

ASFG High School Summer Assignment

Course: Applied Math

Teacher: June Mitsuhashi

Welcome to Applied Math! This is going to be a great and exciting year for us. I have a PhD in Wood Science and Engineering from Oregon State University and I have been teaching this course for three years at ASFG. I'm looking forward to working with you next school year. See you soon!!!

Purpose of the Summer Assignment:

The summer assignment described below is designed to review some of the algebraic concepts that you will have to know for this course.

Detailed Description of the Assignment

If you do not know how to solve a problem you are expected to use the sources available to you (notes, handouts, books, Internet, etc.) to figure it out independently. The best study routine during the summer months is to constantly review topics and do a few problems each day, not attempt to do the entire packet the day before school starts.

This summer assignment will not be collected. You are responsible for knowing how to solve every single problem, but this does not mean you need to do every single problem. At a minimum, we suggest doing every third problem (e.g. 1, 4, 7, 10 ...) so that your summer workload is manageable and you review some problems involving each topic. Motivated students can work additional problems to gain confidence and familiarity with the more difficult topics. For your convenience, the answers to all of the exercises are included at the end of the document.

You will take a quiz on this summer packet study material on Friday of the first week of school. The quiz will consist of approximately twenty (20) free-response questions (no multiple choice, matching, etc.); you will not be able to use a calculator on the test. This will count as a quiz grade for the first quarter.

Help is available at:

- Khan Academy (<http://www.khanacademy.org>) and Math is Fun
- (<http://www.mathsisfun.com/algebra/index.html>).

Unless specifically stated or unless you are to give a decimal approximation to a square root, you should not use a calculator to do these exercises. You may, however, use your calculator to check

Your answers. Please remember to show all of your work on the worksheets provided. Work neatly and in an organized way.

If you do not know how to solve a problem, you are expected to use the sources available to you (notes, handouts, books, Internet, etc.) to figure it out independently. The best study routine during the summer months is to constantly review topics and do a few problems each day, do not attempt to do the entire packet the day before school starts. You can also get help the week before school starts from 12:00 pm to 1:00 pm.

Contact Info

If you have any questions regarding the summer assignment, please contact me at June.Mitsubishi@asfg.mx or leticia.garcia@asfg.mx

Enjoy your summer and do your best!

Sincerely,

The ASFG Math Department

Summer Assignment**Simplify each expression.**

1) $6(m - 3) - 7(8 - 6m)$

2) $-4(7n + 8) + 8(2 + 2n)$

3) $-8x(-8 + 7x) + 7x(2 - 4x)$

4) $-8a(-4 - 5a) - 4(a - 5)$

Solve each equation by completing the square.

5) $p^2 - 8p - 65 = 5$

6) $k^2 + 2k - 105 = -7$

Solve each equation by factoring.

7) $v^2 = -13v - 40$

8) $x^2 = -3x + 10$

9) $n^2 - 6 = -n$

10) $7v^2 - 77v = -210$

Solve each equation with the quadratic formula.

11) $7p^2 + 4 = -4p$

12) $6a^2 - 17 = 0$

Evaluate each function.

13) $f(x) = x^2 - 5$; Find $f(6)$

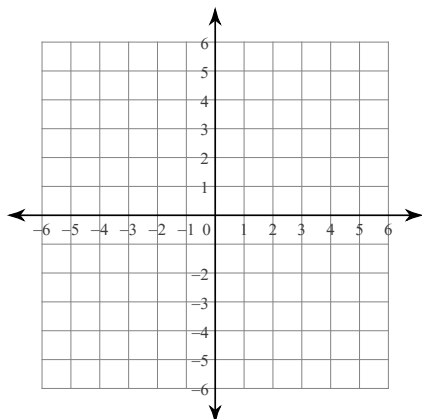
14) $f(x) = 2 \cdot 2^{2x} + 3$; Find $f(0)$

15) $h(n) = n^3 + 5n$; Find $h(2)$

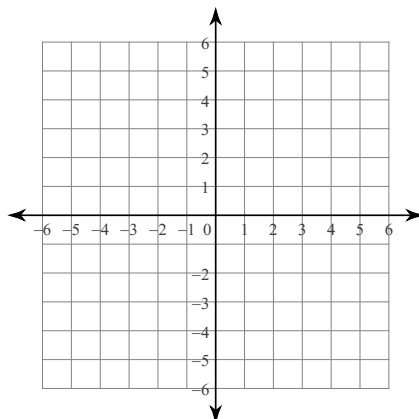
16) $f(t) = t^2 + 5t$; Find $f(-4)$

Sketch the graph of each line.

