Statistics in Science Notesheet *by C. Kohn, Agricultural Sciences – Waterford WI*

Name: Hour Date:

1. A major concern in science is proving that what we have would   
     
   \_ if we .
2. What is the Scientist’s Question?   
     
   \_ .
3. In science, we can use to determine whether or   
     
   not we can be .
4. In other words, the use of can tell us whether our   
     
    are .
5. The more variable our data is, the reliable it is.   
     
   The variable our data is, the more reliable it is.
6. What is the mean of the data?
7. How do we calculate the mean of the data? Write the formula here:
8. What does it mean that the mean of the data can change?   
     
   \_ .
9. List and describe the two factors that affect the reliability of our data:  
     
   \_ .   
     
   \_ .
10. What is Standard Deviation?   
      
    \_ .
11. What does high variance mean?
12. What does low variance mean?
13. What is the equation for standard deviation?
14. You have a group of 5 students.
    1. Student A is 72 inches tall
    2. Student B is 60 inches tall
    3. Student C is 66 inches tall
    4. Student D is 68 inches tall
    5. Student E is 58 inches tall.  
         
       Calculate the mean height and standard deviation for this group. Show your work below.
15. What is the Margin of Error?   
      
    \_ .
16. Margin of error is usually equal to:   
      
    \_ .
17. What does it mean to say that a survey has a margin of error of plus or minus 2%?   
      
    \_   
      
    \_
18. What is Standard Error?   
      
    \_ .
19. What two things does Standard Error utilize to determine reliability?   
      
    \_ .
20. What is the formula for standard error?
21. Calculate standard error for our earlier problem involving average height; show your work:
22. Why is standard error better than standard deviation for determining the margin of error?   
      
    \_ .
23. What are error bars?   
      
    \_ .
24. If two sets of error bars overlap, what does this mean?   
      
    \_ .
25. If two sets of error bars do not overlap, what does this mean?   
      
    \_ .
26. In the space below, draw a bar graph between two samples that are statistically the same.
27. In the space below, draw a bar graph between two samples that are statistically different.