

ALGEBRA 2 SUMMER REVIEW

2023

Dear students,

To prepare you for next year's Algebra 2 class, the Math Department requires that you complete a summer review assignment. This review will refresh your skills and prepare you for our Algebra 2 course.

Solve each problem, **showing all your work**. You are expected to spend a minimum of 2 hours on this assignment, but it may require as many as 4 hours if you are not familiar with the material. ALL problems need to be done with all work shown, neat, and stapled. You may print out the summer review and complete the problems on the document itself, or complete the problems on binder paper. The completed assignment is due the first day of class. All problems on this review should be material that you have already mastered in Algebra 1. If there is anything that does not look familiar, please make sure you get the proper help during the summer. Here are links to helpful Khan Academy Videos if you need to review any topics.

Topic	#'s	Link to Video
Simplifying Expressions and Solving Equations	1-6	https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:foundation-algebra/x2f8bb11595b61c86:combine-like-terms/v/combining-like-terms
	7-13	https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:solve-equations-inequalities
Solving and Graphing Inequalities	14-16	https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:solve-equations-inequalities/x2f8bb11595b61c86:multistep-inequalities/v/multi-step-inequalities-3
	17-20	https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:solve-equations-inequalities/x2f8bb11595b61c86:multistep-inequalities/v/multi-step-inequalities-3
Solving Absolute Value Equations and Inequalities	21-23	https://www.khanacademy.org/math/algebra-home/alg-absolute-value/alg-absolute-value-equations/v/absolute-value-equations
	24-26	https://www.khanacademy.org/math/algebra-home/alg-absolute-value/alg-absolute-value-inequalities/v/absolute-value-inequalities
Linear Equations: Slope	27-29	https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:linear-equations-graphs#x2f8bb11595b61c86:slope
Linear Equations: Slope-Intercept Form	30-32 33-35	https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:forms-of-linear-equations/x2f8bb11595b61c86:writing-slope-intercept-equations/v/graphs-using-slope-intercept-form

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Linear Equations: Graphing Linear Equations	36-38	https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:forms-of-linear-equations
Graphing Linear Inequalities	39-40	https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:inequalities-systems-graphs
System of Linear Equations Word Problems	41-43	https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:systems-of-equations#x2f8bb11595b61c86:systems-of-equations-word-problems

Name: _____

SIMPLIFYING EXPRESSIONS AND SOLVING EQUATIONS

Simplify.

1) $9y + 2x - 4y + x$

2) $3 - 2(2r - 4)$

3) $-(j - 3j + 8)$

4) $|3 - 8| - 5$

5) $-|10 - 6| + 4$

6) $-2 + |8 - 9| - 11$

Solve and check each equation. NOTE: you may get none or infinitely many solutions.

7) $18 - n = 10$

8) $5 - w = 2w - 1$

9) $2(x + 3) + 2(x + 4) = 24$

10) $7b - 6(11 - 2b) = 10$

11) $2x + 4 - 3x = 5 - x$

12) $6x - 3(2 + 2x) = -6$

13) A desktop computer now sells for 15% less than it did last year. The current price is \$425. What was the price of the computer last year?

SOLVING AND GRAPHING INEQUALITIES

Solve each inequality and graph the solution.

14) $3x - 8 \geq 1$

15) $3v \leq 5v + 18$

16) $2(y - 3) + 7 < 21$

Solve each compound inequality and graph the solution.

17) $7x \geq 21$ and $8x \leq 56$

18) $9b > 27$ and $4b \leq 44$

19) $3x < -6$ or $7x > 56$

20) $5p \geq 10$ or $-2p < 10$

SOLVING ABSOLUTE VALUE EQUATIONS AND INEQUALITIES

Solve each equation. Check your answer(s).

21) $|4m + 2| = 10$

22) $|3x - 6| - 7 = 14$

23) $3|2x - 1| = 21$

Solve each inequality. Graph the solution.

24) $|3 - x| < 7$

25) $2|x + 6| \leq 10$

26) $3|2x + 5| + 2 \leq 8$

LINEAR EQUATIONS

Find the slope of the line through each pair of points.

27) (1, 5) and (2, 8)

28) (2, 3) and (-1, 5)

29) (3, 1) and (3, -1)

Write the equation of the line in slope-intercept form given the slope and the point on the line.

30) slope = 3; (-1, 4)

31) slope = $\frac{3}{4}$; (2, 8)

32) slope = -1; (0, 7)

Write the equation of the line in slope-intercept form that passes through each pair of points.

