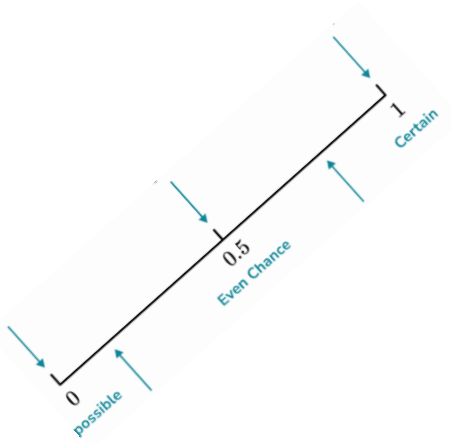
THEME: DATA AND PROBABILITY

TOPIC: PROBABILITY



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LEARNING OUTCOMES

- The learner should be able to identify and understand mutually exclusive and independent events

Activity

- Think about any **crops you grow or have at home**.
- Write them down and call this the **Set of Crops (C)**.

- Think about any **animals you keep at home**.
- Write them down and call this the **Set of Animals (A)**.

- Represent the two sets on a venn diagam
- What do you notice about the two sets?
- Do the two circles overlap? Why or why not?

- Identify two or more situations in life that you are sure cannot occur or happen at the same time.

Activity

There are maroon ,green and blue T shirts only in a wardrobe. The probability of selecting a Maroon T shirt from the wardrobe is 20% and the probability of selecting a green T shirt from the wardrobe is 50%. What is the probability of selecting a blue T shirt?


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Mutually exclusive events

- **Mutually exclusive events** are two or more events that cannot occur at the same time. For example, getting heads and tails on a fair coin in a coin toss or rolling a 2 and a 3 on a six-sided die.
- Mutually exclusive events are sometimes called disjoint events.

- **Tossing a coin**: Getting heads and tails are mutually exclusive events.
- **Rolling a die**: Getting an even and an odd number are mutually exclusive events.
- **Drawing a card from a deck**: Drawing a red card and a club are mutually exclusive events.
- **Being awake or asleep**: You cannot be both awake and asleep at the same time.
- **Profit**: Ending the year with both "very good" and "very bad" profits is not possible.

Activity

In a football match to be played between Uganda Cranes and Kenya during CHAN, the probability that Uganda Cranes will win is 0.7, and the probability that Kenya will win is 0.24. What is the probability that either Uganda Cranes or Kenya will win?

Activity

In a day’s weather forecast, the probability of a sunny day is 0.6, and the probability of a rainy day is 0.3. What is the probability that the day will be either sunny or rainy, assuming it cannot be both?

Activity

A fair six-sided die is rolled once. What is the probability that the outcome will be:

(i) An odd number?

(ii) An even number?

(iii) Either an odd or an even number?

INDEPENDENT EVENTS

- **Independent(not affecting) events** are events which are not affected by the occurrence of other events. For example, if we toss a coin twice, the outcome of the first toss and second toss have no effect on each other – they are independent.
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Look at the events below. Which set of events are not independent?

1. Rolling a die and getting a 6 and tossing a coin and getting a head.
2. Tossing two coins and getting two heads.
3. Choosing a blue ball from a bag containing blue and yellow balls, not replacing it, and then choosing another blue ball from the same bag.
4. A student in class having brown hair and size 3 feet.

Activity

The probability that Alwi forgets his school tie is 0.7. The probability that Shamsi forgets his School tie is 0.1. Calculate the probability that both Alwi and Shamsi forget their school tie on the same day.

Activity