

5) i) 6 spoons, 5 forks, 3 knives

Number of ways of selecting one of each

$$= {}^6C_1 \times {}^5C_1 \times {}^3C_1 = 6 \times 5 \times 3 = 90$$

Number of ways of selecting any 3 items = ${}^{14}C_3 = 364$

$$\text{Prob (all items are different kinds)} = \frac{90}{364} \text{ or } 0.2473$$

ii Number of ways of selecting 3 spoons = ${}^6C_3 = 20$

$$3 \text{ forks} = {}^5C_3 = 10$$

$$3 \text{ knives} = {}^3C_3 = 1$$

$20 + 10 + 1 = 31$ ways of selecting 3 of a kind

$$\text{Prob (3 of a kind)} = \frac{31}{364} \text{ or } 0.0852$$
