Name_____   Date_____

Ms. Board/Ms. Wengrod

Summer Assignment for Students Entering Algebra 2

Directions:

• Complete this assignment WITHOUT the use of a calculator.
• All work must be shown to receive credit.
• Write answers in the space provided.
• Complete this assignment before the first day of class and be ready to hand it in, fully complete, on the first day of class.

Note to the Student:

The purpose of this assignment is to review topics that are essential to your success in Algebra 2. It will be assumed that all of the topics covered in this assignment, and in your previous math courses, have been mastered and will not need explanation as we use them in the Algebra 2 course.

Please make sure that you complete this assignment no earlier than a month before school starts. You want to make sure to give yourself time to identify and relearn concepts you have difficulty with but you don't want to do it too early in the summer that you forget the material.

This assignment will have some weight in your first quarter grade, to be determined by the teacher of your class.

We hope you have a great summer and look forward to seeing you in the fall!

The Birch Wathen Lenox Schol Mathematics Department

GCF: Find the greatest common factor of the following group of numbers.

Watch: https://www.khanacademy.org/math/pre-algebra/pre-algebra- factors-multiples/pre-algebra-greatest-common-divisor/v/greatest-common- divisor-factor-exercise

1) 24,72   2) 18, 63, 108

Answer _____   Answer _____

LCM: Find the lowest common multiple of the following groups of numbers.

Watch: https://www.khanacademy.org/math/algebra2/rational-expressions- equations-and-functions/adding-and-subtracting-rational- expressions/v/least-common-multiple-exercise

3) 12,18   4) 6,14,20

Answer _____   Answer _____

Operations with fractions: Perform the given operation. Write your answers in simplest form.

5) $\dfrac{5}{18} \cdot \dfrac{2}{15}$

6) $\dfrac{18}{7} \div \dfrac{27}{14}$

Answer _____

Answer _____

7) $\dfrac{4}{5} + \dfrac{7}{3}$

8) $\dfrac{5}{12} - \dfrac{5}{18}$

Answer _____

Answer _____

Order of operations: Use the order of operations to evaluate the following expressions.

9) $2 + (3 - 7)^2 \div 2 \cdot 4$

10) $6 + 3 \div 3(7 - 2)^3$

Answer _____

Answer _____

11) $16 \div 4 + 4(22 - 6)^2 \div 2 \cdot -1$

12) $2 + 3 \cdot 5 \div (2 - 3)^3 - 6$

Answer _____

Answer _____

Combining like terms and the Distributive Property: Simplify the following expressions.

13) $x^3 - 3x^2 + 4x - 7x^2 + x^3 + 7$

14) $3x^4 + x^3 + 2xy^2 - x^2y + 7xy^2$

Answer _____

Answer _____

15) $(8x^3 - y^4) + 3(7x^3 + 5y^3 - 2y^4)$

16) $-2(3x^2 - 4x + 5) - (7x - 4x^2 - 3)$

Answer _____

Answer _____

Evaluating Expressions: Evaluate each expression for the value stated.

17) $x^2 + 6x + 9,\ when\ x = -3$

18) $-5x^2 - 2x + 1\ when\ x = -2$

Answer _____

Answer _____

19) $5 - 7x - 8,\ when\ x = -4$

20) $7x + x|3 + x|when\ x = -5$

Answer _____

Answer _____

Properties of Exponents: Simplify the following expressions. Answers should not contain negative exponents.

21) $(3y)^3$

Answer _____

22) $(-2x)^{-4}$

Answer _____

23) $5x^0$

Answer _____

24) -6^2

Answer _____

25) $g^{10} \cdot g^{11}$

Answer _____

26) $(3x^2y^3z)^4$

Answer _____

27) $\dfrac{9^{-4}}{9^{-6}}$

28) $\dfrac{c^2d^{-3}}{c^3d^{-1}}$

Answer _____

Answer _____

29) $(2x^2y^4)^{-5}(y^{-1}x^7)^6$

30) $\left(\dfrac{-4x^4y^{-2}}{5x^{-1}y^4}\right)^{-4}$

Answer _____

Answer _____

Multiplying Polynomials: Multiply the polynomials and simplify if possible.

31) $3x(2x^2 - 4x + 1)$

32) $(x + 4)(2x - 5)$

Answer _____

Answer _____

33) $(2x + 3)^2$

34) $(x + 1)(3x^2 - 5x + 6)$

Answer _____

Answer _____

Simplify Radicals and Operations with Radicals: Simplify the following radical expressions.

