Probability Lab

The Problem:

On Sheet 1:

Change Sheet name to Female Proportion.
Label Each Cell in Row 1 as Trial 1, Trial 2, …, Trial 40.

Random number generator is found by selecting Data-Data Analysis-Random Number Generation--OK. A fairly large box should appear. Using the "Distribution" pull-down menu in this box, select Bernoulli. Then fill in the other boxes: the "Number of variables" is 40, since we will do 40 trials, the "Number of random numbers" is 100, since we are looking over a 100 year period, and the "p Value" is .508 since we want 508/1000 of the numbers to be 1's. For the "Random Seed", use 0. Click onto "Output range" and fill in the box with A2.

Determine the probability of each of the 40 trials on Row 102. Compare these probabilities to the 0.508 probability. In cell A103 find the mean of the entire collection of data.

On Sheet 2:
Create a line graph of Row 102. Add an x axis label of Trail Number, a y-axis label of probability, a main title of Monte Carlo Method (Female Birth) , and a trend line.

On Sheet 3:

Change sheet name to Biased Coin Flips.
Label Each Cell in Row 1 as Trial 1, Trial 2, …, Trial 10.

Random number generator is found by selecting Data-Data Analysis-Random Number Generation--OK. A fairly large box should appear. Using the "Distribution" pull-down menu in this box, select Bernoulli. Then fill in the other boxes: the "Number of variables" is 10, since we will do 10 trials, the "Number of random numbers" is 100, since we are looking over a 100 coin flips of a biased coin, and the "p Value" is .25 since we want 1/4 of the numbers to be 1's. For the "Random Seed", use 0. Click onto "Output range" and fill in the box with A2.

Determine the probability of each of the 10 trials on Row 102. Compare these probabilities to the 0.50 probability. In cell A103 find the mean of the entire collection of data.

On Sheet 4:
Create a line graph of Row 102. Add an x axis label of Trail Number, a y-axis label of probability, a main title of Monte Carlo Method (Coin Flips), and a trend line.