Accelerated CP Geometry Summer Packet

The math teachers at Cherry Creek High School want each student to be successful, no matter which level or math course the student is in. We know that it is critical that each student is challenged at a level appropriate for them. Therefore, it is important that each student be placed in the course or level most appropriate for that student.

Math skills can get rusty when they are not used. So the attached Summer Packet of worksheets has been designed to provide practice on important algebraic skills needed for the next math class that you will tackle when school starts in August.

To prepare for the new school year, you need to:

1. Complete all 9 worksheets in the summer packet. Work independently and then check your answers with the ones provided. The problems on these worksheets represent math skills learned in Algebra 1 that you should be proficient with as you continue in math. If you find that you do not know how to work the problems, you are probably not in the correct class. This packet will be due the first day or two of school, so you need to complete all worksheets before the start of school.

2. Keep note of the problems that you have trouble with and be ready to ask your new teacher when school starts for clarification and help with that type of problem. You will have an opportunity to get help on questions that you don't remember how to answer.

3. Be prepared to take a quiz the first few days of school that incorporates the algebraic skills practiced on the worksheets.

4. Recognize that earning a low score on the quiz will indicate that you are not yet proficient with critical math skills needed for success in Accelerated CP Geometry. Another math course or another level of the same course may be a better fit for you. Math classes build each year on previous knowledge, so students who do not have the needed skills will struggle all year because they do not have a firm foundation upon which to build additional math knowledge.

We hope you have a wonderful summer with time to enjoy all your favorite activities. Just be sure to carve out enough time to complete the Summer Packet prior to the start of school.

Order of Operations   **Worksheet #1**   NAME _____
                                                      Period _____

Do **NOT** use a calculator when completing this worksheet. Show work whenever possible.

Evaluate each expression and leave your answer in simplest form.

1] $3(2 + 4) - 2(7 - 1)$

2] $26 - (17 - 8 \div 2)$

3] $12 - 4 \cdot 2 + (-3)^2$

4] $7^2 - 6(9 - 4) \div 3$

5] $5^2 - 6(2 - (-1))^2$

6] $-8 + 5(1 - (-1))^2 + 4 \cdot 6$

7] $14 + (13 - 6)^2 - 4 \cdot 6$

8] $-3|2 \cdot 8 - 4 \cdot 5| + (16 - 7) \div 3$

9] $\dfrac{7 \cdot (9 - 3)^2}{12}$

10] $[15(10) - 12(10)] \div 10$

11] $4|5 - (-3 \cdot 6)| + 7$

12] $(8 - 4)(12 - 3) - \dfrac{1}{2}[2 + 1(2)]$

13] $\dfrac{4}{9} + \dfrac{1}{9}$

14] $\dfrac{7}{15} + \dfrac{4}{15} - \dfrac{2}{15}$

15] $4\dfrac{2}{7} - 2\dfrac{5}{7} =$

16] $\dfrac{3}{8} + \dfrac{13}{8}$

3

17] $\dfrac{1}{2} + \dfrac{3}{7}$

18] $\dfrac{8}{9} - \dfrac{3}{4}$

19] $1\dfrac{1}{2} + 2\dfrac{3}{4}$

20] $3\dfrac{1}{6} - 1\dfrac{3}{5}$

21] $5\left(\dfrac{2}{7}\right)$

22] $\dfrac{3}{5} \bullet \dfrac{2}{3}$

23] $\left(-\dfrac{3}{4}\right)\left(-\dfrac{1}{9}\right)\left(-\dfrac{6}{5}\right)$

24] $1\dfrac{1}{2} \bullet 2\dfrac{2}{3}$

25] $\dfrac{8}{9} \div \dfrac{2}{3}$

26] $\dfrac{6}{7} \div \dfrac{4}{5}$

ANSWERS Worksheet #1: 1] 6   2] 13   3] 13   4] 39   5] −29   6] 36
7] 39   8] −9   9] 21   10] 3   11] 99   12] 34   13] $\dfrac{5}{9}$ 14] $\dfrac{3}{5}$
15] $1\dfrac{4}{7}$ 16] 2   17] $\dfrac{13}{14}$ 18] $\dfrac{5}{36}$ 19] $4\dfrac{1}{4}$ 20] $1\dfrac{17}{30}$ 21] $\dfrac{10}{7}$ 22] $\dfrac{2}{5}$
23] $-\dfrac{1}{10}$ 24] 4   25] $\dfrac{4}{3}$ 26] $\dfrac{15}{14}$

Simplifying and Evaluating Expressions   **Worksheet #2**

Do NOT use a calculator when completing this worksheet. Show work whenever possible. Simplify each expression and leave your answer in simplest form. Also be sure your answer is in standard form.