35) $\sqrt{72}$

36) $\sqrt{18} \cdot \sqrt{24}$

Answer _____

Answer _____

37) $3\sqrt{108} - \sqrt{27}$

38) $2\sqrt{18} + 3\sqrt{72}$

Answer _____

Answer _____

39) $\sqrt{\dfrac{16}{25}}$

40) $\dfrac{\sqrt{12}}{\sqrt{72}}$

Answer _____

Answer _____

41) $\dfrac{6\sqrt{120}}{18\sqrt{240}}$

42) $\dfrac{3\sqrt{2}+5\sqrt{18}}{4\sqrt{6}}$

Answer _____

Answer _____

Solving linear equations: Solve the following equations. Answers should be in simplest form.

43) $-2x + 9 = 4x - 5$

44) $-3(x + 2) + 7 = 4x + 3$

Answer _____

Answer _____

45) $\frac{1}{2}(x - 6) + 5 = \frac{2}{3}(6x - 9)$

46) $\frac{2x}{3} + 5 = \frac{5}{7}x - 3$

Answer _____

Answer _____

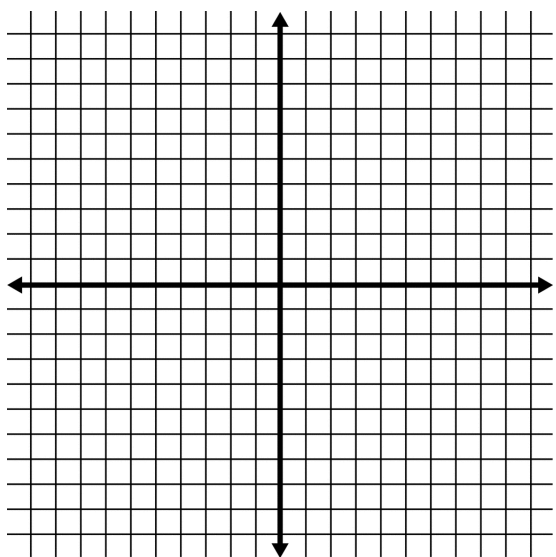**Graphing linear equations:** Graph each of the following linear equations. Identify the slope of the line.
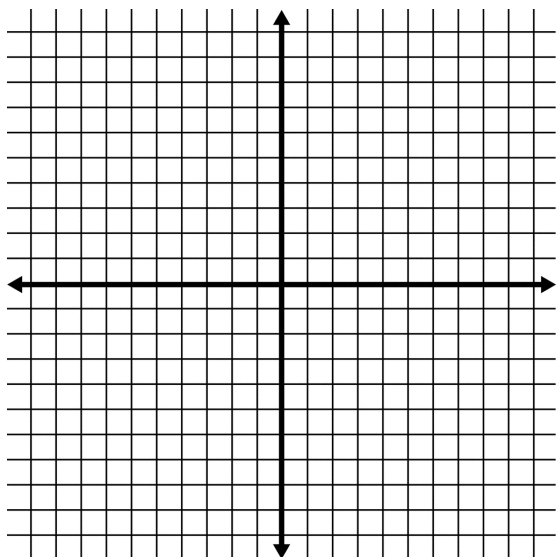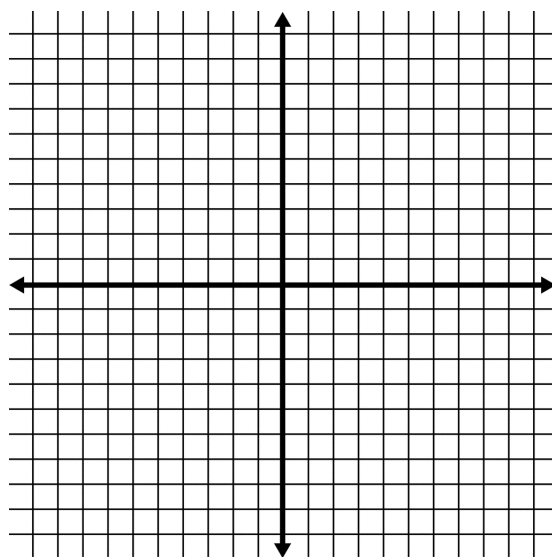
47) $y = -3x + 2$ 48) $y = \frac{2}{3}x - 4$
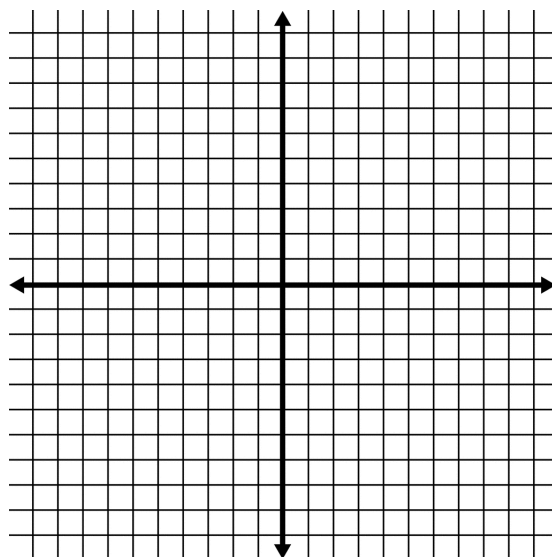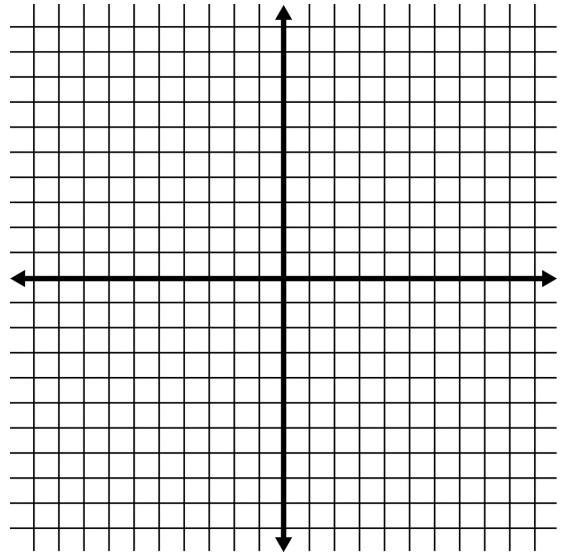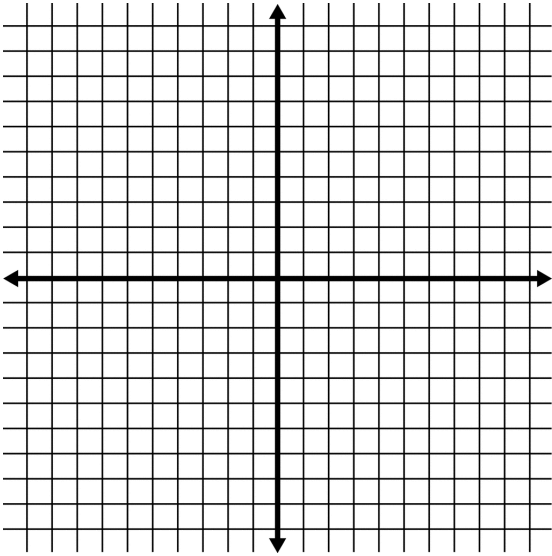
49) $y - 2 = -2(x + 3)$ 50) $2x + 3y = 18$

