

FAIR COIN

| A | B | C | D | E | F | G | H | I | J |
|----|--|----------|----------|----------|----------|--------------|--|--------------------|----------|
| 2 | INPUTS | | | | | | | | |
| 3 | A. INSTRUCTIONS: Randomly sample values from a fair-coin (binary) population. | | | | | | | | |
| 4 | B. POPULATION | | 0 | 1 | | | 1=Heads; 0 = Tails. Ave is fraction of heads | | |
| 5 | C. SAMPLES | | 16 | #/sample | 50 | # of samples | | | |
| 6 | B | C | D | E | F | G | H | I | J |
| 7 | CALCULATIONS AND OUTPUTS | | | | | | | | |
| 8 | D. POPULATION | | 0.5 | Mean.P | 0.50 | StDev.P | | | |
| 9 | | | | | | | | | |
| 10 | G. SAMPLING DIST. | | 0.49 | Mean.SD | 0.14 | StDev.SD | 0.28 | StDev.SD / StDev.P | |
| 11 | | | | | | | | | |
| 12 | F. SAMPLE STATISTICS | | | | | | | | |
| 13 | Mean.S | | 0.63 | 0.63 | 0.63 | 0.69 | 0.44 | 0.56 | 0.63 |
| 14 | StdDev.S | | 0.50 | 0.50 | 0.50 | 0.48 | 0.51 | 0.51 | 0.50 |
| 15 | E. RANDOM VALUES | Sample 1 | Sample 2 | Sample 3 | Sample 4 | Sample 5 | Sample 6 | Sample 7 | Sample 8 |
| 16 | | ID | Value | Value | Value | Value | Value | Value | Value |
| 17 | | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 18 | | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 19 | | 3 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| 20 | | 4 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| 21 | | 5 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 22 | | 6 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |
| 23 | | 7 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 24 | | 8 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |
| 25 | | 9 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |
| 26 | | 10 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| 27 | | 11 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 28 | | 12 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 29 | | 13 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| 30 | | 14 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| 31 | | 15 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| 32 | | 16 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |

CELL FORMULA

- D8 =AVERAGE(D4:E4)
- D17 =RANDBETWEEN(0,1) [Zero or one]
- D10 =AVERAGE(D13:BA13)
- H10 =F10/F8

CELL FORMULA

- F8 =STDEV.P(D4:E4)
- D13 =AVERAGE(D17:D32)
- F10 =STDEV(D13:BA13)
- D14 =STDEV.S(D17:D32)

| A | B | C | D | E | F | G | J | I | |
|----|--|----|----------|----------|----------|--------------|----------|----------------------|----------|
| 2 | INPUTS | | | | | | | | |
| 3 | A. INSTRUCTIONS: Randomly sample values from a fair six-sided die population. | | | | | | | | |
| 4 | B. POPULATION | | 1 | 2 | 3 | 4 | 5 | 6 | |
| 5 | C. SAMPLES | | 16 | #/sample | 50 | # of samples | | | |
| 6 | B | C | D | E | F | G | H | I | |
| 7 | CALCULATIONS AND OUTPUTS | | | | | | | | |
| 8 | D. POPULATION | | 3.5 | Mean.P | 1.71 | StdDev.P | | | |
| 9 | | | | | | | | | |
| 10 | G. SAMPLING DIST. | | 3.53 | Mean.SD | 0.38 | StdDev.SD | 0.22 | StdDev.SD / StdDev.P | |
| 11 | | | | | | | | | |
| 12 | F. SAMPLE MEANS | | 3.50 | 3.63 | 3.63 | 3.00 | 3.81 | 3.56 | 3.00 |
| 13 | STDEV.S | | 1.83 | 1.41 | 1.50 | 1.55 | 1.64 | 1.75 | 1.51 |
| 14 | E. RANDOM VALUES | | Sample 1 | Sample 2 | Sample 3 | Sample 4 | Sample 5 | Sample 6 | Sample 7 |
| 15 | | ID | Value | Value | Value | Value | Value | Value | Value |
| 16 | | 1 | 2 | 4 | 5 | 1 | 4 | 1 | 1 |
| 17 | | 2 | 5 | 6 | 2 | 4 | 3 | 2 | 4 |
| 18 | | 3 | 6 | 4 | 3 | 2 | 6 | 4 | 5 |
| 19 | | 4 | 4 | 2 | 3 | 2 | 3 | 6 | 3 |
| 20 | | 5 | 2 | 3 | 1 | 3 | 6 | 6 | 3 |
| 21 | | 6 | 5 | 2 | 4 | 4 | 1 | 6 | 5 |
| 22 | | 7 | 1 | 4 | 5 | 5 | 3 | 4 | 1 |
| 23 | | 8 | 3 | 2 | 2 | 2 | 3 | 4 | 1 |
| 24 | | 9 | 6 | 4 | 3 | 2 | 5 | 1 | 4 |
| 25 | | 10 | 6 | 6 | 2 | 2 | 6 | 3 | 1 |
| 26 | | 11 | 2 | 4 | 5 | 2 | 2 | 2 | 2 |
| 27 | | 12 | 2 | 3 | 4 | 6 | 5 | 3 | 4 |
| 28 | | 13 | 1 | 2 | 3 | 3 | 1 | 3 | 4 |
| 29 | | 14 | 2 | 3 | 6 | 6 | 4 | 6 | 5 |
| 30 | | 15 | 5 | 6 | 6 | 2 | 4 | 4 | 3 |
| 31 | | 16 | 4 | 3 | 4 | 2 | 5 | 2 | 2 |

