

Skills from Algebra 1 that are necessary for success in Algebra 2:

1. Evaluating numerical expressions using order of operations
2. Evaluating algebraic expressions
3. Combining like terms
4. Solving linear equations and inequalities
5. Calculating the slope of a line
6. Graphing linear equations and inequalities
7. Solving systems of equations and inequalities

For instruction and practice on Order of Operations go to:

<https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-variables-expressions/cc-7th-order-of-operations/v/order-of-operations-example>

Evaluating numerical expressions: Evaluate the following expressions.

1. $25 - 4 \cdot 6$

2. $4^2 + 18 \div 6$

3. $8(4 - 9) + 12 \div (-4)$

4. $2^3 + 4(-2) + 24 \div 8 - 3 \cdot 2$

5. $5(11 - 8)^2 - 3(2 + 3) + 4(2)^2$

For instruction and practice on evaluating algebraic expressions:

<https://www.khanacademy.org/math/algebra/introduction-to-algebra/variable-and-expressions/v/variables-and-expressions-1>

Evaluating algebraic expressions: Evaluate the following for $a = -2, b = 3, c = -1$.

1. $a + b + c$

2. $4a - b$

3. $ab + 4b$

4. $5c - 4ab$

5. $b^2 + c$

6. $abc - 2$

7. $a^3 + 2b^2 - c$

Combining like terms: Simplify the following algebraic expressions.

For instruction and practice on combining like terms go to:

https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-variables-expressions/cc-7th-manipulating-expressions/e/combining_like_terms_1

1. $-8 + 2x + x + 22$

2. $5y + 13 - 2y + 7y - 9$

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

4. $3(2a - 7) + 3(a + 5) - 1$

5. $-2a + 4b + 15 + 5a - 11b - 20$

$$6. 5y^2 - 8y + 12 - 9y - 8y^2 - 21$$

Solving linear equations and inequalities:

For instruction and practice on solving linear equations go to:

https://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations_beginner/v/simple-equations

Solve the following linear equations.

$$1. -8y - 11 = 13$$

$$2. \frac{2}{3}x - 7 = 17$$

$$3. 2x + 5 - 7x = 15$$

$$4. 20 = 4(x + 3)$$

$$5. y + 5 - 4y = -10$$

$$6. d + 4(d + 6) = -1$$

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

$$8. (c + 3) - 2c - 2(1 - 3c) = 2$$

For instruction and practice on solving linear equations as proportions go to:

https://www.khanacademy.org/math/algebra/ratio-proportion-topic/ratios_algebra/v/proportions-2-exercise-examples

$$9. \frac{2+w}{5} = 8$$

$$10. \frac{5x-4}{6} = 6$$

$$11. \frac{4}{x} = \frac{10}{3}$$

$$12. \frac{5}{x+3} = \frac{4}{x}$$

$$13. \frac{3x-8}{6} = \frac{2x}{10}$$

$$14. \frac{4}{2y+6} = \frac{10}{7y-2}$$

For instruction and practice on solving linear inequalities go to:

https://www.khanacademy.org/math/algebra/linear_inequalities/inequalities/v/inequalities-using-multiplication-and-division

Solve the following linear inequalities.

$$15. a+3 > 11$$

$$16. -5w \leq 15$$

$$17. 5y < 4y+6$$

18. $-2(x-4) \geq 6$

19. $4r-5 < 5r+7$

20. $5(v-1) \geq 3(v+4)-5$

21. $5(2b+1)-3(b+1) < 7b+5$

For instruction and practice on calculating slope go to:

<https://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/slope-and-intercepts/v/slope-of-a-line>

Calculating slope:

Find the slope of the line that passes through the given points.

1. $(8,4),(6,5)$

2. $(-4,3),(4,9)$

3. $(-3,3),(-3,7)$

4. $(-2,7),(-5,7)$

5. $(0,-3),(3,-1)$

6. $(-2,-3),(0,-1)$

For instruction and practice on finding slope go to:

<https://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/equation-of-a-line/v/equation-of-a-line-1>

Find the slope of each line.

