1. The average lifetime of certain type of vehicle is 10 years with a standard deviation of 2 years. To spur on sales, the manufacturer wants to offer a warranty that will cover all repair or replacement costs on new vehicles for a period of time. If the manufacturer is willing to pay these costs for at most 3% of the cars that fail, for how long should a warranty provide coverage (in terms of time)? Assume the lifetime of a car follows a normal distribution.

2. In a random sample of 615 people, 72% said they would rather eat worms than take a Business Research Methods final exam. How confident can you be that between 70 and 74% of the general population feels this way?

3. You have just invented a hamster food that you think can make hamsters live longer. If you are right you can become an instant millionaire, but if you are wrong you will be sued for false advertising. A random sample of 100 hamsters fed your food had an average life of 3.7 years with a standard deviation of 0.6 years, while a random sample of 100 hamsters fed a typical diet had an average life of 3.1 years with a standard deviation of 0.4 years. Should you promote your product?

4. A charity is trying to raise money by hosting a comedy club with a famous comedian. In order to maximize donations they want to bring in the best comedian, if there is one. By surveying 100 of their target donors, they find the following preferences:

Comedian	Zach Galifianakis	Maria Bamford	Patton Oswalt	Brian Posehn
Number of Preferences	11	44	23	22

Who (if anyone specific) should be invited? *Note:* Your answer **must** employ a formal statistical analysis.

5. **(BONUS)** You are determining how to price a new type of babysitting service targeted to young single working moms. In order to do this you need to estimate this population's income. You know that the standard deviation is approximately $2175. What sample size will you need to estimate the mean to within $1000 with 95% confidence?