Keypoints Units and Numbers

Definitions

You will not be asked to write a definition of any of these but I do expect you to recognized them when they are used in problems, etc.. Cubic Centimeter Liter Mass Meter Milliliter Significant Figures Units Weight

Concepts

- 1. Be able explain, and give an example, of why a number without units is usually not useful.
- 2. Be able to give standard units of temperature, volume, mass, and distance in SI or metric units.
- 3. Using a table of metric prefixes, and abbreviations, to be able to relate SI units to other SI units of that measure the same thing, (For example mg to kg.)
- 4. Recognize that the units of volume are a cube of the units of distance and be able to explain why.
- 5. Recognize that a milliliter is the same as a cubic centimeter.
- 6. Be able to define mass
- 7. Be able to explain the difference between mass and weight, and give a concrete example of this difference.
- 8. Be able to explain why mass is determined using a balance, while a spring can be used to measure weight.
- 9. Be able to give a few examples of how uncertainty could arise in a measurement.
- 10. Be able to recognize the degree of uncertainty in a measurement by referring to the markings that you use to make the measurements. (In some instances the markings on a measuring tool may be digital.)
- 11. Be able to list the rules for determining the number of significant figures in a number. (It is fine if part of you use examples to illustrate your rules.)
- 12. Be able to correctly identify the number of significant figures in a number written in standard notation, including recognizing when the number of significant figures is not entirely clear.
- 13. Be able to correctly identify the number of significant figures in a number written in scientific notation.
- 14. Be able to give 2 reasons that scientists find scientific notation to be useful.
- 15. Be able to give example of when standard notation cannot indicate the number of significant figures.

Calculations

1. Be able to round numbers correctly.

- 2. Be able to multiply two numbers with known numbers of significant figures, and give your answer with the correct number of significant figures.
- 3. Be able to add two numbers with known numbers of significant figures, and give your answer with the correct number of significant figures, even if your answers have differing levels of exactness, and/or differing numbers of significant figures.
- 4. Be able to subtract two numbers with known numbers of significant figures, and give your answer with the correct number of significant figures, even if your answers have differing levels of exactness, and/or differing numbers of significant figures.
- 5. Be able to add, divide, multiply and subtract in the same equation and keep tract of significant figures.