

C12 - 11.1 - Fundamental Counting Principle Notes

Step 1: a choices

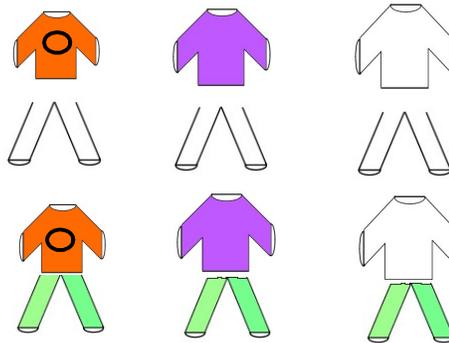
Step 2: b choices

Step 3: c choices

Total number of choices: $a \times b \times c$

Example: A person has 3 shirts and 2 pairs of pants. How many different outfits can they wear?

$$3 \times 2 = 6$$



Example: A woman has 4 pairs of shoes, 3 dresses and 5 hats. How many different outfits can she wear?

$$4 \times 3 \times 5 = 60$$

Example: A fashion designer has 4 different pairs of shoes, 3 different pairs of pants, 2 shirts, 5 necklaces, and 6 hats. How many different outfits can they prepare?

$$4 \times 3 \times 2 \times 5 \times 6 = 720$$

Example: How many 5 digit numbers are there?

10 digits to choose from: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

$$\begin{array}{cccccc} 9 & \times & 10 & \times & 10 & \times & 10 & \times & 10 & = & 90,000 \\ \swarrow & & \underbrace{0-9} & & \underbrace{0-9} & & \underbrace{0-9} & & \underbrace{0-9} & & \\ & & 1-9 & & 0-9 & & 0-9 & & 0-9 & & \end{array}$$

A number can't start with a 0

i.e. 02345 = 2345, which is not a 5 digit number.