Name_____ **Period** _____ **Date** _____

Quality Control

eClinic

Lesson 2: A Quality Control Example

Researchers estimate that medical mistakes result in over 250,000 deaths each year in the United States. In fact, medical mistakes are now the third leading cause of death in the country. The data shows that accurate and precise laboratory testing is now more important than ever. Quality control is at the heart of valid and reliable tests. Do you have all the qualities needed to conduct laboratory tests? If so, get started with this simulation.

Doing the Science

1. Open the "Quality Control" simulation.
2. Select the practice or test mode as directed by your professor.
3. Select the "Analysis" button on the screen.
4. Select and move the rack of test tubes to the "Chemical Analyzer" on the right side of the screen.
5. Select the "Close" button to close the lid and then select the "Start" button.
6. Note and record in Table 1 the analyte type, lot number, and the 20 values.
7. Calculate and enter in Table 1 the sum and mean of the values.
8. Calculate and enter in Table 1 the mean difference and mean difference squared for each value.
9. Calculate and enter in Table 1 the sum of the mean differences squared.
10. Calculate and enter the values for Table 2.
11. Select the "Check Answers" or "Submit Answers" button to have your responses evaluated.

Do You Understand?

1. Name one benefit and one deficiency of using an unassayed chemical control.

2. Thirty samples for glucose testing were run and the mean was found to be 96 mg/dL with a standard deviation of 11 mg/dL. What is the coefficient of variation for the sample set?

Table 1. Analyte = Lot # =

Value (mg/dL)	Mean Difference	Mean Difference^2
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		
Sum =		Sum =
Mean =		

Table 2.

One standard deviation	= ±	mg/dL
Two standard deviations	= ±	mg/dL
Three standard deviations	= ±	mg/dL
Range of acceptable limits	= ±	mg/dL
Upper acceptable limit	= ±	mg/dL
Lower acceptable limit	= ±	mg/dL
Coefficient of variation		%