**PRACTICAL: 13**

*Application of Sampling Distribution (Central Limit Theorem).*

**FORMULA USED:**

1. **BINOMIAL DISTRIBUTION PMF :**
2. **POISSON DISTRIBUTION PMF :**

**Question:** Suppose an experiment is performed and getting a successful outcome has a probability of ½ . Let the number of times the same experiment is performed is 20. 50 and 100 respectively, calculate the binomial distribution for the same and plot it on the graph. Perform the same experiment assuming the probability of ¼ and ¾.

**Answer:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X=R | P(X=0.5) | P(X=0.75) |  | P(X=0.25) |
| 0 | 4.76837E-07 | 2.27374E-13 |  | 0.002378409 |
| 1 | 1.00136E-05 | 1.43245E-11 |  | 0.016648863 |
| 2 | 0.000100136 | 4.29736E-10 |  | 0.055496209 |
| 3 | 0.000634193 | 8.16499E-09 |  | 0.117158663 |
| 4 | 0.00285387 | 1.10227E-07 |  | 0.175737995 |
| 5 | 0.009703159 | 1.12432E-06 |  | 0.199169728 |
| 6 | 0.025875092 | 8.99455E-06 |  | 0.177039758 |
| 7 | 0.055446625 | 5.78221E-05 |  | 0.12645697 |
| 8 | 0.097031593 | 0.000303566 |  | 0.073766566 |
| 9 | 0.140156746 | 0.001315453 |  | 0.035517235 |
| 10 | 0.168188095 | 0.004735631 |  | 0.014206894 |
| 11 | 0.168188095 | 0.014206894 |  | 0.004735631 |
| 12 | 0.140156746 | 0.035517235 |  | 0.001315453 |
| 13 | 0.097031593 | 0.073766566 |  | 0.000303566 |
| 14 | 0.055446625 | 0.12645697 |  | 5.78221E-05 |
| 15 | 0.025875092 | 0.177039758 |  | 8.99455E-06 |
| 16 | 0.009703159 | 0.199169728 |  | 1.12432E-06 |
| 17 | 0.00285387 | 0.175737995 |  | 1.10227E-07 |
| 18 | 0.000634193 | 0.117158663 |  | 8.16499E-09 |
| 19 | 0.000100136 | 0.055496209 |  | 4.29736E-10 |
| 20 | 1.00136E-05 | 0.016648863 |  | 1.43245E-11 |

