

MATH 126

Combinations (Answers)

Quick Check! Don't solve these problems—simply identify PERMUTATION (P) or COMBINATION (C). Which counting technique applies?

THE ANSWER HAS A BOX AROUND IT.

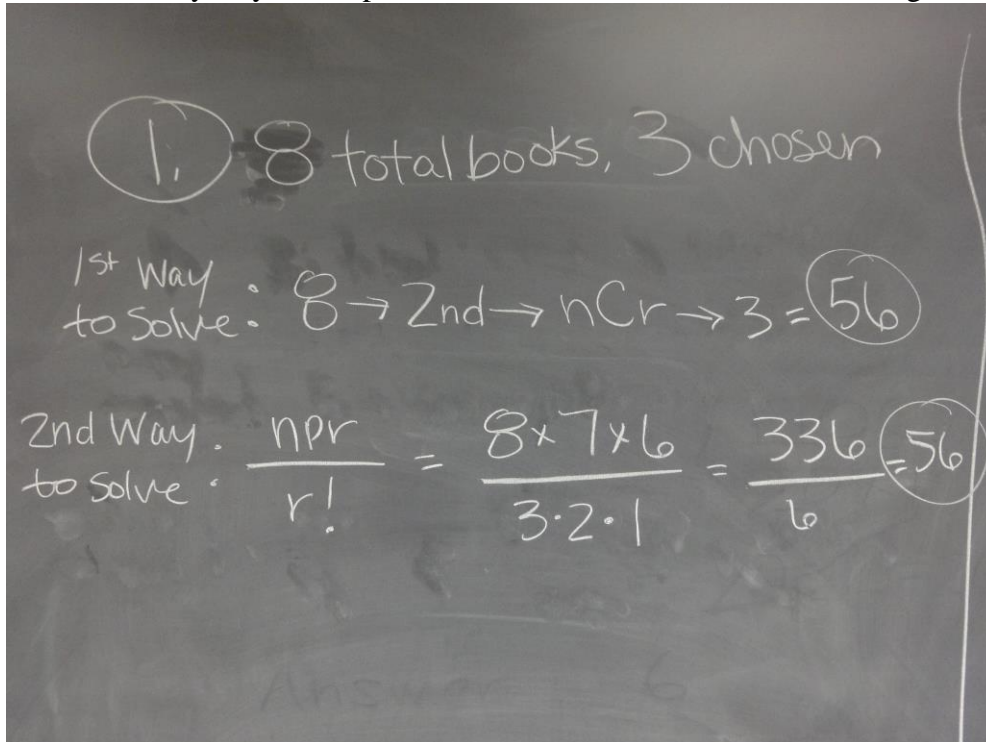
- (a) From a class of 30 people, a group of four is selected to give a presentation.
- (b) A starting shortstop and pitcher are chosen from a 12-person intramural team.
- (c) A 6-digit passcode is chosen from the numbers 0-9.
- (d) A gardener picks 4 vegetable plants from 11 possibilities for his garden.

P
P
P
P

C
C
C
C

Solve these problems:

1. In how many ways can a person choose three books from a list of eight best-sellers?



(OVER)

2. A home security device with 10 buttons is disarmed when 3 different buttons are pushed in the proper sequence (no button can be pressed twice). How many possible 3-button sequences are there?

A chalkboard showing the solution to problem 2. At the top, the number 10 is written, followed by a large 'P' with a vertical line through it, and an equals sign followed by the number 3. Below this, the calculation $10 \cdot 9 \cdot 8 = 720$ is written.

$$10P_3 = 3$$
$$10 \cdot 9 \cdot 8 = 720$$

3. You are studying abroad and part of the requirement is to visit 10 different cities. You are planning to visit 3 of the 10 on a long weekend. Assuming distance is not a major factor, in how many ways can you choose the three to visit?

A chalkboard showing the solution to problem 3. At the top, the number 3 is circled, followed by the equation $10C_3 = 120$. Below this, a list of combinations is shown with checkmarks above each letter: V S M, M V S, and a vertical ellipsis.

③ $10C_3 = 120$

✓ V S M
✓ M V S
⋮

4. In the NY state lottery, a player wins 1st prize by selecting the correct 6 digit combination from digits 1 through 54. If you play a specific 6-number combination, what is the likelihood you will win 1st prize?

A chalkboard showing the solution to problem 4. At the top, the number 4 is circled, followed by the equation $54C_6 = 25,827,165$.

④ $54C_6 = 25,827,165$