

CIT 5920 — Lecture 7: Permutations, combinations

24 - 24 Sep 2024

Poll results

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Quiz: Counting Basics (1/6)

038

How many different passwords of length 4 can be formed using the uppercase English alphabet, where $|A| = 26$?

26^4 ✓



4^{26}



26^3



$26 * 4$



Quiz: Counting Basics (2/6)

0 4 3

If a password can be of length between 4 and 8 characters, using only uppercase English letters, how many possible passwords are there?

$26^4 + 26^5 + 26^6 + 26^7 + 26^8$ ✓

 95 %

$4^{26} * 5^{26} * 6^{26} * 7^{26} * 8^{26}$

☐ 2 %

$26^4 * 26^8$

☐ 0 %

$8^{26} + 7^{26} + 6^{26} + 5^{26} + 4^{26}$

☐ 2 %

Quiz: Counting Basics (3/6)

0 4 3

How many different 3-digit numbers can be formed if the first digit cannot be 0?

$9 * 10^2$ ✓



10^3

☐ 0 %

9^3

☐ 2 %

$8 * 10 * 10$

☐ 0 %

Quiz: Counting Basics (4/6)

0 4 3

How many functions can be formed from a set with 3 elements to a set with 4 elements?

4^3 ✓



3^4



$4 + 3$



$4 * 3$



Quiz: Counting Basics (5/6)

038

How many possible drinks can be ordered if a customer chooses one option from a set {oat milk, no oat milk} and one option from another set {extra shot, no extra shot} and another from another set {iced, not iced}?

(1/2)

$2 * 3$

☐ 0 %

$3 * 3$

☐ 3 %

$2 * 2 * 2$ ☒

☒ 97 %

4^3

☐ 0 %

Quiz: Counting Basics (5/6)

038

How many possible drinks can be ordered if a customer chooses one option from a set {oat milk, no oat milk} and one option from another set {extra shot, no extra shot} and another from another set {iced, not iced}?

(2/2)

4!

☐ 0 %

Quiz: Counting Basics (6/6)

0 4 2

How many ways are there to arrange 3 people in a line if there are 4 people to choose from?

$4 * 3 * 2$ ✓



$4 + 3 + 2$

0 %

3^4

0 %

4^3

2 %

Counting: The Right Tool for the Job (1/6)

0 4 5

To solve this problem, which tools would you use: "How many ways can you choose a main course and a dessert from a menu that offers 5 main courses and 3 desserts?"

product rule ✓



sum rule



bijection principle



Counting: The Right Tool for the Job (2/6)

0 4 4

To solve this problem, which tools would you use: "In a deck of cards, how many ways can you draw either a heart or a diamond, but not both?"

product rule

 9 %

sum rule ☒

 73 %

bijection principle

 18 %

Counting: The Right Tool for the Job (3/6)

0 4 1

How many ways can you create a password using 3 letters followed by 2 numbers?

product rule ✓



sum rule



bijection principle



Counting: The Right Tool for the Job (4/6)

0 4 2

From a group of 5 singers and 4 dancers, how many ways can you choose either a singer or a dancer for a performance, but not both?

product rule

 10 %

sum rule ✓

 86 %

bijection principle

 5 %

Counting: The Right Tool for the Job (5/6)

039

How many ways can you arrange 5 books on a shelf if two specific books must always be together?

product rule



sum rule



bijection principle ✓



Counting: The Right Tool for the Job (6/6)

0 4 3

In a competition, there are 3 rounds. In each round, a participant can either win, lose, or draw. How many possible outcomes are there for a participant after all 3 rounds?

product rule ✓



sum rule



bijection principle



Quiz: Sum/Product vs Arrangements (1/6)

0 4 1

How many ways can 5 people sit in a row of 5 chairs?

120 ✓



25



5



10



Quiz: Sum/Product vs Arrangements (2/6)

0 1 0

In how many ways can you arrange the letters in the word "APPLE"?

60 ✓



30

0 %

120



24

0 %