

The following skills are recommended, self-guided, SUMMER WORK resources for all students scheduled to take **Algebra II**. Please plan to spend some quality time this summer practicing these skills. We recommend you pace yourself and do not leave it all until the last week.

Below is the list of recommended Khan Academy tutorials, the second page are the skills students should be proficient in by the first day of school. There will be an assessment of this material the first week of school.

<https://www.khanacademy.org>; click **COURSES** (upper left); click **MATH**; scroll down & click **8th Grade** and complete the following:

1. Numbers and Operations
 - a. square roots & cube roots
 - b. exponents with negative bases
 - c. exponent properties intro
 - d. negative exponents
 - e. exponent properties
2. Linear Equations and Functions
 - a. Graphing Slope-intercept form
 - b. Writing slope-intercept equations
 - c. Functions
 - d. Recognizing functions

Once your student has completed these, return to the **MATH** menu, scroll down, click **Algebra I**, and student should complete the following:

1. Algebra Foundations (all skills)
2. Solving Equations and Inequalities (all skills)
3. Linear Equations and Graphs (all skills)
4. Forms of Linear Equations (all skills)
5. Systems of Equations – all skills except word problems
6. Inequalities (systems and graphs) – checking solutions of two-variable inequalities and graphing two-variable inequalities
7. Functions – evaluating functions, inputs & outputs of a function, functions & equations, and recognizing functions
8. Exponents and Radicals (all skills)
9. Quadratics: Multiplying and Factoring (all skills)
10. Quadratic Functions and Equations
 - a. Intro to Parabolas
 - b. Solving and Graphing with Factored form
 - c. Solving by Taking the Square root
 - d. Vertex Form
 - e. Solving Quadratics by Factoring
 - f. The Quadratic Formula
11. Irrational Numbers – irrational numbers, sums, and products of rational and irrational numbers

Student SUPPLIES NEEDED FOR Algebra II 2024-25:

Text: McDougal Littell Algebra II, ISBN: 0-618-25020-4, a TI-30 XIIS Scientific Calculator (students should already have it from Geometry), Graph Paper (if desired), Loose-leaf paper, pencils, 1-2” Binder.

Teacher Wish List: loose-leaf paper, wide-tip black dry erase markers, and Lysol spray and/or wipes.

“An investment in knowledge always pays the best interest.” - Benjamin Franklin

Solve each of the following equations or inequalities, leave answers in simplest form.

1 $\frac{3}{4}x + 16 = 2 - \frac{1}{8}x$ $x =$ _____

2 $6(x + 2) - 4 = -10$ $x =$ _____

3 $6(x - 5) = 18 - 2x$ $x =$ _____

4 $3(2x + 25) - 2(x - 1) = 78$ $x =$ _____

5 $\frac{5}{8} + \frac{3}{4}x = \frac{1}{16}$ $x =$ _____

6 $5(2x - 6) - 7(x + 7) > 4x$ _____

Solve each of the following for slope-intercept form: $y = mx + b$

7 $2(x + y + 1) = 4y$ _____

8 $5x - 3y + 2 = 14 - 4x$ _____

Write an equation in slope-intercept form for each of the following:

9 **(-3, -1), $m = -\frac{2}{3}$** _____

10 **(-5, 1), $m = -\frac{3}{2}$** _____

11 **(2, -2) and (3, 2)** _____

12 **x-int = -3, y-int = 4** _____

13 contains (4,6) parallel to $3y - 2x = 15$ _____

14 contains (2, -5) perpendicular to $y = \frac{1}{4}x + 7$ _____

Evaluate each of the following expressions.

15 $10 \cdot 4 \div 2^3 \cdot 5 - 50 \div 5^2$ _____

16 $(256 - 4^4 + 12^2) \div 4 \cdot 3 + (2^5 + 68 + 5^2) \div 5^3$ _____

17 $18 - 7 \cdot 15 \div 3$ _____

18 $36 - 5^2 \cdot 2 + 7$ _____

Factor and solve each of the following completely (identify the factors and the solutions).

19 $x^2 - 5x - 6 = 0$ _____

20 $x^2 = 18 - 7x$ _____

21 $3x^2 + 18x = 21$ _____

22 $8x^2 = 6x + 9$ _____

Simplify each expression completely.

23 $2(-2x)^3$ _____

24 $\frac{-y^5z^7}{y^8z^5}$ _____

25 $\frac{-12m^4n^8(m^3n^2)}{36m^5n^{12}}$ _____