Graphing Linear Inequalities: Graph each of the following linear inequalities.
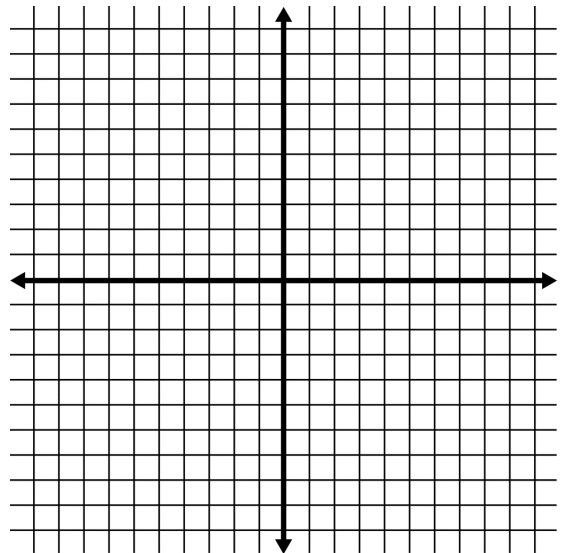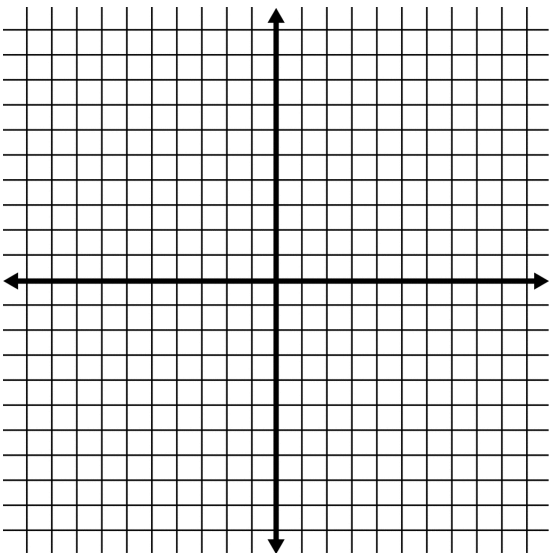
51) $y < -\frac{1}{3}x + 5$

52) $y \geq 4x - 2$

53) $x < 3$

54) $y \geq -7$

Writing Linear Equations: Write the equation of the line, in both point-slope and slope intercept form, with the given description.

