

Binomial Distribution

- Definition
- Computation
- Examples

Definition of Binomial Distribution

Binomial Distribution: The distribution of the result of an experiment with

- A fixed number of trials, n
- The trials are independent
- Each trial results in success or failure
- The probability of success, p , is the same for each trial.

Binomial Distribution Example

- Economy Current Event
- If **20** randomly selected people are surveyed, what is the probability that the number who are angry about the economy is
 - Exactly **5** are angry?
 - Exactly **6** are angry?
 - At most **4** are angry?

2nd VARS (DISTR):

A*: $P(=x)$

binompdf(n,p,x)

B:** $P(\leq x)$

binomcdf(n,p,x)

*: 0 on TI 83

** : A on TI 83

Binomial Distribution Example

Two percent of the world population has Down's Syndrome. If **300** randomly selected people are surveyed, what is the probability that the number who have Down's Syndrome is

- Exactly **6**?
- Less than **5**?
- At least **7**?

2nd VARS (DISTR):

A*: $P(=x)$

binompdf(n,p,x)

B:** $P(\leq x)$

binomcdf(n,p,x)

*: 0 on TI 83

** : A on TI 83

Binomial Distribution Statistical Significance

47% of all high school students have had sex. Greenville High has a new sex ed. program. It reports that of the 50 students surveyed only 20 had sex.

Find the probability that 20 or fewer out of 50 students selected from all high schools have had sex. Is this statistically significant?

2nd VARS (DISTR):

A*: $P(=x)$

binompdf(n,p,x)

B:** $P(\leq x)$

binomcdf(n,p,x)

*: 0 on TI 83

** : A on TI 83

Binomial Distribution Statistical Significance

37% of California residents are Hispanic. A company with **25** workers employs only **6** Hispanics. Is this statistically significant? Hint: Find the probability of employing **6** or fewer out of **25**.

2nd VARS (DISTR):

A*: $P(=x)$

binompdf(n,p,x)

B:** $P(\leq x)$

binomcdf(n,p,x)

*****: 0 on TI 83

******: A on TI 83

Binomial Distribution Statistical Significance

Only **42%** of CCC algebra students pass. Of the **65** LTCC algebra students, **38** of them passed. Is this statistically significant? Hint: Find the probability that at least **38** of **65** CCC students will pass.

2nd VARS (DISTR):

A*: $P(=x)$

binompdf(n,p,x)

B:** $P(\leq x)$

binomcdf(n,p,x)

*****: 0 on TI 83

******: A on TI 83