

Name: _____ Pd: _____ Teacher: _____

Algebra 2B

Directions

This packet should be completed for maximum benefit. You may use extra paper for computations, as needed. There are *limited* answers on the back page to help you check for accuracy.

Some pages include problems with a video URL. You may watch the video to write the steps on how to solve the problems or try the problems yourself. Good Luck and see you in September!



Fill in the Blank

absolute
coefficient
constant

equation
exponent
expression

inequality
integers
like terms

operations
variable
x-intercept
y-intercept

1. An algebraic _____ is a variable or a combination of variables, numbers, and symbols. Exs.: a^2 , $3y - 8$, $x^2 - 4x + 5$.
2. An _____ is a math sentence that compares unequal expressions using $<$, $>$, \leq , \geq or \neq .
3. A _____ is a number that does not change, such as 2, -5, 7.25.
4. A _____ is a letter used to represent or more numbers.
5. To follow the Order of _____, begin with parenthesis, then the exponents, then multiply and divide, and finally add and subtract.
6. The set of zero, positive and negative whole numbers (...-3, -2, -1, 0, 1, 2, 3...) are known as the _____.
7. A _____ is the number in front of a variable, such as the 5 in $5x^2$.
8. In the expression 3^5 , 3 is the base and 5 is the _____.
9. An _____ is a math sentence with an equal (=) sign.
10. The _____ Value of a number is its distance from the zero on the number line. For example, $|-4| = 4$.
11. _____ are terms that contain the same variable with the same exponent. The group $4x^2$, x^2 , and $-6x^2$ is an example, but $5x$ and $6x^2$ are not.
12. The _____ is the coordinate where the line crosses the x-axis.
13. The _____ is the coordinate where the line crosses the y-axis.

Match the Vocabulary Word with the Operation

- | | | | | |
|-------|-----|------------|----|----------------|
| _____ | 14. | Sum | A. | addition |
| _____ | 15. | Difference | B. | division |
| _____ | 16. | Product | C. | multiplication |
| _____ | 17. | Quotient | D. | subtraction |

Match the Formulas

- | | | | | |
|-------|-----|--------------------------|----|---|
| _____ | 18. | Distance Formula | A. | $a^2 + b^2 = c^2$ |
| _____ | 19. | Midpoint Formula | B. | $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ |
| _____ | 20. | Pythagorean Theorem | C. | $m = \frac{y_2 - y_1}{x_2 - x_1}$ |
| _____ | 21. | Quadratic Formula | D. | $Ax + By = C$ |
| _____ | 22. | Slope between two points | E. | $y = mx + b$ |
| _____ | 23. | Slope-Intercept Form | F. | $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ |
| _____ | 24. | Standard Form of a line | G. | $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$ |

Need help with pages 2-3?

Try 

Distributive Property and Combining Like Terms

Try these problems first!

a. $4(x + 2) + 5x + 1$

b. $5x - 3(2x + 1) + 9$

c. $3(x - 5) + 2(4x + 3)$

d. $12 - (3x + 7) + 10x$

e. $2(7x - 4) - 9(x + 1)$

f. $4x + 2(3x + 7) - 7x$

Watch the Video for the Answers!

<https://youtu.be/T0a92gEDukY>

Video by James Neal, "Algebra - Distributive and Combining Like Term Part 2."

Distributive Property and Combining Like Terms (continued)

Now try these problems on your own.

25. $7x + 6 - 8x + 44$

26. $16y - 4 + 2y + 14$

27. $(4x^2 - 7x) - (5x^2 + 7)$

28. $9x - 7 + 5x - 8x + 9$

29. $(2x^2 + 5x - 3) - (x^2 - x + 2)$

30. $(-4x + 8) + (15x - 17)$

31. $-7(x + 2) - 18x + 4$

32. $6(y - 14) - 3(2y + 1)$

33. $4(x^2 - x) - 9(x^2 - 5x)$

Solve for the variable

Try these problems first!

a. $7x = 4x + 15$

b. $5x - 2 = 3x + 4$

c. $9n - 6 = 5n + 18$

d. $6y + 4 - 3y = -5 + y + 17$

e. $x + 14 = 7x + 32 - 3x$

f. $2k - 5k = 3(1 - 2k)$

Watch the Video for the Answers!

<https://youtu.be/fDMxOiS5g7k>

Video by Mike DeVor, "Solving Equation with variables on both sides of the equation."

Solve for the variable (continued)

Now try these problems on your own.

