

Magruder High School

Algebra 2

Summer Review Packet

In order to be successful in Algebra 2, you must have certain prerequisite skills mastered. You will be assessed on the content of this material during the first week of school. This quiz will **not be reassessable**.

The Algebra 2 team wants you to give your best effort as you work on this packet. You can work with another person, but keep in mind that each person has to take the quiz. **Please show all of your work**. The hope is that this review will prepare you mathematically for the year ahead and encourage you to think positively about the challenge ahead.

Enjoy your summer! We look forward to meeting you and working with you when you return in the fall.

Algebra 2 Team

Solve each equation or inequality. Check your solution and reduce fractions.

(Hint: when you multiply or divide each side of an inequality by a negative number, reverse the direction of the inequality symbol.)

1. $-18 + x = 6$

2. $3 = -9x$

3. $5x - 2 = 13$

4. $-(x + 1) = 2(3x - 1)$

5. $1 - 2x > x + 10$

6. $4x - 5(x - 2) = 9x - 14$

7. $\frac{4}{5}x - 7 = 16$

8. $2x > 6$

9. $3 - 2x \leq 5$

10. $4 \leq 7 + x$

Solve the systems by elimination.

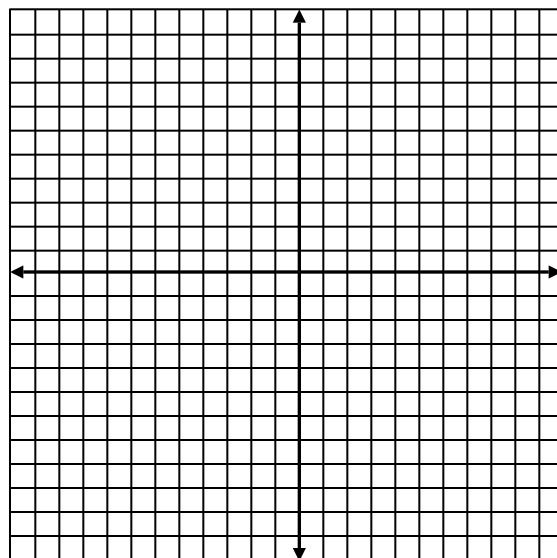
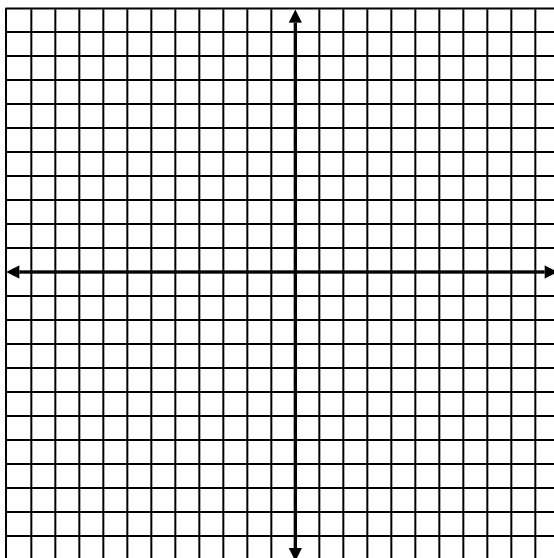
11.
$$\begin{cases} 4x + 2y = 2 \\ 5x - 2y = -11 \end{cases}$$

12.
$$\begin{cases} x + 2y = 7 \\ 3x + 5y = 17 \end{cases}$$

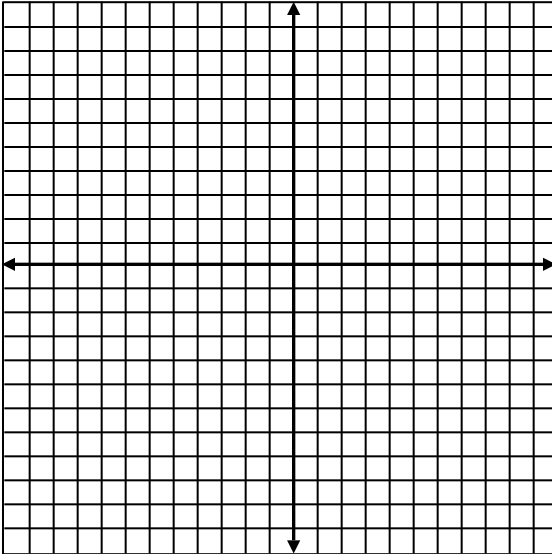
Graph the equation.

