Main_8

Part a.

black: 1, 6, **11, 16**

grey: 2, 7, 12

red: 3, 8, 13

green: 4, 9, 14

blue: 5, 10, 15

1. To get 6 pairs of socks we must pull 12 socks .

2. A worse case scenario would mean that I grab 15 socks and I get only three of each of the 5 colours.

3. Since I am very unlucky and the universe is against me, I would pick up sock after sock but never get the 16th sock until I have 3 socks of all 5 clours.

4. When I grab the 16th sock I will definitely get the 6th pair no matter which colour I get.

5. The 16th sock I grab will be black(or any color it does not matter) there is no other possible sock that I can grab that will not result in 6 pairs of socks.

Answer: 16 socks

Part b.

black: 1, 6, 11, 16, 21, 26, 31, 36, 41, 45, 49, **51**

grey: 2, 7, 12, 17, 22, 27, 32, 37, 42, 46, -

red: 3, 8, 13, 18, 23, 28, 33, 38 - ,

green: 4, 9, 14, 19, 24, 29, 34 ,39, 43, 47, 50,

blue: 5, 10, 15, 20, 25, 30, 35, 40, 44, 48, -

black; 12

grey; 10

red; 8

green; 14

blue; 10

1. To get 6 pairs of the same color we must pull 12 of the same color socks.

2. The 51st sock I grab will be black(or any color it does not matter) there is no other possible sock that I can grab that will not result in 6 pairs of socks of the same color.

3. Since I am unlucky and the universe is against me I would pick up sock after sock, but never getting the 51st sock until I have 3 socks of all clours.

4. A worse case scenario would mean that I grab 50 socks and I get two of each of the 5 colours.

5. When I grab the 51st sock I will definitely get the 6th pair of a single color sock no matter which colour I get.

Answer: 53 socks