

Question:

A spinner has the numbers 1 to 12 marked equally on the face. If the spinner is spun 2 times, determine the probability of it landing on a 7 and then an even number. State whether the events are dependent or independent.

Solution:

Let event A is that spinner is landing on 7, and event B – that spinner is landing on even number.

Events A and B are independent because probability of event B doesn't depend on probability of event A.

As events A and B are independent:

$$P(AB) = P(A) \cdot P(B)$$

Find probability of event A:

$$P(A) = \frac{N(A)}{n}$$

Where

$N(A)$ – the number of ways event a can occur (only 7 can occur)

n – the total number of possible outcomes

$$\text{So } P(A) = \frac{1}{12}$$

Find probability of event B:

$$P(B) = \frac{N(B)}{n}$$

Where

$N(B)$ – the number of ways event a can occur (2, 4, 6, 8, 10, 12 can occur)

n – the total number of possible outcomes

$$\text{So } P(B) = \frac{6}{12} = \frac{1}{2}$$

$$P(AB) = \frac{1}{12} \cdot \frac{1}{2} = \frac{1}{24}$$

$$\text{Answer: } P(AB) = \frac{1}{24}$$

