



Algebra 2 CP Summer Homework

Name _____

Dear Future Algebra 2 Student,

I hope you are excited for your upcoming year in Algebra 2! The purpose behind this summer homework packet is to reacquaint you with the necessary skills to be successful in this year's math course.

There are approximately 9 weeks of summer, pace yourself. There are 4 Parts of this packet – complete one part each day and you will easily be able to complete the assignment before your return to school in the fall. Please be prepared to submit this assignment during your **second Algebra 2 class**. It will be graded for accuracy as well as completion. Work needs to be shown in a neat and organized manner, and it is perfectly acceptable to complete the packet on separate sheets of paper. Just be sure to staple any extra papers to the packet. Also, do not rely on a calculator.

Show ALL work for each problem and take your time. Remember, this will be your first impression to your new math teacher, and you want to make sure that it is a positive one! See below for directions and helpful websites. We hope you have a wonderful summer!

Best,

Wareham High School Math Department

Suggestions for time management: There are 4 parts to the summer packet. You may choose to break up the 4 parts to 4 days (sittings) of work.

Need help with your Summer math packet???

Feel free to email Mrs. Medina at mmedina@wareham.k12.ma.us with any questions you might have. To ensure the fastest response, please include your name, summer assignment name, and (if possible) a picture of the problem and your accompanying work.

Directions:

- Before answering any questions, read through the given notes and examples for each topic.
- This packet is to be submitted during your **second algebra class** period.
- All work must be shown in the packet or on a separate sheet of paper stapled to the packet.
- **To avoid a penalty on your grade, final answers MUST BE BOXED or CIRCLED.**

Part 1 – Solving Systems of Equations by Graphing

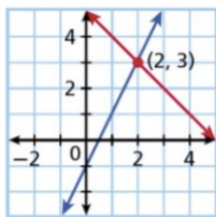
How do you solve a system of equations by graphing?

Step 1:

Set-up each equation to be graphed in slope-intercept form (solve for y).

Step 2:

Graph each equation and look for the intersection point; write the ordered pair as your answer.



Step 3:

Check your answer by substituting the point in both equations.

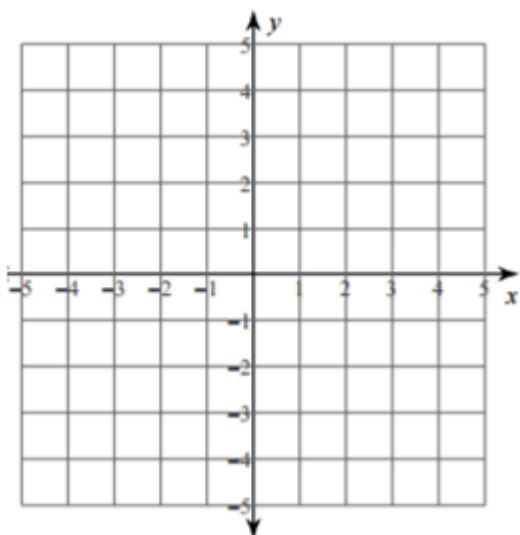
<https://www.khanacademy.org/math/algebra-basics/core-algebra-systems/corealgebra-systems-tutorial/e/graphing-systems-of-equations>

Solve each system of equations below by graphing. Write the solution as an ordered pair (x, y).

1)

$$y = \frac{1}{3}x - 2$$

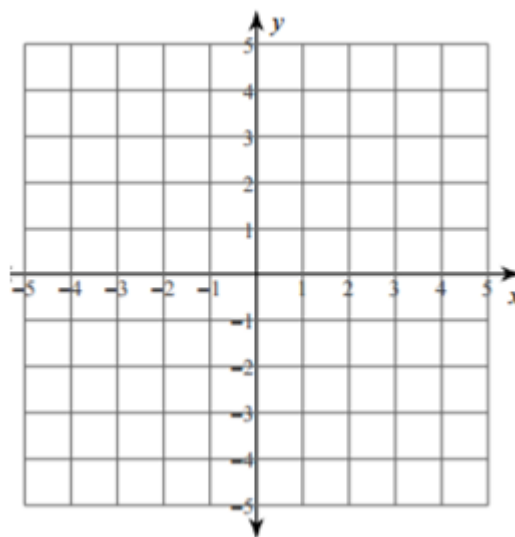
$$y = -\frac{2}{3}x + 1$$



2)