7. $y = -3x + 2$

8. $y = 4 + \frac{1}{2}x$

9. $x - 3y = 9$

10. $y + 4 = 0$

11. $2x + 5y = 10$

12. $x = 2$

For instruction and practice on graphing linear equations go to:

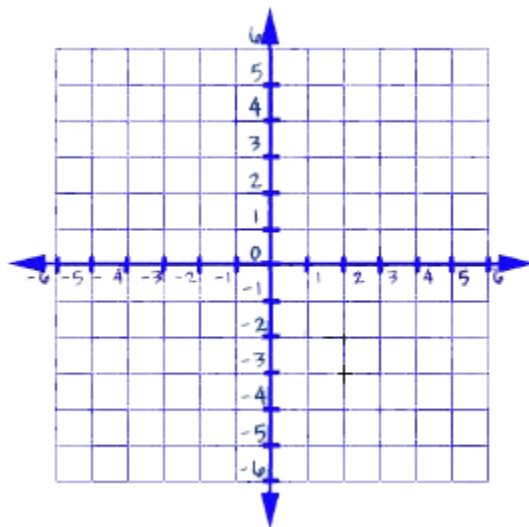
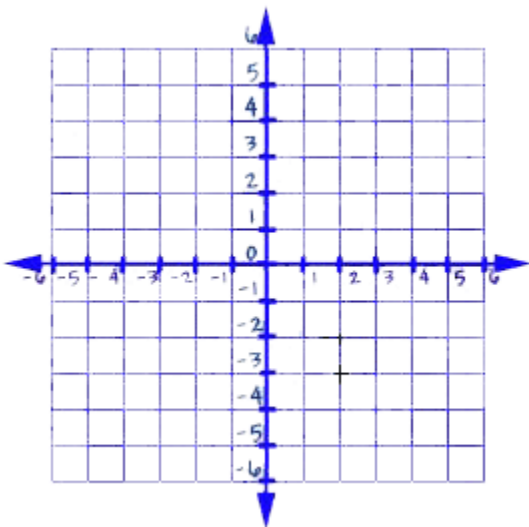
<https://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/graphing-slope-intercept/v/graphing-a-line-in-slope-intercept-form>

Graphing linear equations and inequalities in two variables:

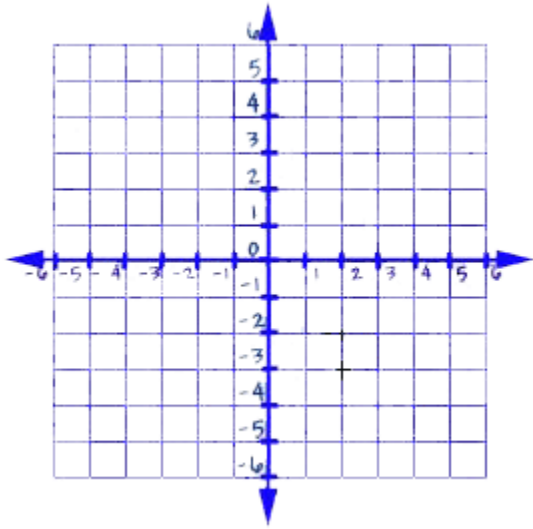
Graph the following linear equations on the given coordinate planes.

