

Assignment 1

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Download python code from

<https://github.com/v-samyuktha/AI1103/blob/main/Assignment-1.py>

and latex-tikz code from

<https://github.com/v-samyuktha/AI1103/blob/main/Assignment-1.tex>

1 QUESTION

There are 40 students in class X of a school of whom 25 are girls and 15 are boys. The class teacher has to select one student as the class representative. She writes the name of each student on a separate card, the cards being identical. Then she puts the cards in a bag and stirs them thoroughly. She then draws one card from the bag. What is the probability that the name written on the card is the name of

- (i) a girl?
- (ii) a boy?

2 SOLUTION

Let random variable $X \in \{0, 1\}$ denote the outcomes of the experiment of drawing a card from the bag, where 0 corresponds to a girl and 1 to a boy respectively.

Then $n(X = 0) = 25$ and $n(X = 1) = 15$

$$p(X = 1) = \frac{n(X = 1)}{n(X = 0) + n(X = 1)} \quad (2.0.1)$$

$$p(X = 1) = \frac{15}{25 + 15} \quad (2.0.2)$$

$$\begin{aligned} p(X = 1) &= 0.375 \\ p(X = 0) &= 1 - p(X = 1) = 0.625 \end{aligned} \quad (2.0.3)$$

Hence, the probability of picking a boy is 0.375 and a girl is 0.625 respectively.