**GRAPH:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| WHEN N:50 | | P=Q=1/2 | P=3/4 | P=1/4 |
| X=R |  | P(X=R) | P(X=R) | P(X=R) |
| 0 |  | 4.44089E-16 | 1.97215E-31 | 4.24741E-07 |
| 1 |  | 2.26485E-14 | 3.01739E-29 | 7.2206E-06 |
| 2 |  | 5.66214E-13 | 2.26304E-27 | 6.01717E-05 |
| 3 |  | 9.24816E-12 | 1.10889E-25 | 0.000327601 |
| 4 |  | 1.10978E-10 | 3.99201E-24 | 0.001310405 |
| 5 |  | 1.04319E-09 | 1.12575E-22 | 0.004105937 |
| 6 |  | 7.99781E-09 | 2.58922E-21 | 0.01049295 |
| 7 |  | 5.14145E-08 | 4.99349E-20 | 0.022484892 |
| 8 |  | 2.8278E-07 | 8.23926E-19 | 0.041222303 |
| 9 |  | 1.35106E-06 | 1.18096E-17 | 0.065650334 |
| 10 |  | 5.67444E-06 | 1.48801E-16 | 0.091910468 |
| 11 |  | 2.11502E-05 | 1.66387E-15 | 0.114191793 |
| 12 |  | 7.05007E-05 | 1.66387E-14 | 0.12687977 |
| 13 |  | 0.000211502 | 1.49748E-13 | 0.12687977 |
| 14 |  | 0.000574077 | 1.21938E-12 | 0.114795983 |
| 15 |  | 0.001416056 | 9.02339E-12 | 0.094387808 |
| 16 |  | 0.003186127 | 6.09079E-11 | 0.070790856 |
| 17 |  | 0.006559672 | 3.76196E-10 | 0.04858196 |
| 18 |  | 0.012390492 | 2.13178E-09 | 0.030588641 |
| 19 |  | 0.021520329 | 1.11077E-08 | 0.017709213 |
| 20 |  | 0.034432526 | 5.33168E-08 | 0.009444914 |
| 21 |  | 0.050828967 | 2.36117E-07 | 0.004647497 |
| 22 |  | 0.069312228 | 9.65935E-07 | 0.002112499 |
| 23 |  | 0.087393678 | 3.65375E-06 | 0.000887862 |
| 24 |  | 0.101959291 | 1.27881E-05 | 0.00034528 |
| 25 |  | 0.110116035 | 4.14336E-05 | 0.000124301 |
| 26 |  | 0.110116035 | 0.000124301 | 4.14336E-05 |
| 27 |  | 0.101959291 | 0.00034528 | 1.27881E-05 |
| 28 |  | 0.087393678 | 0.000887862 | 3.65375E-06 |
| 29 |  | 0.069312228 | 0.002112499 | 9.65935E-07 |
| 30 |  | 0.050828967 | 0.004647497 | 2.36117E-07 |
| 31 |  | 0.034432526 | 0.009444914 | 5.33168E-08 |
| 32 |  | 0.021520329 | 0.017709213 | 1.11077E-08 |
| 33 |  | 0.012390492 | 0.030588641 | 2.13178E-09 |
| 34 |  | 0.006559672 | 0.04858196 | 3.76196E-10 |
| 35 |  | 0.003186127 | 0.070790856 | 6.09079E-11 |
| 36 |  | 0.001416056 | 0.094387808 | 9.02339E-12 |
| 37 |  | 0.000574077 | 0.114795983 | 1.21938E-12 |
| 38 |  | 0.000211502 | 0.12687977 | 1.49748E-13 |
| 39 |  | 7.05007E-05 | 0.12687977 | 1.66387E-14 |
| 40 |  | 2.11502E-05 | 0.114191793 | 1.66387E-15 |
| 41 |  | 5.67444E-06 | 0.091910468 | 1.48801E-16 |
| 42 |  | 1.35106E-06 | 0.065650334 | 1.18096E-17 |
| 43 |  | 2.8278E-07 | 0.041222303 | 8.23926E-19 |
| 44 |  | 5.14145E-08 | 0.022484892 | 4.99349E-20 |
| 45 |  | 7.99781E-09 | 0.01049295 | 2.58922E-21 |
| 46 |  | 1.04319E-09 | 0.004105937 | 1.12575E-22 |
| 47 |  | 1.10978E-10 | 0.001310405 | 3.99201E-24 |
| 48 |  | 9.24816E-12 | 0.000327601 | 1.10889E-25 |
| 49 |  | 5.66214E-13 | 6.01717E-05 | 2.26304E-27 |
| 50 |  | 2.26485E-14 | 7.2206E-06 | 3.01739E-29 |

