

EX: Three dice of different colors are rolled at the same time. Find the number of possible outcomes that are members of event A :

$A \equiv$ The sum of the numbers on the dice equals seven.

SOL'N: We make a list of possible outcomes. One way of displaying the results is to use one column for each die and write the number on each die in the columns. This approach yields a list of numbers. We can list all possible outcomes for the three dice and add a fourth column that contains a 0 if the event is not in A and contains a 1 if the event is in A .

1	1	1	0
1	1	2	0
1	1	3	0
1	1	4	0
1	1	5	1
1	1	6	0
1	2	1	0
			⋮

Since each of the three dice can have one of six possible values, the entire list has $6^3 = 216$ entries. Writing the entire list is tedious. Nevertheless, the visualization of the list or use of a partial list is often helpful. Also, just listing the outcomes that are in the event may be feasible. Below is the list of all outcomes in event A .

1	1	5	2	1	4	3	2	2
1	2	4	2	2	3	3	3	1
1	3	3	2	3	2	4	1	2
1	4	2	2	4	1	4	2	1
1	5	1	3	1	3	5	1	1

By simple counting, we find that there are 15 outcomes in event A , out of the total of 216 possible outcomes.

If all outcomes are equally likely, then $P(A) = 15/216 \approx 0.06944$.