1] 3x + 5x

2] (7x)(9x)

3] $4x(7x+5)$

4] $-3x(4-3x)$

5] $2-4(3x+7)$

6] $9-4(3x-1)$

7] $(2y^3+2y^2-y+16)-(5y^3+3y-3)$

8] -7x + 8(-2x + 5)

9] $4y(2-y)+3y^2$

10] 5(x + y) – 4(3x – 2y + 1)

11] $\dfrac{30x^2+20x-10}{-5}$

12) $2(x-5)-(3x+5)$

13] $3x+2xy-x-2y$

14] $2x-3(4x-7)-(3-x)$

15] $3(6-4x)-(20-10x)$

16] $\dfrac{1}{2}(4-6x)+\dfrac{1}{3}(9x-12)$

5

Given a = 2, b = 3 and c = -5, evaluate each expression. Include the substitution step.

17] $ab^2 - c$

18] $-a^2c$

19] $\dfrac{a^2bc}{-4}$

20] $4a - bc$

21] $3a - (b + c)$

22] $(ac)^2 - b^3$

23] $-c^2 + b$

24] $-c^2$

25] $(-c)^2$

ANSWERS: 1] $8x$ 2] $63x^2$ 3] $28x^2 + 20x$ 4] $9x^2 - 12x$ 5] $-12x - 26$
6] $-12x + 13$ 7] $-3y^3 + 2y^2 - 4y + 19$ 8] $-23x + 40$ 9] $-y^2 + 8y$ 10] $-7x + 13y - 4$
11] $-6x^2 - 4x + 2$ 12] $-x - 15$ 13] $2x + 2xy - 2y$ 14] $-9x + 18$ 15] $-2x - 2$
16] -2 17] 23   18] 20   19] 15   20] 23   21] 8   22] 73
23] -22 24] -25 25] 25

Solving Linear Equations   **Worksheet #3**

Solve the following equations for x. **You must show all algebraic steps.** . Please also include a **CHECK** of your solution. Do **not** use a calculator when completing the worksheet.

1] $-2x = -4x + 24$

2] $7x - 40 = -3x$

3] $8x - 9 = 8x$

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

5] $-3 - (-4x) = -4x + 5$

6] $-(10 - x) = 3(x + 4)$

7] $\frac{1}{4}(4 - x) = 10 + 2x$

8] $\frac{1}{5}x = 7 - \frac{4}{5}x$

9] $\frac{1}{4}x + 12 = \frac{-1}{4}x$

10] $\frac{1}{2}x - 8 = 14 + \frac{1}{2}x$

11] $\frac{2}{3}(3x + 18) = 5x - 9$

12] $2(x - 1) = \frac{3}{5}(10 + 5x)$

13] $3 - 2(x - 1) = 2 + 4x$

14] $8x - 4 + 3(x + 7) = 6x - 3(x - 3)$

15] $2(x + 2) = -3(x - 8)$

16] $2(x - 3) - 4 = 8 - 2(x - 4)$

17] $4 + \frac{1}{2}x = 13$

18] $\frac{2}{3} = \frac{x+7}{3x}$

19] $\frac{x-2}{x+3} = \frac{4}{5}$

20] $\frac{x-4}{2x+1} = \frac{3}{5}$

ANSWERS: 1] x = 12   **2]** x = 4   **3]** No Solution   **4]** All Real Numbers   **5]** x = 1
6] x = –11   **7]** x = –4   **8]** x = 7   **9]** x = –24   **10]** No Solution   **11]** x = 7   **12]** x = –8
13] $x = \frac{1}{2}$ **14]** x = –1   **15]** x = 4   **16]** $x = \frac{13}{2}$ **17]** x = 18   **18]** x = 7   **19]** x = 22
20] x = –23

Linear Functions   **Worksheet #4**

You should **NOT** use a calculator to complete this worksheet. Please **DO** use a straightedge when graphing.

Find the slope of the line passing through the given points. Include your work.

1] $(-5,5),\ (-7,1)$ **2]** $(12,-7),\ (-2,0)$ **3]** $(-3,8),\ (-7,8)$

Graph the functions.

