

# Assignment 1

## AI1110: Probability and Random Variables

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**10.15.1.4:** Which of the following cannot be the probability of an event ?

- 1)  $\frac{2}{3}$    2)  $-1.5$    3)  $15\%$    4)  $0.7$

**Answer:**

Probability of an event  $E$  , written as  $P(E)$ :

$$P(E) = \frac{\text{Number of outcomes favourable to } E}{\text{Total Number of possible outcomes in sample space}}$$

From the definition of probability  $P(E)$  , number of favourable outcomes is always less than or equal to the number of all possible outcomes.

$$0 \leq P(E) \leq 1 \quad (1)$$

- 1)  $\frac{2}{3}$

Since  $0 \leq \frac{2}{3} \leq 1$  , From (1)

It can be probability of an event.

- 2)  $-1.5$

Since  $-1.5 < 0$  , From (1)

It cannot be a probability of any event.

- 3)  $15\%$

$$15\% = \frac{15}{100}$$

Since  $0 \leq \frac{15}{100} \leq 1$  , From (1)

It can be probability of an event.

- 4)  $0.7$

Since  $0 \leq 0.7 \leq 1$  , From (1)

It can be a probability of an event.