

Welcome to College Algebra. As a warm-up to the course, we are going to start with a review of some fundamental concepts of algebra (i.e. chapter 1). These concepts are the foundation upon which we shall build the entire course. It is essential that you review and master these concepts now. I consider chapter 1 to be review.

Directions: Please introduce yourself to your group members. Then, please work through the following problems with your group. Please discuss your answers and ask each other for help. Note: you may need to write your answers on a separate piece of paper.

1. True/False: Please circle 'T' if true, 'F' if false. If the answer is false, please correct the statement (i.e. state why it is false and then fix it).

T F 0 is a positive integer.

T F 0 is a nonnegative integer.

T F Addition is commutative. (What does commutative mean?)

T F $\frac{1}{a} \cdot a = 1$

T F $\frac{-1}{a} = \frac{1}{-a} = -\frac{1}{a}$ for any real number a .

T F $\frac{-1}{a} = \frac{1}{-a} = -\frac{1}{a}$ for any nonzero real number a .

T F $3 \cdot 17.4 \cdot \pi = 17.4 \cdot \pi \cdot 3$.

T F $0 \cdot a = 0$ for any real number a .

T F There is a real number which is neither positive or negative. (If true, how many real numbers have this property? What is/are the number(s)?)

2. Finish the property: For any real numbers a, b, c, d , with nonzero denominators where appropriate:

(a) $\frac{a}{b} = \frac{c}{d}$ if $ad =$

(b) If $ab = 0$, then either $a =$ or $b =$

(c) $-(-a) =$

(d) $(-a)(-b) =$

(e) $a \div b =$

(f) $a^{-1} =$

(g) $\frac{a}{b} + \frac{c}{d} =$

(h) $\frac{a}{b} \cdot \frac{c}{d} =$

(i) $\frac{a}{b} \div \frac{c}{d} =$

3. Factor 1260.

4. Circle the correct choice and cross off the incorrect choice:

- (a) If a is positive, then $-a$ is positive/negative.
- (b) If a is negative, then $-a$ is positive/negative.
- (c) The notation $a > b$ means a is greater/less than b .
- (d) If $a < b$, then $a - b$ is positive/negative.

5. Draw a real number line. Each real number is associated with a point on this line. The number is called the coordinate of the point. Please plot the following numbers: -3 , -2 , $-1/2$, 1 , $\sqrt{2}$, 2 , 3 , π , 2π

6. If $x < 0$ and $y > 0$, determine the sign of $\frac{x}{y} + \frac{y}{x}$. (I.e. is it positive or negative?)

7. What does the “distance” between two real numbers mean?

8. What does $|a|$ mean?

9. $|-3| =$, $\left|\frac{27}{-4}\right| =$, $|2 - \sqrt{2}| =$, $|\sqrt{2} - 2| =$

Definition: If b is a real number, then the absolute value of b , written $|b|$, is the distance between 0 and b . In particular: 1) If $b \geq 0$, then $|b| = b$. 2) If $b < 0$, then $|b| = -b$.

10. Simplify

(a) $7(3 - 2) - 4 * 5$

(b) $\frac{7}{3} + 5\frac{2}{3}$

(c) $\frac{\frac{1}{2} + \frac{1}{3}}{\frac{4}{5} + \frac{5}{4}}$