4] $y = 2x + 4$ **6]** $y = -x$ **7]** $y = \dfrac{2}{3}x - 6$

8] $y = -5$ **9]** $x = 3$ **10]** $3x + 2y = 6$

9
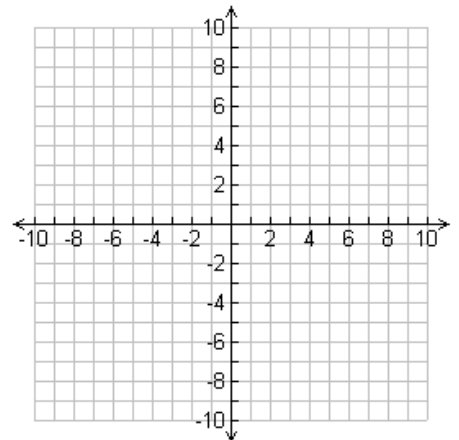
10] $x - 4y = -8$

11] $y = -2x + 5$

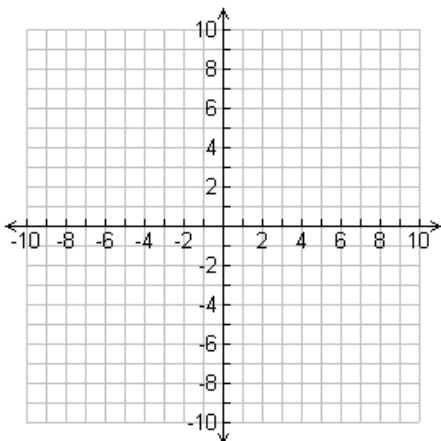**12]** $-2x + 5y = 10$

Graph the inequalities.

13] $y > -2$

14] $y \le -x - 1$

15] $x < -3$

16] $y \ge -\dfrac{1}{3}x$

17] $2x - 3y > 12$

18] $-2x + 4y \le 12$

10
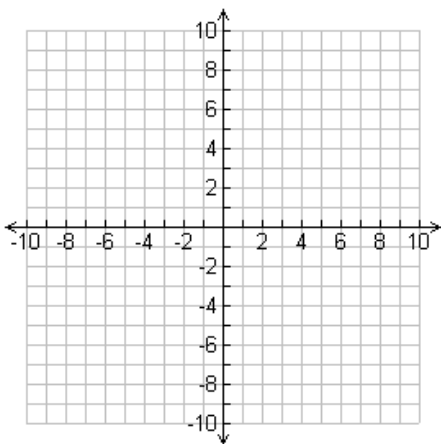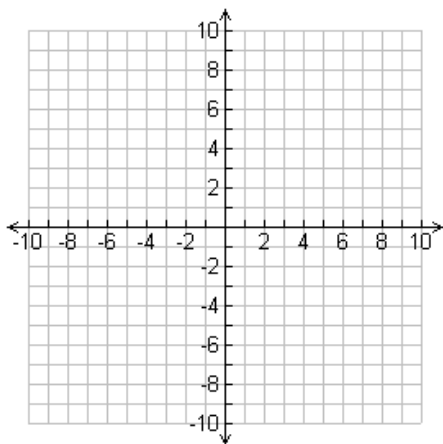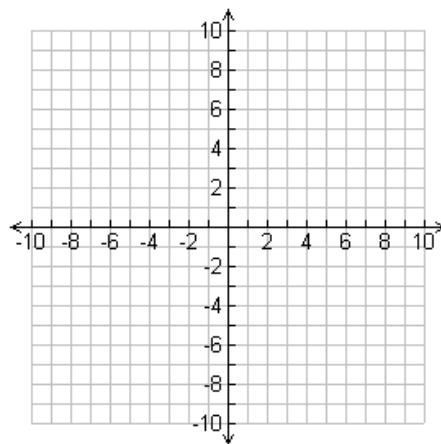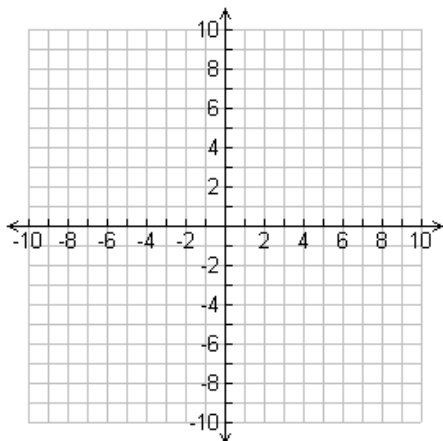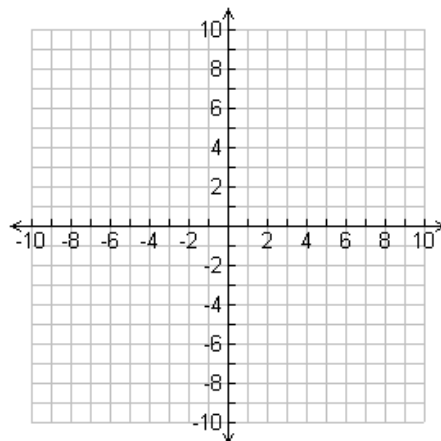
ANSWERS: **1]** $m = 2$ **2]** $m = -\dfrac{1}{2}$ **3]** $m = 0$