| CELL | FORMULA |
|------|--------------------|
| D8 | =AVERAGE(D4:I4) |
| D17 | =RANDBETWEEN(1,6) |
| D10 | =AVERAGE(D12:BA12) |

| CELL | FORMULA |
|------|-------------------|
| F8 | =STDEV.P(D4:I4) |
| D12 | =AVERAGE(D17:D32) |
| F10 | =STDEV(D12:BA12) |
| H10 | =F10/F8 |

NORMAL DISTRIBUTION (Long way)

| A | B | C | D | E | F | G | H | I | J | | |
|----|--|-------------------|--------|-------------------------|----------|----------|--------------------------|---------------------------------|----------|-------|--|
| 2 | A. Randomly sample values from a Normal Population (long way) | | | | | | | | | | |
| 3 | B. POPULATION | | 100 | Mean.P | 16 | StDev.P | | Normal | Shape | | |
| 4 | B | C | D | E | F | G | H | I | J | | |
| 5 | CALCULATIONS AND RESULTS: | | | | | | | | | | |
| 6 | F. SAMPLING DIST. | | 100.02 | Mean.SD | 3.66 | StDev.SD | 0.23 | StDev.SD / Stdev.P | | | |
| 7 | | | | | | | | | | | |
| 8 | E. SAMPLE MEANS | | | | 104.55 | 99.81 | 103.34 | 99.71 | 105.62 | 97.38 | |
| 9 | B. POPULATION VALUES | | | D. RANDOM VALUES | | | | | | | |
| 10 | ID | Percentile | Value | Sample 1 | Sample 2 | Sample 3 | Sample 4 | Sample 5 | Sample 6 | | |
| 11 | 1 | 0.025 | 68.64 | Value | Value | Value | Value | Value | Value | | |
| 12 | 2 | 0.050 | 73.68 | 106.165 | 118.406 | 110.792 | 100.000 | 93.835 | 100.000 | | |
| 13 | 3 | 0.075 | 76.97 | 120.505 | 101.003 | 81.594 | 118.406 | 131.359 | 81.594 | | |
| 14 | 4 | 0.100 | 79.50 | 120.505 | 79.495 | 97.989 | 131.359 | 86.534 | 120.505 | | |
| 15 | 5 | 0.125 | 81.59 | 97.989 | 87.913 | 98.997 | 110.792 | 93.835 | 73.682 | | |
| 16 | 6 | 0.150 | 83.42 | 109.564 | 103.026 | 104.054 | 89.208 | 123.033 | 126.318 | | |
| 17 | 7 | 0.175 | 85.05 | 100.000 | 113.466 | 97.989 | 86.534 | 93.835 | 106.165 | | |
| 18 | 8 | 0.200 | 86.53 | 79.495 | 118.406 | 126.318 | 91.610 | 104.054 | 83.417 | | |
| 19 | 9 | 0.225 | 87.91 | 100.000 | 126.318 | 102.011 | 112.087 | 105.098 | 113.466 | | |
| 20 | 10 | 0.250 | 89.21 | 97.989 | 102.011 | 101.003 | 92.740 | 131.359 | 109.564 | | |
| 21 | 11 | 0.275 | 90.44 | 86.534 | 89.208 | 105.098 | 96.974 | 118.406 | 85.047 | | |
