# Question Analysis

I'm interpreting this as a series of statements (presumably items 28-31) about a 95% confidence interval for the mean number of chocolate chips in cookies, where the interval is (18.6, 21.3). I need to evaluate whether each interpretation is valid or invalid.

Since the specific interpretations aren't provided in your question, I'll discuss the common valid and invalid interpretations of confidence intervals to demonstrate my understanding:

## Valid interpretations of a 95% confidence interval (18.6, 21.3):

1. We are 95% confident that the population mean number of chocolate chips per cookie is between 18.6 and 21.3.

2. The interval from 18.6 to 21.3 was produced by a method that captures the true population mean in 95% of all possible samples.

3. If we were to repeat this sampling procedure many times, about 95% of the resulting confidence intervals would contain the true mean number of chips per cookie.

## Invalid interpretations:

1. There is a 95% probability that the true mean number of chips is between 18.6 and 21.3. (Invalid because the population parameter is fixed, not random)

2. 95% of all cookies have between 18.6 and 21.3 chocolate chips. (Invalid because this describes the distribution of individual values, not the mean)

3. There is a 95% chance that a randomly selected cookie will have between 18.6 and 21.3 chocolate chips. (Invalid for the same reason as above)

4. 95% of the sample means are between 18.6 and 21.3. (Invalid because it misrepresents the sampling distribution)

Without seeing the specific statements in items 28-31, I can only provide this general framework for evaluating confidence interval interpretations.