$$y = 2x - 1$$

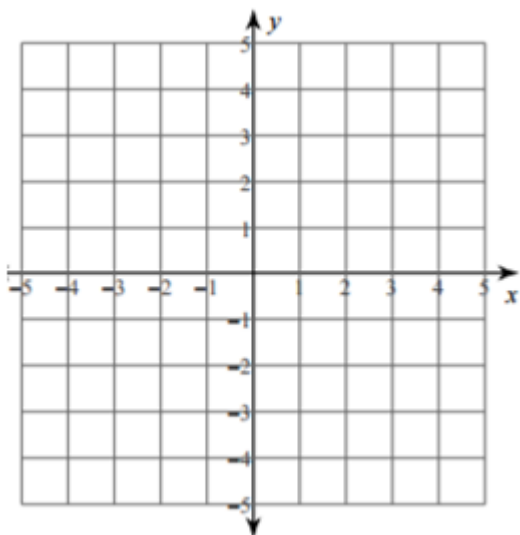
$$y = -3x + 4$$



3)

$$y = x - 5$$

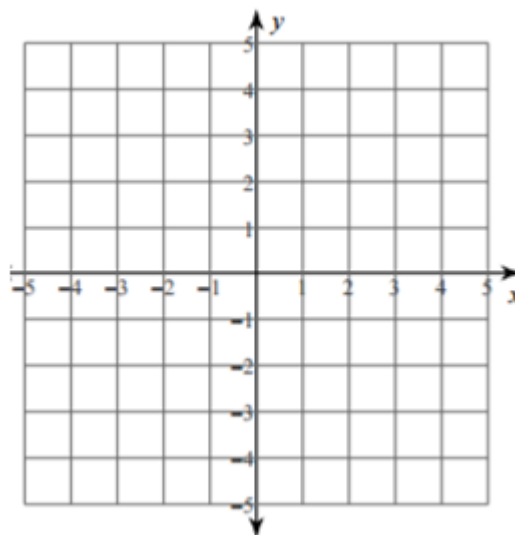
$$y = -\frac{3}{4}x + 2$$



4)

$$y = -x + 2$$

$$y = -\frac{1}{4}x - 1$$



Part 2 - Solving Systems of Equations by Substitution

Example - Substitution:

$$y = x + 1 \quad 2y = 3x$$



$$2y = 3x$$

$$2(x + 1) = 3x$$

$$\begin{array}{r} 2x + 2 = 3x \\ -2x \quad -2x \\ \hline \end{array}$$

$$2 = x$$



$$y = x + 1$$

$$y = 2 + 1 = 3$$

Solution: (1, 3)

<https://www.khanacademy.org/math/algebra-home/alg-system-of-equations/alg-solving-systems-of-equations-with-substitution/v/solving-linear-systems-by-substitution>

Solve each system of equations below using substitution.

5)

$$y = 2x + 5$$

$$y = x + 3$$

6)

$$y = x - 4$$

$$2x + y = 5$$

7)

$$y = 3x + 2$$

$$2x + 4y = 22$$

8)