| 22 | 12 | 0.300 | 91.61 | 108.390 | 79.495 | 90.436 | 104.054 | 97.989 | 73.682 | | |
| 23 | 13 | 0.325 | 92.74 | 93.835 | 94.902 | 123.033 | 113.466 | 103.026 | 104.054 | | |
| 24 | 14 | 0.350 | 93.83 | 113.466 | 76.967 | 95.946 | 86.534 | 101.003 | 105.098 | | |
| 25 | 15 | 0.375 | 94.90 | 96.974 | 100.000 | 109.564 | 81.594 | 113.466 | 81.594 | | |
| 26 | 16 | 0.400 | 95.95 | 118.406 | 97.989 | 109.564 | 76.967 | 87.913 | 98.997 | | |
| 27 | 17 | 0.425 | 96.97 | 123.033 | 108.390 | 98.997 | 103.026 | 105.098 | 94.902 | | |
| 28 | 18 | 0.450 | 97.99 | | | | | | | | |
| 29 | 19 | 0.475 | 99.00 | | | | | | | | |
| 30 | 20 | 0.500 | 100.00 | | | | | | | | |
| 31 | 21 | 0.525 | 101.00 | C. RANDOM INDEX | | | | | | | |
| 32 | 22 | 0.550 | 102.01 | Sample 1 | Sample 2 | Sample 3 | Sample 4 | Sample 5 | Sample 6 | | |
| 33 | 23 | 0.575 | 103.03 | Index | Index | Index | Index | Index | Index | | |
| 34 | 24 | 0.600 | 104.05 | 26 | 35 | 30 | 20 | 14 | 20 | | |
| 35 | 25 | 0.625 | 105.10 | 36 | 21 | 5 | 35 | 39 | 5 | | |
| 36 | 26 | 0.650 | 106.17 | 36 | 4 | 18 | 39 | 8 | 36 | | |
| 37 | 27 | 0.675 | 107.26 | 18 | 9 | 19 | 30 | 14 | 2 | | |
| 38 | 28 | 0.700 | 108.39 | 29 | 23 | 24 | 10 | 37 | 38 | | |
| 39 | 29 | 0.725 | 109.56 | 20 | 32 | 18 | 8 | 14 | 26 | | |
| 40 | 30 | 0.750 | 110.79 | 4 | 35 | 38 | 12 | 24 | 6 | | |
| 41 | 31 | 0.775 | 112.09 | 20 | 38 | 22 | 31 | 25 | 32 | | |
| 42 | 32 | 0.800 | 113.47 | 18 | 22 | 21 | 13 | 39 | 29 | | |
| 43 | 33 | 0.825 | 114.95 | 8 | 10 | 25 | 17 | 35 | 7 | | |
| 44 | 34 | 0.850 | 116.58 | 28 | 4 | 11 | 24 | 18 | 2 | | |
| 45 | 35 | 0.875 | 118.41 | 14 | 15 | 37 | 32 | 23 | 24 | | |
| 46 | 36 | 0.900 | 120.50 | 32 | 3 | 16 | 8 | 21 | 25 | | |
| 47 | 37 | 0.925 | 123.03 | 17 | 20 | 29 | 5 | 32 | 5 | | |
| 48 | 38 | 0.950 | 126.32 | 35 | 18 | 29 | 3 | 9 | 19 | | |
| 49 | 39 | 0.975 | 131.36 | 37 | 28 | 19 | 23 | 25 | 15 | | |
| 50 | | | | | | | | | | | |
| 51 | CELL FORMULA | | | | | D11 | =NORM.INV(C11,D\$3,F\$3) | | | | |
| 52 | D6 | =AVERAGE(E8:BB8) | | | | | E34 | =RANDBETWEEN(1,39) | | | |
| 53 | F6 | =STDEV(E8:BB8) | | | | | E12 | =VLOOKUP(E34,\$B\$11:\$D\$49,3) | | | |
| 54 | E8 | =AVERAGE(E12:E27) | | | | | H7 | =F6/F3 | | | |