4] $y = 2x + 4$ **6]** $y = -x$ **7]** $y = \dfrac{2}{3}x - 6$
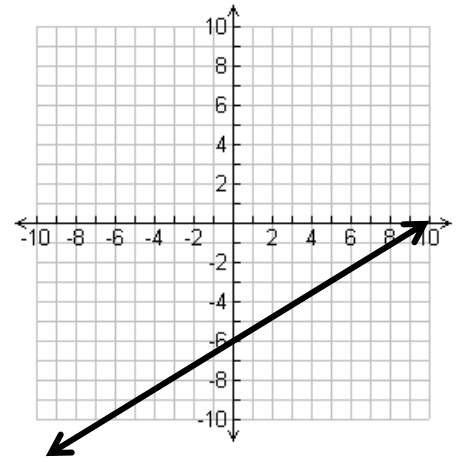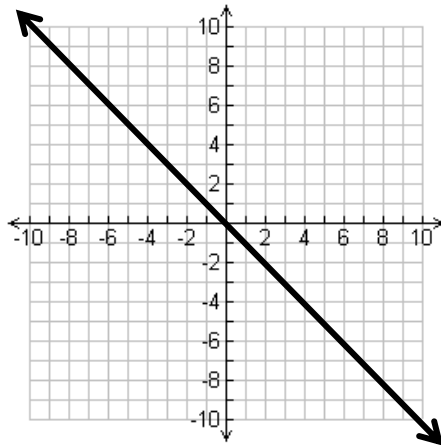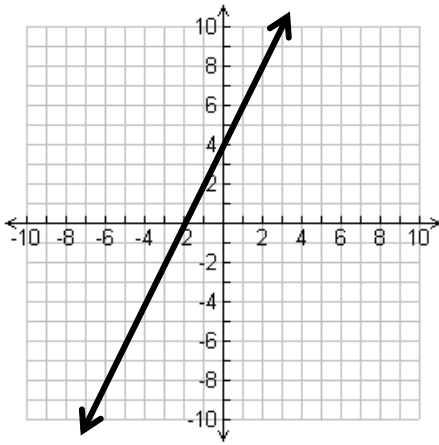
8] $y = -5$ **9]** $x = 3$ **10]** $3x + 2y = 6$
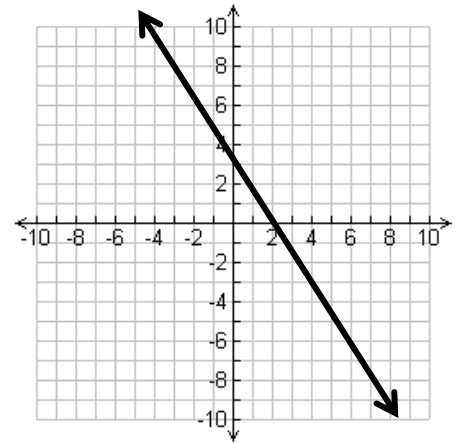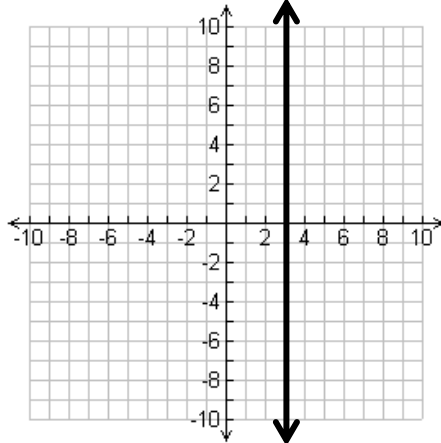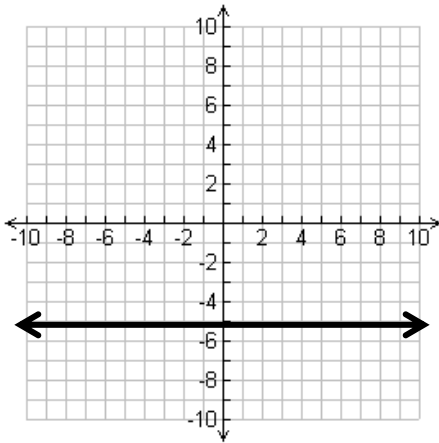
10] $x - 4y = -8$ **11]** $y = -2x + 5$ **12]** $-2x + 5y = 10$
