

Chapter 6.3
Tuesday, Week 5

Warmup/Permutations

How many ways are there to sit 4 friends at a round table?

Four horses run a race. If there are no ties and we give a gold medal to the winning horse, how many different ways might we award the medal?

How many ways if we give out bronze, silver, and gold medals?

What if we also give a participation medal to the 4th place horse?

Suppose we run out of medals. How many ways are there to give no medals to the horses?

Combinations

Oops! We accidentally ordered only gold medals for the horses, so every horse that wins a medal gets an identical gold medal. How many ways are there to give 0/1/2/3/4 medals to the horses?

Combinatorial Proofs

The universe U has n elements. If a set $A \subset U$ has r elements, how many elements does \overline{A} have?

You have 7 spies in your employment. How many ways are there to pick 2 of them to go on a secret mission?

How many ways are there to pick 5 of them to *not* go on a secret mission?