| A | B | C | D | E | F | G | J | I |
|----|---|----------|----------|----------|--------------------|----------|----------------------|----------|
| 2 | INPUTS | | | | | | | |
| 3 | A. INSTRUCTIONS: Randomly sample values from a Normal population (short way) | | | | | | | |
| 4 | | | | | | | | |
| 5 | B. POPULATION | 100 | Mean | 16 | Standard Deviation | Shape | Normal | |
| 6 | | | | | | | | |
| 7 | C. SAMPLES | 16 | #/sample | 50 | # of samples | | | |
| 8 | B | C | D | E | F | G | H | I |
| 9 | CALCULATIONS AND OUTPUTS | | | | | | | |
| 10 | | | | | | | | |
| 11 | F. SAMPLING DIST. | 100.92 | Mean.SD | 4.36 | StDev.SD | 0.27 | StdDev.SD / StdDev.P | |
| 12 | | | | | | | | |
| 13 | E. SAMPLE MEANS | 101.48 | 100.87 | 95.18 | 105.95 | 97.87 | 100.52 | 98.09 |
| 14 | | | | | | | | |
| 15 | D. RANDOM VALUES | Sample 1 | Sample 2 | Sample 3 | Sample 4 | Sample 5 | Sample 6 | Sample 7 |
| 16 | | ID | Value | Value | Value | Value | Value | Value |
| 17 | | 1 | 91.8 | 96.2 | 77.8 | 82.4 | 105.4 | 90.8 |
| 18 | | 2 | 69.8 | 80.0 | 83.9 | 111.2 | 75.9 | 89.0 |
| 19 | | 3 | 121.4 | 84.9 | 99.5 | 119.9 | 91.8 | 110.2 |
| 20 | | 4 | 79.1 | 115.4 | 100.4 | 99.0 | 112.6 | 89.0 |
| 21 | | 5 | 113.4 | 110.5 | 119.5 | 109.0 | 88.4 | 105.6 |
| 22 | | 6 | 113.1 | 104.0 | 98.2 | 111.5 | 87.2 | 107.6 |
| 23 | | 7 | 126.6 | 118.3 | 83.8 | 84.2 | 101.1 | 122.0 |
| 24 | | 8 | 86.9 | 111.4 | 116.1 | 102.5 | 132.5 | 73.3 |
| 25 | | 9 | 108.1 | 117.5 | 92.6 | 98.5 | 102.4 | 116.5 |
| 26 | | 10 | 109.1 | 106.4 | 81.5 | 105.0 | 99.5 | 109.2 |
| 27 | | 11 | 119.4 | 100.4 | 90.9 | 104.0 | 101.3 | 82.5 |
| 28 | | 12 | 109.2 | 73.8 | 92.7 | 115.8 | 99.8 | 100.4 |
| 29 | | 13 | 89.3 | 102.3 | 93.3 | 116.0 | 96.6 | 112.1 |
| 30 | | 14 | 61.8 | 128.4 | 99.0 | 115.2 | 81.9 | 109.0 |
| 31 | | 15 | 98.0 | 88.0 | 105.6 | 106.8 | 99.6 | 102.7 |
| 32 | | 16 | 126.8 | 76.4 | 88.2 | 113.9 | 89.9 | 88.3 |

CELL FORMULA
 D11 =AVERAGE(D13:BA13)
 F11 =STDEV(D13:BA13)

CELL FORMULA
 D13 =AVERAGE(D17:D32)
 D17 =NORM.INV(RAND(), \$D\$5,\$F\$5)