34. $3x + 6 = 8x - 44$

35. $6x - 4 = 2x + 4$

36. $2d + 6 = -5d - 15$

37. $-9 = 2x - 2 + 5x$

38. $-5x - 2 = 3x - 18$

39. $-2(y - 8) = 28$

40. $8 - 5(x + 3) = 2x$

41. $3(2x + 1) = 3x - 6$

42. $6 + 2(k + 4) = 30$

43. $22x - 9(x - 7) = -2$

44. $\frac{1}{2}(10x - 6) = x - 15$

45. $7(1 - x) = -4x - 11$

Graphing Linear Equations

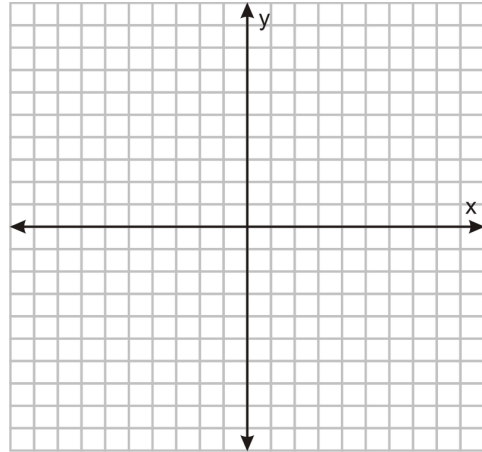
Try these problems first!

Slope-Intercept Form: _____

In the equation $y = 2x - 1$, determine the value of (a) the slope, (b) the y-intercept, and (c) graph the line on the coordinate plane.

slope =

y-intercept =

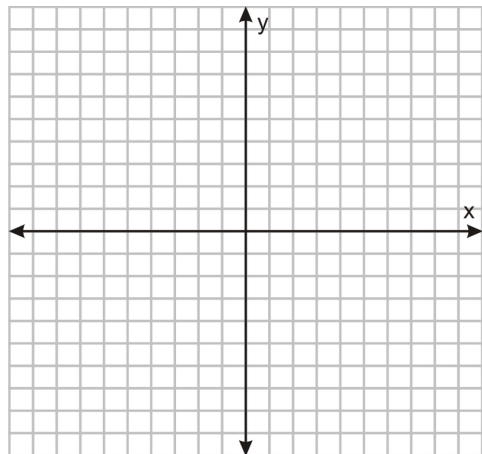


Standard Form: _____

In the equation $3x - y = 9$, determine the value of (a) the x-intercept, (b) the y-intercept, and (c) graph the line on the coordinate plane.

x-intercept =

y-intercept =



Watch the Video for the Answers!

<https://youtu.be/0xsZBidIKTE>

Video by Sharon Serano, "Graphing Linear Equations in Standard and Slope-Intercept Forms."

Graphing Linear Equations (continued)

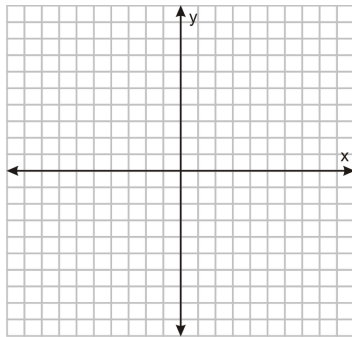
Now try these problems on your own.

For #46-48, determine the slope, y-intercept, and graph the equation.

46. $y = 3x - 5$

slope = _____

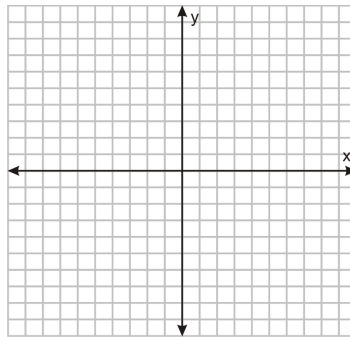
y-intercept = _____



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

slope = _____

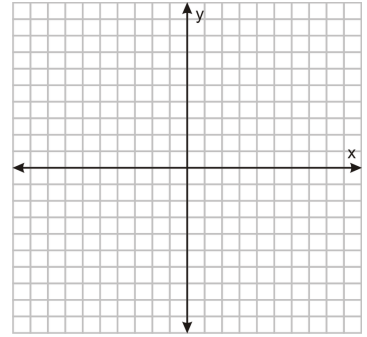
y-intercept = _____



48. $y = -x + 2$

slope = _____

y-intercept = _____

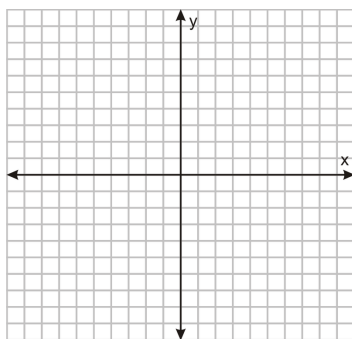


For #49-51, determine the x-intercept, y-intercept, and graph the equation.

