**The Magical World of Significant Figure Calculations**

As you know, doing significant figure calculations can be a little frustrating. Here’s a quick recap on how to do it:

**Adding and subtracting:**

1. Figure out the precision that the numbers you’re working with have (i.e. “To the nearest tenth”)
2. Do the match as you normally would
3. Round the answer to the level of precision as the least precise number you were starting with.

An example:

17.2 cm – 2.883 cm = ?

First step: Figuring out the precision of the numbers we’re working with:

17.2 cm is precise to the nearest 0.1 gram, as that’s the last significant figure.

2.883 cm is precise to the nearest 0.001 gram, as that’s the last significant figure.

Second step: Doing the math

If you plug 17.2 cm – 2.883 cm into a calculator, you get the answer 14.317 cm.

Step three: Round to the least precise number you were working with:

17.2 cm is precise to 0.1 cm (see above) and 2.883 cm is precise to 0.001 cm (also above). Because 0.1 cm is less precise than 0.001, we need to round our answer to the nearest 0.1 cm.

As a result, when we round 14.317 cm to the nearest 0.1 cm, we end up with **14.3 cm**.

**Multiplication and division:**

1. Find out how many significant figures are in each number you’re working with.
2. Do the calculation on your calculator.
3. Round your answer to the same number of sig figs as the smallest number of the ones you’re working with.

Example:

17.2 km/hr X 2.883 hr = ?

First step: Figure out how many sig figs are in each number:

17.2 has three sig figs

2.883 has four sig figs

Second step: Do the math

17.2 km/hr X 2.883 hr = 49.5878 km

Third step: Round the answer so it has the same number of sig figs as the smallest number we’re working with:

Sine 17.2 km/hr has three sig figs and 2.883 has four sig figs, clearly, the smaller of those two numbers is three sig figs. As a result, our answer of 49.5878 needs to be rounded to three significant figures (3 < 4), giving us **49.6 km**.

Now for some practice problems:

1. 3.45 grams + 0.03 grams =
2. 4.52 grams / 80 mL =
3. 5.1 grams + 7 grams =
4. 0.0039 meters / 820 seconds =
5. 450.0 cm – 283 cm =
6. 3.4 x 104 km/hr X 125 hr =
7. 400 grams + 86 grams =
8. 73.80 kg + 23.11 kg =
9. 4.502 grams / 91.2 mL =