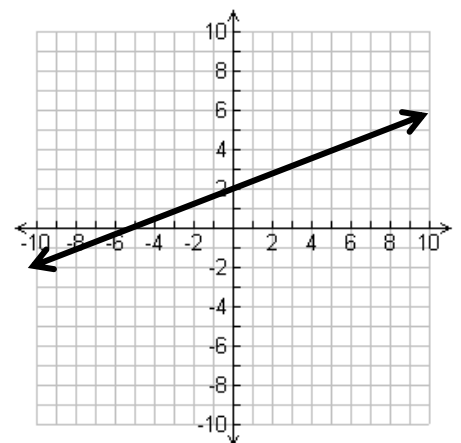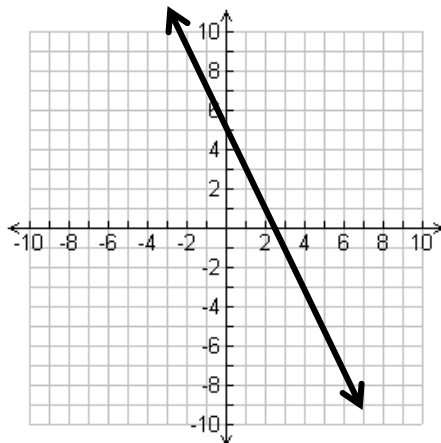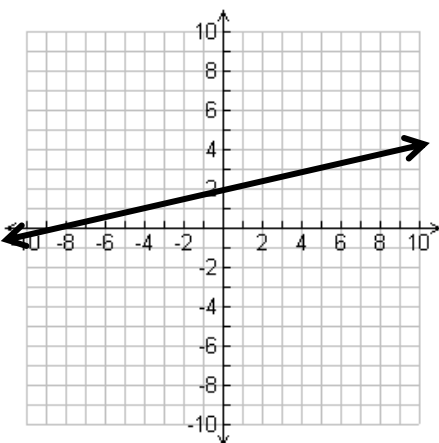
13] $y > -2$
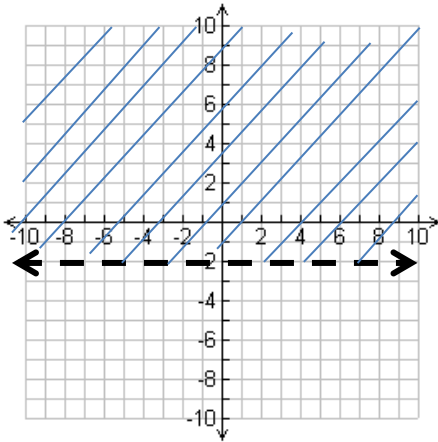
14] $y \leq -x - 1$
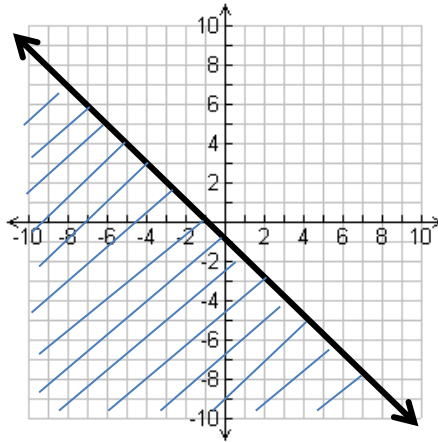
15] $x < -3$
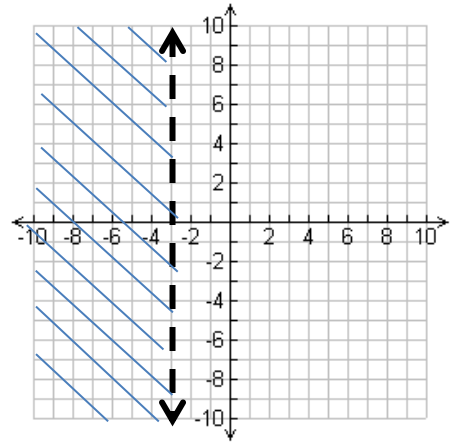
16] $y \geq -\frac{1}{3}x$
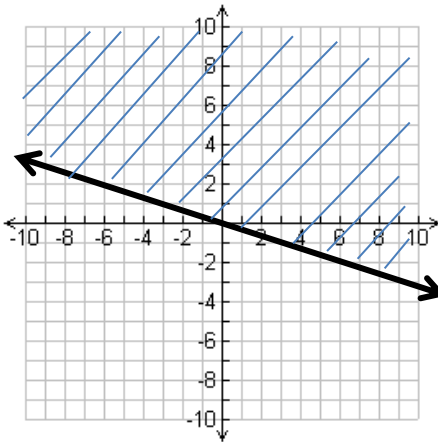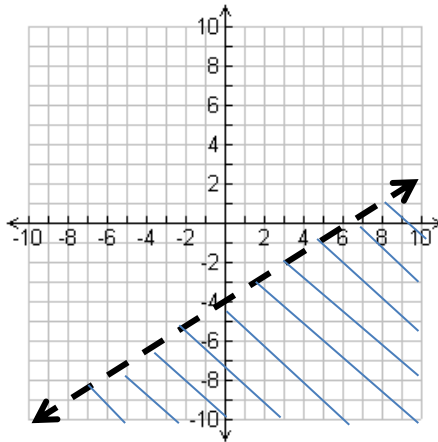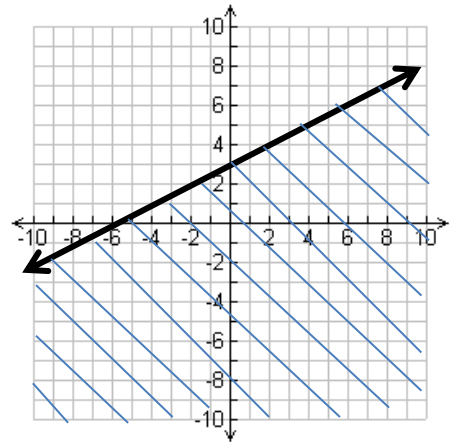
17] $2x - 3y > 12$

