This worksheet is all review from Basic Math/6th grade. Review each of these concepts going as in-depth as needed.

## Monsters meet Decimals

1. Ignore the decimal and any zeros, do a monster on the normal number, and get an answer
2. Count the decimal places
3. Take the number of decimal places and divide by the number in the hook.
4. That number is the amount of decimal places needed in the final answer.

Sample Problem:

$\sqrt{.000016}$ A monster on just the 16 gets you a 4. There are 6 total decimal places and divided by the 2 in the hook, we find out that our final answer needs 3 decimal places. Final answer is .004

Practice Decimal Monster Problems:

- $\sqrt[5]{.0000000032}$
- $\sqrt{2.56}$
- $\sqrt[5]{1.21}$
- $\sqrt[3]{.343}$

## Multiplying Decimals

1. Ignore the dots and zeros then multiply like normal
2. Add up all the decimal places in both numbers
3. That's how many places need to be in your final answer.

Practice Decimal Multiplication Problems:

- 9.678(6.78)
- .00000098(.0000047)
- 8,700,000(.00039) *Ignore dots and zeros and multiply like normal. Put the zeros from the whole number back on first and then make sure the final answer has the correct number of decimal places.

## Exponents and Decimals

Follow the rules for multiplying decimals. Pay extra attention to make sure you get the correct number of decimal points in the final answer.

Practice Decimal Exponent Problems:

- $(.002)^4$

- $(.0001)^2$

## Long Division of Decimals

The number on the outside has to be a whole number. Move the decimal place as needed. However many places you move on the outside you must move the same number of places on the inside. Decimals should continue to be divided until they either end or repeat. Do not round unless the problem tells you to.

Practice Ordering Decimals Problems:

- $.58 \div 2.7$ $.2\overline{148}$
- $3.459 \div .2$ $17.295$
- $49.8 \div .03$ $1660$
- $.04 \div 5.4$ $.00\overline{74}$
- $.0685 \div .008$ $8.5625$
- $35.45 \div 7.93$ round to four decimal places $4.4704$

## Order of Operations with Decimals

Nothing new to teach here as the students already know the order of operations and know how to do everything with fractions. This just allows them to put all their skills together to solve one problem.

Practice Decimals Order of Operation Problems:

- $\sqrt[3]{.000064} + 8.6 \div .04(.032 - .012)^3 + (2.34)^2$ $5.51732$
- $8.6(4.27 - 2.89) \div (.53 - .23) - \sqrt[3]{2.197}$ $38.26$
- $.0452(.0098) \div (.01)^3 - \sqrt{.000289} + 2.4(5.03 - 2.1)^2$ $463.54676$
- $(2.56)^0 + \sqrt{10.24} - 3.86(5.7 - 5.09)^2$ $2.763694$
- $\sqrt[4]{.0081}(.000856 \div .428)^2 \div .00008 + 3.6(45.8 - 32.76)$ $46.959$
- $(1.58)^2 + \sqrt[4]{.0625} + .064 \div .16(.57 - .47)^3$ $2.9968$
- $\sqrt{.000676} + .03 \div (2.46 - 1.86) \div (.18 + .22)$ $.151$

- $3.8(4.17-1.6)^2+.0000064(.008)\div(.02)^4-\sqrt{.00000361}$

  5025.09672

- $\sqrt{5.76}-(8.034)^0+2.18(6.3-4.9)^2$ 5.6728

- $4.9(37.2-29.16)-\sqrt[4]{.1296}(.00243\div.027)^2\div.009$ 38.856

## Baby Math God (getting *x* alone)

This is a concept that the students are familiar with but hasn't been applied in this way yet. This is basically just the last step of math god. **New math rule: if a letter is on the bottom, you must first kill the letter, and then get it alone once its on top.**

Sample problem: $\frac{3}{8}=\frac{6x}{4}$ Ask students who is bothering *x*. They should answer 6 and 4. Then prompt, "Think of a war game: how would we kill a letter on the top?" Someone should answer to put it on the bottom and then remind students that to keep the world in balance, what we do to one side of the wall we have to do to the other side. Do that with everything bothering *x* until *x* is alone. Then just do a war game to simplify.

Practice Baby Math God Problems:

- $\frac{54}{48}=\frac{81x}{36}$
- $\frac{28}{32}=\frac{63}{72x}$

## Dimensional Analysis

Used to convert between units

Memorize these conversions:

- 12 inches = 1 foot
- 3 feet = 1 yard
- 5,280 feet = 1 mile *It's helpful to memorize this tree
- 60 seconds = 1 minute
- 60 minutes = 1 hour
- 24 hours = 1 day
- 365 days = 1 year * This one too
- 16 ounces = 1 pound
- 2000 pounds = 1 ton

Sample Problem: Amanda drives at 88 miles per hour. How many feet per second is she going?

Set up problem as a fraction. $\frac{88 \text{ miles}}{1 \text{ hour}}$ We want our final to have feet on the top and seconds on the bottom. We will use the conversions to kill the words we don't need working our way towards the words we do need.

$$\frac{88 \text{ miles} \bullet 5280 \text{ feet} \bullet 1 \text{ hour} \bullet 1 \text{ minute}}{1 \text{ hour} \bullet 1 \text{ miles} \bullet 60 \text{ minutes} \bullet 60 \text{ seconds}}$$

Remember that the rules of a war game is that ANY thing that is the same on the top and bottom can kill each other so that means that even the words can die in a war game. Kill all the words and then do trees on the numbers to do a war game. The final answer would be $\frac{1936 \text{ feet}}{15 \text{ seconds}}$

Practice Dimensional Analysis Problems:

- Let's go mining for gold! We get lucky and are finding gold at a rate of 3 ounces every 4 hours. How many tons will we find in one year?
- An ant can run 10 feet in 4 seconds. How fast is that in miles per hour?
- Convert 32,000 ounces into tons

## Converting between Fractions, Decimals, and Percents

Use our exclusive F-D-P chart (see below) whenever you have to convert between fractions, decimals, and percents. Place the type of number you have under the appropriate letter in the chart. Follow the arrows as they help to remind you of the proper order to divide out the fraction and which way the decimal moves in the conversion. The "little two" reminds you to ALWAYS move the decimal two places.

Example: Convert 12.5% into a fraction.

$$F \rightleftarrows D \overset{2}{\rightleftarrows} P$$

Solution: Place the 12.5% under the P in the F-D-P chart. The only way to move on the chart off of P is to follow the arrow to the left. This means you move the decimal place to the left, and the "little two"

between the D and the P reminds you to always move it two places. This results in the decimal .125. To turn a decimal into a fraction, you simply read it properly. Since .125 is read as one hundred twenty five thousandths, you write $\frac{125}{1000}$ which reduces to $\frac{1}{8}$.

Practice FDP Problems:

- Convert $\frac{3}{8}$ to a percent.
- Convert $24\%$ to a fraction.
- Convert $\frac{5}{11}$ to a percent.
- Convert $1\frac{3}{5}\%$ to a fraction.
- Convert $\frac{2}{3}\%$ to a fraction.
- Convert $5$ to a percent.

## Word Problems to set up Baby Math God

Students will change word problems into math equations and solve for *x*. Remind students that "of" means to multiply and tell that is means equal.

Sample problem: 36 is what percent of 24?

First have students translate into "math." $36 = x \cdot 24$ Then get *x* alone. Once you have an answer for *x* go back and check the problem, if it asks for a percent you need to put your *x* answer on the FDP chart to turn into a percent.

Practice Seting up Baby Math God Problems:

- 18 is 48% of what number?
- 12 is what percent of 2?
- Find .64% of 1200