

Teaching Notes for Algebra I

Homework #2

Overview: In this lesson, students will continue to review material from Basic Math and Pre-Algebra.

Preparation: Watch videos on “Trees,” “Divisibility Rules,” “War Games,” “Jealously Games,” and “FDP”

Classroom Examples:

*Make sure to review how to add, subtract, and multiply decimals.

1) Simplify: $56.48 \div .8$

Answer: 70.6

2) Simplify: $22.04016 \div .034$

Answer: 648.24

3) Simplify: $\frac{50}{273} - \frac{17}{286}$

Answer: $\frac{50}{273} - \frac{17}{286} \rightarrow \frac{50}{3 \cdot 7 \cdot 13} - \frac{17}{2 \cdot 11 \cdot 13} \rightarrow \frac{50 \cdot 2 \cdot 11}{3 \cdot 7 \cdot 13 \cdot 2 \cdot 11} - \frac{17 \cdot 3 \cdot 7}{2 \cdot 11 \cdot 13 \cdot 3 \cdot 7} = \frac{743}{6006}$

4) Simplify: $\frac{2261}{102} \div \frac{494}{1001} \cdot \frac{552}{3773}$

Answer:

$$\frac{7 \cdot 17 \cdot 19}{2 \cdot 3 \cdot 17} \div \frac{2 \cdot 13 \cdot 19}{7 \cdot 11 \cdot 13} \cdot \frac{2 \cdot 2 \cdot 2 \cdot 3 \cdot 23}{7 \cdot 7 \cdot 7 \cdot 11} \rightarrow \frac{7 \cdot 17 \cdot 19 \cdot 7 \cdot 11 \cdot 13 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 23}{2 \cdot 3 \cdot 17 \cdot 2 \cdot 13 \cdot 19 \cdot 7 \cdot 7 \cdot 7 \cdot 11} = \frac{46}{7}$$

5) Simplify: $\frac{288}{5} \left(\frac{5}{48} + \frac{7}{36} \right) \div 86 - \frac{3^0}{12}$

Answer: $\frac{288}{5} \left(\frac{43}{144} \right) \div 86 - \frac{3^0}{12} \rightarrow \frac{288}{5} \left(\frac{43}{144} \right) \cdot \frac{1}{86} - \frac{1}{12} \rightarrow \frac{1}{5} - \frac{1}{12} \rightarrow \frac{7}{60}$

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6) Simplify: $\frac{3^2}{24} + \frac{312}{4} \left(\frac{4}{39} - \frac{5}{52} \right) - \frac{1}{7}$

Answer: $\frac{3^2}{24} + \frac{312}{4} \left(\frac{1}{156} \right) - \frac{1}{7} \rightarrow \frac{9}{24} + \frac{312}{4} \left(\frac{1}{156} \right) - \frac{1}{7} \rightarrow \frac{9}{24} + \frac{1}{2} - \frac{1}{7} \rightarrow \frac{41}{56}$

7) Simplify: $\frac{1}{2} + \frac{5}{8} \div \left(\frac{7}{18} - \frac{21}{54} \right) \div \frac{2^3}{12}$

Answer: $\frac{1}{2} + \frac{5}{8} \div (0) \div \frac{2^3}{12} \rightarrow \frac{1}{2} + \frac{5}{8} \div (0) \div \frac{8}{12} \rightarrow \frac{1}{2} + \frac{5}{8} \cdot \frac{1}{0} \cdot \frac{12}{8} \rightarrow \text{undefined}$

8) Simplify: $\frac{-(-3-1)^2 - 6^0 - 54 \div 9(-4-2) - 3^4}{-4^2 - (-1-2)^3 \div 3(-2-1) - 1^8}$

Answer: $\frac{-1(-3-1)^2 - 6^0 - 54 \div 9(-4-2) - 3^4}{-4^2 - (-1-2)^3 \div 3(-2-1) - 1^8} \rightarrow \frac{-1(-4)^2 - 6^0 - 54 \div 9(-6) - 3^4}{-6^2 - 1(-3)^3 \div 3(-3) - 1^8} \rightarrow \frac{-1(16) - 1 - 54 \div 9(1-8) - 81}{-16 - 1(-27) \div 3(-3) - 1} \rightarrow \frac{-16 - 1 - 54 \div 9(1-8) - 81}{-16 - 27 - 1} \rightarrow \frac{-62^2 - 1(-3)^3 \div 3(-3) - 1^8}{-44} \rightarrow \frac{-44}{22}$

9) Turn $\frac{3}{16}\%$ into a fraction.

Answer: Use the FDP Chart to do the conversion. Students will tend to place the $\frac{3}{16}\%$ under the F because it looks like a fraction, but it is the percent symbol that requires it to be placed under the P in the chart. Following the arrows to the left, with the 2 above the arrow pointing from the P to the D, means that you have to move the decimal point 2 places to the left. This is easily done if the number under the P is already a decimal. However, if that number is a fraction, you will have to use long division to turn the fraction percent into a decimal percent. Dividing 16 into 3 gives the answer 0.1875%. Keep in mind, this number is STILL a percent, but now you can move the decimal point 2 places to the left, following the direction of the arrow. You now have the number 0.001875 under the D. To turn any decimal, that ends, into a fraction, you simply write down the fraction as you read the decimal correctly. Properly read, 0.001875 is one thousand eight hundred seventy-five millionths. Therefore, under the F, you should write $\frac{1875}{1000000}$. The

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final step would be to use a War Game to reduce the fraction. The trees would

yield: $\frac{5 \cdot 5 \cdot 5 \cdot 5 \cdot 3}{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5} \rightarrow \frac{3}{160}$.