13. $y = 3x - 1$

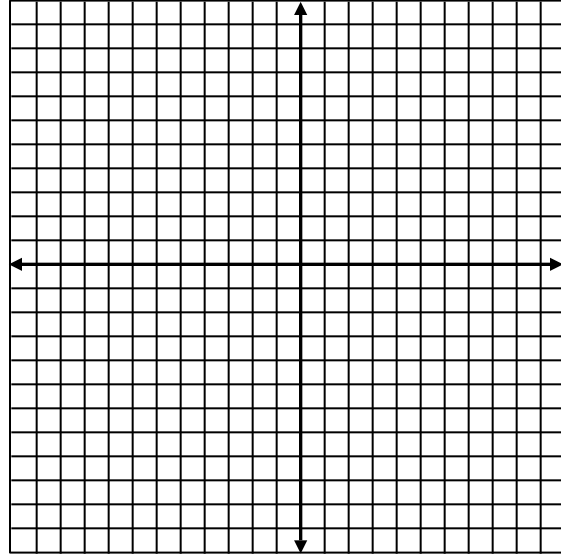
14. $y = -2x$



15. $-x + 2y = -8$

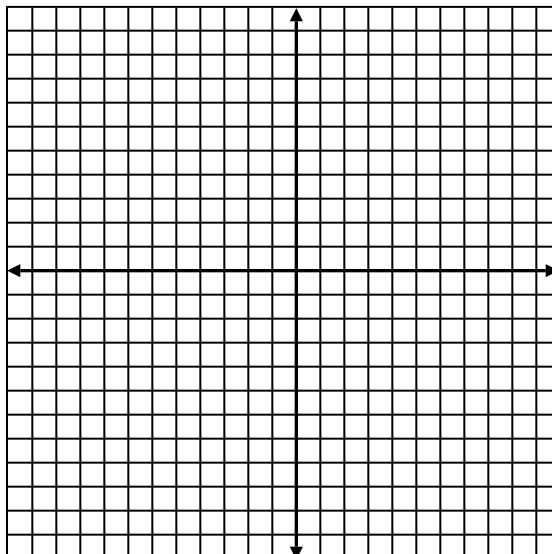


16. $6x - 3y = -15$

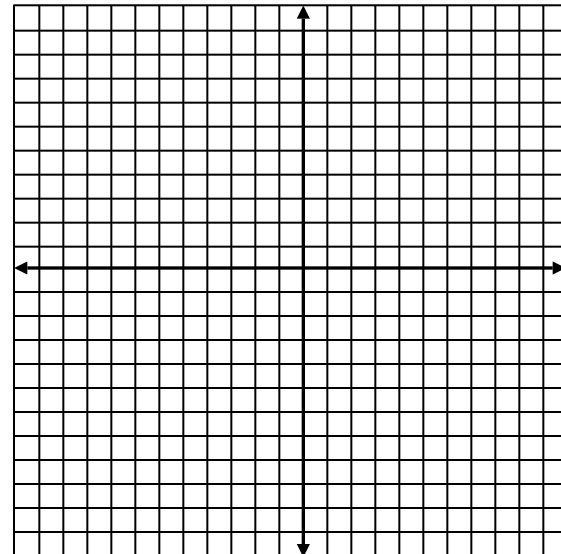


Solve the systems by graphing.

17.
$$\begin{cases} x + y = 3 \\ 2x + y = 4 \end{cases}$$



18.
$$\begin{cases} x - y = 7 \\ x + y = 3 \end{cases}$$



Use the quadratic formula to solve the equation. Round all answers to three places after the decimal.

Quadratic Formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

19. $x^2 - x - 1 = 0$

20. $-2x^2 + 3x + 2 = 0$

Solve the equation by factoring.

Example: $x^2 - 7x + 12 = 0$

Step 1: Factor polynomial. $(x - 4)(x - 3) = 0$

Step 2: Set each factor each to zero. $x - 4 = 0$ $x - 3 = 0$

Step 3: Solve each equation. $x = 4, x = 3$

21. $x^2 - 2x - 3 = 0$

22. $x^2 - 16 = 0$

23. $x^2 + 4x = 0$

24. $x^2 - 6x + 9 = 0$

25. $x^2 + 3x - 10 = 0$

Simplify using the properties of exponents.

Properties of exponents

$$a^m \times a^n = a^{m+n}$$

$$(ab)^m = a^m b^m$$

$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$$

$$(a^m)^n = a^{mn}$$

$$a^{-n} = \frac{1}{a^n}$$

$$\frac{a^m}{a^n} = a^{m-n}$$

$$a^0 = 1$$

26. $x^3 \times x^5$

27. $(x^4)^6$

28. $\frac{x^7}{x^2}$

29. $\left(\frac{3x}{y}\right)^2$

30. $x^{-2} \times x^{-4} \times x^6$