EXPONENTIAL DISTRIBUTION

| A | B | C | D | E | F | G | J | I |
|---|---|---|--------------------------------|-------------|----|-------------------|--|-------|
| 2 | INPUTS | | | | | | | |
| 3 | A. INSTRUCTIONS: Randomly sample values from the Exponential population. | | | | | | | |
| 4 | B. POPULATION | | <input type="text" value="5"/> | Mean | | | <input type="text" value="Exponential"/> | Shape |
| 5 | | | | | | | | |
| 6 | C. SAMPLES | | 16 | Size/sample | 50 | Number of samples | | |
| 7 | | | | | | | | |

| 8 | CALCULATIONS AND OUTPUTS | | | | | | | | |
|----|---------------------------------|----------|-----------------------------------|-----------|-----------------------------------|----------|-----------------------------------|------------------|-------|
| 9 | D. POPULATION | | <input type="text" value="5.00"/> | Pop. Mean | <input type="text" value="5.00"/> | StDev.P | | | |
| 10 | | | | | | | | | |
| 11 | G. SAMPLING DIST. | | <input type="text" value="5.35"/> | Mean | <input type="text" value="1.45"/> | StDev.SD | <input type="text" value="0.29"/> | StDev.SD/StDev.P | |
| 12 | | | | | | | | | |
| 13 | F. SAMPLE MEANS | | <input type="text" value="7.78"/> | 4.95 | 3.19 | 7.97 | 6.12 | 8.40 | 3.49 |
| 14 | E. RANDOM VALUES | Sample 1 | Sample 2 | Sample 3 | Sample 4 | Sample 5 | Sample 6 | Sample 7 | |
| 15 | | ID | Value | Value | Value | Value | Value | Value | |
| 16 | | 1 | <input type="text" value="6.63"/> | 17.73 | 2.75 | 5.13 | 5.21 | 0.23 | 2.55 |
| 17 | | 2 | 15.33 | 1.11 | 6.98 | 5.17 | 6.20 | 22.04 | 0.97 |
| 18 | | 3 | 8.25 | 4.04 | 6.87 | 2.85 | 4.69 | 7.21 | 4.53 |
| 19 | | 4 | 11.47 | 0.43 | 5.05 | 15.83 | 4.84 | 7.05 | 2.15 |
| 20 | | 5 | 2.69 | 5.59 | 0.20 | 2.75 | 5.88 | 1.02 | 4.70 |
| 21 | | 6 | 7.45 | 8.29 | 0.93 | 3.14 | 4.39 | 5.10 | 4.46 |
| 22 | | 7 | 8.62 | 4.61 | 3.09 | 0.07 | 7.67 | 42.32 | 2.76 |
| 23 | | 8 | 4.68 | 4.73 | 0.79 | 4.78 | 9.54 | 4.94 | 2.91 |
| 24 | | 9 | 0.97 | 3.26 | 3.02 | 7.63 | 0.94 | 2.39 | 0.42 |
| 25 | | 10 | 20.53 | 7.15 | 2.10 | 2.78 | 2.05 | 17.67 | 14.69 |
| 26 | | 11 | 0.99 | 3.40 | 6.65 | 5.18 | 3.22 | 1.06 | 0.80 |
| 27 | | 12 | 7.59 | 2.62 | 2.92 | 22.74 | 0.75 | 0.70 | 4.54 |
| 28 | | 13 | 2.54 | 5.86 | 1.70 | 32.30 | 18.22 | 14.75 | 8.65 |
| 29 | | 14 | 12.92 | 0.38 | 2.74 | 6.53 | 8.63 | 2.51 | 0.74 |
| 30 | | 15 | 7.88 | 6.00 | 3.32 | 9.30 | 10.15 | 1.40 | 0.69 |
| 31 | | 16 | 5.96 | 4.03 | 2.00 | 1.28 | 5.53 | 3.96 | 0.26 |

| | | | |
|-------------|---------------------------|-------------|-------------------|
| CELL | FORMULA | CELL | FORMULA |
| D17 | =-LN(1-RAND())/(1/\$D\$5) | D14 | =AVERAGE(D17:D32) |
| D12 | =AVERAGE(D14:BA14) | F12 | =STDEV(D14:BA14) |
| D10 | =D5 | F10 | =D10 |
| | | H12 | =F12/F10 |

