College Algebra
Fall 2021
Exam One
9/27/21
Time Limit: 80 Minutes

Your Name: _____

Instructor: _____

This exam contains 6 pages (including this cover page) and 8 problems. Check to see if any pages are missing. Enter all requested information on the top of this page, and put your initials on the top of every page, in case the pages become separated.

You may *not* use your books, notes, or **any calculator** on this exam.

You are required to show your work on each problem on this exam. The following rules apply:

- **Organize your work**, in a reasonably neat and coherent way, in the space provided. Work scattered all over the page without a clear ordering will receive very little credit.
- **Box your final answer** and label the solution with the appropriate variables (if applicable).
- **Simplify your final answer**. A correct answer, written in an unsimplified way, will receive less than full credit. All fractions must be written such that the numerator and denominator share no common factors.
- If you need more space, use the back of the pages; clearly indicate when you have done this.

Do not write in the table to the right.

Problem	Points	Score
1	5	
2	6	
3	4	
4	25	
5	20	
6	15	
7	5	
8	30	
Total:	110	

1. (5 points) Write your name and the name of the instructor on page one.
2. Write as a product of primes:
   (a) (2 points)

   $$36$$

   (b) (2 points)

   $$144$$

   (c) (2 points)

   $$64$$

3. Write each fraction as a percentage:
   (a) (2 points)

   $$\frac{7}{10}$$

   (b) (2 points)

   $$\frac{6}{25}$$

4. Solve:

(a) (5 points)

$$3x + 2 = 14$$

(b) (5 points)

$$\frac{15}{8} = \frac{21}{12}x$$

(c) (5 points)

$$2(3x - 6) - 4(x - 2) = 0$$

(d) (5 points)

$$\frac{x - 3}{2} + 2 = \frac{14}{8}$$

(e) (5 points)

$$\frac{1}{2}x + \frac{2}{3} = \frac{1}{6}x$$

5. Solve for the specified variable:

   (a) (5 points)

$$P = 2w + 2l, \quad \text{for } w$$

   (b) (5 points)

$$I = Prt, \quad \text{for } t$$

   (c) (5 points)

$$ax + by = c, \quad \text{for } y$$

   (d) (5 points)

$$A = \frac{1}{2}bh + 2bl, \quad \text{for } l$$

6. Solve the inequalities

   (a) (5 points)

$$3x + 5 > x - 11$$

   (b) (5 points)

$$-2(x-1) + 5(x-2) < 5(x+3)$$

   (c) (5 points)

$$\frac{2n+3}{5} \leq \frac{n+1}{3}$$

7. (5 points) Pick one of the inequalities from the previous problem.

   (a) Write the Solution Set

   (b) Draw the Line Graph

   (c) Write the solution in Interval Notation

8. (30 points) Set up and solve the following word problems:

   (a) How many years will it take \$500 to earn \$750 in interest if it is invested at 6% simple interest?

   (b) The length of a rectangle is two inches less than twice its width. If the perimeter of the rectangle is 32 inches, find the rectangle's length and width.

   (c) The sum of the present ages of Arthur and Trillian is 64 years. In 8 years, Arthur will be three-fifths as old as Trillian is at that time. Find the present ages of Arthur and Trillian.