18] $-2x + 4y \leq 12$

12

Systems of Equations   **Worksheet #5**

You should **NOT** use a calculator to complete this worksheet. Please **DO** use a straightedge when graphing.

Solve each system of equations by graphing.

1] $\begin{cases} y = x - 5 \\ y = -2x + 1 \end{cases}$
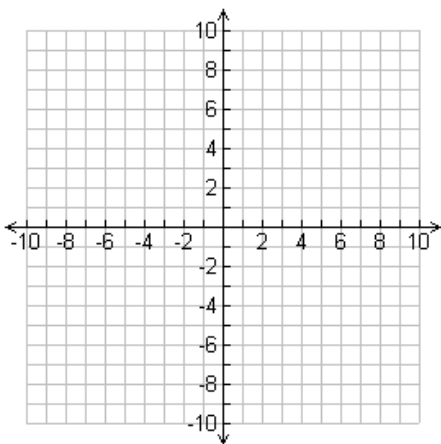
2] $\begin{cases} 2x - 3y = 6 \\ y = \dfrac{2}{3}x - 4 \end{cases}$
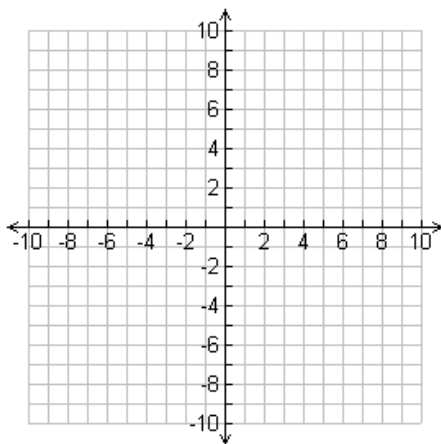
3] $\begin{cases} 4x + 2y = 8 \\ y = -2x + 4 \end{cases}$
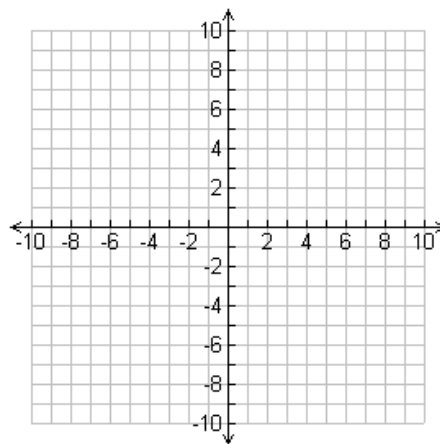
Solve the following systems of equations using the substitution method or the linear combination method. Remember to write your solution as an ordered pair. CHECK your solution in both original equations.

4] $\begin{cases} y = 2x - 2 \\ 6x + 2y = 16 \end{cases}$

5] $\begin{cases} -4x + 7y = -2 \\ -x - y = 5 \end{cases}$

6] $\begin{cases} 6x + 7y = 5 \\ 4x - 2y = -10 \end{cases}$

7] $\begin{cases} 4x - 5y = 9 \\ 7x - 9y = 15 \end{cases}$

8] $\begin{cases} 6x - 8 + 6y - 21 = -35 \\ 2x - 3y - x = 7 \end{cases}$

9] $\begin{cases} 6x - 3y = 4 \\ 2x - y = 3 \end{cases}$

10] $\begin{cases} 4x - 9y = 12 \\ 2x + 6y = -1 \end{cases}$

11] $\begin{cases} 2x + 3y = 3 \\ x + 5y = 4 \end{cases}$

12] $\begin{cases} 5x + y = -1 \\ 11x + 4y = -1 \end{cases}$

13] $\begin{cases} 3x - 2y = 7 \\ 6x - 4y = 14 \end{cases}$

ANSWERS:

1] $(2, -3)$ **2]** no solution **3]** infinitely many solutions **4]** $(2, 2)$ **5]** $(-3, -2)$

6] $\left(-\dfrac{3}{2}, 2\right)$ **7]** $(6, 3)$ **8]** $(1, -2)$ **9]** No solution **10]** $\left(\dfrac{3}{2}, -\dfrac{2}{3}\right)$ **11]** $\left(\dfrac{3}{7}, \dfrac{5}{7}\right)$

12] $\left(-\dfrac{1}{3}, \dfrac{2}{3}\right)$ **13]** an infinite number of solutions

Multiplying Expressions   **Worksheet #6**

You should **NOT** use a calculator to complete this worksheet.
Find each product. All answers should be in standard form.

