Name: Date:
Mr. Brostrom/Mr. Stayton – Grade 9 Algebra I

9th Grade Summer Assignment

Hey there, welcome to Algebra I! This assignment will allow us to determine your level of **mathematical knowledge**, and **your ability to think mathematically** as we head into the new school year. Please make an effort to respond to every problem, and don't worry if you can't figure some of them out entirely, just do your best! You will receive full credit for completing and turning this in, and it will be your first grade of the new school year! This assignment must be turned in by Friday, September 11th, 2020.

1. Assuming that light travels at about 186 thousand miles per second, and the sun is about 93 million miles from the Earth, how much time does light take to reach the Earth from the sun?

2. You have perhaps heard the saying, "A journey of 1000 miles begins with a single step." How many steps would you take to finish a journey of 1000 miles? What information do you need in order to answer this question? What would your answer be if the journey were 1000 kilometers?

3. Wes bought some school supplies at an outlet store in Maine, a state that in 2016 had a 5.5% sales tax. Including sales tax, how much did Wes pay for a jacket priced at $49.95 and a pair of pants priced at $17.50?

4. (continuation) A familiar feature of arithmetic is that multiplication *distributes* over addition. When written in algebraic code, this property looks like $a(b + c) = ab + ac$. Because of this property, there are two equivalent methods that can be used to compute the answer in number 3. Explain, using words and complete sentences.

5. Simplify $x + 2 + x + 2 + x + 2 + x + 2 + x + 2 + x + 2 + x + 2 + x + 2 + x + 2$.

6. Solve each of the following equations for x.

a. $16x + 7x = 46$ b. $12x = 6x - 3$ c. $ax + bx = 10$ d. $px - qx = r$

7. Simplify $k - 2(k - (2 - k))$ as much as possible. Your final answer should not include parentheses.

8. Rewrite each of the following as a *single* fraction.

a. $\frac{3}{a} + \frac{7}{a}$ b. $\frac{3}{a} + \frac{7}{2a}$ c. $\frac{3}{a} + \frac{7}{b}$ d. $3 + \frac{7}{b}$

9. Using the variable x to represent a certain number, write an algebraic expression to represent each of the following.

     a. Eleven more than one-third of the number
     b. Three times the difference between the number and twelve
     c. Two times the number, decreased by the sum of the number and two.

10. Pat bought several pens at Walgreen's, for 60 cents each. Spending the same amount of money at the bookstore, Pat then bought some pens that cost 80 cents each. In all, 42 pens were bought. How many pens did Pat buy at the bookstore?

11. A ladder is leaning against the side of a building. Each time I step from one rung to the next, my foot moves 6 inches closer to the building and 8 inches further from the ground. The base of the ladder is 9 feet from the wall. How far up the wall does the ladder reach?

12. Which is greater, 73 percent of 87, or 87 percent of 73?

13. If k stands for an integer, then is it possible for $k^2 + k$ to stand for an *odd* integer? Explain.