many drink-snack pairs are possible?

1. Choose a drink: 6 ways.
2. Choose a snack: 5 ways.
3. Multiply: 6 x 5 = 30.

Answer: 30 pairs

PRACTICE 5 problems

1 You may join 7 art workshops or 8 coding workshops, but not both. How many choices are there?

ANSWER _____

2 A game avatar has 9 hats and 4 jackets. How many outfits use one of each?

ANSWER _____

3 A bag has 8 red, 7 blue, and 1 green token. What is P(red or blue) on one draw?

ANSWER _____

4 A quiz has 8 possible topics for Part A and 9 possible topics for Part B. How many topic pairs are possible?

ANSWER _____

5 P(win a round) = 2/7. An independent fair coin is flipped. What is P(win and heads)?

ANSWER _____

APPLY IT Show your work

1 A playlist has 9 indie songs, 2 hip-hop songs, and 7 pop songs. One song plays at random. What is P(hip-hop or pop)?

WORK SPACE

ANSWER _____

2 For a club profile image, you can choose 8 background colors and 4 border styles. How many designs can you make?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A game tag has one letter followed by two different digits. The letter is chosen from 7 letters, and the digits are chosen from 1, 2, 3, and 4. How many tags are possible?

WORK SPACE AND ANSWER

Count It Out

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	You may join 7 art workshops or 8 coding workshops, but not both. How many choices are there?	**15**
2	A game avatar has 9 hats and 4 jackets. How many outfits use one of each?	**36**
3	A bag has 8 red, 7 blue, and 1 green token. What is P(red or blue) on one draw?	**15/16**
4	A quiz has 8 possible topics for Part A and 9 possible topics for Part B. How many topic pairs are possible?	**72**
5	P(win a round) = 2/7. An independent fair coin is flipped. What is P(win and heads)?	**1/7**

PART 2 · APPLY IT

1. **1/2** Add favorable songs: 2 + 7 = 9. There are 18 songs total, so 9/18 = 1/2.
2. **32** Each background can pair with each border. Multiply 8 x 4 = 32.

CHALLENGE

84

Accept equivalent probability forms, although simplified fractions are preferred. For the challenge, accept 7 x 4 x 3 as correct reasoning.