

Algebra III



Hello Future Algebra II Students!

Get ready to level up your math skills this summer! 🎉 Everything you'll learn in Algebra II builds on the concepts you learned in Algebra I, so this packet is designed to help you jump back in and start the year feeling confident and prepared. Since it's been a little while since your last Algebra class, completing this packet will jog your memory and sharpen your skills before school begins. I would recommend waiting until August to complete it so that the information is fresh for the new school year.

You will turn this packet in on the first day of school for a grade. Be sure to show all work, and don't worry if you get stuck — I'm just an email away at smixa@kasd.org, and you can also use online resources like Khan Academy for extra support. AI may be used as a resource if you look at the work and understand it, but do not simply copy or you will not be prepared for Algebra II. There is a key at the end so you can check your answers and learn from mistakes along the way.

Enjoy your summer, have fun, and I can't wait to work with you next school year! 😊

Sincerely,

Mrs. Mixa

Algebra II
Algebra Skills Review

NAME _____

Complete all problems without a calculator!!

Fractions

Simplify.

1) $\frac{3}{2} + \frac{4}{5}$

2) $\frac{1}{3} - \frac{5}{9}$

3) $\frac{5}{4} - \frac{5}{6}$

4) $\frac{5}{12} \cdot \frac{8}{3}$

5) $\frac{8}{3} \div \frac{20}{9}$

6) $8 \div \frac{18}{5}$

Solve Linear Equations

Solve.

1) $3x + 25 = 10 - 2x$

2) $\frac{5}{6}x - 3 = x - 4$

3) $2(3x + 1) = 5(2x - 1)$

4) $\frac{3}{2}(14x + 1) = 6 - 9x$

Solve Linear Inequalities*Solve.*

1) $3x + 12 \leq 9$

2) $40 - 6a > 1$

3) $4r - 5 < 5r + 7$

4) $5(1 - t) \geq 4(3 - t)$

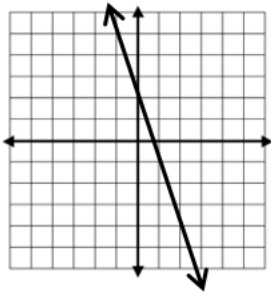
5) $-2 < 2b - 1 \leq 5$

6) $-4 \leq 4 - 2x \leq 10$

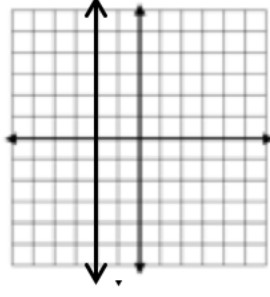
Slope

Find the slope of the line.

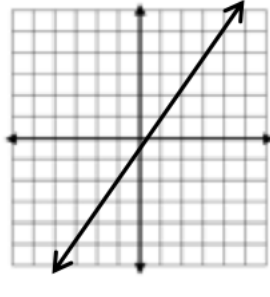
1)



2)



3)



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

4) $(-3, 6), (5, 2)$

5) $(-5, 4), (-3, 4)$

6) $(4, -2), (2, -6)$

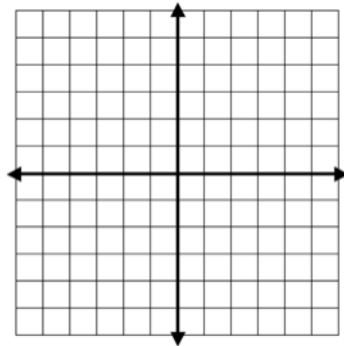
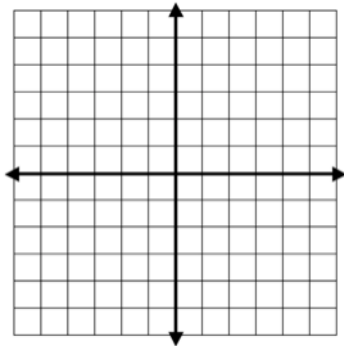
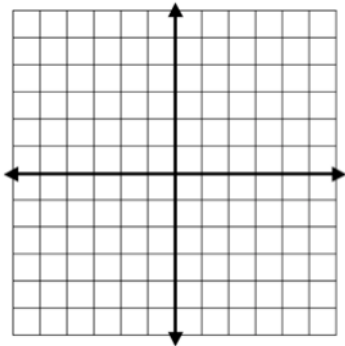
Graph Linear Equations

If necessary, put the equation or inequality into slope-intercept form ($y = mx + b$) and then graph.