17) $6x + 3y = 6$

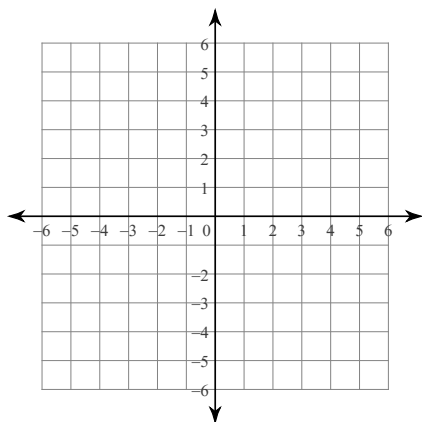


18) $0 = 3x - 1 + y$

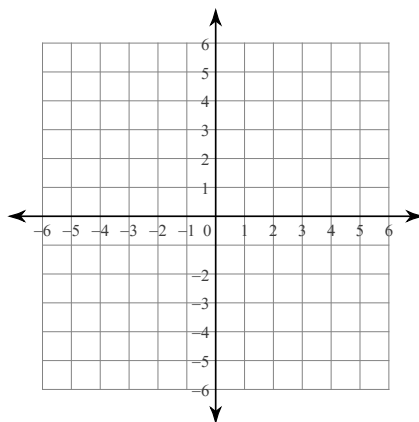


Sketch the graph of each linear inequality.

19) $4x + 3y > 15$



20) $2x - 3y \leq -12$



Solve each system by graphing.

21) $y = 3x - 7$
 $y = \frac{3}{5}x + 5$

22) $y = \frac{12}{7}x + 4$
 $y = -8$

23) A metal alloy weighing 6 lb. and containing 10% copper is melted and mixed with 4 lb. of pure copper. What percent of the resulting alloy is copper?

24) 15 lbs. of mixed nuts containing 44% peanuts were mixed with 20 lbs. of another kind of mixed nuts that contain 37% peanuts. What percent of the new mixture is peanuts?

25) 6 qt. of a 65% sugar solution was mixed with 2 qt. of a 5% sugar solution. Find the concentration of the new mixture.

26) A saline solution was made by mixing 3 qt. of a 70% saline solution and 7 qt. of a 90% saline solution. What is the concentration of the mixture?

Find each product.

27) $(-5x + 6)(7x - 3)$

28) $(x + 5)(-x + 2)$

29) $(-2x - 3)(-7x + 2)$

30) $(-6b - 2)(-b + 1)$

Evaluate each using the values given.

31) $y\left(x + \frac{z}{2}\right) + x$; use $x = -6$, $y = -7$, and $z = 10$

32) $\frac{p}{4} - (p - (q - 9))$; use $p = -4$, and $q = 8$

33) $y - |5| + z + x$; use $x = -7$, $y = -6$, and $z = -5$

34) $|m|(-4 - nm)$; use $m = -4$, and $n = 7$

Simplify each expression.

35) $(4k + 13k^5 + 12k^4) - (-12k^5 - 6k + 2k^4)$

36) $(-11x^3 + 2x^4 + 12) + (2x - 14 + 9x^3)$

37) $(-7n - 7n^4 - 6n^2) + (5 - 7n^4 - 14n^2)$

38) $(-2x^3 + 12x^2 + 13x^5) + (-5x^2 + 13x^5 + 8x^3)$

Solve each system by elimination.

39) $-7x - y = 28$
 $4x + 5y = 15$

40) $-x + 3y = -2$
 $7x - 8y = -12$

Solve each system by graphing.

41) $y = -\frac{1}{2}x + 1$
 $y = \frac{1}{4}x + 4$

42) $y = -\frac{1}{4}x + 3$
 $y = \frac{3}{2}x - 4$

Solve each system by substitution.

43) $7x + y = 5$
 $-7x + 4y = -15$

44) $-6x + 2y = 2$
 $-3x + y = -7$

45) When you reverse the digits in a certain two-digit number you increase its value by 27. Find the number if the sum of its digits is 5.

46) Molly and Jack each improved their yards by planting grass sod and geraniums. They bought their supplies from the same store. Molly spent \$67 on 2 ft of grass sod and 5 geraniums. Jack spent \$137 on 10 ft of grass sod and 3 geraniums. Find the cost of one ft of grass sod and the cost of one geranium.

47) A plane traveled 576 miles to Tahiti and back. The trip there was with the wind. It took 6 hours. The trip back was into the wind. The trip back took 12 hours. Find the speed of the plane in still air and the speed of the wind.