**GRAPH:**

|  |  |  |  |
| --- | --- | --- | --- |
| N:100  X=R | P(0.5) | P(0.75) | P(0.25) |
| 0 | 3.9443E-31 | 1.55575E-61 | 2.4054E-13 |
| 1 | 3.98375E-29 | 4.71393E-59 | 8.09819E-12 |
| 2 | 1.99187E-27 | 7.0709E-57 | 1.3497E-10 |
| 3 | 6.57318E-26 | 7.00019E-55 | 1.48467E-09 |
| 4 | 1.61043E-24 | 5.14514E-53 | 1.21248E-08 |
| 5 | 3.12423E-23 | 2.99447E-51 | 7.84069E-08 |
| 6 | 4.99877E-22 | 1.43735E-49 | 4.1817E-07 |
| 7 | 6.78405E-21 | 5.85205E-48 | 1.89172E-06 |
| 8 | 7.97126E-20 | 2.06285E-46 | 7.40925E-06 |
| 9 | 8.23697E-19 | 6.39483E-45 | 2.55207E-05 |
| 10 | 7.57801E-18 | 1.76497E-43 | 7.82636E-05 |
| 11 | 6.26908E-17 | 4.38034E-42 | 0.000215818 |
| 12 | 4.70181E-16 | 9.85577E-41 | 0.000539545 |
| 13 | 3.21893E-15 | 2.02422E-39 | 0.001231268 |
| 14 | 2.02333E-14 | 3.81711E-38 | 0.0025798 |
| 15 | 1.17353E-13 | 6.64177E-37 | 0.004987614 |
| 16 | 6.30773E-13 | 1.07099E-35 | 0.008936142 |
| 17 | 3.15386E-12 | 1.60648E-34 | 0.01489357 |
| 18 | 1.4718E-11 | 2.24907E-33 | 0.023167776 |
| 19 | 6.42946E-11 | 2.94746E-32 | 0.033735533 |
| 20 | 2.63608E-10 | 3.62538E-31 | 0.046105228 |
| 21 | 1.01677E-09 | 4.19508E-30 | 0.059278151 |
| 22 | 3.69735E-09 | 4.57645E-29 | 0.071852304 |
| 23 | 1.26996E-08 | 4.71574E-28 | 0.082265682 |
| 24 | 4.12737E-08 | 4.59784E-27 | 0.089121155 |
| 25 | 1.27123E-07 | 4.24841E-26 | 0.091497719 |
| 26 | 3.71591E-07 | 3.72553E-25 | 0.089151624 |
| 27 | 1.0322E-06 | 3.10461E-24 | 0.0825478 |
| 28 | 2.72795E-06 | 2.46151E-23 | 0.072720681 |
| 29 | 6.8669E-06 | 1.85886E-22 | 0.061018502 |
| 30 | 1.64806E-05 | 1.33838E-21 | 0.048814802 |
| 31 | 3.77458E-05 | 9.19598E-21 | 0.037267214 |
| 32 | 8.25689E-05 | 6.03486E-20 | 0.02717401 |
| 33 | 0.000172644 | 3.7855E-19 | 0.018939462 |
| 34 | 0.000345288 | 2.2713E-18 | 0.012626308 |
| 35 | 0.00066098 | 1.30438E-17 | 0.008056787 |
| 36 | 0.001211798 | 7.17407E-17 | 0.004923592 |
| 37 | 0.002128834 | 3.78093E-16 | 0.002883185 |
| 38 | 0.003585404 | 1.91036E-15 | 0.00161863 |
| 39 | 0.005791806 | 9.25792E-15 | 0.00087157 |
| 40 | 0.008977299 | 4.30493E-14 | 0.000450311 |
| 41 | 0.01335647 | 1.92147E-13 | 0.000223325 |
| 42 | 0.019080671 | 8.23487E-13 | 0.000106345 |
| 43 | 0.026180456 | 3.3897E-12 | 4.86385E-05 |
| 44 | 0.034510601 | 1.34047E-11 | 2.13715E-05 |
| 45 | 0.043713428 | 5.0938E-11 | 9.02351E-06 |
| 46 | 0.053216347 | 1.86034E-10 | 3.66171E-06 |
| 47 | 0.062274449 | 6.53099E-10 | 1.42833E-06 |
| 48 | 0.070058755 | 2.20421E-09 | 5.35623E-07 |
| 49 | 0.075777837 | 7.15244E-09 | 1.93116E-07 |
