

1. A box has 7 red apples, 5 green apples, and 8 pears. If seven items are selected from the box at the same time,
- (a) Find the probability of picking exactly 5 apples.

$$\frac{C(12, 5) * C(8, 2)}{C(20, 7)}$$

- (b) Find the probability of picking exactly 4 red apples and at least 2 green apples.

$$\frac{C(7, 4)C(5, 2)C(8, 1) + C(7, 4)C(5, 3)}{C(20, 7)}$$

2. A group of friends consists of 10 boys and 7 girls. Five people are randomly selected and placed in a row for a picture. What is the probability that in the picture the boys and girls alternate?

$$\frac{10 * 7 * 9 * 6 * 8 + 7 * 10 * 6 * 9 * 5}{17 * 16 * 15 * 14 * 13}$$