

5th Grade Assignment – Week #20

Important Note:

- Before Tuesday’s group meeting, it will be best for each student to first make a meter stick. See the specific instructions for this under “individual work”.
- You will need a scale to measure metric weight.

Group Assignments:

For Tuesday.

Metric Measurement

- 1) Each student should spend a few minutes trying to find two objects in their house that weigh fairly close to 1 kilogram and 100 grams. Then you should share what you have found with the others in the group.
- 2) Use your meter stick to measure the length of the longest room in your house, then report back to the group what you found. (It might be OK at this point if you just round your answer to the nearest whole meter.)
- 3) Our meter sticks show that if we divide a meter into 100 equal parts, we get 1 centimeter. This tells us two things:

$$1 \text{ m} = 100 \text{ cm}$$

$$1 \text{ cm} = \frac{1}{100} \text{ m} \text{ or } 1 \text{ cm} = 0.01 \text{ m}$$

Now fill in the blanks for these problems:

- | | |
|--------------------|---------------------|
| a) 2 m = ____ cm | f) 6 cm = ____ m |
| b) 5 m = ____ cm | g) 83 cm = ____ m |
| c) 37 m = ____ cm | h) 830 cm = ____ m |
| d) 600 cm = ____ m | i) 2.53 m = ____ cm |
| e) 60 cm = ____ m | j) 0.4 m = ____ cm |

Decimal Fractions

- 4) For each problem, do the following steps: convert the decimal fraction into a common fraction, add the two fractions together, then convert back to a decimal fraction.
 - a) $0.03 + 0.06$
 - b) $0.42 + 0.035$
 - c) $3.7 + 0.48$
- 5) Now answer this question: How can you add decimal fractions together without converting them to common fractions? Then use your shortcut to do the following problems without converting to common fractions:
 - a) $2.45 + 0.062$
 - b) $0.6 + 0.007$
 - c) $34.34 - 2.7$
 - d) $8.2 - 0.13$
- 6) Why was the last one (above) tricky?

For Thursday

Metric Measurement

1) Making Metric Measurement Tables

- This is similar to an assign that I gave with the US measurement system in Week #10. The instructions below are a reminder of that process.
- Do each table roughly while in your group, and then later perhaps do a better version as a main lesson page.
- For each table, always have the columns go left to right from largest unit to smallest, and have the rows go from top to bottom from largest unit to smallest.
- Start by just doing a table for length. (Of course, weight and volume will have the same table in the metric system.)
- I think it is fine to only do the commonly used prefixes: kilo, unit (m,g,ℓ), centi, milli.
- Remember that each cell in the table answers the question: “How many of the row units are there in a column unit?”
 - Example: row = inch, and column = foot. We ask:
“How many inches are there in 1 foot?” (Ans: 12)
 - Example: row = foot, and column = inch. We ask:
“How much of a foot is in an inch?” (Ans: $\frac{1}{12}$)
- Remember that the diagonal cells (from top-left to bottom-right) should have a “1” in them. Cells that are above and to the right of this diagonal should have fractional values.

2) Fill in the blanks for these problems:

a) 5 m = ____ mm

d) 400 mm = ____ cm = ____ m

b) 8 ℓ = ____ mL

e) 280 mL = ____ cℓ = ____ ℓ

c) 37 g = ____ mg

f) 6 kg = ____ g = ____ mg

Decimal Fractions

- 3) For each problem, do the following steps: convert the decimal fraction into a common fraction, add the two fractions together, then convert back to a decimal fraction.
- a) 0.2×0.4
 - b) 0.3×0.6
 - c) 0.04×0.07
- 4) Now answer this question: How can you multiply decimal fractions together without converting them to common fractions? Then use your shortcut to do the following problems without converting to common fractions:
- a) 0.8×0.9
 - b) 0.3×0.002
 - c) 0.06×0.007
 - d) 0.023×0.0041

Individual Work

- *Metric Measurement.*
 - *Making a Meter Stick.*
 - The parent should ensure that a (blank) stick is cut to exactly 1 meter in length (which may be the backside of the yardstick made before, as long as it is the correct measurement, about 39.4 inches).
 - Then the student should use a string, and carefully think about how to fold the string in order to mark the stick into ten equal segments, with large marks. (We learned this earlier in the year.) Then divide each of these decimeters (one-tenth of a meter) in half, with medium-sized marks. Then carefully by eye, divide each half-decimeter into five parts by putting four small marks on it. Label the large and medium marks with multiples of five, thereby indicating centimeters.
 - *Guess and Measure!!!* As we did with the US measurement system, we should now measure (length, weight and volume) all kinds of things. Remember to always guess before you measure.
- *Main Lesson Book Pages.* (It doesn't all have to be done this week!)
 - *The Importance of the Zero.* Create a page regarding the importance of the zero in our place value system. Include these ideas (but make up your own examples):
 - With whole numbers, adding a zero to the end of a number makes it ten times larger.
80 is ten times larger than 8
70000 is 10000 times larger than 7
 - With whole numbers, adding a zero in front of a number makes no difference.
006 is the same as 6
 - With decimal fractions, adding a zero between the number and the decimal point makes it ten times smaller.
0.036 is ten times smaller than 0.36
0.00041 is 1000 times smaller than 0.41
 - With decimal fractions, adding a zero at the end makes no difference.
0.3 is the same as 0.30
0.007000 is the same as 0.007
 - *Adding and Subtracting Decimal Fractions.* Create a page that shows the shortcut for adding and subtracting decimal fractions. Include your own examples.
 - *Multiplying Decimal Fractions.* Create a page that shows the shortcut for multiplying decimal fractions. Include your own examples.
 - *The Metric System.* Create a page (or two?) that summarizes the metric system. Include the prefixes, and how simple it is to do conversions because you are always just multiplying and dividing by powers of ten. Include your own examples.
 - *Metric Measurement Tables.* See group work (above) for more of an explanation. You have many options for how to do this in your main lesson book. You decide!
- *Decimal Fraction Practice.*
 - 1) With each of the below problems, rewrite the given decimal fraction in two ways: as a single fraction (with a power of ten denominator), and then as a series of fractions where each one has a single-digit numerator and a power of ten denominator. (Don't reduce.)
 - a) 0.59
 - b) 0.0023
 - c) 0.287
 - d) 0.0400
 - 2) Convert each common fraction into a decimal fraction.
 - a) $\frac{73}{100}$
 - b) $\frac{923}{1000}$
 - c) $\frac{6}{1000}$
 - d) $\frac{23}{10000}$
 - e) $\frac{8364}{10000}$
 - f) $\frac{4}{5}$
 - g) $\frac{3}{4}$
 - h) $\frac{3}{4000}$