



Penrose GED Prep

4.4 Permutations

In this worksheet, we will work on permutations. Permutations are a lot like combinations except for permutations, the order in which you place items matters. In permutations it is important to ask yourself if you can repeat items, or if they can only be used once. If you would like further explanation before attempting these problems, links to video descriptions can be found at the end of this worksheet. Starred problems have video solutions.

- 1 Michael is planning a date. He wants to go to a movie, go to dinner and go for a walk, but he's not sure which order to do it in. How many different ways of ordering his date are there?

- 2 * Erica bought a bike lock, but she forgot the code. The lock has four dials of numbers. Each dial consists of the digits 0 through 9. How many different four digit codes does Erica have to choose from to open her bike lock?

- 3 *Greg, Nami, Deanna, and Jacob want to take a group picture, but they keep arguing about who should stand next to whom, and who should be on the ends. How many different ways can the four of them order themselves in a line of four to take the picture?

- 4 Celia is baking sugar cookies. She uses flour, butter, eggs and sugar. She wants to see if the order that she adds the ingredients matters. How many different orders of ingredients can she try?
 - (a) 50
 - (b) 120
 - (c) 100
 - (d) 125

- 5 Zach is trying to open his locker, but he can't remember the combination. He knows the combination has three numbers, and that the dial on his locker has the numbers 1-50 on it. How many different combinations are there for Zach to try?
 - (a) 100,000
 - (b) 10,000
 - (c) 125,000
 - (d) 200,000

Additional Resources:

- Here you'll find info about permutations: https://www.khanacademy.org/math/precalculus/prob_comb/combinatorics_precalc/v/permutations