1. $y = -2$

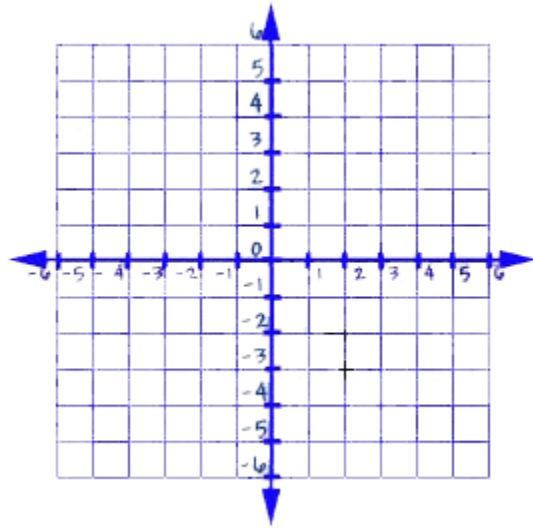
2. $x = 3$



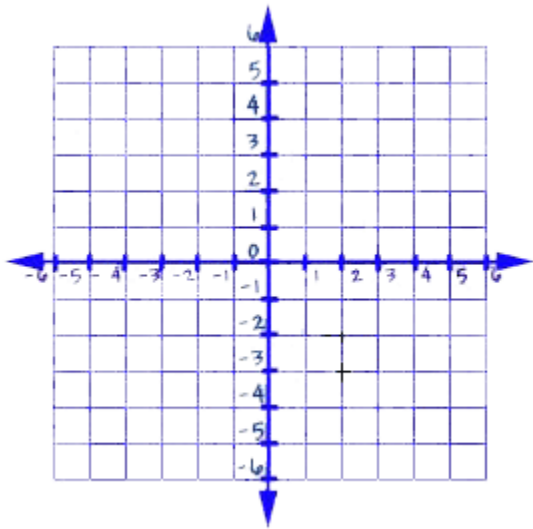
3. $y = x - 2$



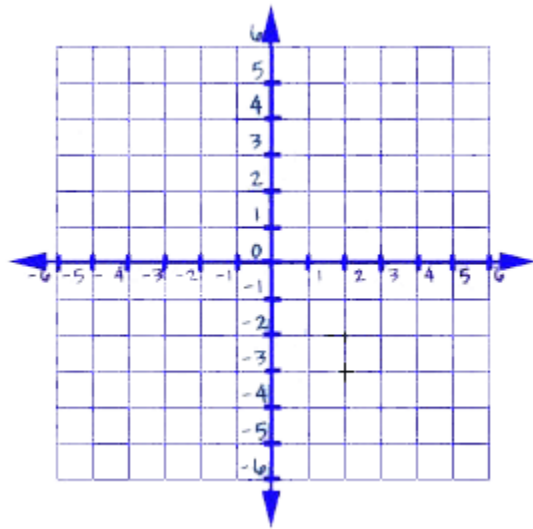
4. $y = -2x + 3$



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

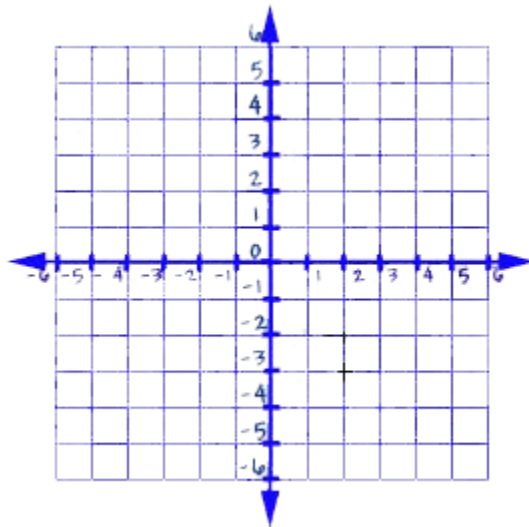


6. $y = -\frac{4}{5}x + 3$

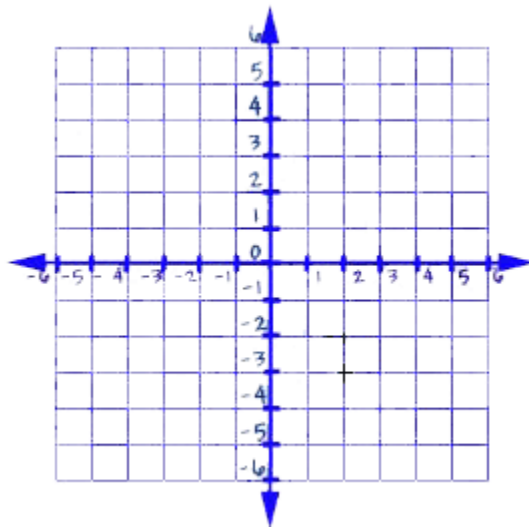


Graph the following linear equations by first rewriting each equation into slope-intercept form ($y = mx + b$).

