

Algebra 1 Summer Work

Welcome to Algebra I. The topics in Algebra I will continue to expand upon your current math knowledge and is the foundation for your future math courses. Mathematics is a series of building blocks. This summer assignment was prepared for students to be able to review material from Pre-Algebra. The summer packet is to be **completed by the first day of school.** You will have an assignment within the first week of school on this material. You will have time to see your teacher during office hours, one lunch, and IDLT for additional help. This packet covers all review skills. **This should be done WITHOUT a calculator.**

Part 1: Fractions

We use fractions for many things. Fractions are often easy to use in algebraic steps than decimals. A fraction is a ratio of two values. You should be able to simplify fractions, perform operations (addition, subtraction, multiplication, division) with fractions, and convert between mixed fractions and improper fractions.

1. Write the fraction in simplest form.

a. $\frac{15}{45}$

b. $\frac{17}{34}$

2. Perform the given operations. Write all answers as simplified improper fractions.

a. $\frac{2}{5} + \frac{4}{5}$

b. $\frac{10}{12} - \frac{2}{6}$

c. $\frac{2}{7} \cdot \frac{3}{5}$

d. $\frac{12}{5} \cdot -\frac{3}{7}$

e. $-3\frac{1}{5} \cdot 2\frac{3}{5}$

f. $5\frac{4}{9} \cdot 1\frac{1}{5}$

g. $-4 \cdot -\frac{2}{9}$

h. $\frac{3}{7} \div \frac{3}{5}$

i. $\frac{25}{3} \div \frac{1}{4}$

j. $\frac{30}{14} \div 5$

k. $\frac{3}{7} + \frac{4}{5}$

l. $\frac{7}{3} - \frac{14}{8}$

Part 2: Real Numbers & Scientific Notation

It is important to develop your number sense and now how numbers compare to one another. We often represent numbers in scientific notation when the value is very large or very small because it is easier to read.

1. Write in scientific notation.

a. 0.00000708

b. 8,900,000,000

2. Write in standard form.

a. 4.7×10^7

b. 5.3×10^{-3}

3. Compare the following numbers using $<$, $=$, $>$

a. -12 _____ 4

b. $\frac{1}{3}$ _____ 0.33

c. $\frac{3}{4}$ _____ $\frac{18}{24}$

d. 0.54 _____ 0.5

e. $-3\frac{2}{5}$ _____ $-3\frac{4}{11}$

Part 3: Variables & Expressions

Variables and expression are the building blocks to equations. Variables allow to us to represent unknown or changing values to help us solve problems in the real world.

1. Write a variable expression to represent the phrase: *29 decreased by a number*

2. You are going to an amusement park with your friends. You have \$50 to buy all of your friends' tickets. If tickets cost \$6 a piece, write a variable expression for the amount of money you have left after purchasing m tickets.

3. Evaluate the expression when $f=-3$, $g=2$, and $h=-6$.

a. $f \cdot g \cdot h$

b. $\frac{f^2+h}{3}$

c. $(g-h)^2 \div (h-g)$

d. $2f^3 - 3g^2$

e. $\frac{g}{f} + 4h$

f. $4g - (g - 2f)$

4. Simply each expression

a. $2(3a + 5)$

b. $-(a + 7t)$

c. $6x + 7y - 4x + 10y$

d. $10a - 3(a + 5b - 2) + 6b$

e. $5(x - 7) - x - (x + 2)$

f. $3(x - y) + 2(4x + 5y)$

Part 4: Solving Equations

Solving equations is the foundation of algebra. The ability to solve for a variable allows to isolate the variable and continue to uncover solutions.

1. Solve the following equations

a. $x + 5 = -14$

b. $\frac{k}{-3} = -9$

c. $-7 + h = -4$

d. $3g = 72$

e. $\frac{y}{6} + 13 = -15$

f. $9a - 7 + 3a = 137$

g. $5 - (9 - x) = 4$

h. $17 - 5m = 50 + 6m$

i. $-8 + \frac{a}{4} = 13$

j. $-2(x - 1) = 4x - (x + 2)$

k. $5(3x - 2) = 5(4x + 1)$

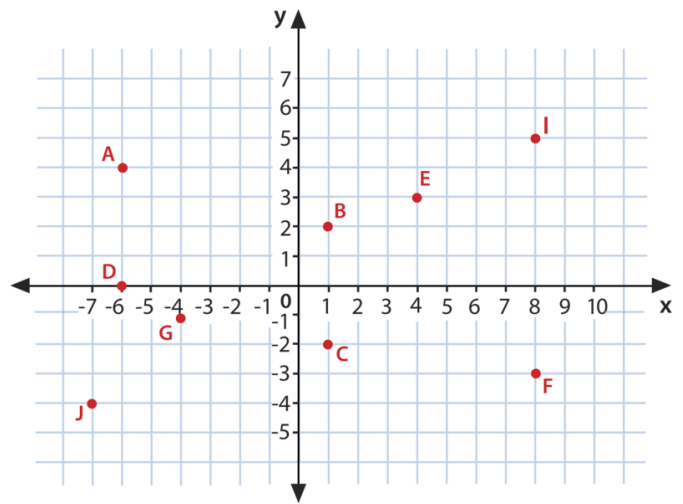
l. $-8 + \frac{a}{4} = 13$

Part 6: Coordinate Plane

The coordinate plane is used for many things. We want to make sure that we can graph points, ordered pairs on the plane. Ordered pairs are written in the form (x,y) . To graph a coordinate, written as an ordered pair you move horizontally according to the x value and move vertically according to the y value.

1. List the ordered pair for each letter, then identify the quadrant or axes the point lies in.

Point	Ordered Pair	Quadrant/Axis
A		
B		
C		
D		
E		
G		
I		
J		



2. Plot and label the following ordered pairs

- a. $(-3, 4)$
- b. $(2, 6)$
- c. $(0, 1)$
- d. $(4, -5)$
- e. $(6, -3)$
- f. $(-5, 0)$

