

07/19/2019

5 shirts
4 skirts

$$\frac{5!}{3!4!}$$

$$\begin{array}{r} 3 \quad 2 \quad 3 \\ 5 \quad 4 \quad 7 \quad 6 \\ \hline 4 \quad 3 \quad 2 \end{array}$$

$$0! = 1$$

$$1! = 1$$

$$n! = n(n-1)(n-2) \dots 1$$

Simplify w/o calculator

$$\frac{25!}{23!} = \frac{25 \cdot 24 \cdot 23 \cdot \dots \cdot 1}{23 \cdot 22 \cdot \dots \cdot 1} = 25 \cdot 24 = 3600$$

? T/F

$$3! + 2! = 5!$$

* False

$$3 \times 2 + 2 = 8 \neq 5!$$

4 desks

4 people

$${}^4P_4 = \frac{4!}{(4-4)!} = 24$$

$${}^7C_3 = \frac{7!}{3!(7-3)!} = \frac{7!}{3!4!} = \frac{7 \cdot 6 \cdot 5}{3 \cdot 2} = 35$$

Ex 2.

area code

x x x

8 10 10 10 10 10 10

26 26 26

10 10 10

Letters

3 digits

Ex 3

a)

9 10 10 10 = 9000

b)

9 9 8 7 = 4536

c)

9 10 10 2 = 1800

Ex 4

8 7 6 = 336

$${}^8P_3 = \frac{8!}{(8-3)!} = \frac{8!}{5!} = 336$$

Ex 5

${}^{90}P_4 = 9527280$

~~Roll dice~~

Sample space $S = \{1, 2, 3, 4, 5, 6\}$
Set of all possible outcome
coin $\{H, T\}$.

Probability of getting 1

$$P(1) = \frac{1}{6}$$

$$P(H) = \frac{1}{2} \quad 50\%$$

1. $0 \leq P(A) \leq 1$

2. $P(a_1) + P(a_2) + \dots = 1$

3. $P(A) + P(\bar{A}) = 1$.

1, 2, 3, 4, 5, 6

$$P(1) + P(2) + P(3) + P(4) + P(5) + P(6)$$

$$\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$$

$$= \frac{6}{6} = 1$$

$$P(A) = 0.35$$

$$P(B) = 0.40$$

$$P(C) = 0.35$$

$$P(\text{Not getting a Head}) = 1 - 0.5 = 0.5$$

$\{0, 1, \dots, 36\}$

$$P(2) = \frac{1}{38} \approx 0.0263 \approx 2.63\%$$

Roll a dice + flip a coin

$\boxed{6}$ $\boxed{2}$
dice coin

$\{(1, H), (1, T), (2, H), (2, T), \dots\}$

1 coin 2

2 coin 2 2

3 coin 2 2 2

$$P(\text{sum of two dice} = 7) = \frac{6}{36} = \frac{1}{6}$$

2 dice

2, 5 6, 1 3, 4
5, 2 1, 6 4, 3