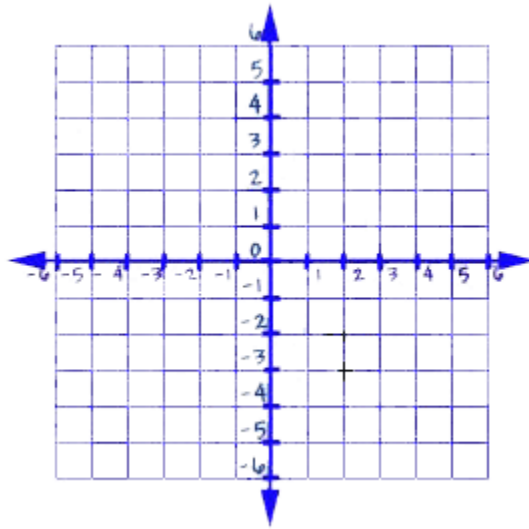
7. $x + y = 5$



8. $-2x + 3y = 6$



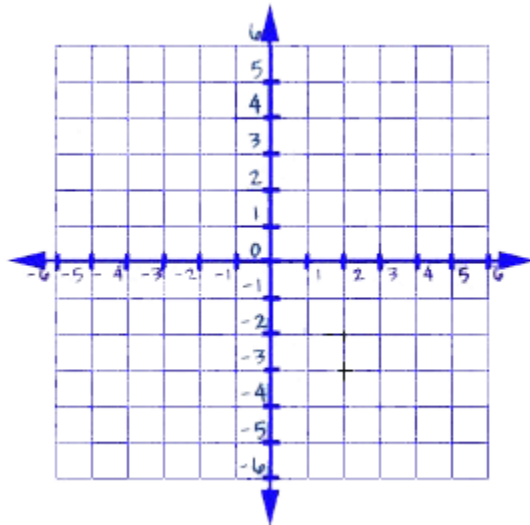
9. $3x - 5y = -5$



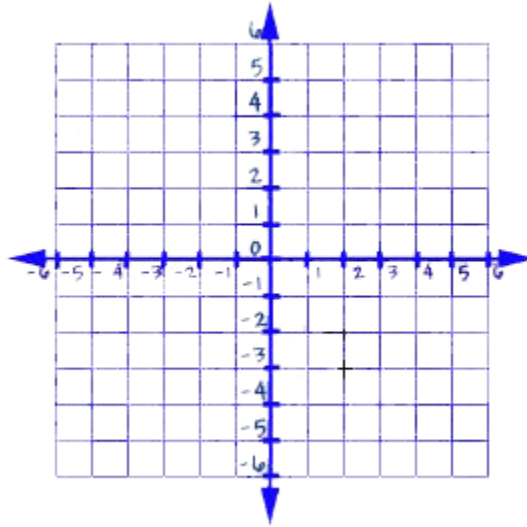
For instruction and practice in graphing by x and y intercepts go to:
https://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/graphing_with_intercepts/v/graphing-using-x-and-y-intercepts

Graph the following linear equations by finding the x and y intercepts.

10. $-2x + 4y = 8$



11. $5x - y = -5$



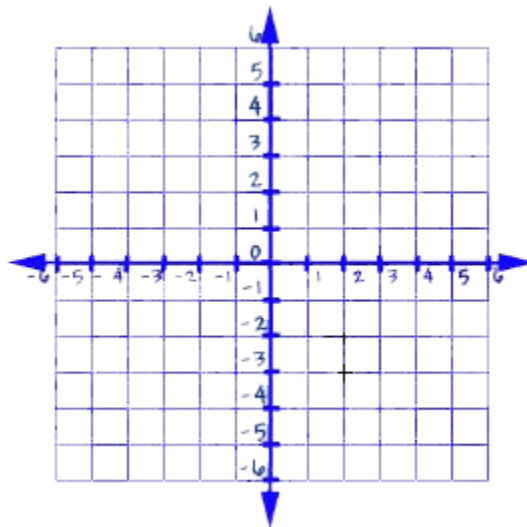
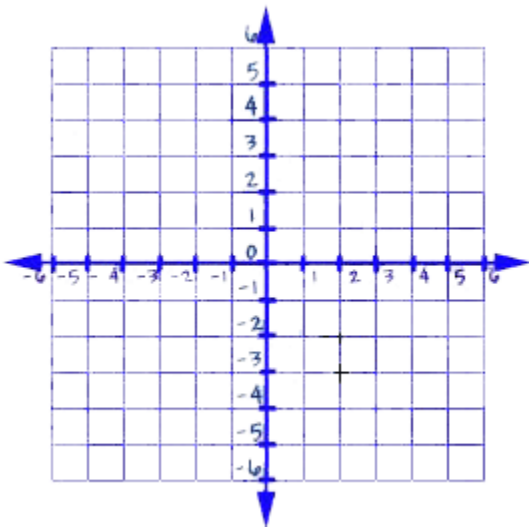
For instruction and practice on graphing inequalities:

