

EE23010 NCERT Exemplar

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Question 12.13.3.2

A fair die is thrown two times. Let A and B be the events, 'same number each time', and a 'a total score is 10 or more', respectively. Determine whether or not A and B are independent.

Solution:

Event	Description
A	Getting same number each time.
B	Getting a total score of atleast 10.

For two events A and B to be independent,

$$\Pr(A) \Pr(B) = \Pr(AB) \quad (1)$$

$$\Pr(A) = \frac{6}{36} \quad (2)$$

$$\Pr(B) = \frac{6}{36} \quad (3)$$

$$\Pr(AB) = \frac{2}{36} \quad (4)$$

$$\Pr(A) \Pr(B) = \frac{6}{36} \times \frac{6}{36} \quad (5)$$

$$= \frac{1}{36} \quad (6)$$

Thus,

$$\Pr(A) \Pr(B) \neq \Pr(AB) \quad (7)$$

$$\frac{1}{36} \neq \frac{2}{36} \quad (8)$$

Hence A and B are not independent events.