1. You throw a coin 5 times. What is the probability to get a) TTTTT? b) HHHHH c) b) THHTT??
2.
   a. How many ways are there to draw 3 cards from a 52-card deck? (Order matters: drawing first king of spades, then queen of hearts is different from drawing them in opposite order).
   b. How many ways are there to draw 3 cards from a 52-card deck if after each drawing we record the card we got, then return the card to the deck and reshuffle the deck? (As before, order matters.)
   c. We draw 3 cards from a 52-card deck, and after each drawing we record the card we got, then return the card to the deck and reshuffle the deck. What is the probability that all 3 drawn cards are different?
3. Probability to hit a duck is 1/3. Probability to miss a duck is 2/3. The hunter fires 5 shots. What is probability that he
   a. Misses all?
   b. Hits at least once?
   c. 1 hit and 4 misses?
4. We roll two identical dice. What is the probability of getting 1 and 3?

Main Algebraic Identities

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$(a - b)^2 = a^2 - 2ab + b^2$$

$$(a + b)(a - b) = a^2 - b^2$$

And *factorizing*:

$$a(b + c) = ab + ac$$