1. 9 colors, 5 sizes, striped or solid, long or short sleeve
2. (Red, gold) + the rest of the color

1. because the letter can be reused after each letter and there’s 26 different letters.
2. , 4 because K can be in any positions, and because the letter used before cannot be used again.
3. , 4 because K can be in any position, and because K can be reused.
4. D5 = divisible by 5 and D7 = divisible by 7, S = {1, … , 99999}, T = {1, … , 9999}

T – S = {1000, …, 99999}

|D5 D7| = | D5|+| D7| - |D5 D7|



Because we can consider Ann, Beth, and Chris as one because the order must be Ann-Beth-Chris order. So (7 + 1)!



3! Because Ann, Beth and Chris can be in any order among 3 of them. And 8! Because we can take Ann, Beth and Chris as a whole because they have to stand next to each other. So (7 + 1)!

1. for function A to B and for function B to A

because each element in set A can link to any of the element in set B and theirs is 9 elements in set A and 10 elements in set B.

1. functions

because if all the element from A that is linked must be excluded

1. functions

because onto functions must have all element in B linked to A.

1. ,

because only choose 5 out of 8 people as mom and dad is chosen already. And 7! to shuffle all 7 people in all position.

+

If mom or dad is in already, then we need to choose 6 out of 8 people because if mom is in, dad is not and vice versa.

1. K = 10, r = 5

At least 41 tickets to get 5 same movie ticket.

1. 5 to 50 tickets because assuming the you took the first 45 tickets and all of it is not Avengers ticket or you are lucky and first 5 tickets are Avengers ticket.
2. Problem A requires Pigeonhole Principle
3. F