# SUMMER ASSIGNMENT
## ALGEBRA 2 CPE
## COURSE CODE: (5320)

**LEARN**  **EXCEL**


You are taking **Algebra 2 CPE** in the fall. A mastery of and proficiency performing the following Algebra I and Geometry skills; will be necessary for success in **Algebra 2 CPE**. Work on each problem in order. Copy the problem onto loose-leaf paper; show all work in a neat and organized manner. Box in your final answer. This mandatory assignment was designed by the IHA Math Department to ensure you have the proper prerequisite skills for success in you the mathematics course you will be entering in the fall.

**This assignment is mandatory and the math department strongly encourages you do this assignment on your own and to the best of your ability. Since the material contained in the summer math packet is *prerequisite material* you are responsible for having learned and retained. If you have forgotten any of these important mathematical concepts, you will find at the end of this assignment,** several links to websites that you might find helpful should you have any problems or need some additional support on this assignment.

# Algebra 2 CPE Summer Math Assignment

**A.** Give the greatest common factor(GCF) and least common multiple(LCM) of the pair of numbers. No calculator.

1. 15, 25 2. 4, 7 3. 20, 6 4. 12, 9 5. 18, 24 6. 45, 25

**B.** Find the reciprocal of each number. No calculator.

1. $\frac{2}{5}$ 2. $-\frac{1}{14}$ 3. $7$ 4. $6\frac{2}{5}$ 5. $10\frac{1}{3}$ 6. $-3\frac{5}{7}$

**C.** Multiply or divide. Write the answer as a simple fraction or a mixed number in lowest terms. No calculator.

1. $\frac{2}{3}\times\frac{4}{5}$ 2. $\frac{5}{8}\times\frac{4}{15}$ 3. $\frac{3}{5}\times 1\frac{2}{3}$ 4. $5\frac{1}{4}\times 1\frac{1}{7}$

5. $\frac{7}{8}\div\frac{3}{4}$ 6. $\frac{4}{5}\div\frac{2}{3}$ 7. $2\frac{1}{4}\div 1\frac{1}{3}$ 8. $3\frac{2}{5}\div 4$

**D.** Perform the indicated operation(s). You must find the LCD. Simplify the result. No calculator.

1. $\frac{3}{8}+\frac{5}{13}$ 2. $\frac{7}{4}-\frac{1}{12}$ 3. $\frac{2}{5}-\frac{1}{3}-\frac{1}{6}$ 4. $\frac{8}{9}+\frac{2}{3}+\frac{1}{2}$

5. $\frac{1}{2}+\frac{1}{3}+\frac{1}{4}$ 6. $\frac{9}{11}-\frac{5}{3}-\frac{5}{6}$ 7. $-\frac{3}{12}+\frac{4}{10}-\frac{1}{5}$

8. $\frac{2}{8}-\frac{3}{4}+\frac{1}{2}$ 9. $\frac{7}{15}-\frac{4}{5}+\frac{2}{3}$ 10. $\frac{1}{2}-\frac{8}{10}+\frac{5}{4}$

11. $5\frac{1}{8}-2\frac{3}{4}$ 12. $4\frac{3}{8}-2\frac{5}{6}$ 13. $9\frac{2}{5}+3\frac{1}{3}$ 14. $2\frac{1}{20}+3\frac{3}{8}$

**E.** Solve the proportion. Hint: Cross products are equal in a proportion.

1. $\frac{5}{7}=\frac{a}{28}$ 2. $\frac{5}{4}=\frac{x}{10}$ 3. $\frac{3}{7}=\frac{9}{-b}$ 4. $\frac{60}{40}=\frac{12}{m}$ 5. $\frac{-3}{x}=\frac{40}{6}$

**F.** Write the percent as a decimal.

1. 63% 2. 7% 3. 125% 4. 0.8% 5. 5.2%

**G.** Find the answer.

1. What percent of 90 is 15?
2. 12 is what percent of 60?
3. 15 is what percent of 90?
4. What percent of 18 is 4.5

**H.** Evaluate the expression. Use the proper order of operations.

1. $3^3 - 12 \div 4$
2. $10^2 \div 4 + 6$
3. $10^2 \div (4+6)$
4. $\dfrac{9 \cdot 7^2}{5 + 8^2 - 6}$
5. $3 + 7(3.5 \div 5)$
6. $2 + 21 \div 3 - 6$
7. $50 \div (6^2 - 11) - 2$
8. $3(2.7 \div 0.9) - 5$
9. $\left[(5 \cdot 2^3) + 8\right] \div 16$
10. $2.5 \cdot 0.5^2 \div 5$