| 50 | 0.078808951 | 2.23156E-08 | 6.69468E-08 |
| 51 | 0.078808951 | 6.69468E-08 | 2.23156E-08 |
| 52 | 0.075777837 | 1.93116E-07 | 7.15244E-09 |
| 53 | 0.070058755 | 5.35623E-07 | 2.20421E-09 |
| 54 | 0.062274449 | 1.42833E-06 | 6.53099E-10 |
| 55 | 0.053216347 | 3.66171E-06 | 1.86034E-10 |
| 56 | 0.043713428 | 9.02351E-06 | 5.0938E-11 |
| 57 | 0.034510601 | 2.13715E-05 | 1.34047E-11 |
| 58 | 0.026180456 | 4.86385E-05 | 3.3897E-12 |
| 59 | 0.019080671 | 0.000106345 | 8.23487E-13 |
| 60 | 0.01335647 | 0.000223325 | 1.92147E-13 |
| 61 | 0.008977299 | 0.000450311 | 4.30493E-14 |
| 62 | 0.005791806 | 0.00087157 | 9.25792E-15 |
| 63 | 0.003585404 | 0.00161863 | 1.91036E-15 |
| 64 | 0.002128834 | 0.002883185 | 3.78093E-16 |
| 65 | 0.001211798 | 0.004923592 | 7.17407E-17 |
| 66 | 0.00066098 | 0.008056787 | 1.30438E-17 |
| 67 | 0.000345288 | 0.012626308 | 2.2713E-18 |
| 68 | 0.000172644 | 0.018939462 | 3.7855E-19 |
| 69 | 8.25689E-05 | 0.02717401 | 6.03486E-20 |
| 70 | 3.77458E-05 | 0.037267214 | 9.19598E-21 |
| 71 | 1.64806E-05 | 0.048814802 | 1.33838E-21 |
| 72 | 6.8669E-06 | 0.061018502 | 1.85886E-22 |
| 73 | 2.72795E-06 | 0.072720681 | 2.46151E-23 |
| 74 | 1.0322E-06 | 0.0825478 | 3.10461E-24 |
| 75 | 3.71591E-07 | 0.089151624 | 3.72553E-25 |
| 76 | 1.27123E-07 | 0.091497719 | 4.24841E-26 |
| 77 | 4.12737E-08 | 0.089121155 | 4.59784E-27 |
| 78 | 1.26996E-08 | 0.082265682 | 4.71574E-28 |
| 79 | 3.69735E-09 | 0.071852304 | 4.57645E-29 |
| 80 | 1.01677E-09 | 0.059278151 | 4.19508E-30 |
| 81 | 2.63608E-10 | 0.046105228 | 3.62538E-31 |
| 82 | 6.42946E-11 | 0.033735533 | 2.94746E-32 |
| 83 | 1.4718E-11 | 0.023167776 | 2.24907E-33 |
| 84 | 3.15386E-12 | 0.01489357 | 1.60648E-34 |
| 85 | 6.30773E-13 | 0.008936142 | 1.07099E-35 |
| 86 | 1.17353E-13 | 0.004987614 | 6.64177E-37 |
| 87 | 2.02333E-14 | 0.0025798 | 3.81711E-38 |
| 88 | 3.21893E-15 | 0.001231268 | 2.02422E-39 |
| 89 | 4.70181E-16 | 0.000539545 | 9.85577E-41 |
| 90 | 6.26908E-17 | 0.000215818 | 4.38034E-42 |
| 91 | 7.57801E-18 | 7.82636E-05 | 1.76497E-43 |
| 92 | 8.23697E-19 | 2.55207E-05 | 6.39483E-45 |
| 93 | 7.97126E-20 | 7.40925E-06 | 2.06285E-46 |
| 94 | 6.78405E-21 | 1.89172E-06 | 5.85205E-48 |
| 95 | 4.99877E-22 | 4.1817E-07 | 1.43735E-49 |
| 96 | 3.12423E-23 | 7.84069E-08 | 2.99447E-51 |
| 97 | 1.61043E-24 | 1.21248E-08 | 5.14514E-53 |
| 98 | 6.57318E-26 | 1.48467E-09 | 7.00019E-55 |
| 99 | 1.99187E-27 | 1.3497E-10 | 7.0709E-57 |
| 100 | 3.98375E-29 | 8.09819E-12 | 4.71393E-59 |