48) Willie's school is selling tickets to the annual dance competition. On the first day of ticket sales the school sold 7 adult tickets and 12 student tickets for a total of \$189. The school took in \$88 on the second day by selling 4 adult tickets and 4 student tickets. Find the price of an adult ticket and the price of a student ticket.

Solve each equation by taking square roots.

49) $-4x^2 = -112$

50) $b^2 - 4 = 5$

Summer Assignment

Simplify each expression.

1) $6(m-3) - 7(8-6m)$
 $48m - 74$

3) $-8x(-8+7x) + 7x(2-4x)$
 $78x - 84x^2$

2) $-4(7n+8) + 8(2+2n)$
 $-12n - 16$

4) $-8a(-4-5a) - 4(a-5)$
 $28a + 40a^2 + 20$

Solve each equation by completing the square.

5) $p^2 - 8p - 65 = 5$
 $\{4 + \sqrt{86}, 4 - \sqrt{86}\}$

6) $k^2 + 2k - 105 = -7$
 $\{-1 + 3\sqrt{11}, -1 - 3\sqrt{11}\}$

Solve each equation by factoring.

7) $v^2 = -13v - 40$
 $\{-5, -8\}$

8) $x^2 = -3x + 10$
 $\{-5, 2\}$

9) $n^2 - 6 = -n$
 $\{2, -3\}$

10) $7v^2 - 77v = -210$
 $\{6, 5\}$

Solve each equation with the quadratic formula.

11) $7p^2 + 4 = -4p$
 $\left\{ \frac{-2 + 2i\sqrt{6}}{7}, \frac{-2 - 2i\sqrt{6}}{7} \right\}$

12) $6a^2 - 17 = 0$
 $\left\{ \frac{\sqrt{102}}{6}, -\frac{\sqrt{102}}{6} \right\}$

Evaluate each function.

13) $f(x) = x^2 - 5$; Find $f(6)$
 31

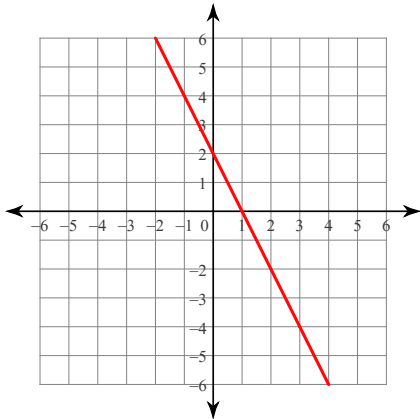
14) $f(x) = 2 \cdot 2^{2x} + 3$; Find $f(0)$
 5

15) $h(n) = n^3 + 5n$; Find $h(2)$
 18

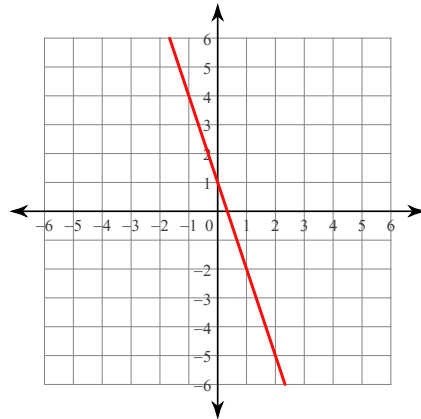
16) $f(t) = t^2 + 5t$; Find $f(-4)$
 -4

Sketch the graph of each line.

17) $6x + 3y = 6$

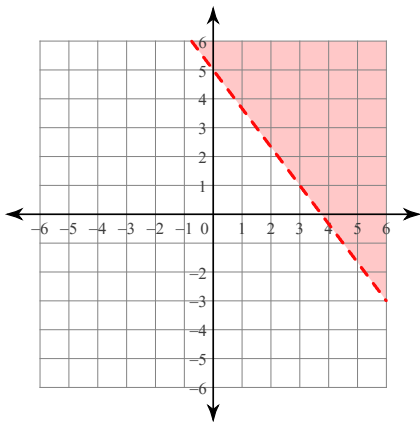


18) $0 = 3x - 1 + y$

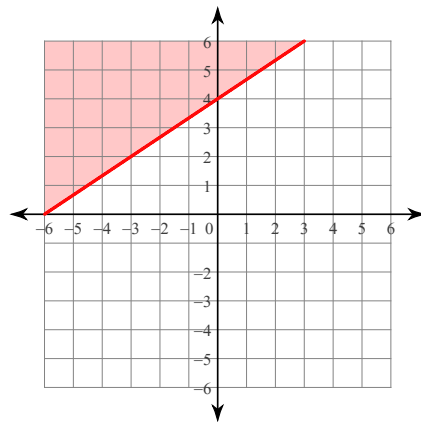


Sketch the graph of each linear inequality.

