Victoria University of Bangladesh

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A random variable is a rule that assigns a numerical value to each out come in a ~~sm~~ sample space. Random variables may be either discrete or continuous. A random variable is said to be discrete if it assumes only specified values in an interval. Otherwise, it is continuous. We generally denote the random variables with capital letters such as X and Y. When X takes values 1, 2, 3 ... it is said to have a discrete random variable. As a function, a random variable is needed to be measured which allows probabilities to be assigned to a set of potential values. It is obvious that the results depend on some physical variables which are not predictable. Say, when we toss a fair coin, the final result of happening

to be heads or tails will depend on the possible physical conditions. We cannot predict which outcome will be noted. Though there are other probabilities like coin could break or be lost such consideration is avoided.

<u>Ans: to: the: Q. no. ②</u>

Binomial experiments are distinct types of experiments because they have a fixed number of outcomes possible in each trial conducted in the experiment. Specifically, binomial experiments can only ever result in one of two outcomes. To fully answer the question of what is a binomial experiment it is necessary to understand statistical terms. When a binomial experiment is conducted one outcome will be labeled

a success and other will be referred
to as a failure. These terms will be
used to help determine the statistical
significance of the results of multiple
trials in the analysis portion of the
experiment. Sometimes, success relates
to a colloquially positive outcome, such
as someone answering yes to a question
asked. However in this context success
and failure are terms used in statistics
that are based on the phrasing
of the experimental question. Success
does not necessarily equate to the
result being good. similarly, failure
does not necessarily equate to the
result being bad. Rather success
means that the outcome of the
trial supported the statistical question
or hypothesis.

An example of this is if an experimenter hypothesized that a coin flipped would land on heads more than 50% of the time in a certain environment. In this case success would correspond to the coin landing on heads and failure would relate to coin landing on tails. See in this example how these terms do not carry the everyday meanings of good and bad but rather relate to the statistical question at hand.