

11.1 (Day 2).....Page #

GOAL: Solve problems involving the Fundamental Counting Principle, Permutations, and Combinations.

Feb 10-10:33 AM

Fundamental Counting Principle:
when given choices, you multiply the choices together to find the total options.


To make a yogurt parfait, you choose one flavor of yogurt, one fruit topping, and one nut topping. How many parfait choices are there?

Yogurt Parfait (choose 1 of each)		
Flavor	Fruit	Nuts
Choc.	Peaches	Almonds
	Strawberries	Peanuts
	Bananas	Walnuts
	Raspberries	
	Blueberries	

2 · 5 · 3
30 yogurts

You go to get a haircut. Before your hair cut they plan to wash your hair. They have 6 different kinds of shampoo and 4 different conditioners. How many different ways could you get your hair washed?

6 · 4 = 24 ways



Feb 15-8:20 AM

Using the Fundamental Counting Principle

1. A sandwich can be made with 3 different types of bread, 5 different meats, and 2 types of cheese. How many types of sandwiches can be made if each sandwich consists of one bread, one meat, and one cheese.

3 · 5 · 2 = 30 sand.

Does your answer seem reasonable?

2. How many identification codes can be made with 3 digits followed by 2 letters? 0-9

10 · 10 · 10 · 26 · 26

3. How many identification codes can be made with 2 digits followed by 2 letters with no repetition?

10 · 9 · 26 · 25 =

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Remember the formulas for Permutations and Combinations!!!

$${}_n P_r = \frac{n!}{(n-r)!} \quad {}_n C_r = \frac{n!}{r!(n-r)!}$$

order

Evaluate.

4. ${}_8 P_6 = \frac{8!}{2!} = \frac{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{2 \cdot 1}$ (20,160)

5. ${}_9 C_6 = \frac{9!}{(3!) \cdot 6!} = \frac{9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{(3 \cdot 2 \cdot 1) \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}$ (84)

Feb 10-1:43 PM

Does order matter?

Tell whether each situation involves combinations or permutations. Then give the possible number of outcomes.

6. In a talent show, the top 3 performers of 15 will advance to the next round. In how many ways can this be done?

C R *
C

7. A family of 5 plans to sit in the same row at a movie theater. How many ways can the family be seated in 3 seats?

P

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Does order matter?

8. A basketball team has 12 members who can play any position. How many different ways can the coach choose 5 starting players?

P L R C
C R

9. Four people in a writing contest are competing for first, second and third prize. How many ways can the 4 people be chosen?

4 P 3

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What are key words that mean the same are order matters?

10. Ingrid is stringing 3 different types of beads on a bracelet. How many ways can she use one bead of each type to string the next three beads?

$3P_3$

11. The three best essays in a contest will receive gold, silver, and bronze stars. There are 10 essays. In how many ways can the prizes be awarded?

$10P_3$

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Assignment: 11.1 Day 2 Worksheet

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