19) $4x + 3y > 15$



20) $2x - 3y \leq -12$



Solve each system by graphing.

21) $y = 3x - 7$

$$y = \frac{3}{5}x + 5$$

(5, 8)

23) A metal alloy weighing 6 lb. and containing 10% copper is melted and mixed with 4 lb. of pure copper. What percent of the resulting alloy is copper?

46%

25) 6 qt. of a 65% sugar solution was mixed with 2 qt. of a 5% sugar solution. Find the concentration of the new mixture.

50%

22) $y = \frac{12}{7}x + 4$

$$y = -8$$

(-7, -8)

24) 15 lbs. of mixed nuts containing 44% peanuts were mixed with 20 lbs. of another kind of mixed nuts that contain 37% peanuts. What percent of the new mixture is peanuts?

40%

26) A saline solution was made by mixing 3 qt. of a 70% saline solution and 7 qt. of a 90% saline solution. What is the concentration of the mixture?

84%

Find each product.

27) $(-5x + 6)(7x - 3)$

$$-35x^2 + 57x - 18$$

28) $(x + 5)(-x + 2)$

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

29) $(-2x - 3)(-7x + 2)$

$$14x^2 + 17x - 6$$

30) $(-6b - 2)(-b + 1)$

$$6b^2 - 4b - 2$$

Evaluate each using the values given.

31) $y\left(x + \frac{z}{2}\right) + x$; use $x = -6$, $y = -7$, and $z = 10$

1

32) $\frac{p}{4} - (p - (q - 9))$; use $p = -4$, and $q = 8$

2

33) $y - |5| + z + x$; use $x = -7$, $y = -6$, and $z = -5$

-23

34) $|m|(-4 - nm)$; use $m = -4$, and $n = 7$

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Simplify each expression.

35) $(4k + 13k^5 + 12k^4) - (-12k^5 - 6k + 2k^4)$

$$25k^5 + 10k^4 + 10k$$

36) $(-11x^3 + 2x^4 + 12) + (2x - 14 + 9x^3)$

$$2x^4 - 2x^3 + 2x - 2$$

37) $(-7n - 7n^4 - 6n^2) + (5 - 7n^4 - 14n^2)$

$$-14n^4 - 20n^2 - 7n + 5$$

38) $(-2x^3 + 12x^2 + 13x^5) + (-5x^2 + 13x^5 + 8x^3)$

$$26x^5 + 6x^3 + 7x^2$$

Solve each system by elimination.

39) $-7x - y = 28$
 $4x + 5y = 15$
 $(-5, 7)$

40) $-x + 3y = -2$
 $7x - 8y = -12$
 $(-4, -2)$

Solve each system by graphing.

41) $y = -\frac{1}{2}x + 1$
 $y = \frac{1}{4}x + 4$
 $(-4, 3)$

42) $y = -\frac{1}{4}x + 3$
 $y = \frac{3}{2}x - 4$
 $(4, 2)$

Solve each system by substitution.

43) $7x + y = 5$
 $-7x + 4y = -15$
 $(1, -2)$

44) $-6x + 2y = 2$
 $-3x + y = -7$
No solution

45) When you reverse the digits in a certain two-digit number you increase its value by 27. Find the number if the sum of its digits is 5.

14

46) Molly and Jack each improved their yards by planting grass sod and geraniums. They bought their supplies from the same store. Molly spent \$67 on 2 ft of grass sod and 5 geraniums. Jack spent \$137 on 10 ft of grass sod and 3 geraniums. Find the cost of one ft of grass sod and the cost of one geranium.

ft of grass sod: \$11, geranium: \$9

47) A plane traveled 576 miles to Tahiti and back. The trip there was with the wind. It took 6 hours. The trip back was into the wind. The trip back took 12 hours. Find the speed of the plane in still air and the speed of the wind.

plane: 72 mph, wind: 24 mph

48) Willie's school is selling tickets to the annual dance competition. On the first day of ticket sales the school sold 7 adult tickets and 12 student tickets for a total of \$189. The school took in \$88 on the second day by selling 4 adult tickets and 4 student tickets. Find the price of an adult ticket and the price of a student ticket.

adult ticket: \$15, student ticket: \$7

Solve each equation by taking square roots.

49) $-4x^2 = -112$
 $\{2\sqrt{7}, -2\sqrt{7}\}$

50) $b^2 - 4 = 5$
 $\{3, -3\}$