Provide your complete solution for the following problems.

Problem 1.1. (8 points)
The scores of individual students on the Advanced Dark Arts Exam are modeled as normally distributed with a mean of 19.6 and a standard deviation of 5.0. At Voldemort High, 64 seniors take the test. Assume the individual scores at this school are modeled using the same distribution as national scores. What is the sampling distribution of the sample average score for this random sample of 64 students?
State the name and the parameter value(s) of this distribution.

Problem 1.2. (3 points)
The “Aristocratic Hog” chocolate bars are all labeled to weigh 4.0 ounces. The distribution of the actual weights of these chocolate bars is modeled as normal with a mean of 4.0 ounces and a standard deviation of 0.1 ounces. Bernard, the quality control manager and principal taster, initially plans to take (and weigh) a simple random sample of size \( n \) from the production line. Then he reconsiders and decides that a sample twice as large is needed. By what factor does the standard deviation of the sampling distribution of the sample average change?

Problem 1.3. (2 points) What is the approximate probability that a standard normal random variable exceeds 1?

Provide your final answer only to the following questions.

Problem 1.4. (2 points) Any normally distributed random variable has the mean equal to the median. True or false?