1) $2x - y = -1$

2) $3x + 2y = -8$

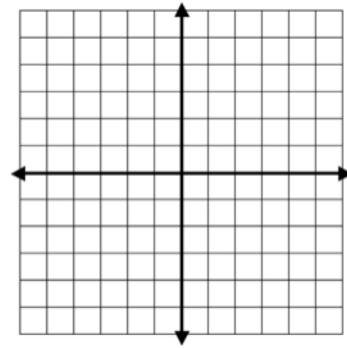
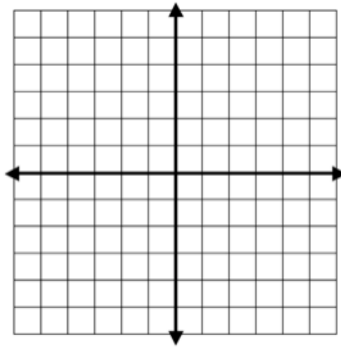
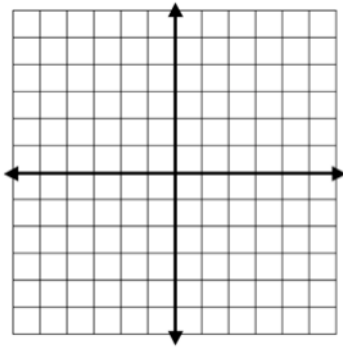
3) $y = 2$



$$4) 2x - y > -5$$

$$5) 4x + 3y \geq -16$$

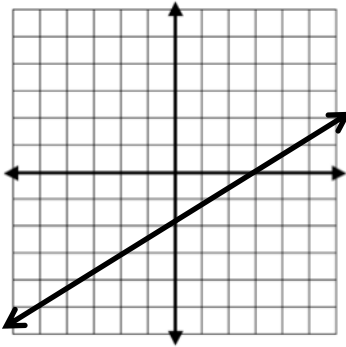
$$6) -3x < 6$$



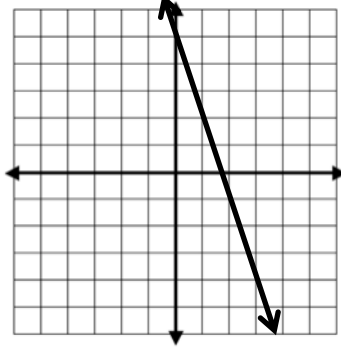
Writing Linear Equations

Write an equation of the line shown.

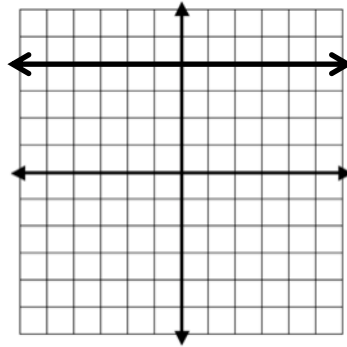
1)



2)



3)



Write an equation of the line containing the given point with the given slope.

4) $(3, -4)$; $m = 2$

5) $(5, 2); m = 4/3$

Write an equation of the line containing the given points.

6) $(6, -2)$ and $(0, 7)$

7) $(6, -1)$ and $(3, 4)$

Exponent Properties

Simplify completely.

1) $\frac{2^8}{2^{12}}$

2) $4^3 \cdot 4^{-6}$

3) $\frac{2^{-2}}{2^{-5}}$

$$4) \left(\frac{3}{5}\right)^{-3}$$

$$5) (-6)^0$$

Simplify completely. Remember that you should have only one of each variable and no negative exponents in your answer.

$$6) (3m^4n^2)(6m^3n)$$

$$7) (-4j^3k^4)^2$$

$$8) \frac{-4a^4b^7}{10a^5b^3}$$

$$9) \frac{8a^2b^{-5}}{2a^{-3}b^{-4}}$$

$$10) (4f^{-2}g^5)(9f^7g^{-5})$$

$$11) \left(\frac{3a^3b}{2c^5}\right)^{-3}$$

Factor and Solve*Factor and solve.*

1) $x^2 + 11x + 18 = 0$

2) $x^2 - 10x + 24 = 0$

3) $x^2 + 13x - 30 = 0$

4) $x^2 - 5x - 24 = 0$

5) $x^2 - 36 = 0$

ANSWER KEY:

