Grade 8 Math Unit 3

Canterbury Public Schools

Subject	Math
Grade Level	8
Unit Title	**Linear Relationships**
Unit Goals	1. **Understand Linear Relationships**: Students learn that a linear relationship has a constant rate of change, which is represented by a straight line on a graph. 2. **Define and Calculate Slope:** Students define slope as the rate of change (changes when increases by 1) and calculate it using any two distinct points on a line. 3. **Interpret Slope and Intercept:** Students interpret the slope and vertical intercept (where the line crosses the y-axis) within various contexts. 4. **Connect Representations:** Students translate between equations, graphs, and tables of linear relationships, including those with negative slopes and non-zero intercepts. 5. **Understand Solutions**: Students understand the "solution of an equation" in two variables as a set of points on a graph.
Pacing (# of weeks)	3-4 weeks
Standards	8.EE.B.5, 8.F.A.2, 8.F.A.3,8.EE.B.5
Content/Conceptual Knowledge (know)	Linear versus non-linear relationships Representations of linear functions
Skills (be able to do)	Represent Linear Relationships ● Create Tables, Graphs, and Equations: Represent linear relationships (both proportional and non-proportional) using tables, graphs, and equations (y=mx+b) ● Interpret the slope as the rate of change and the vertical intercept as the starting value in a given context ● Recognize and distinguish between proportional relationships (passing through the origin) and non-proportional linear relationships. Understand Slope and Rate of Change ● Calculate the slope of a line using the formula ● Understand that the slope represents the amount y changes when x increases by 1. ● Graph and interpret linear relationships with negative slopes. ● Write equations for and graph horizontal and vertical lines. Analyze and Compare Linear Situations ● Compare two different linear relationships represented in different ways, such as comparing a table to a graph. ● Use slope triangles to find the slope of a line.

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Recognize that lines with the same slope are vertical translations of each other.

Solve Linear Equations

Understand that a solution to a linear equation in two variables is any point (x,y) that lies on the line.
Graph a linear equation by identifying points that make the equation true.
Use linear equations to solve real-world problems involving constant rates, such as budgeting, packing, or constant speed.

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<tr><td>Essential Questions</td><td>How can you use graphs to determine information about a linear situation?
What strategies can be used to justify correspondences between different representations, and which equations correspond to graphs of horizontal and vertical lines?
How can linear relationships be represented in different ways?</td></tr>
<tr><td>Enduring Understandings</td><td>The constant of proportionality between two variables as the rate of of change of one variable with respect to the other
Linear relationships show constant change</td></tr>
<tr><td>Vocabulary</td><td>Rate of change, linear relationship, vertical intercept,
Solution to an equation with two variables
y-intercept</td></tr>
<tr><td>Common Learning Experiences</td><td>Create graphs, tables, and equations in order to interpret the constant of proportionality in a context
Graphing activities
Contextual problems</td></tr>
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