**I.** Simplify the expression.

1. $-3 + 8$
2. $5 + (-7)$
3. $-4 + (-11)$
4. $-8 - 5$
5. $-4 + 13 + (-6)$
6. $15 + (-12) + (-4)$
7. $-2 + (-9) + 8$
8. $17 + (-5) + 15$
9. $4.1 - 6.3$
10. $-3 - (-7)$
11. $-6 + (-3) - 4$
12. $-15 + 4 - 12$
13. $-11 - (-6) - 7$
14. $3.6 - 2.4 - (-6.1)$
15. $\dfrac{9}{10} - \dfrac{1}{2} + \left(-\dfrac{1}{5}\right)$
16. $(-6)(-7)$
17. $3(-8)(-2)$
18. $(-8)(-4x)$
19. $-3(-y)(-y)$
20. $(-c)^3(c)$
21. $(-7)^2(b)(-b)$
22. $-4(-a^4)$
23. $6(y+5)$
24. $4(a-6)$
25. $(x+3)(-5)$
26. $-r(r-5)$
27. $-k(7+k)$
28. $s(s - s^2)$
29. $(0.5z - 1.4)6$
30. $3x + 7x$
31. $5.4m - 2.3m$
32. $82p - (-29p)$
33. $6 - 4t - 4$
34. $5 + 4(x-2)$
35. $8x^2 + 5 - 2x^2$
36. $2x(7-x) + 3x^2$
37. $\dfrac{2}{3}x + \left(-\dfrac{1}{6}\right)x$
38. $18 \div (2)$
39. $-48 \div 12$
40. $16 \div \left(-\dfrac{4}{5}\right)$
41. $\dfrac{3x}{8} \div \dfrac{1}{2}$
42. $21x \div 7$
43. $8x \div \left(-\dfrac{1}{4}\right)$
44. $-24x \div \left(-\dfrac{2}{3}\right)$
45. $\dfrac{-22}{-\frac{1}{3}}$
46. $\dfrac{\frac{1}{2}}{\frac{3}{4}}$

47. $\dfrac{\frac{2}{3}}{5}$ 48. $\dfrac{\frac{1}{0.5}}{4}$ 49. $-39 \div \left(-4\frac{1}{3}\right)$ 50. $68x \div \left(-\frac{17}{9}\right)$

51. $-54x^2 \div \frac{-9}{5}$ 52. $-7 \cdot \left(-\frac{2w}{7}\right)$ 53. $\frac{42t}{-14z} \div \frac{-6}{7t}$

54. $49x \div 3\frac{1}{2}$ 55. $\frac{3y}{4} \div \frac{1}{2}$ 56. $-\frac{2b}{7} \div \frac{7}{9}$

57. $\frac{18x-9}{3}$ 58. $\frac{22x+10}{2}$ 59. $\frac{-56+x}{-8}$ 60. $\frac{45-5x}{5}$

61. $\frac{22-4x}{4}$ 62. $\frac{15x-7}{5}$ 63. $\frac{20x+3}{5}$ 64. $\frac{4y-12}{5}$

**J.** Solve each equation.

1. $2x = -10$ 2. $x - 4x = 12$ 3. $\frac{x}{3} = 2$ 4. $x - \frac{x}{2} = 5$

5. $\frac{x}{3} - \frac{x}{5} = 3$ 6. $-\frac{3}{8}y = -6$ 7. $-\frac{1}{2}b = -|-8|$ 8. $\frac{9}{2}(x+3) = 27$

9. $x - 3 = x + 1$ 10. $-\frac{4}{9}(2x-4) = 48$ 11. $9x - 5(3x-12) = 30$

12. $5m - (4m-1) = -12$ 13. $3(4+4x) = 12x + 12$ 14. $-(8n-2) = 3 + 10(1-3n)$

15. $-2(6-10n) = 10(2n-6)$ 14. $\frac{x-8}{-2} = \frac{11-4x}{11}$ 15. $\frac{x-3}{10} + \frac{2x-5}{5} = -3\frac{1}{2}$

**K.** Solve each linear inequality and graph the solution on the number line.

1. $x + 2x > 9$ 2. $-2x < 10$ 3. $\frac{a}{3} \le 12$ 4. $13 \le -\frac{x}{3}$ 5. $-\frac{x}{2} \le 0$

6. $-3.5x \ge 28$ 7. $-x + 6 > -(2x+4)$ 8. $-2(x+3) < 4x - 7$

9. Linda had scores of 70, 96, 74, and 84 on four tests. What score must she get on her next test to achieve an average of at least 83?

