

SHOW YOUR WORK! Credit is given for work shown and the correct answer.

1) Your store makes 24 visually different chocolates. Exactly 4 of which have soft centers.

You randomly pick 4 to line up on a shelf for a window display. How many ways can you arrange the 4 chocolates?	
How many of these arrangements will contain 2 soft centers?	
How many of these arrangements will contain no soft centers?	
How many of these arrangements will contain all 4 soft centers?	
How many of these arrangements will contain at least 1 soft center?	

2) There are 20 female athletes and 5 male athletes in your sports club. None are identical twins. You randomly choose 6 athletes to record scores at the next meet.

How many different selections of 6 athletes can you make?	
How many will contain all girls?	
How many will contain 3 girls and 3 boys?	
How many will contain one girl?	
How many will contain at least one boy?	

3) The waiting room at the dentist has 4 pairs alphabet blocks, 2 Ps, 2 As, 2 Ts, and 2 Os. How many unique "words" can you make with these eight blocks?

4) You are randomly dealt a hand of 2 cards from a standard deck. Order doesn't matter.

How many different hands are possible? In cards a {2, K} is the same as a {K, 2}.	
Of those 2-card hands:	
How many will contain "21" (an Ace and one of K, Q, J, 10)?	
How many will contain two of the same kind (2 and 2, 3 and 3 etc)?	
How many will contain at least one ace?	

5) You are building a stack 6 lego bricks tall. You have 4 red, 7 blue, and 12 white bricks and grab a random handful of 6 bricks and stick them in a stack. Within each color the bricks are identical.

How many stacks will contain exactly 1 red brick?	
How many stacks will contain exactly 3 red bricks if you don't care about the other colors?	
How many stacks will contain exactly 3 red bricks if you do care about the other colors?	
How many stacks will contain exactly 2 of each color?	
How many stacks will be all the same color?	
How many stacks will contain at least one red brick if you do care about the other colors?	

5) A pizza store lets you choose zero, one, two, or three toppings chosen from the list:
Avocado, Bacon, Cranberry, and Diced peppers.

Show and state how many different pizzas are possible. When a pizza is baked all the toppings melt together, so an avocado, avocado, bacon is the same thing as avocado, bacon.