

Conditions

Find the probability that the sum is as stated when a pair of dice is rolled. (Enter your answers as fractions.)

(a) even and doubles

(b) even or doubles

Solution

a.

The probability of a certain event is a ratio between all favorable outcomes (when the event is has occurred) to all possible outcomes. There are only 3 favorable outcomes:

2-2, 4-4, 6-6

All possible outcomes are $6 \times 6 = 36$

Hence, the probability is:

$$\frac{3}{36} = \frac{1}{12}$$

b.

The amount of favorable outcomes in this case is bigger:

0-0,1-1,2-2,3-3,4-4,5-5,6-6

0-2,0-4,0-6

1-3,1-5

2-0,2-4,2-6

3-1,3-5

4-0,4-2,4-6

5-1,5-3

6-0,6-2,6-4

Totally 24.

The probability is:

$$\frac{24}{36} = \frac{2}{3}$$