

Warm-up

1) How many ways can 5 green, 4 blue and 2 red folders be arranged in a drawer?

Rep

$$\frac{11!}{(5!4!2!)}$$

6930

2) How many ways could you select 3 folders from above, if you needed one of each color?

F.C.P.

$$\underline{5} \cdot \underline{4} \cdot \underline{2}$$

40

3) Quick Slice offers 4 sizes, 3 different styles of crust, 2 different sauces and 10 toppings.

If you want a pizza with 3 different toppings, how many different pizzas are possible?

$$\underline{4} \cdot \underline{3} \cdot \underline{2} \cdot \underline{{}^{10}C_3} =$$

2880

PERMUTATIONS

Evaluate each expression.

1. $P(6, 3)$

120

2. $P(8, 5)$

6720

3. ${}_9P_4$

3024

4. ${}_{11}P_6$

332640

How many different ways can the letters of each word be arranged?

5. MOM

3 $\frac{3!}{2!}$

6. MONDAY

720

7. STEREOS

1260

8. There are 7 people in a science competition. How many different ways could they be ranked? How many ways could the top 3 spots be awarded?

5040

$210 \rightarrow P$
 $7 \cdot 6 \cdot 5 = {}_7P_3$

${}_7P_7$
 $7!$

9. James is playing with building blocks. There are 5 blue, 3 red and 6 green blocks. If h arranged them all in a row, how many different arrangements would be possible?

~~14!~~
 $\frac{14!}{5!3!6!}$

168,168

COMBINATIONS

Evaluate each expression.

10. $\underline{C}(5, 3)$

$$10$$

11. $\underline{C}(7, 4)$

$$35$$

12. ${}_{15}C_7$

$$6435$$

13. ${}_{10}C_5$

$$252$$

14. From a stack of 35 cards, in how many ways can 5 cards be drawn?

$${}_{35}C_5 = 324,632$$

15. How many hockey teams of 6 players can be formed from 14 players without regard to position played?

$${}_{14}C_6 = 3003$$

16. A chorus has been practicing 12 songs, but at their concert they will only perform 5. How many different sets of 5 songs could they choose? How many different orderings of 5 songs are possible?

$${}_{12}C_5 = 792$$

$${}_{12}P_5 = 95040$$

1) How many ways can Bill pick movies from 6 action, 7 drama and 5 comedy if he wants one of each?

F.C.P. $\underline{6} \cdot \underline{7} \cdot \underline{5} = 210$

2) How many ways can Jill arrange buttons if there are 6 red, 7 blue and 5 green?

$14,702,688$ $\frac{18!}{(6!7!5!)}$

3) How many ways can 6 people be elected from 20 if all have the same role?

${}_{20}C_6$ No Order $38,760$

4) How many ways can 4 people be elected from 20 if all have different titles?

${}_{20}P_4$ Order $116,280$

QUICK TIPS::

Permutation with Repetition

Arrange All

$$\frac{n!}{()}$$

Permutation vs. Combination

ORDER (Rank
Comp
Title)

No Order

Fundamental Counting Principle

One of Each

Independent vs. Dependent

Change

Theoretical vs. Empirical

should

actual

QUIZ...

Quiz Code:



- You may use your notes on quizzes.
- Take your time.
- No phones out until you have turned in your quiz.
- No talking until everyone is done.

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Apps → School Net Secure