

MathLinks: Essentials

Grade 9 Checklist

These four packets address essential 8th grade topics, the major work of the grade. Can your 9th grade students do the following?

Expressions, Equations, and Applications (EE3) moves students from building and drawing expressions and equations to formal algebra. It includes 6th, 7th, and 8th grade work (Standards 6.EE.A, 7.EE.A, 8.EE.C).

- Use the distributive property to rewrite expressions. Simplify expressions using procedures. [1]
- Solve multi-step equations using procedures. [2]
- Solve word problems and non-routine problems using algebra. [3]

Introduction to Linear Functions (FUN1) focuses on representations of functions and informally introduces concepts through meaningful contexts: saving for purchases, observing geometric patterns, and determining better buys. (Standards 6.RP.A, 7.RP.A, 8.EE.C, 8.F.A, 8.F.B).

- Create tables, label column headings, keep track of data, label axes, and graph data from tables. [4]
- Write input-output equations that represent the data from the tables and graphs. [4]
- Analyze data from tables and graphs. Explain in context the meaning of vertical intercepts and rates of change. [5]
- Clearly explain conclusions about the data in context, verbally and in writing. [5]

Slope and Slope-Intercept Form of a Line (FUN2) focuses on the meaning of slope and y-intercept (standards 8.F.A, 8.F.B).

- Find the slope of a line by counting on a grid, using the slope rule with coordinates, or inspecting an equation in the form $y = mx + b$. [6]
- Understand the meaning of the slope and y-intercept of a line, and the slope-intercept form of a line. Included in this is knowing when lines are parallel without graphing them; knowing how to graph a line when given two ordered pairs, one ordered pair and the slope of the line, or just an equation; knowing the y-intercept of a line without graphing it; etc. [6 – 9]
- Understand features of equations of lines that are horizontal or vertical [9]
- Solve non-routine problems that involve linear relationships. [embedded in the packet]

Systems of Linear Equations (FUN3) students solve systems of linear equations in two variables graphically and algebraically (8.EE.C, 8.F.A, 8.F.B). Can your students do the following?

- Use tables, graphs, and equations to solve problems. [10, 12]
- Know slope-intercept and standard forms of linear equations. Write linear equations in these forms. [10]
- Understand when a system of linear equations has exactly one, infinite, or no solutions. [10 – 13]
- Solve systems of linear equations using the graphing, substitution, and elimination. [10, 12, 13]
- Solve word problems using systems of linear equations. [13]