<https://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/graphing-linear-inequalities/v/graphing-inequalities>

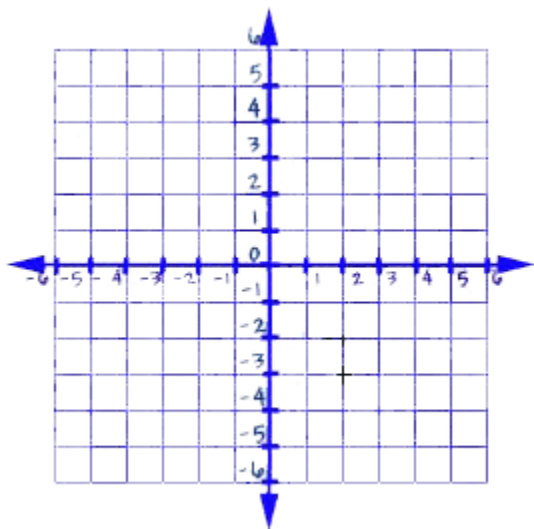
Graph the following linear inequalities on the given coordinate planes.

12. $y < \frac{3}{4}x - 2$

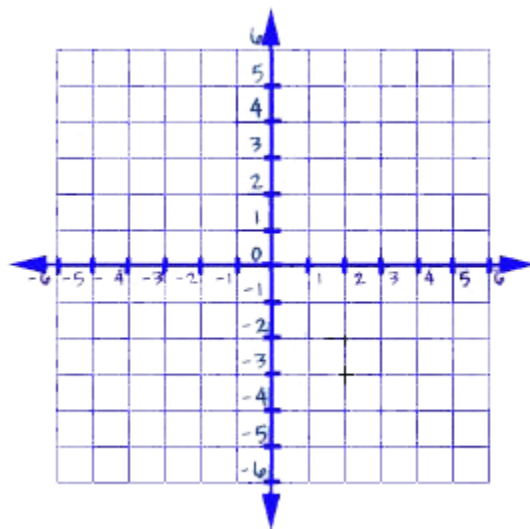
13. $y \geq -3x + 4$



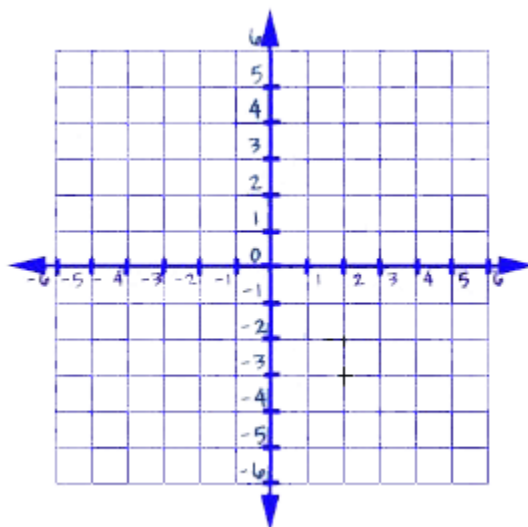
14. $y > -\frac{1}{2}x$



15. $2x - 3y \leq 6$



16. $-3x + 4y > -8$

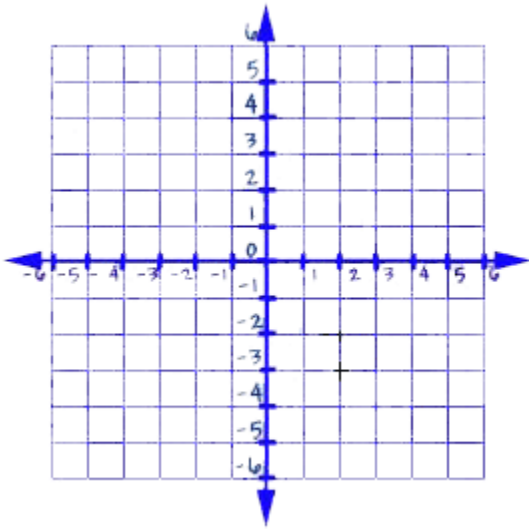


For instruction and practice on solving systems of equations by graphing go to:
<https://www.khanacademy.org/math/algebra/systems-of-eq-and-ineq/fast-systems-of-equations/v/solving-linear-systems-by-graphing>