**L**. Find the slope of the line passing through the given points. Use $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

1. $(2, 5), (7, 10)$ 2. $(0, 5), (-4, 7)$ 3. $(2, -5), (-7, -10)$

4. $\left(\frac{1}{2}, 4\right), \left(1, \frac{2}{5}\right)$ 5. $(0.5, -0.7), (1, 2.5)$ 6. $(-2, -4), (-3, -5)$

7. Write an equation in slope-intercept form( $y = mx + b$) of the line that passes through the points.

*a*). $(-2, -4), (4, 2)$ *b*). $(-1, 0), (0, -3)$

*c*). $(2, 0), (-2, 6)$ *d*). $(1, 4), (5, -1)$

8. Given $\boldsymbol{f(x) = -\frac{1}{2}x - 3}$ and $\boldsymbol{g(x) = -x - 4}$, find each of the following

f(0) = _____ f(−2) = _____ g(−2) = _____ f(1) = _____

**M.** Graph the equation.

1. $y = 2x + 1$ 2. $y = -\frac{2}{3}x + 2$ 3. $3x - 2y - 2 = 0$

4. $-7x - y + 49 = 0$ 5. $y = 5$ 6. $x = 3$

**N.** Solve the linear system.

1. $y = x - 4$
   $4x + y = 26$

2. $2c - d = -2$
   $4c + d = 20$

3. $x - 2y = -25$
   $3x - y = 0$

4. $-3x = 36$
   $-6x + y = 1$

5. $7x + y = -2$
   $x - 2y = 9$

6. $2x + y = 5$
   $x - y = 1$

7. $8x + y = 15$
   $9 = 2y + 2x$

8. $100 - 9x = 5y$
   $0 = 5y - 9x$

9. $0.2x - 0.5y = -3.8$
   $0.3x + 0.4y = 10.4$

**O.** Simplify each expression. No negative exponents.

1. $2^3 \cdot 2^4$ 2. $(7)^2 (7)^3$ 3. $(12x)^3$ 4. $-(4x)^2 \cdot (5x)^3$

5. $(7x^3 y) \cdot (2x^4)$ 6. $(4r^2 s)^2 (-2s^2)^3$ 7. $m^{-4}$ 8. $\frac{y}{x^{-2}}$

9. $\frac{3}{3x^{-4}y^3}$ 10. $(-3t)^0 \cdot \frac{2}{s^{-2}}$ 11. $\left(\frac{4b^{-1}}{2a^4}\right)^{-2}$ 12. $\frac{2^{11}}{2^8}$

13. $\left(\frac{3x^2 z^4}{2xz}\right)^3$ 14. $\frac{18b^2 c}{4bc^3} \cdot \frac{3ab^{-2}}{5a^2 c^3}$

**P.** Find the sum, difference or product. Simplify your answer.

1. $7x^2-4+x^2+5$ 2. $\left(3x^2-2\right)-\left(2x-6x^2\right)$ 3. $\left(8x^2-3x+7\right)+\left(6x^2-4x+1\right)$
4. $\left(-z^2+3z\right)+\left(-z^2-4z-6\right)$ 5. $\left(5x^2-7x-4\right)-\left(4x^2-2x\right)$
6. $\left(3a+2a^4-5\right)-\left(a^3+2a^4+5a\right)$ 7. $x\left(4x^2-8x+7\right)$ 8. $-3x\left(x^2+5x-5\right)$
9. $5b^2\left(3b^3-2b^2+1\right)$ 10. $\left(t+9\right)\left(2t+1\right)$ 11. $\left(3z+4\right)\left(5z-8\right)$
12. $\left(x+3\right)\left(x^2-2x+6\right)$ 13. $\left(3+2s-s^2\right)\left(s-1\right)$ 14. $\left(x+9\right)^2$
15. $\left(-c-d\right)^2$ 16. $\left(a-2\right)\left(a+2\right)$ 17. $\left(-7+m\right)\left(-7-m\right)$ 18. $\left(x+5\right)^2$
19. $\left(5p-6q^2\right)$ 20. $\left(2a+3b\right)\left(2a-3b\right)$ 21. $\left(10x-5y\right)\left(10x+5y\right)$

