

AI1103-Assignment 1

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QUESTION

A box contains 5 red marbles, 8 white marbles, and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be

- 1) red?
- 2) white?
- 3) not green?

SOLUTION

total number of marbles = $5 + 8 + 4 = 17$ marbles

- 1) Probability that the marble taken out will be red = $P(\text{red})$

$$P(\text{red}) = \frac{\text{number of red marbles}}{\text{total number of marbles}} \quad (0.0.1)$$

$$P(\text{red}) = \frac{5}{17} = 0.294117647 \quad (0.0.2)$$

- 2) Probability that the marble taken out will be white = $P(\text{white})$

$$P(\text{white}) = \frac{\text{number of white marbles}}{\text{total number of marbles}} \quad (0.0.3)$$

$$P(\text{white}) = \frac{8}{17} = 0.4705882353 \quad (0.0.4)$$

- 3) Probability that the marble taken out will not be green = $P(\text{not green})$

$P(\text{not green}) + P(\text{green}) = 1$ (since complementary events are mutually exclusive)

$$\Rightarrow P(\text{not green}) = 1 - P(\text{green})$$

$$P(\text{green}) = \frac{\text{number of green marbles}}{\text{total number of marbles}} \quad (0.0.5)$$

$$P(\text{green}) = \frac{4}{17} = 0.235294117 \quad (0.0.6)$$

$$\Rightarrow P(\text{not green}) = 1 - 0.235294117 = 0.764705883 \quad (0.0.7)$$