1] $-4x(2x-5)$

2] $3m(m-5)$

3] $2x(x^2-8x+1)$

4] $(t+8)(t+5)$

5] $(t-3)(t-4)$

6] $(x+5)(x+7)$

7] $(x-3)(x-6)$

8] $(x-5)(x+6)$

9] $(x-7)(x+8)$

10] $(x-3)(x+3)$

11] $(x-6)(x+6)$

12] $(x-7)(x+7)$

13] $(x-9)(x+2)$

14] $(2x-1)(x+8)$

15] $(3x+4)(x-8)$

16] $(2d+3)(3d+1)$

17] $(4q-1)(3q+8)$

18] $(2z+7)(3z+2)$

19] $(5x+6)(5x-6)$

20] $(2w-5)(w+5)$

21] $(x-9)(2x+15)$

Find each product. Your answers need to be in standard form.

22] $(5t-3)(2t+3)$

23] $(3w-5)(w+3)$

24] $(4x+1)(x-8)$

25] $(3b-1)(b-9)$

26] $(9w+8)(11w-10)$

27] $(6x-5)(3x-2)$

28] $(t+6)^2$

29] $(n-10)^2$

30] $(3x+2)(3x-2)$

31] $(2a+3)^2$

32] $(2w+3)(2w-3)$

33] $(3x-2)^2$

ANSWERS: **1]** $-8x^2+20x$ **2]** $3m^2-15m$ **3]** $2x^3-16x^2+2x$ **4]** $t^2+13t+40$
5] $t^2-7t+12$ **6]** $x^2+12x+35$ **7]** $x^2-9x+18$ **8]** x^2+x-30 **9]** x^2+x-56
10] x^2-9 **11]** x^2-36 **12]** x^2-49 **13]** $x^2-7x-18$ **14]** $2x^2+15x-8$ **15]** $3x^2-20x-32$
16] $6d^2+11d+4$ **17]** $12q^2+29q-8$ **18]** $6z^2+25z+14$ **19]** $25x^2-36$ **20]** $2w^2+5w-25$
21] $2x^2-3x-135$ **22]** $10t^2+9t-9$ **23]** $3w^2+4w-15$ **24]** $4x^2-31x-8$ **25]** $3b^2-28b+9$
26] $99w^2-2w-80$ **27]** $18x^2-27x+10$ **28]** $t^2+12t+36$ **29]** $n^2-20n+100$ **30]** $9x^2-4$
31] $4a^2+12a+9$ **32]** $4w^2-9$ **33]** $9x^2-12x+4$

Factoring Numbers

You should NOT use a calculator to complete this worksheet.

List all the factors of each number. Make a T chart for each list.

Example:

36

1	36
2	18
3	12
4	9
6	6

1.   120

2.   72

3.   108

4.   54

5.   27

6.   80

7.   150

8.   98

Factoring and Solving Quadratic Equations   Worksheet #8

You should NOT use a calculator to complete this worksheet.
Factor each quadratic expression. Remember to check for common factors.

1] $x^2 - 7x + 6$

2] $6x^2 - 6x$

3] $x^2 + 10x + 25$

4] $x^2 - 6x - 16$

5] $x^2 - 64$

6] $x^2 - x - 6$

7] $x^2 - 11x + 24$

8] $x^2 - 20x + 100$

9] $x^2 - 9x - 36$

10] $x^2 + 3x - 54$

11] $x^2 + x - 56$

12] $-t^2 + 19t - 18$

13] $6x^2 - 13x + 6$

14] $9x^2 - 25$

15] $3x^2 + 12x$

16] $3x^2 + 7x + 4$

17] $5x^2 - 10x$

18] $x^2 + 6x + 9$

Factor each quadratic expression. Remember to check for common factors.

19] $5x^2 - 9x + 4$

20] $2x^2 - 14x + 20$

21] $5x^2 - 35x + 30$

22] $4x^2 + 15x - 4$

23] $6x^2 + 17x + 12$

24] $8x^2 - 14x - 15$

Solve the equation by factoring. Include your algebra and be sure your solutions include statements "x = ." Checking your solutions is advised.