**GRAPH:**

**QUESTION 2:** Suppose an experiment is performed and getting a successful outcome has a probability of ½ . Let the number of times the same experiment is performed is 20. 50 and 100 respectively, calculate the Poisson distribution for the same and plot it on the graph. Perform the same experiment assuming the probability of ¼ and ¾.

**ANSWER:**

|  |  |  |  |
| --- | --- | --- | --- |
| X=R | P(0.5) | P(0.75) | P(0.25) |
| 0 | 2.75364E-05 | 1.44498E-07 | 0.005247518 |
| 1 | 0.000289133 | 2.27584E-06 | 0.027549472 |
| 2 | 0.001517947 | 1.79223E-05 | 0.072317363 |
| 3 | 0.005312814 | 9.40919E-05 | 0.126555385 |
| 4 | 0.013946136 | 0.000370487 | 0.166103943 |
| 5 | 0.029286886 | 0.001167034 | 0.17440914 |
| 6 | 0.05125205 | 0.003063464 | 0.152607998 |
| 7 | 0.076878074 | 0.006892794 | 0.114455998 |
| 8 | 0.100902473 | 0.013570188 | 0.075111749 |
| 9 | 0.117719551 | 0.023747828 | 0.043815187 |
| 10 | 0.123605529 | 0.03740283 | 0.023002973 |
| 11 | 0.117987096 | 0.053554051 | 0.010978692 |
| 12 | 0.103238709 | 0.070289693 | 0.004803178 |
| 13 | 0.083385111 | 0.085158666 | 0.001939745 |
| 14 | 0.062538833 | 0.095803499 | 0.000727404 |
| 15 | 0.043777183 | 0.100593674 | 0.000254592 |
| 16 | 0.028728777 | 0.099021898 | 8.35378E-05 |
| 17 | 0.017744244 | 0.091740876 | 2.57984E-05 |
| 18 | 0.010350809 | 0.080273267 | 7.52455E-06 |
| 19 | 0.005720184 | 0.066542313 | 2.07915E-06 |
| 20 | 0.003003097 | 0.052402072 | 5.45777E-07 |