Proof of Exponential Inverse at <http://www.excelbanter.com/showthread.php?t=163575>

| A | B | C | D | E | F | G | J | I | |
|---|---|---|---------------------------------|-------------|---|---------------------------------|-------------------|--------------------------------------|-------|
| 2 | INPUTS | | | | | | | | |
| 3 | A. INSTRUCTIONS: Randomly sample values from the LogNormal population. | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | B. POPULATION | | <input type="text" value="80"/> | Mean | | <input type="text" value="50"/> | Median | <input type="text" value="LogNorm"/> | Shape |
| 6 | | | | | | | | | |
| 7 | C. SAMPLES | | 16 | Size/sample | | 50 | Number of samples | | |
| 8 | B | C | D | E | F | G | H | I | |

| CALCULATIONS AND OUTPUTS | | | | | | | | | | |
|--------------------------|--------------------------|----------|-------------------------------------|----------|----------|------------------------------------|----------|-----------------------------------|------------------|-------|
| 10 | D. POPULATION | | <input type="text" value="80.00"/> | Mean.P | | <input type="text" value="99.92"/> | StDev.P | | | |
| 11 | | | | | | | | | | |
| 12 | H. SAMPLING DIST. | | <input type="text" value="79.52"/> | Mean.SD | | <input type="text" value="22.14"/> | StDev.SD | <input type="text" value="0.22"/> | StDev.SD/StDev.P | |
| 13 | | | | | | | | | | |
| 14 | G. SAMPLE MEANS | | <input type="text" value="131.65"/> | 92.85 | | 71.85 | 68.68 | 62.79 | 65.82 | 54.68 |
| 15 | | | | | | | | | | |
| 16 | F. RANDOM VALUES | Sample 1 | Sample 2 | Sample 3 | Sample 4 | Sample 5 | Sample 6 | Sample 7 | | |
| 17 | | ID | Value | Value | Value | Value | Value | Value | | |
| 18 | | 1 | <input type="text" value="231.80"/> | 157.4 | 20.5 | 16.0 | 72.2 | 37.7 | 18.2 | |
| 19 | | 2 | 19.0 | 55.3 | 15.5 | 42.7 | 118.0 | 25.5 | 9.8 | |
| 20 | | 3 | 30.7 | 60.3 | 97.9 | 39.4 | 26.3 | 20.9 | 9.8 | |
| 21 | | 4 | 19.6 | 48.8 | 34.3 | 14.1 | 147.2 | 19.1 | 58.2 | |
| 22 | | 5 | 57.7 | 23.5 | 87.9 | 23.0 | 157.7 | 15.1 | 37.4 | |
| 23 | | 6 | 346.6 | 17.9 | 100.4 | 37.2 | 11.2 | 17.9 | 30.4 | |
| 24 | | 7 | 136.6 | 35.4 | 82.1 | 27.6 | 52.4 | 118.5 | 152.7 | |
| 25 | | 8 | 21.2 | 164.7 | 10.0 | 169.0 | 8.8 | 306.5 | 32.6 | |
| 26 | | 9 | 21.9 | 30.9 | 54.0 | 169.5 | 72.5 | 21.8 | 56.8 | |
| 27 | | 10 | 82.5 | 13.5 | 18.3 | 8.6 | 47.8 | 143.2 | 35.3 | |
| 28 | | 11 | 179.4 | 197.5 | 54.8 | 176.8 | 13.7 | 23.6 | 256.2 | |
| 29 | | 12 | 100.4 | 102.2 | 136.2 | 151.3 | 87.3 | 81.9 | 15.3 | |
| 30 | | 13 | 793.2 | 205.8 | 85.1 | 37.0 | 15.7 | 105.1 | 16.9 | |
| 31 | | 14 | 27.8 | 167.6 | 80.4 | 40.5 | 28.1 | 42.0 | 6.5 | |
| 32 | | 15 | 21.8 | 170.9 | 252.3 | 119.8 | 38.7 | 52.2 | 104.0 | |
| 33 | | 16 | 16.3 | 34.0 | 20.0 | 26.4 | 107.0 | 22.1 | 34.9 | |

E. NORMAL Mu Sigma

| CELL | FORMULA | CELL | FORMULA |
|------|---|------|--------------------------|
| C40 | =LN(F5) | E40 | =SQRT(2*(LN(D5)-LN(F5))) |
| D18 | =EXP(NORM.INV(RAND(), \$C\$40,\$E\$40)) | D14 | =AVERAGE(D18:D33) |
| D12 | =AVERAGE(D14:BA14) | F12 | =STDEV(D14:BA14) |
| F10 | =D5*SQRT((D5/F5)^2-1) | H12 | =F12/F10 |