25] $x^2 - 25 = 0$

26] $x^2 + 5x - 14 = 0$

27] $x^2 - 9x = -14$

28] $x^2 = -10x$

29] $x^2 + 16x = -15$

30] $x^2 + 3x = 54$

31] $y^2 - 3y = 18$

32] $x^2 + 7x + 10 = 0$

33] $14x^2 - 7x = 0$

34] $3x^2 + 13x - 10 = 0$

35] $-x + x^2 = 56$

36] $8x^2 - 2x = 3$

ANSWERS Worksheet #8

1] $(x-6)(x-1)$ **2]** $6x(x-1)$ **3]** $(x+5)^2$ **4]** $(x-8)(x+2)$ **5]** $(x-8)(x+8)$ **6]** $(x-3)(x+2)$

7] $(x-8)(x-3)$ **8]** $(x-10)^2$ **9]** $(x-12)(x+3)$ **10]** $(x+9)(x-6)$ **11]** $(x+8)(x-7)$

12] $-1(t-18)(t-1)$ **13]** $(2x-3)(3x-2)$ **14]** $(3x-5)(3x+5)$ **15]** $3x(x+4)$ **16]** $(3x+4)(x+1)$

17] $5x(x-2)$ **18]** $(x+3)^2$ **19]** $(5x-4)(x-1)$ **20]** $2(x-5)(x-2)$ **21]** $5(x-6)(x-1)$

22] $(4x-1)(x+4)$ **23]** $(2x+3)(3x+4)$ **24]** $(2x-5)(4x+3)$ **25]** $x=5;\ x=-5$ **26]** $x=2;\ x=-7$

27] $x=7;\ x=2$ **28]** $x=0;\ x=-10$ **29]** $x=-15;\ x=-1$ **30]** $x=6;\ x=-9$ **31]** $x=6;\ x=-3$

32] $x=-2;\ x=-5$ **33]** $x=0;\ x=\dfrac{1}{2}$ **34]** $x=\dfrac{2}{3};\ x=-5$ **35]** $x=8;\ x=-7$ **36]** $x=\dfrac{3}{4};\ x=-\dfrac{1}{2}$

You should NOT use a calculator to complete this worksheet.

Simplify each expression. Your answers cannot include negative exponents. If an expression cannot be simplified, state "simplified now."

1] $b^3 \cdot b^2$

2] $\left(6y^3\right)\left(2y^6\right)$

3] $\left(m^3\right)^2$

4] $\left(4a\right)^2$

5] $\left(-2x^2\right)^3$

6] $\dfrac{m^3}{m^3}$

7] $\dfrac{-54x^7}{-9x^4}$

8] $\dfrac{-10n^5}{15n^8}$

9] $\left(\dfrac{x^2}{y^3}\right)^4$

10] $\left(\dfrac{-2x^3}{c}\right)^5$

11] $\left(\dfrac{-3a^3}{12a^5}\right)$

12] $2x^0$

13] $\left(5a^5\right)\left(-a^3\right)$

14] $\dfrac{\left(4x^2\right)\left(5x\right)}{\left(10x\right)^2}$

15] $\dfrac{1}{b^{-4}}$

Simplify each expression. Your answers cannot include negative exponents.

16] $\left(a^4\right)^3$

17] $-x^2 \cdot x^4 \cdot x$

18] $\dfrac{\left(3x^2\right)\left(4x^5\right)}{\left(2x\right)^2}$

19] $x^5 \cdot x^{-9}$

20] $\dfrac{a+3}{a}$

21] $\dfrac{2a}{8a^2}$

22] $\dfrac{6x}{-3x}$

23] $\dfrac{a^5}{b^4} \cdot \dfrac{b^4}{a^5}$

24] $\dfrac{n^2+3n}{n^2+6}$

25] $\dfrac{2a+5a}{7}$

26] $\dfrac{2x-6}{2}$

27] $\dfrac{4x}{-8x^2} \cdot 2x$

ANSWERS: 1] b^5 **2]** $12y^9$ **3]** m^6 **4]** $16a^2$ **5]** $-8x^6$ **6]** 1

7] $6x^3$ **8]** $-\dfrac{2}{3n^3}$ **9]** $\dfrac{x^8}{y^{12}}$ **10]** $\dfrac{-32x^{15}}{c^5}$ **11]** $\dfrac{-1}{4a^2}$ **12]** 2

13] $-5a^8$ **14]** $\dfrac{x}{5}$ **15]** b^4 **16]** a^{12} **17]** $-x^7$ **18]** $3x^5$ **19]** $\dfrac{1}{x^4}$

20] simplified now   **21]** $\dfrac{1}{4a}$ **22]** -2 **23]** 1 **24]** simplified now   **25]** a

26] $x-3$ **27]** -1