55) Line going through (−2,4) with slope −3

Answer _____

56) Line going through (3,−2) and (−2,−5)

Answer _____

57) Line parallel to y = −2x+ 4 going through (−3,−1)

Answer _____

58) Line perpendicular to y =−3x+4 going through (6,2)

Answer _____

Solving linear inequalities: Solve each of the following linear inequalities.

59) $2x + 3 < 5x - 2$
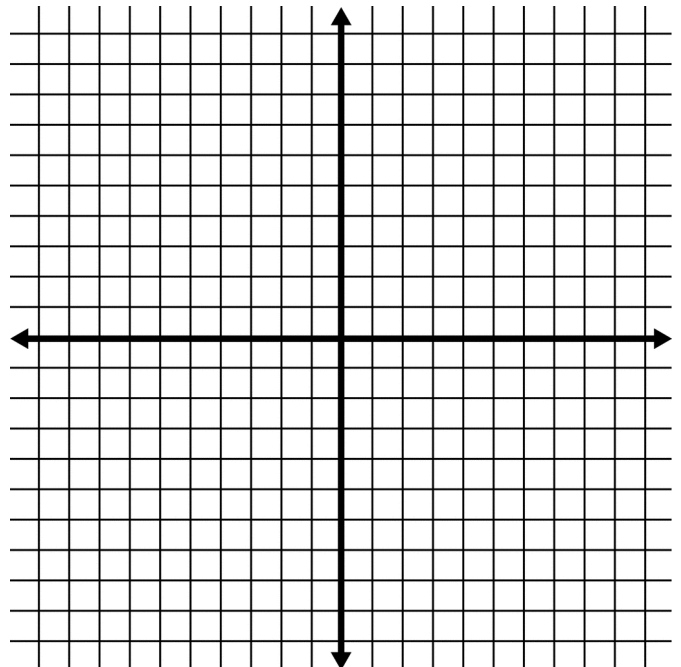
60) $-2 \leq -3x + 1 < 7$

Answer _____

Answer _____

Solving Systems of Equations: Solve the system of equations by graphing.

61) $y = x + 3$

$y = -\frac{1}{2}x + 6$

Solving Systems of Equations: Solve each system of equations using substitution or linear combinations (elimination). Your answer should be an ordered pair.

62) $y = x + 4$
     $3x - y = 16$

63) $3x + y = 1$
     $x - y = 7$

Answer _____

Answer _____

64) $3x + 5y = 17$
     $2x + 3y = 11$

65) $6x - 7y = 12$
     $5x - 4y = 10$

Answer _____

Answer _____

Factoring Polynomial Expressions: Factor each of the expressions completely.

66) $x^2 + 5x + 6$

67) $x^3 - 4x^2 + 9x - 36$

Answer _____

Answer _____

68) $3x^3 - 9x^2$

69) $x^2 - x - 6$

Answer _____

Answer _____

70) $4x^2 - 9$

71) $5x^3 - 5x$

Answer _____

Answer _____

72) $4x^2 - 8x - 32$

73) $-2x^4 + 12x^3 + 54x^2$

Answer _____

Answer _____

Translating Words to Mathematics

74) A housecleaning service charges $10 per visit plus $7.50 per hour.

a)   Write an equation for the cost, C, of cleaning a house that takes h hours to clean.

b)   How much would this service charge if it took 312 hours to clean a house?

c)   If the bill for cleaning Natasha's house is $28.75, how long did it take to clean?

75) Erika's Baby-Sitting Service charges $8.50 per job plus $6.75 per hour.

a)   Write an equation for the charge, C, for baby-sitting h hours.

b)   What is the cost of an 8-hours job?

c)   If Brittney was charged $55.75 for her nephew's care, how many hours was he in Erika's care?

76) The time that a traffic light remains yellow is 1 second more than 0.05 times the speed limit.

a)   Write an equation that represents Y, the length of time the light is yellow at x miles per hour.

b)   Find the length of time the light is yellow at 30 miles per hour.

c)   If the light is yellow for 4 seconds, find the speed limit.

77) The final exam in the Skiing and Snowboard class is 30% of the total semester points.

a)   Write an equation to find the value of the final exam, F.

b)   If the total points before the final is 700, find the point value of the final.

c)   If the final was worth 360 points, find the point total before the exam.