**GRAPH:**

|  |  |  |  |
| --- | --- | --- | --- |
| X=R | P(0.5) | P(0.75) | P(0.25) |
| 0 | 8.42346E-12 | 2.44476E-17 | 2.90232E-06 |
| 1 | 2.14798E-10 | 9.3512E-16 | 3.70046E-05 |
| 2 | 2.73868E-09 | 1.78842E-14 | 0.000235904 |
| 3 | 2.32788E-08 | 2.28023E-13 | 0.001002593 |
| 4 | 1.48402E-07 | 2.18047E-12 | 0.003195765 |
| 5 | 7.56851E-07 | 1.66806E-11 | 0.008149201 |
| 6 | 3.21662E-06 | 1.06339E-10 | 0.017317052 |
| 7 | 1.17177E-05 | 5.81066E-10 | 0.031541774 |
| 8 | 3.73501E-05 | 2.77822E-09 | 0.050269702 |
| 9 | 0.000105825 | 1.18074E-08 | 0.071215411 |
| 10 | 0.000269854 | 4.51635E-08 | 0.090799649 |
| 11 | 0.000625572 | 1.57046E-07 | 0.105245048 |
| 12 | 0.00132934 | 5.00583E-07 | 0.111822863 |
| 13 | 0.002607551 | 1.47287E-06 | 0.109672424 |
| 14 | 0.004749467 | 4.02409E-06 | 0.099880243 |
| 15 | 0.008074094 | 1.02614E-05 | 0.084898207 |
| 16 | 0.012868087 | 2.45312E-05 | 0.067653258 |
| 17 | 0.019302131 | 5.51953E-05 | 0.050739944 |
| 18 | 0.027344686 | 0.00011729 | 0.035940794 |
| 19 | 0.036699447 | 0.000236123 | 0.024118164 |
| 20 | 0.046791795 | 0.000451586 | 0.01537533 |
| 21 | 0.056818608 | 0.000822531 | 0.009335022 |
| 22 | 0.065857932 | 0.001430083 | 0.005410069 |
| 23 | 0.073016403 | 0.00237829 | 0.00299906 |
| 24 | 0.077579928 | 0.003790399 | 0.001593251 |
| 25 | 0.079131526 | 0.005799311 | 0.000812558 |
| 26 | 0.077609766 | 0.008531678 | 0.000398466 |
| 27 | 0.073298113 | 0.012086544 | 0.000188164 |
| 28 | 0.066753638 | 0.016511083 | 8.5682E-05 |
| 29 | 0.058697165 | 0.021777549 | 3.76705E-05 |
| 30 | 0.04989259 | 0.027766375 | 1.601E-05 |
| 31 | 0.041040679 | 0.034260123 | 6.58475E-06 |
| 32 | 0.032704291 | 0.040951554 | 2.62361E-06 |
| 33 | 0.025271498 | 0.047466574 | 1.01367E-06 |
| 34 | 0.018953623 | 0.053399895 | 3.80126E-07 |
| 35 | 0.013809068 | 0.058358457 | 1.38474E-07 |
| 36 | 0.009781423 | 0.062005861 | 4.9043E-08 |
| 37 | 0.006741251 | 0.064100653 | 1.68999E-08 |
| 38 | 0.004523734 | 0.064522368 | 5.67038E-09 |
| 39 | 0.002957826 | 0.063281553 | 1.85378E-09 |
| 40 | 0.001885614 | 0.060512985 | 5.90891E-10 |
| 41 | 0.00117276 | 0.056454188 | 1.83753E-10 |
| 42 | 0.000712033 | 0.051413635 | 5.57821E-11 |
| 43 | 0.000422252 | 0.045734222 | 1.654E-11 |
| 44 | 0.000244714 | 0.039757591 | 4.79285E-12 |
| 45 | 0.000138671 | 0.033793952 | 1.35798E-12 |
| 46 | 7.68722E-05 | 0.028100406 | 3.76395E-13 |
| 47 | 4.17073E-05 | 0.022868947 | 1.02107E-13 |
| 48 | 2.2157E-05 | 0.018223692 | 2.71222E-14 |
| 49 | 1.15307E-05 | 0.014225637 | 7.05732E-15 |
| 50 | 5.88064E-06 | 0.010882613 | 1.79962E-15 |