$$y = -3x + 6$$

$$2x - 5y = 4$$

Part 3 - Solving Systems of Equations by Elimination

<p>Example 1 - Elimination:</p> <p style="text-align: center;">Find the Solution</p> <p style="text-align: center;">$4x - 2y = 4$ $2x + y = 6$</p> <hr style="border-top: 1px dashed black;"/> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px; vertical-align: top;"> <p><u>Multiply by 2</u></p> <p>$2(2x + y = 6)$ $4x + 2y = 12$</p> <hr style="border-top: 1px dashed black;"/> <p><u>Eliminate y</u></p> <p>$+4x - 2y = 4$ $+4x + 2y = 12$ <hr style="border-top: 1px solid black;"/>$8x = 16 \rightarrow x = 2$</p> </td> <td style="width: 50%; padding: 5px; vertical-align: top;"> <p><u>To solve for y,</u></p> <p style="text-align: center;"><u>plug in x</u></p> <p>$4x - 2y = 4$ $2x + y = 6$</p> <p>$4(2) - 2y = 4$ $2(2) + y = 6$</p> <p>$-2y = 4$ $4 + y = 6$</p> <p style="text-align: center;">$y = 2$ $y = 2$</p> <hr style="border-top: 1px dashed black;"/> <p style="text-align: center;">Solution</p> </td> </tr> </table>	<p><u>Multiply by 2</u></p> <p>$2(2x + y = 6)$ $4x + 2y = 12$</p> <hr style="border-top: 1px dashed black;"/> <p><u>Eliminate y</u></p> <p>$+4x - 2y = 4$ $+4x + 2y = 12$ <hr style="border-top: 1px solid black;"/>$8x = 16 \rightarrow x = 2$</p>	<p><u>To solve for y,</u></p> <p style="text-align: center;"><u>plug in x</u></p> <p>$4x - 2y = 4$ $2x + y = 6$</p> <p>$4(2) - 2y = 4$ $2(2) + y = 6$</p> <p>$-2y = 4$ $4 + y = 6$</p> <p style="text-align: center;">$y = 2$ $y = 2$</p> <hr style="border-top: 1px dashed black;"/> <p style="text-align: center;">Solution</p>	<p>https://www.khanacademy.org/math/algebra-home/alg-system-of-equations/alg-equivalent-systems-of-equations/v/solving-systems-of-equations-by-elimination</p>
<p><u>Multiply by 2</u></p> <p>$2(2x + y = 6)$ $4x + 2y = 12$</p> <hr style="border-top: 1px dashed black;"/> <p><u>Eliminate y</u></p> <p>$+4x - 2y = 4$ $+4x + 2y = 12$ <hr style="border-top: 1px solid black;"/>$8x = 16 \rightarrow x = 2$</p>	<p><u>To solve for y,</u></p> <p style="text-align: center;"><u>plug in x</u></p> <p>$4x - 2y = 4$ $2x + y = 6$</p> <p>$4(2) - 2y = 4$ $2(2) + y = 6$</p> <p>$-2y = 4$ $4 + y = 6$</p> <p style="text-align: center;">$y = 2$ $y = 2$</p> <hr style="border-top: 1px dashed black;"/> <p style="text-align: center;">Solution</p>		

Solve each system of equations below using elimination.

<p>9)</p> <p>$5x + 2y = 12$</p> <p>$3x + 2y = 8$</p>	<p>10)</p> <p>$-4x + 2y = 30$</p> <p>$4x + 8y = 20$</p>
<p>11)</p> <p>$3x + y = 4$</p> <p>$6x + 3y = 6$</p>	<p>12)</p> <p>$4x - y = 9$</p> <p>$3x + 2y = 4$</p>

Part 4 - Solving Systems of Equations with No Solution or Infinite Solutions.

Example 1 -

No Solution

Solve the following system of equation algebraically and graphically:

$$2x + 2y = 18$$

Add the equations to eliminate a variable:

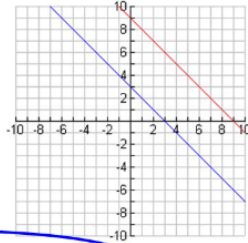
$$-2x - 2y = -6$$

The two lines are parallel. They never intersect.

$$2x + 2y = 18$$

$$+ \quad -2x - 2y = -6$$

$$\hline 0 = 12$$



No Solution.

Example 2 -

$$y = 3x + 1 \quad 4y = 12x + 4$$

$$4y = 12x + 4$$

$$4(3x + 1) = 12x + 4$$

$$12x + 4 = 12x + 4$$

Infinite solutions

Solve each system of equations below using substitution or elimination.

13)

$$y = x - 1$$

$$-x + y = 2$$

14)

$$x + y = -3$$

$$2x + 2y = -6$$

15)

$$x = -2y + 4$$

$$2y + x = 4$$

16)

$$-8x + 7y = -2$$

$$8x - 7y = 5$$