

68) Number of people in the Jury: 27

Number of Men: 14

Number of Women: 13

Number of ways to select 12 men out of 14 men

$$= {}^{14}C_{12} = \frac{14!}{(12!(14-12)!)} \\ = 91$$

Number of ways to select 12 people out of 27.

$$= {}^{27}C_{12} = \frac{27!}{(12!(27-12)!)} \\ = 17383860$$

$\therefore$ Probability that the selected Jury is all male

$$= \frac{{}^{14}C_{12}}{{}^{27}C_{12}} = \frac{91}{17383860} = \frac{7}{1337220} //$$

64) There are 10 digits from 0 to 9. We have to pick 3 numbers & the order is not important.

$$\text{Possibilities} = {}^{10}C_3 = 120 //$$

54) The number of eight character long passwords possible
Since there are 26 possibilities for each character,

$$\begin{aligned}\text{Possibilities} &= 26 \times 26 \times 26 \times 26 \times 26 \times 26 \times 26 \times 26 \\ &= 26^8\end{aligned}$$

18) Probability of getting a head $= \frac{1}{2}$

$\therefore$ Probability of getting heads on both flips

$$= \frac{1}{2} \times \frac{1}{2}$$

$$= \frac{1}{4} //$$

32)

Number of blue marbles = 10

Number of even numbered blue marbles = 5

Number of even numbered marbles = 2 Red + 5 Blue = 7

Total number of marbles = 4 + 10 = 14

Probability the marble is blue or even numbered

$$= P(\text{blue}) + P(\text{even numbered}) - P(\text{Both})$$

$$= \frac{10}{14} + \frac{7}{14} - \frac{5}{14}$$

$$= \frac{12}{14} = \frac{6}{7} //$$

2) There are 26 alphabets of which 21 are consonants & 5 are vowels.

a) The probability of getting a consonant after drawing one slip at random

$$\text{Probability} = \frac{21}{26} //$$

b) The probability of getting a vowel

$$= \frac{5}{26} //$$

6) Since a six-sided die does not have the number 7,

$$\begin{aligned} \text{Probability of getting a 7} \\ = 0 // \end{aligned}$$

8) Total number of people = 81

Number of people with no credit cards = 27

$$\begin{aligned} \text{Probability that chosen person has no credit card} &= \frac{27}{81} \\ &= \frac{1}{3} // \end{aligned}$$

26) Number of spades in a 52 playing cards = 13

Number of ways in which 2 spades can be selected = ${}^{13}C_2$

Number of ways in which 2 cards can be selected = $52C_2$

$$\text{Probability of drawing 2 spades} = \frac{{}^{13}C_2}{{}^{52}C_2} = \frac{1}{17}$$

28)

a) Ways in which one male student can be selected = ${}^{11}C_1$

Ways in which two female students can be selected = ${}^{14}C_2$

Probability of selecting one male student & two female students

$$= \frac{{}^{11}C_1 \times {}^{14}C_2}{{}^{25}C_3} = \frac{1001}{2300} //$$

b) Probability of selecting a female student and the two males

$$= \frac{{}^{14}C_1 \times {}^{11}C_2}{{}^{25}C_3} = \frac{770}{2300} //$$

c) Probability selecting two females & then one male

$$= \frac{{}^{14}C_2 \times {}^{11}C_1}{{}^{25}C_3} = \frac{1001}{2300}$$

d) Probability of selecting three males = $\frac{{}^{11}C_3}{{}^{25}C_3} = \frac{165}{2300} //$

c) Probability of selecting three females

$$= \frac{{}^{14}C_3}{{}^{25}C_3} = \frac{364}{2300} //$$