IMPORTANT FIRST STEPS:

1. **Close your laptops and put them away (if necessary, you may refer to your course notes).**
2. **Form a group of 2-3 students.**
3. **Clearly put your names and IDs on 1 copy of this worksheet.**
4. **Be sure to turn this exercise in at the end of class.**

Counting

How many ways can you arrange 8 books, such that a particular book is in the second place?

Order?	matters
Rep?	no
n=?	8
r=?	7

If we have 35 green marbles and 12 purple marbles, how many ways can we select a collection of marbles so that we have 8 green ones and 3 purples ones?

Order?	
Rep?	
n=?	
r=?	

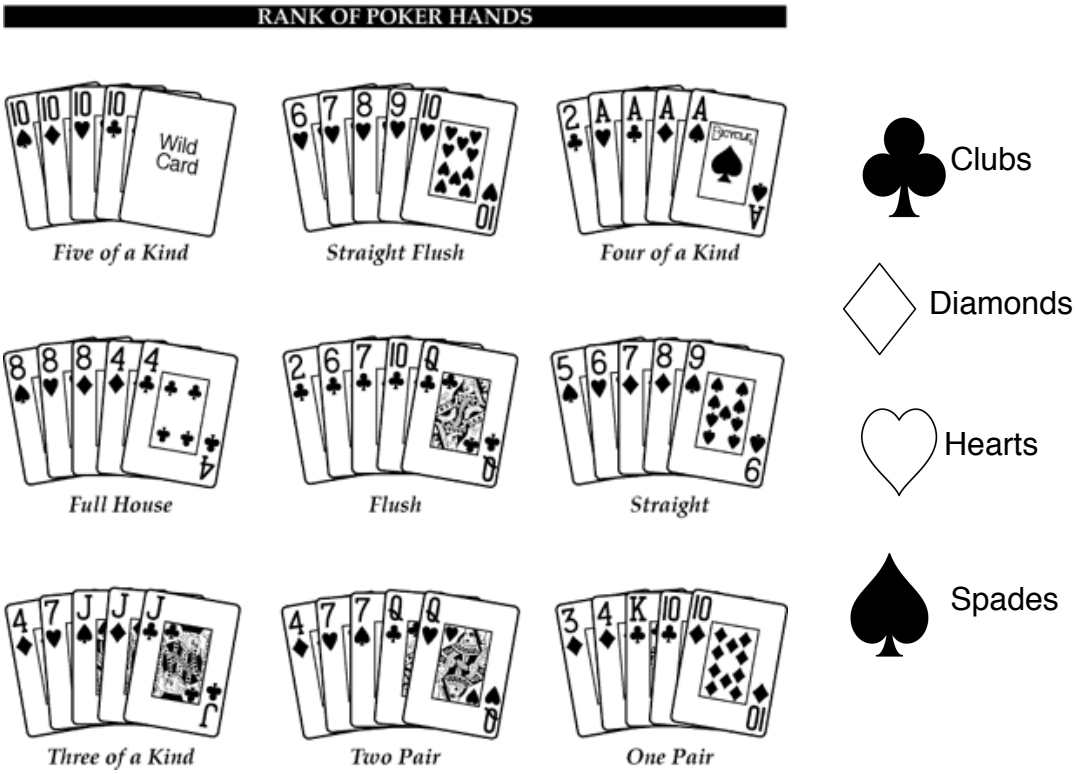
How many ways can you arrange m identical stones into k piles so that each pile has exactly one stone in it?

Order?	
Rep?	
n=?	
r=?	

How many strictly positive integer solutions are there for $x_1 + x_2 + x_3 + x_4 = 10$?

Order?	
Rep?	
n=?	
r=?	

For the next few questions, consider the following:



Rank (13 total): Ace, King, Queen, Jack, 10, 9, 8, 7, 6,5,4,3,2

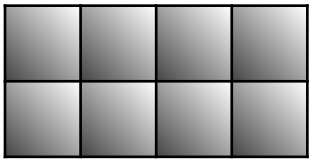
How many 3-of-a-kind (but not full house) hands are possible?

How many straights, but not straight flushes are possible?

How many different hands of 5 cards are possible?

How many different hands of 5 cards with no diamonds are possible?

Suppose you are to place square tiles in a 2x4 rectangular pattern on a bathroom wall. How many different patterns can you make if you have 15 distinct tiles to use?



How many ways are there to place 10 distinct marbles in 3 distinct baskets?

What if the marbles are not distinct, but the baskets are?

The next two are difficult and just an extra challenge to think about:
What if the baskets are not distinct, but the marbles are?

What if both the marbles and the baskets are not distinct?