

Answer on Question #40055, Math, Statistics and Probability

Let two dice be thrown. What is the probability that the sum on the dice is greater than or equal to 9?

Solution

The sample space S of two dice is shown below.

$$\begin{aligned} S = \{ & (1,1), (1,2), (1,3), (1,4), (1,5), (1,6) \\ & (2,1), (2,2), (2,3), (2,4), (2,5), (2,6) \\ & (3,1), (3,2), (3,3), (3,4), (3,5), (3,6) \\ & (4,1), (4,2), (4,3), (4,4), (4,5), (4,6) \\ & (5,1), (5,2), (5,3), (5,4), (5,5), (5,6) \\ & (6,1), (6,2), (6,3), (6,4), (6,5), (6,6) \} \end{aligned}$$

Let E be the event "sum greater than or equal to 9". Ten possible outcomes give a sum greater than or equal to 9:

$$E = \{(3,6), (4,5), (4,6), (5,4), (5,5), (5,6), (6,3), (6,4), (6,5), (6,6)\}, \text{ hence}$$

$$P(E) = \frac{n(E)}{n(S)} = \frac{10}{36} = \frac{5}{18}.$$

Answer: $\frac{5}{18}$.