**GRAPH:**

|  |  |  |  |
| --- | --- | --- | --- |
| X=R | P(0.5) | P(0.75) | P(0.25) |
| 0 | 1.16985E-22 | 1.2653E-33 | 1.08159E-11 |
| 1 | 5.90772E-21 | 9.58464E-32 | 2.73103E-10 |
| 2 | 1.4917E-19 | 3.63018E-30 | 3.44792E-09 |
| 3 | 2.51103E-18 | 9.16621E-29 | 2.902E-08 |
| 4 | 3.17017E-17 | 1.73585E-27 | 1.83189E-07 |
| 5 | 3.20187E-16 | 2.62981E-26 | 9.25103E-07 |
| 6 | 2.69491E-15 | 3.32014E-25 | 3.89314E-06 |
| 7 | 1.94419E-14 | 3.59287E-24 | 1.40431E-05 |
| 8 | 1.22727E-13 | 3.40199E-23 | 4.43236E-05 |
| 9 | 6.88633E-13 | 2.86335E-22 | 0.000124352 |
| 10 | 3.4776E-12 | 2.16898E-21 | 0.000313989 |
| 11 | 1.59653E-11 | 1.49364E-20 | 0.000720749 |
| 12 | 6.71875E-11 | 9.42861E-20 | 0.001516575 |
| 13 | 2.60997E-10 | 5.49398E-19 | 0.002945656 |
| 14 | 9.41455E-10 | 2.97263E-18 | 0.005312701 |
| 15 | 3.16957E-09 | 1.50118E-17 | 0.008943046 |
| 16 | 1.00039E-08 | 7.10715E-17 | 0.014113244 |
| 17 | 2.97176E-08 | 3.16686E-16 | 0.020962319 |
| 18 | 8.33743E-08 | 1.33272E-15 | 0.029405475 |
| 19 | 2.216E-07 | 5.31335E-15 | 0.039078328 |
| 20 | 5.59541E-07 | 2.01243E-14 | 0.04933639 |
| 21 | 1.34556E-06 | 7.25913E-14 | 0.059321135 |
| 22 | 3.08868E-06 | 2.49945E-13 | 0.068084484 |
| 23 | 6.78166E-06 | 8.23188E-13 | 0.074744923 |
| 24 | 1.42697E-05 | 2.59819E-12 | 0.078637888 |
| 25 | 2.88249E-05 | 7.87251E-12 | 0.079424267 |
| 26 | 5.59868E-05 | 2.29363E-11 | 0.077133182 |
| 27 | 0.000104716 | 6.43489E-11 | 0.072133809 |
| 28 | 0.000188863 | 1.74087E-10 | 0.065049239 |
| 29 | 0.000328882 | 4.54727E-10 | 0.056637699 |
| 30 | 0.000553618 | 1.14819E-09 | 0.047670064 |
| 31 | 0.000901861 | 2.80565E-09 | 0.038828036 |
| 32 | 0.001423249 | 6.64149E-09 | 0.030637747 |
| 33 | 0.002178003 | 1.52452E-08 | 0.023442518 |
| 34 | 0.003234975 | 3.39655E-08 | 0.017409517 |
| 35 | 0.004667607 | 7.35111E-08 | 0.012559723 |
| 36 | 0.006547615 | 1.5468E-07 | 0.00880925 |
| 37 | 0.008936609 | 3.16675E-07 | 0.006011718 |
| 38 | 0.011876284 | 6.31266E-07 | 0.003994628 |
| 39 | 0.015378265 | 1.22611E-06 | 0.002586266 |
| 40 | 0.019415059 | 2.32195E-06 | 0.00163258 |
| 41 | 0.023913671 | 4.28995E-06 | 0.001005431 |
| 42 | 0.028753342 | 7.73723E-06 | 0.000604455 |
| 43 | 0.03376846 | 1.36301E-05 | 0.000354942 |
| 44 | 0.038756982 | 2.34655E-05 | 0.000203688 |
| 45 | 0.043493947 | 3.95002E-05 | 0.000114292 |
| 46 | 0.047748789 | 6.50466E-05 | 6.27362E-05 |
| 47 | 0.05130455 | 0.000104836 | 3.3704E-05 |
| 48 | 0.053976662 | 0.000165444 | 1.77297E-05 |
| 49 | 0.055629009 | 0.000255763 | 9.13623E-06 |
| 50 | 0.056185299 | 0.000387481 | 4.6138E-06 |
| 51 | 0.055634463 | 0.000575523 | 2.28428E-06 |
| 52 | 0.054029623 | 0.000838382 | 1.10919E-06 |
