

Flipping Pennies Simulation Handout

Bring up the interactive Excel spreadsheet for flipping pennies (flipping_pennies.xls).

Go to the "10 flips" tab on the spreadsheet and press the F9 key to generate a new simulation of flipping 10 pennies. Note that the results are shown in three different ways. The words 'heads' and 'tails' are used, the numbers 1 and 0 are used where 1 means 'heads', and a bar graph shows the distribution of heads and tails for each simulation. The number of heads is recorded at the top and the percent error is calculated. The %error is based on the fact that the expected value for heads is 5. The formula for the %error calculation can be seen by putting the mouse over the red triangle above the '=' sign.

By pressing the F9 key on the computer keyboard, flip your ten pennies for ten trials and record the number of heads you get on each trial.

Number of heads out of ten flips of a penny

Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
Trial 6	Trial 7	Trial 8	Trial 9	Trial 10

How do your trials compare to each other?

Ten flips of 10 pennies each gives you 100 flips of a penny. How many heads did you get? How does that total number of heads compare to others in the class?

Go to the "100 flips" tab and try a few trials flipping a hundred pennies at a time. What do you notice about the error?

If you have time, you can try the "1000 flips" tab and "10,000 flips" tab and watch the error.