Foundations of Algebra Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 1 Review Guide**

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| What I Need to Know | Things to Remember | Practice |
| 1. Operations with Integers |  | a. Add or Subtract:-5 + 3 = \_\_\_\_\_\_\_ 3 – 9 = \_\_\_\_\_\_4 – (-8) = \_\_\_\_\_\_ -5 – 4 = \_\_\_\_\_\_  | b. Multiply or Divide:4 x -5 = \_\_\_\_\_ 18 ÷ -6 = \_\_\_\_\_-7 x -3 = \_\_\_\_\_ -8 ÷ -2 = \_\_\_\_\_ |
| c. How do you know when the sum of a positive and negative integer will be positive? | d. How do you know when the sum of a positive and negative integer will be negative? |
| 2. Real World Applications of Integers | Integers are whole numbers; they can be positive, negative, or zero. | a. Represent the scenario with an integer:-You take the elevator to 14th floor.-The temperature is seven degrees below zero.  | b. Amara jumped off the diving board that was 12 feet in the air and went 9 feet below the water’s surface. How far did she travel? *(Hint: draw a picture/diagram to help you)* |
| 3. Powers of 10 | When you multiply, move the decimal to the right (making the number bigger).When you divide, move the decimal to the left (making the number smaller). | a. Multiply or Divide: 5.7 x 100 = \_\_\_\_\_\_\_0.42 x 10 = \_\_\_\_\_\_\_5670 ÷ 1000 = \_\_\_\_\_\_\_ | b. Multiply or Divide:450 ÷ 10 = \_\_\_\_\_\_\_5.6 x 100 = \_\_\_\_\_\_ |
| 4. Decimal Comparison | < means less than> means greater  than | a. Order from least to greatest: | b. Compare the following decimals: 0.56 \_\_\_\_ 0.5 0.35 \_\_\_\_ 0.350  |
| 5. Decimals on a Number Line |  | a. Plot the following points on the number line. |
| 6. Rounding Decimals | 4 or less – let is rest (stays the same)5 or more – raise the score (rounds up) Only look at the digit immediately following what you are rounding to. | a. Complete the chart below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *Round to the nearest ten* | *Round to the nearest one* | *Round to the nearest tenth* | *Round to the nearest hundredth* | *Round to the nearest thousandth* |
| **4735.1628** |  |  |  |  |  |
| **258.0751** |  |  |  |  |  |
| **632.9516** |  |  |  |  |  |

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| 7. Decimal Word Problems | 1 quarter = 25 cents = 0.25 dollars1 dime = 10 cents = 0.1 or 0.10 dollars1 nickel = 5 cents = 0.05 dollars1 penny = 1 cent = 0.01 dollars | a. Jack has 78 dimes, 16 quarters, and 410 pennies. How much money does he have? | b. Mia is traveling from Atlanta to Los Angeles, which is 2,175 miles. She wants to drive the same number of miles for 10 days. How many miles will they drive per day? Round your answer to the nearest mile.  |
| 8. Comparing Decimals & Fractions | Remember that you can add 0’s behind decimals to help you when comparing. For example 0.4 is the same decimal as 0.40.When comparing fractions and decimals, change the fractions to decimals first. | a. Name an equivalent fraction for each decimal:0.6 = \_\_\_\_\_\_\_\_\_\_ 0.37 = \_\_\_\_\_\_\_\_\_\_3.3 = \_\_\_\_\_\_\_\_\_\_ 4.059 = \_\_\_\_\_\_\_\_\_\_\_ | b. Order the numbers from least to greatest:Then plot on the number line: |
| 9. Benchmark Fractions |  | a. Order the following benchmark fractions from smallest to largest.$\frac{1}{3}$ $\frac{1}{6}$ $\frac{1}{11}$ $\frac{1}{8}$ $\frac{1}{4}$ $\frac{1}{10}$ $\frac{1}{12}$ $\frac{1}{2}$ $\frac{1}{5}$ $\frac{1}{7}$ $1$ |
| 10. Ordering Fractions and Converting Fractions |  | a. Order from least to greatest: | b. Convert each fraction to the decimal equivalent.$\frac{3}{4}$ $\frac{1}{3}$ $\frac{2}{5}$$ \frac{5}{2}$ $\frac{4}{10}$ $\frac{2}{3}$ |
| 11. Converting Between Improper and Mixed Numbers |  | a. Convert to improper fractions:  | b. Convert to mixed numbers:  |
| 12. Operations with Fractions | When adding and subtracting, you need a common denominator.When multiplying, multiply straight across.When dividing, write it as the first fraction on top of the second fraction; multiply both by the reciprocal of the bottom fraction. | a. Add or Subtract: | b. Multiply or Divide: |
| 13. Operations with Fractions (Word Problems) |  | a. A stack of board is 21 inches high. Each board is inches thick. How many boards are there? | b. DJ Gabe is going to serve of a whole pizza to each guest at his party. If he expects 24 guests, how many pizzas will he need? |
| c. feet are cut off a board that is  feet long. How long is the remaining part of the board? | d.  of the corn in the US is grown in Iowa.  of it is grown is Nebraska. How much of the corn supply is grown in the two states? |
| 14. Using Visuals to Solve Problems.  | Remember, $\frac{5}{2}÷\frac{1}{4}$ really means how many $\frac{1}{4}'s$ are in $\frac{5}{2}$.When multiplying, divide vertically with one fraction and horizontally with the other. Then, find the overlap. | a. Use a picture to show how to divide  | b. Draw a picture to solve the following: Out of 18 cookies, are chocolate chip. How many of the cookies are chocolate chip? |
| c. Use a picture to show how multiply  | d. The New York Rangers hockey team won of their games last season. If they lost 21 games, how many games did they play in the entire season? |
| 15. Operations with Decimals | When adding and subtracting, line up the decimals first. Remember, you may need to borrow when subtracting.When multiplying, line up the right sides and save the decimal for last. | a. Find the sum of $12.85$ and $3.901$. | b. Find the difference between $27.583$ and $11.315$. |
| c. Find the product of $5.25$ and $0.8$. | d. Find the sum, difference, and product between $4.572$ and $2.15$. |
| 16. Exponents and Exponent Rules |  | a. Express with a single exponent: $2^{4}∙2^{6}$ | b. Express with a single exponent: $(3^{4})^{5}$ |
| c. Express with a single exponent: $\frac{3^{7}}{3^{2}}$ | d. Express with a single positive exponent: $2^{-3}$ |
| 17. Estimating Square Roots | You need to know the perfect squares 1-144. | a. is between what two whole numbers? Which number is it closer to? Approximate it’s value as a mixed number. | b.  is between what two whole numbers? Which number is it closer to? Approximate it’s value as a mixed number. |
| 18. Simplify Radicals | When multiplying, outisde●outside and inside●inside.Make factor trees- pairs break out (one dies) and single numbers stay in the radical. | a. Simplify  | b. Simplify  |
| 19. Add or Subtract Radicals | Simplify radicals first. Then add/subtract **like** radicals. | a.  | b. |
| c.  | d.  |
| 20. Rational & Irrational Numbers | Rational Numbers: a number that can be expressed as a fraction.Irrational Number: a number that cannot be expressed as a fraction. | a. Determine whether the sum of is rational or irrational.  | b. Determine whether the following results in a rational or irrational number. .  |