Fractions

1) $\frac{23}{10}$

4) $\frac{10}{9}$

2) $-\frac{2}{9}$

5) $\frac{6}{5}$

3) $\frac{5}{12}$

6) $\frac{20}{9}$

Solve Linear Equations

1) -3

3) $\frac{7}{4}$

2) 6

4) $\frac{3}{20}$

Solve Linear Inequalities

1) $x \leq -1$

3) $r > -12$

5) $-\frac{1}{2} < b \leq 3$

2) $a < \frac{13}{2}$

4) $t \leq -7$

6) $-3 \leq x \leq 4$

Slope

1) -3

4) $-\frac{1}{2}$

2) undefined

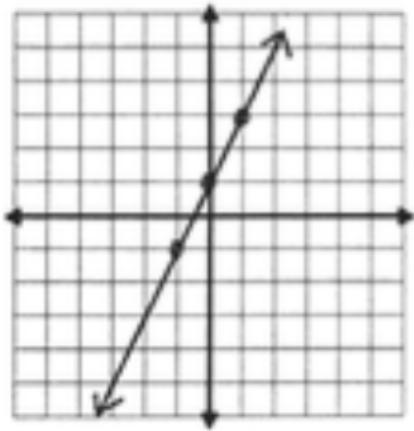
5) 0

3) $\frac{3}{2}$

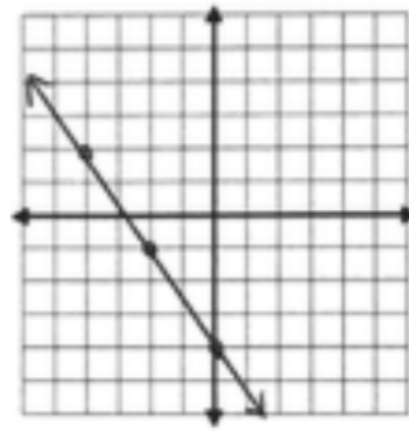
6) 2

Graph Linear Equations

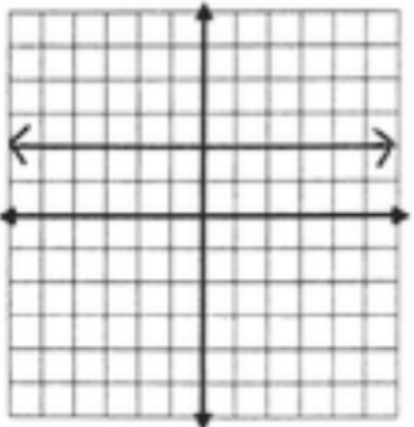
1)



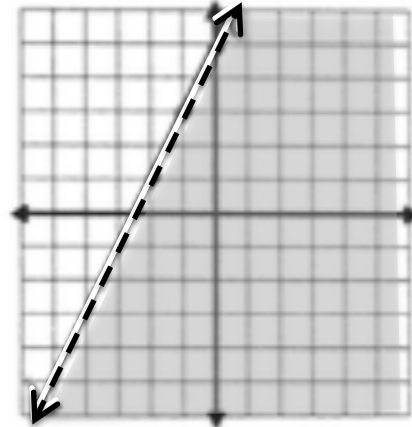
2)



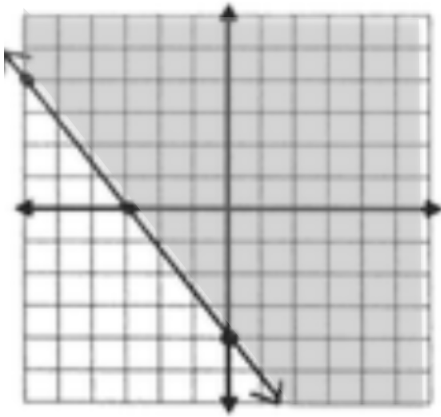
3)



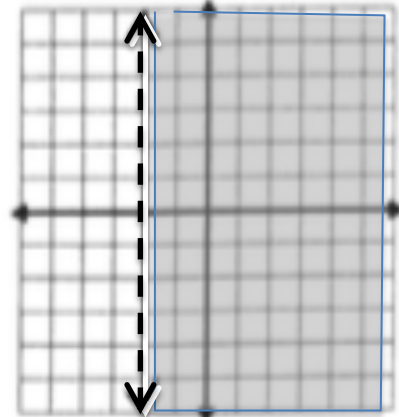
4)



5)



6)



Writing Linear Equations

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

2) $y = -3x + 1$

3) $y = 4$

4) $y = 2x - 10$

5) $y = \frac{4}{3}x - \frac{14}{3}$

6) $y = -\frac{3}{2}x - 3$

7) $y = -\frac{5}{3}x + 9$

Exponent Properties

1) $1/16$

2) $1/64$

3) 8

4) $125/27$

5) 1

6) $18m^7n^3$

7) $16j^6k^8$

8) $\frac{-2b^4}{5a}$

9) $\frac{4a^5}{b}$

10) $36f^5$

11) $\frac{8c^{15}}{27a^9b^3}$

Factor and Solve

1) $-2, -9$

2) $4, 6$

3) $-15, 2$

4) $8, -3$

5) $6, -6$