

Warm Up

130/23

WOULD YOU RATHER...

Crack
this lock...



...or
this lock



Justify your reasoning with mathematics. Tell any assumptions you have made.

21.3 Combinations

Remember that order doesn't matter so we will have less possibilities. ABC is the same as CBA

The formula is the same as the one for permutations except that we need to eliminate the duplicates by dividing.

The number of combinations of n objects taken r at a time

$${}_n C_r = \frac{n!}{r!(n-r)!} \text{ (can be written as } C(n, r) \text{ or } \binom{n}{r} \text{)}$$

EX: Pizza Hut offers twelve different toppings. How many different three topping pizzas can be formed with the twelve toppings?

Determine whether the following situations would require calculating a permutation or a combination:

a) Selecting five students to attend a State conference.

- permutation combination

b) Selecting a first play winner and a second place winner.

- permutation combination

c) Assigning students to their seats on the first day of school.

- permutation combination

How many 3-digit **permutations** can you make from the digits 1, 2, 3, and 4? List them.

How many 3-digit **combinations** can you make from the digits 1, 2, 3, and 4? List them.