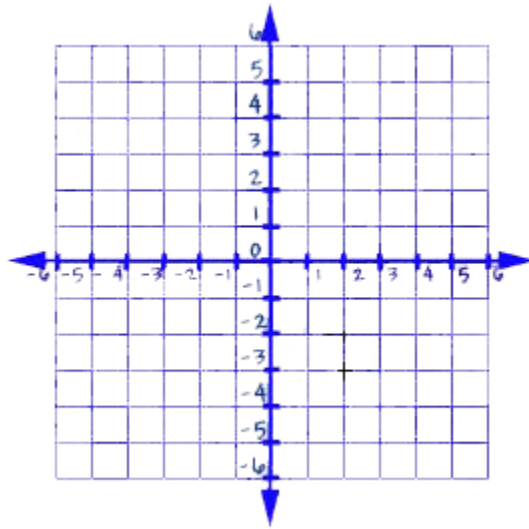
Solving systems of equations and inequalities:

Solve the following systems by graphing.

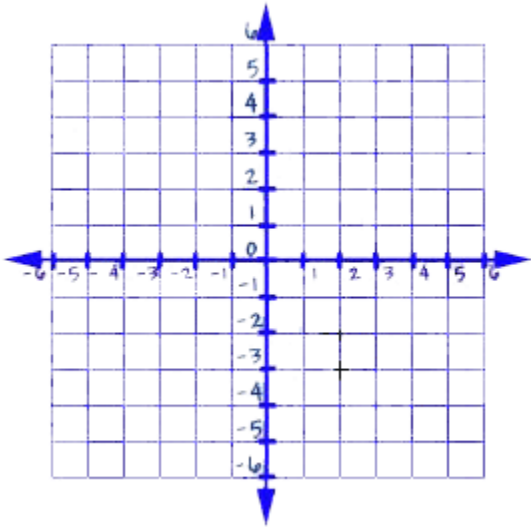
1. $y = x$
 $y = 6 - x$



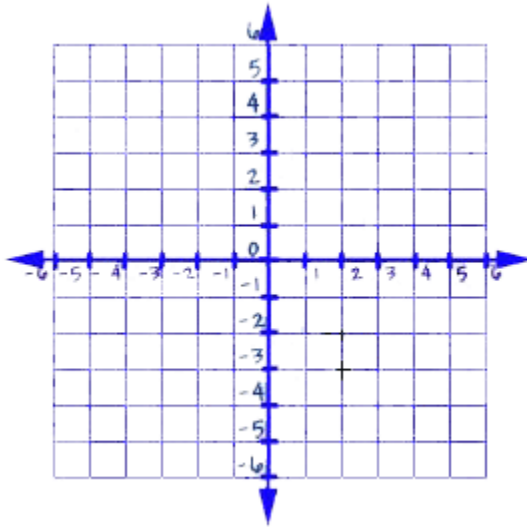
2. $y = -x + 2$
 $y = 2x + 5$



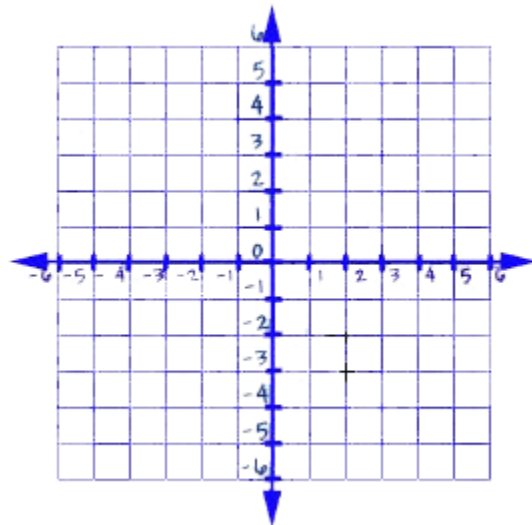
3. $y = 3x + 1$
 $y - 3x = -5$



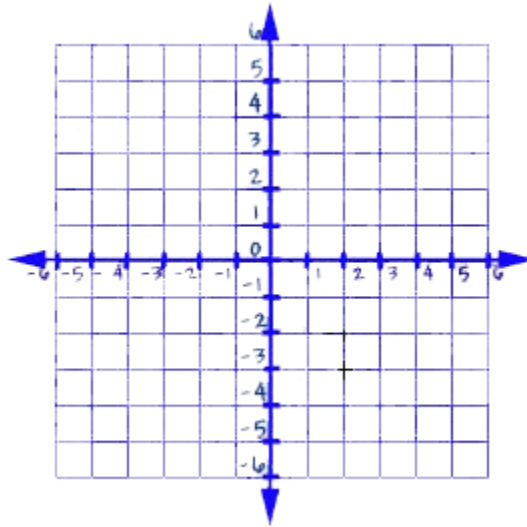
4. $y = \frac{1}{2}x + 1$
 $4x - 8y = -8$



5. $-2x + y = -1$
 $x + y = 5$



6. $x - y = 6$
 $2x + y = 0$



For instruction and practice on solving systems by substitution go to:

<https://www.khanacademy.org/math/algebra/systems-of-eq-and-ineq/systems-with-substitution/v/solving-systems-by-substitution-1>

Solve the following systems using substitution.

7. $x + y = 15$
 $4x + 3y = 38$

8. $2x - 3y = 4$
 $x + 4y = -9$