49. $x + y = 3$

x-intercept = _____

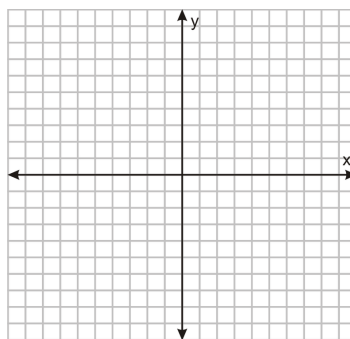
y-intercept = _____



50. $-3x + 2y = -12$

x-intercept = _____

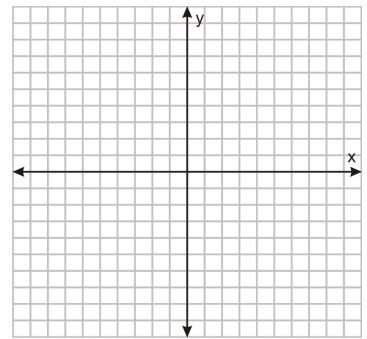
y-intercept = _____



51. $-x + 2y = 8$

x-intercept = _____

y-intercept = _____



Factoring by GCF, Difference of Squares, Trinomials

Try these problems first!

Greatest Common Factor (GCF)

a. $12x^3 - 24x^2 + 16x$

b. $40y^4 - 16y^6$

c. $36x^3 + 60x^2 + 6x + 12$

Difference of Squares

a. $25x^2 - 144$

b. $100x^2 - 1$

c. $36a^2 - 49b^2$

Easier Trinomials using the X-method

a. $x^2 + 2x - 35$

b. $x^2 - 2x - 15$

c. $x^2 + 10x + 16$

d. $x^2 - 14x + 40$

Watch the Video for the Answers!

<https://youtu.be/k1i2CQZk318>

Video by Sharon Serano, "Factoring GCF, Difference of Squares, Easier Trinomials."

Factoring by GCF, Difference of Squares, Trinomials

Now try these problems on your own.

Greatest Common Factor (GCF)

52. $90x^4 - 54x^3$

53. $24y^3 - 48y^2 + 12y$

54. $4x^3 - 24x^2 - 16x + 12$

55. $14y^9 + 21y^7$

56. $20x^5 + 50x^4 - 40x^3$

57. $15c^3 + 25c^2 - 5c - 40$

Difference of Squares

58. $x^2 - 81$

59. $x^2 - 1$

60. $4x^2 - 25y^2$

61. $16x^2 - 49$

62. $36x^2 - 121$

63. $64x^2 - y^2$

Trinomials using the X-method

64. $x^2 + 4x + 4$

65. $x^2 - 12x + 36$

66. $x^2 + 10x + 25$

67. $x^2 + 5x + 6$

68. $x^2 - 13x + 42$

69. $x^2 - 3x - 40$

70. $x^2 + 14x + 45$

71. $x^2 + 8x - 48$

72. $x^2 - 8x - 33$

Just a few Answers...

1. expression

6. integers

11. like terms

16. C

19. G

27. $-x^2 - 7x - 7$

30. $11x - 9$

33. $-5x^2 + 41x$

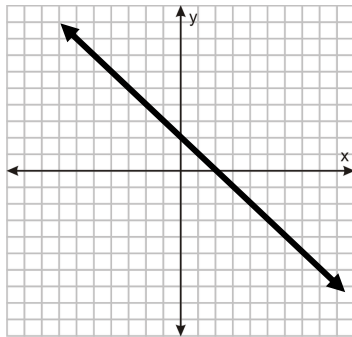
36. $d = -3$

39. $y = -6$

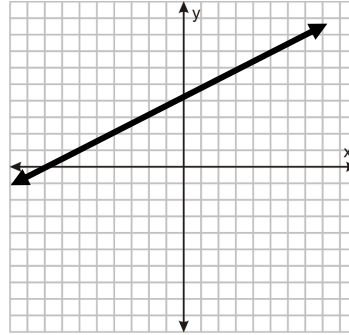
42. $k = 8$

45. $x = 6$

48. slope = -1
y-intercept = (0,2)



51. x-intercept = (-8,0)
y-intercept = (0,4)



54. $4(x^3 - 6x^2 - 4x + 3)$

56. $10x^3(2x^2 + 5x - 4)$

60. $(2x + 5y)(2x - 5y)$

62. $(6x + 11)(6x - 11)$

66. $(x + 5)(x + 5)$

69. $(x - 8)(x + 5)$

72. $(x - 11)(x + 3)$