**Q.** Factor completely.

1. $y^2+3y-4$ 2. $n^2+16n-57$ 3. $x^2+17x+66$
4. $-45+14z-z^2$ 5. $12b^2-17b-99$ 6. $2t^2+63t+145$
7. $18d^2-54d+28$ 8. $4n^2+4n-288$ 9. $4x^2-9$
10. $169-x^2$ 11. $25x^2-49y^2$ 12. $36x^4-4x^2$
13. $3x^5+3x^4-90x^3$

**R.** Solve the equation.

1. $\left(2x-3\right)\left(x+7\right)=0$ 2. $5\left(x+3\right)\left(2x-5\right)=0$ 3. $x^2-x-2=0$
4. $x^2+7x+10=0$ 5. $x^2-9x=-14$ 6. $2x^2-9x-35=0$
7. $7x^2-10x+3=0$ 8. $2x^2+19x=-24$ 9. $10x^2+x-10=-2x+8$

**S.** Write the given phrase or sentence as an algebraic expression.

1. 8 more than a number
2. 3 times a number
3. one sixth of a number
4. 90% of a number
5. 4 less than a number
6. the cube of a number
7. 3 more than a number, all divided by 2
8. the sum of a number and 5
9. twice a number increased by 3
10. three times the difference of 20 and a number
11. The sum of x and 16 is less than 32.
12. The product of 15 and x is greater than 50.
13. The quotient of 30 and x is greater than or equal to 10.

**T**. Write **an expression** to answer the question.

1. A triangle has base b and height 5. What is its area?
2. Amy pays $50 for a membership fee and $25 per dress rental. How much does she append altogether for x rentals?
3. Tom has $65.25. He spends x dollars for a new book. How much does he have left?
4. How much is 6% sales tax on an item that costs x dollars?
5. Joe earns $10 for each car he washes. Write an expression for the number of cars Joe must wash to earn d dollars.

**U**. Find the answer.

1. Tasha bought salads at $2.75 each and cartons of milk at $0.80 each. The total cost was $16.15. How much of each did Tasha buy?

2. A rectangular garden is 45 feet long and has perimeter 150 feet. Rows of plant are planted 3 feet apart. Find the area of the garden?

3. If five turkey club sandwiched cost $18.75, how much would seven sandwiches cost?

4. Mary wants to arrive at school no later than 7:25 A.M. for her first class. It takes her 25 minutes to shower and dress, 15 minutes to eat breakfast, and at least 20 minutes to get to school. What time should she plan to get out of bed?

5. There are 32 players in a single-elimination chess tournament. That is, a player who loses once is eliminated. Assuming that no ties are allowed, how many games must be played to determine a champion?

6. Carl has $135 in the bank and plans to save $5 per week. Jean has $90 in the bank and plans to save $10 per week. How many will it be before Jean has at least as much in the bank as Carl?

7. The Lees are planning to use square tiles to tile a kitchen floor that is 18 feet long and 15 feet wide. Each tile covers one square foot. A carton of tiles cost $18. How much will it cost to cover the entire kitchen floor?

8. A car travels 60 miles per hour for a distance 300 miles. How long did the trip take? Hint: d=rt

9. You pay $105 for 8 tickets to attend a folk festival. Tickets for students cost $10 each and tickets for adults cost $15 each. How many of each type of ticket did you buy?

10. You spend $13 to rent five movies for the weekend. Since new releases rent for $3 and regular movies rent $2, how many regular movies did you rent? How many new releases did you rent?

11. Divide $80 among three people so that the second will have twice as much as the first, and the third will have $5 less than the second.

12. A soccer league offers two options for membership plans. Option A includes an initial fee of $40 and costs $5 for each game played. Option B costs $10 for each game played. After how many games will the total cost of the two options be the same?

13. A test has twenty questions worth 100 points. The test consists of True/False questions worth 3 points each and multiple choice questions worth 11 points each. How many multiple choice questions are on the test?

14. Susan and Tom each improved their yards by planting rose bushes and geraniums. They bought their supplies from the same store. Susan spent $54 on 6 rose bushes and 9 geraniums. Tom spent $36 on 8 rose bushes and 3 geraniums. Find the cost of one rose bush and the cost of one geranium.

## Helpful websites:

1. http://www.purplemath.com
2. http://www.khanacademy.org/
3. http://www.algebra-class.com/
4. http://www.themathpage.com/alg/algebra.htm