

University of South Carolina
Math 221: Math for Elementary Educators
Instructor: Austin Mohr
Section 001
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Test 3

1. Adding Decimals

- a. Write 3.8 and 4.26 in expanded form.
- b. Use the expanded forms in part a to find $3.8 + 4.26$. Write your final answer as a decimal.
- c. Why must you line up the decimal point to use the standard algorithm?

2. Multiplying Decimals

- a. Convert 3.2 and 0.21 to fractions (*not* mixed numbers). Do not reduce.
- b. Use the fractions in part a to find $3.2 \cdot 0.21$. Write your final answer as a decimal.
- c. According to the standard algorithm, how many digits should be behind the decimal in your answer? Why must this be the case? (Simply restating the rule will not get full credit. I want to know *why* the rule is the way it is.)

3. Percents

- a. You baked 240 cookies for a bake sale and sold $\frac{3}{4}$ of them. How many cookies did you sell?
- b. You contribute \$18 toward the cost of dinner, which happens to be 15% of the total bill. What is the total cost of the dinner?

4. You survey some of your friends about terrible music and find that:

- 12 hate Nickelback
- 11 hate John Mayer
- 5 hate both Nickelback and John Mayer

Let N and J be the set of surveyed people that hate Nickelback and John Mayer, respectively.

- a. What do people in the set $N \cap J$ think about Nickelback and John Mayer?
- b. What do people in the set $N - J$ think about Nickelback and John Mayer?
- c. Draw a Venn Diagram to represent the results of the survey.

5. Each of the following statements is false. For each one, state the negation and prove that it is true.

- a. Some natural numbers are negative.
- b. If 4 is even, then 5 is even.

6. The following statement is true.

If $x \cdot y$ is even, then x is even or y is even.

- a. State the contrapositive of the statement above. (Hint: Try to write out just “not(x is even or y is even)” first.)
- b. Prove the original statement by proving the contrapositive.