| 53 | 0.051481055 | 0.001198253 | 5.28437E-07 |
| 54 | 0.04814432 | 0.001680883 | 2.47093E-07 |
| 55 | 0.04420524 | 0.002315034 | 1.13438E-07 |
| 56 | 0.039863654 | 0.003131497 | 5.11485E-08 |
| 57 | 0.035317798 | 0.004161594 | 2.26579E-08 |
| 58 | 0.030750842 | 0.005435185 | 9.864E-09 |
| 59 | 0.026320636 | 0.006978225 | 4.22146E-09 |
| 60 | 0.022153202 | 0.00881001 | 1.77653E-09 |
| 61 | 0.018339946 | 0.010940299 | 7.35367E-10 |
| 62 | 0.014938182 | 0.013366575 | 2.99484E-10 |
| 63 | 0.011974257 | 0.016071715 | 1.20031E-10 |
| 64 | 0.009448437 | 0.019022381 | 4.73561E-11 |
| 65 | 0.007340709 | 0.02216839 | 1.8396E-11 |
| 66 | 0.005616754 | 0.025443266 | 7.03787E-12 |
| 67 | 0.004233524 | 0.028766081 | 2.65233E-12 |
| 68 | 0.003144014 | 0.032044568 | 9.84873E-13 |
| 69 | 0.002301054 | 0.035179363 | 3.60407E-13 |
| 70 | 0.001660046 | 0.038069096 | 1.30004E-13 |
| 71 | 0.001180737 | 0.040615972 | 4.62337E-14 |
| 72 | 0.000828156 | 0.042731387 | 1.62139E-14 |
| 73 | 0.000572902 | 0.044341131 | 5.60824E-15 |
| 74 | 0.000390967 | 0.045389739 | 1.91362E-15 |
| 75 | 0.000263251 | 0.045843636 | 6.44253E-16 |
| 76 | 0.000174923 | 0.045692835 | 2.14045E-16 |
| 77 | 0.000114723 | 0.044951068 | 7.01899E-17 |
| 78 | 7.42755E-05 | 0.043654403 | 2.27217E-17 |
| 79 | 4.74799E-05 | 0.041858494 | 7.26233E-18 |
| 80 | 2.99717E-05 | 0.039634761 | 2.29217E-18 |
| 81 | 1.86861E-05 | 0.037065842 | 7.14535E-19 |
| 82 | 1.15079E-05 | 0.034240701 | 2.20025E-19 |
| 83 | 7.00178E-06 | 0.031249797 | 6.69352E-20 |
| 84 | 4.2094E-06 | 0.02818062 | 2.01204E-20 |
| 85 | 2.50088E-06 | 0.025113906 | 5.97694E-21 |
| 86 | 1.46854E-06 | 0.022120678 | 1.75486E-21 |
| 87 | 8.52428E-07 | 0.019260246 | 5.09312E-22 |
| 88 | 4.89178E-07 | 0.016579132 | 1.46138E-22 |
| 89 | 2.77567E-07 | 0.014110891 | 4.14605E-23 |
| 90 | 1.55746E-07 | 0.011876666 | 1.1632E-23 |
| 91 | 8.64305E-08 | 0.009886346 | 3.22755E-24 |
| 92 | 4.74428E-08 | 0.008140116 | 8.85822E-25 |
| 93 | 2.5762E-08 | 0.006630256 | 2.40505E-25 |
| 94 | 1.38402E-08 | 0.005342999 | 6.46039E-26 |
| 95 | 7.35716E-09 | 0.004260339 | 1.7171E-26 |
| 96 | 3.87017E-09 | 0.003361673 | 4.51634E-27 |
| 97 | 2.01488E-09 | 0.002625224 | 1.17564E-27 |
| 98 | 1.03828E-09 | 0.002029191 | 3.02908E-28 |
| 99 | 5.29629E-10 | 0.001552639 | 7.72569E-29 |
| 100 | 2.67462E-10 | 0.001176124 | 1.95074E-29 |

**GRAPH:**

**INFERENCE:**

It can be inferred from the graphs that the Binomial and Poisson Distribution form a bell shaped curve, which can be inferred using the standard normal distribution , hence by central limit theorem, we can say that these two distribution as the normal distribution.