$$9. \begin{cases} 2x + y = 9 \\ x + 4y = 1 \end{cases}$$

$$10. \begin{cases} 2x - 8y = 6 \\ x - 4y = 8 \end{cases}$$

$$11. \begin{cases} 3y - 6x = 24 \\ y = 2x + 8 \end{cases}$$

$$12. \begin{cases} 3n + 5m = 7 \\ -4n + m = 6 \end{cases}$$

For instruction and practice on solving systems of linear equations by elimination go to <https://www.khanacademy.org/math/algebra/systems-of-eq-and-ineq/solving-systems-addition-elimination/v/solving-systems-by-elimination>

Solve each system using elimination (linear combinations).

13. $12n + 3m = 18$
 $5n + 3m = 4$

14. $6p - 7q = 28$
 $-6p + 3q = -12$

15. $3c - 8d = 7$
 $c + 2d = -7$

16. $2x - 7y = 41$
 $6x + 5y = -7$

$$17. \begin{cases} 18a - 5b = 17 \\ 6a + 10b = -6 \end{cases}$$

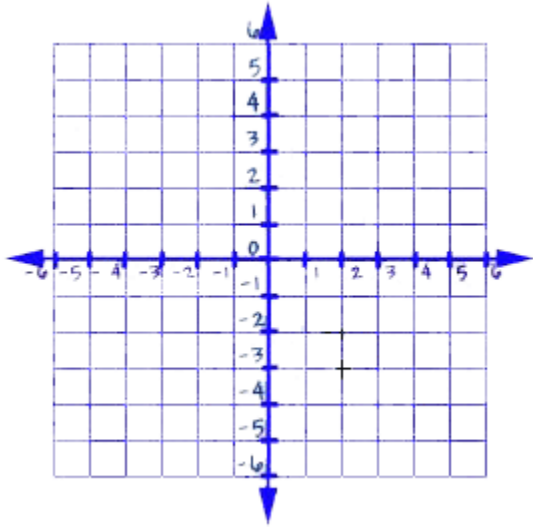
$$18. \begin{cases} 5x + 6y = -16 \\ 2x + 10y = 5 \end{cases}$$