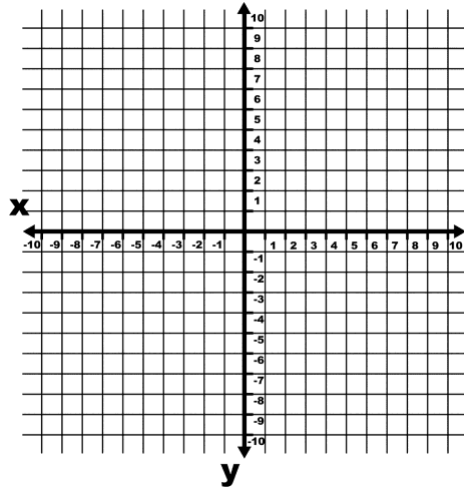
33) (-4, -5) and (-1, -8)

34) (-5, 6) and (3, -10)

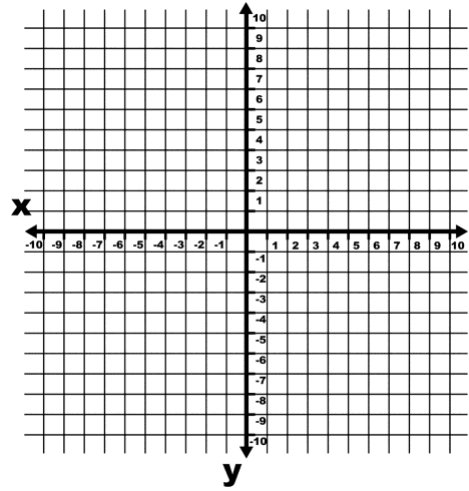
35) (12, 10) and (0, 0)

Graph each line.

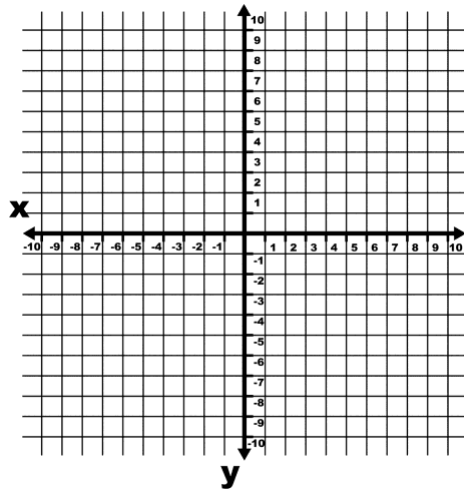
36) $y = x - 3$



37) $y = -4x + 3$

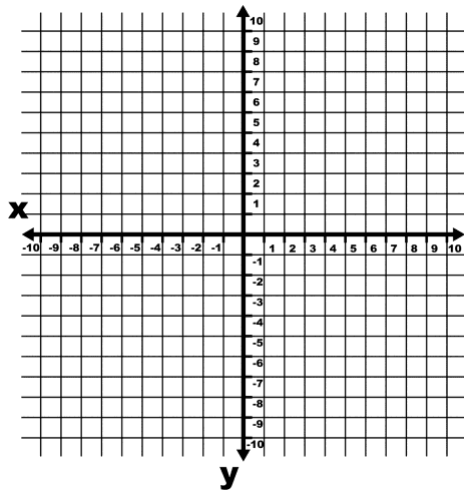


38) $-2y = x - 2$

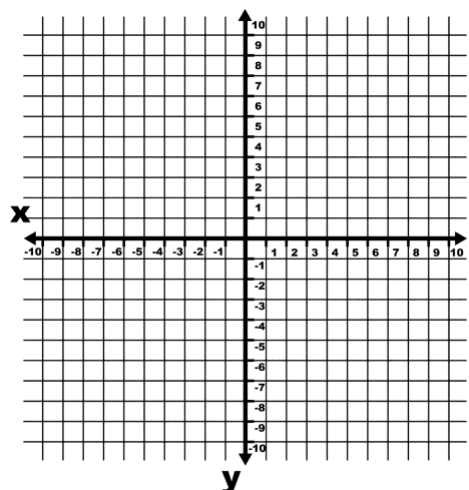


Graph each inequality.

39) $y < -x + 5$



40) $x + 3y > 12$



Solve each word problem using a system of equations.

41) Matthew bought flowers for his mom. He bought 12 flowers that were a combination of roses and lilies. The roses cost \$1.75 each and the lilies cost \$2.00 each. He spent \$21.75. How many of each flower did he buy?

42) Leslie bought batteries. She bought 7 packages total of AA and AAA. AA has 6 batteries in each package and AAA has 8 batteries in each package. She ended up with 52 batteries total. How many packages of AA and AAA did she buy?

43) Maria made a soup that has 24 total ounces of tomatoes (yellow and red). There are 3 times as many yellow tomatoes as there are red. How many ounces of each tomato does she have?