

ALGEBRA II SUMMER PACKET

This packet is designed to prepare students for their Algebra II courses for the 2020-2021 school year. This work will be used in all Algebra II courses, and will help to call back your previous work from Algebra I.

While we understand that the conclusion of the school year last year may not have some of these concepts fresh in your mind, we strongly encourage you to complete this packet prior to the start of the school year in September. This packet is NOT required, but will give you a leg up on starting off the year strong.

If there are concepts or problems you are not familiar with, please feel free to utilize all of the tools available to you on Khan Academy ([khanacademy.org](https://www.khanacademy.org)). Good luck, and we look forward to seeing you in September!

Directions: Complete the following problems on loose-leaf paper and attach it to the back of the packet.

Simplify the following using order of operations:

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

2. $26 - (17 - 8 \div 2)$

3. $12 - 4 * 2 + (-3)^2$

4. $5^2 - 6(2 - (-1))^2$

5. $\frac{7*(9-3)^2}{12}$

6. $\frac{7}{15} + \frac{4}{15} - \frac{2}{15}$

7. $\frac{8}{9} - \frac{3}{4}$

8. $1\frac{1}{2} + 2\frac{3}{4}$

9. $5\left(\frac{2}{7}\right)$

10. $\left(-\frac{3}{4}\right)\left(-\frac{1}{9}\right)\left(\frac{6}{5}\right)$

11. $1\frac{1}{2} * 2\frac{2}{3}$

12. $\frac{6}{7} \div \frac{4}{5}$

Simplify by combining like terms:

13. $4x^2(7x + 5)$

14. $(2x - 5)(2x + 5)$

15. $(2x^3 + 2x^2 - x + 16) - (5x^3 + 3x - 3)$

16. $4y(2 - y) + 3y^2$

17. $\frac{30x^2 + 20x - 10}{-5}$

Solve the following functions for the given variable:

18. $8x - 2 = -9 + 7x$

19. $m - 2 = 5m + 3m - 8$

20. $12 = -2(2x + 5)$

21. $3n - 5 = -8(6n + 1)$

22. Write the equation of the line in slope-intercept form that goes through the point (3,1) and has a slope of $\frac{-2}{3}$.

23. Graph the following lines:

a. $2x + y = -4$

b. $x = -5$

c. $y > \frac{3}{5}x - 4$

d. $y = -2|x + 3| + 2$

24. Solve the following systems of equations using any method

a. $y = 3x - 4$
 $y = -\frac{1}{2}x + 3$

b. $5x - 3y = 22$
 $-4x + y = -19$

25. Solve the following quadratic functions using any method.

a. $x^2 + 4x - 21 = 0$

b. $3x^2 - 32x = -45$

c. $2x^2 - 50 = 0$

d. $2x^4 - 162 = 0$

Simplify the following using exponent properties:

26. $5^4 * 5^{-1}$

27. $((-2)^3)^2$

28. x^2x^5

29. $(x^2y^3)^2$

30. $(x^4y^3)(x^{-5}y^3)$

31. $\sqrt{75x^3}$