$$19. \begin{cases} 7x - 4y = -3 \\ 2x + 5y = -7 \end{cases}$$

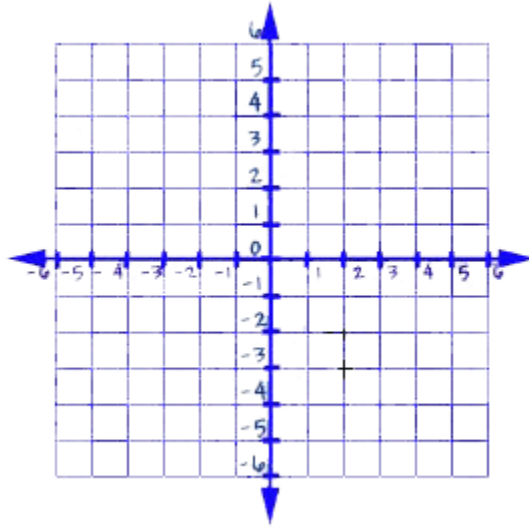
For instruction and practice on solving systems of linear inequalities go to:
<https://www.khanacademy.org/math/algebra/systems-of-eq-and-ineq/system-of-inequalities/v/graphing-systems-of-inequalities-2>

Graph the system of linear inequalities. Shade the solution region.

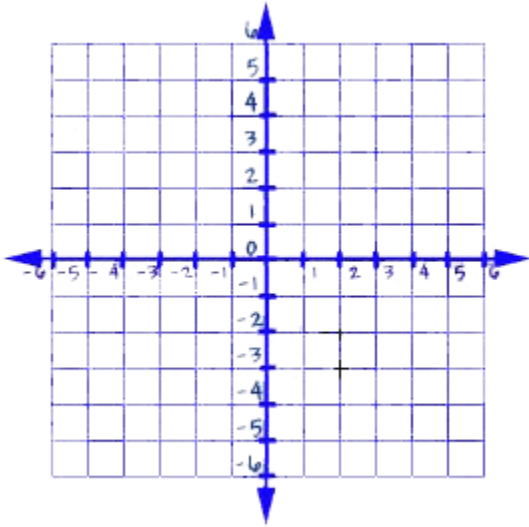
20. $y > -4$
 $x < 2$



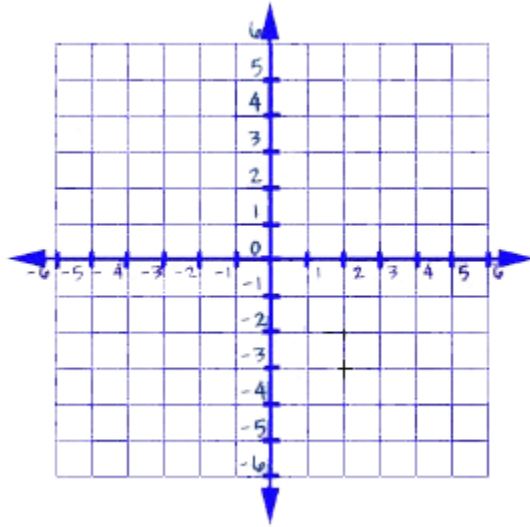
21. $y \geq -x - 2$
 $y < 5x - 3$



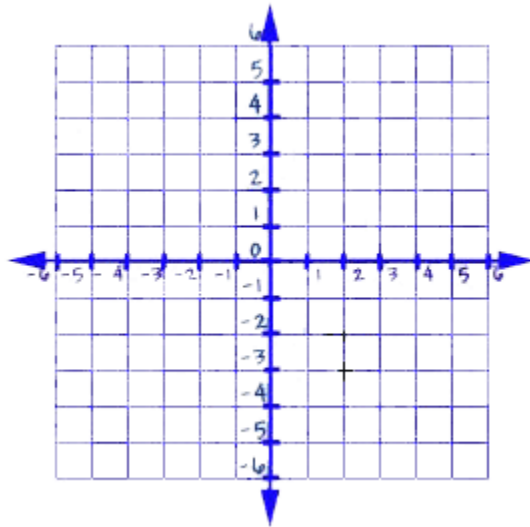
$$y \geq 0$$
$$22. \quad x \geq 0$$
$$y < -\frac{1}{2}x + 3$$



$$23. \quad y > -x$$
$$x + 3y > 6$$



$$5x - 3y \leq 6$$
$$24. \quad x + y \geq 4$$
$$y < 4$$



$$2x - 3y > -6$$

25. $5x - 3y < 3$

$$x + 3y > -3$$

