

## Binomial Distribution Probability Using Excel

This tutorial will demonstrate the solution of an example using the binomial distribution probability function within Excel. In this example, if 10% of all disc drives produced on an assembly line are defective, then what is the probability that there will be exactly one defect in a random sample of 5 of these? We will also calculate the probability that there will be no defects in a random sample of 5.

We will begin by entering our values in Excel as shown below:

$n$  = number of trials

$p$  = probability of success

$r$  = number of successes

	A	B	C	D	E	F	G	H	I	J
1										
2	Binomial distribution									
3										
4										
5										
6	Number of trials	n =	5							
7	Probability of success	p =	0.1							
8	Number of success = r									
9			Successes	Probability						
10		a) r =	1							
11		b) r =	0							
12										
13										
14										

We are going to use the binomial distribution formula for Excel, so, in cell **D10**, type **=BIOMDIST(C10,\$C\$6,\$C\$7,FALSE)** and hit the **Enter** key or click the checkmark icon.

The values in the parentheses denote: the number which you desire (which would be to get one defect) (C10); then the number of trials is going to be the number that is going to be pulled out, so that will be 5 (\$C\$6); the next argument will be the probability of success which is .1 (\$C\$7). Where it says cumulative (if we were doing problems where we want to know the probability that one or less would be discovered), we would want to get the cumulative probability of either one or getting zero, but in this case we do not want this; we just want the probability of getting one, so we will type in FALSE, and the answer will be 0.32805. This is reflected in the spreadsheet on the next page.

	A	B	C	D	E	F	G	H	I	J
1			<b>THESE SOLUTIONS USE THE EXCEL FUNCTION BINOMDIST</b>							
2	Binomial distribution		<b>binomdist(r, n, p, true) gives the probability of exactly r successes</b>							
3			<b>binomdist(r, n, p, false) gives the cumulative probability of r successes or less</b>							
4										
5										
6	Number of trials	n =	5							
7	Probability of success	p =	0.1							
8	Number of success = r									
9			Successes	Probability						
10		a) r =	1	0.32805						
11		b) r =	0							
12										
13										
14										

So now we will do the same thing for the case where we would get zero defects. We will use the BIOMDIST again, and it is going to be zero out of 5 trials, probability of .1, and FALSE for cumulative. So in cell **D11**, type **=BIOMDIST(C11,\$C\$6,\$C\$7,FALSE)** and hit the **Enter** key or click the checkmark icon. We get 0.59049 for that answer, as shown below.

	A	B	C	D	E	F	G	H	I	J
1			<b>THESE SOLUTIONS USE THE EXCEL FUNCTION BINOMDIST</b>							
2	Binomial distribution		<b>binomdist(r, n, p, true) gives the probability of exactly r successes</b>							
3			<b>binomdist(r, n, p, false) gives the cumulative probability of r successes or less</b>							
4										
5										
6	Number of trials	n =	5							
7	Probability of success	p =	0.1							
8	Number of success = r									
9			Successes	Probability						
10		a) r =	1	0.32805						
11		b) r =	0	0.59049						
12										
13										
14										

[Click here](#) to download the completed spreadsheet so you can compare it to yours.

This concludes the tutorial on binomial probability distribution using Excel.