

Pigeonhole Week 1

1. How many 2 digit numbers are there such that the first digit of the number is bigger than the second digit?

2. Your bedroom is completely dark, and you need a pair of matching socks. How many socks do you need to take out of the drawer if there are:
 - a. 2 white socks and 4 black socks?

 - b. 6 white socks and 8 black socks?

 - c. 100 white socks and 100 black socks?

How many socks do you need to take out of the drawer if you need a pair of black socks?
White socks?(find for a, b, & c from above)

4. Suppose you have 3 white marbles, 5 red marbles, and 4 blue marbles in a bag. How many marbles do you need to take out of the bag so you have at least 2 marbles of the same color. How many marbles do you have to take out if you want 3 of the same color?

5. How many 3 digit numbers are there such that the first digit of the number is bigger than the 2nd digit, and the 2nd digit is bigger than the 3rd digit?

6. You have 5 bags with gold coins that look the same. 4 bags have real coins, 1 bag has fake coins. Real coins weigh 10 grams each, but fake coins weigh 11 grams each. The pirates have a scale that can tell you the exact weight of the coins, but it can only be used once.