

You should be sitting with your desks facing your three fellow group members. Each person will take a turn "manipulating" the buttons to answer one of the four questions in each category below & share his/her answer with the group.

Each group should have 4 different color button. Let Y = yellow, B = blue, G = green, R = red, and O = orange.

PERMUTATIONS: A permutation of a set of distinct objects is an arrangement of the objects in a specific order without repetition.

1. How many ways can you arrange 2 of the 4 buttons in a straight line?
Write out all the possible arrangements here:
For example: If I had a yellow, blue, green and red button, a few possibilities are

YB BY YG GY . . .

2. How many ways can you arrange 3 of the 4 buttons in a straight line? Write out all the possible arrangements here:

3. How many ways can you arrange all 4 of the buttons in a straight line? Write out all the possible arrangements here:

COMBINATIONS: A combination of n distinct objects taken r at a time is a subset of the n objects of size r . The order of the items in the subset does not matter. For example the following combinations are identical $\{y, b, g\}$ $\{b, y, g\}$

1. How many ways can you form a combination of 2 of the 4 buttons?
Write the possible combinations here:

2. How many ways can you form a combination of 3 of the 4 buttons?
Write the possible combinations here:

3. How many ways can you form a combination of 4 of the 4 buttons?
Write the possible combinations here:

COMPARE PERMUTATIONS AND COMBINATIONS:

Which are there more of permutations of 4 objects taken 4 at a time or combinations of 4 objects taken 4 at a time?

Which are there more of permutations of 4 objects taken 3 at a time or combinations of 4 objects taken 3 at a time?

Which are there more of permutations of 4 objects taken 2 at a time or combinations of 4 objects taken 2 at a time?

CONCLUSION: