

Unit Title: Linear Representations
Grade Level: 8
Subject Area: Math/Algebra
Duration/Length/Number of class periods: 4-6 class periods
Description: Graphs/tables/equations – Students can represent linear relationships with graphs, tables, equations, and verbal descriptions and convert between forms
Established Goals (National, State, Local): MN State Math Standards 8.2.2.1 Represent linear functions with tables, verbal descriptions, symbols, equations and graphs; translate from one representation to another. 8.2.1.3 Understand that a function is linear if it can be expressed in the form $f(x) = mx + b$ or if its graph is a straight line. 8.2.2.2 Identify graphical properties of linear functions including slopes and intercepts. Know that the slope equals the rate of change, and that the y-intercept is zero when the function represents a proportional relationship.

What Enduring Understandings are desired? Patterns and relationships can be represented numerically, graphically, symbolically, and verbally.
What Essential Questions will be considered? What are the different ways to represent the patterns or relationships? How can we communicate linear relationships with clarity?
Students will know / be able to: Students can represent linear relationships with graphs, tables, equations, and verbal descriptions and convert between forms.

Description	Units must include at least one of each formative, summative, introductory activity and learning activity. Check the appropriate box; one per row.	Formative	Summative	Introductory Activity	Learning Activity	Student Technology	Teacher Technology Used	ISTE Standards

					Used		
Warm Up - Refresher on plotting points - Locate the aliens game Link			x		x		3C
Table to Graph: Video explaining how to take a linear table to coordinate points to plotting on a graph. Link	x			x	x		3C
Graph to table: Project a linear graph on the screen or hand out worksheet of graphs. Have students label points and then practice making a table on their whiteboards.	x			x		x	
Equation to table: Option 1 Plug x values into the equation and evaluate option Link Option 2: Teach students to start the table with the y-intercept and then use the slope to make other entries in the table $m = \frac{\Delta y}{\Delta x}$	x			x		x	
Equation to graph: - non-tech: human plotting - Link Tech: Phet graphing lines simulator - Link	x			x			1C
Word problems linear representations: Desmos activity builder: Link	x			x	x	x	1C
Formative Assessment: Hand out blank graph/table/equation sheet. Have students put it in a sheet protector. Project one linear representation and ask for another. Students use dry erase marker to provide answers. Link	x						
Put it all together: Graphs/Tables/Equations Card Sort in Desmos activity builder: Link	x			x	x	x	1C
Put it all together (if needed): Graphs/Tables/Equations Card Sort with no tech: Link	x			x			
Summative Assessment - Standards Based Assessment - Link		x					
Extension activity: Desmos drawing hyperdoc - Link		x			x	x	6B

Materials, tools and resources Mathplayground, Youtube, Teaching Channel, Desmos Activity Builder Markerboards, sheet protectors, dry erase markers
Unit Plan Author (name, school and optional email address or hyperlink to teacher's web page) Becky Rahm Luverne Public School b.rahm@isd2184.net @beckyrahm
Additional credit given to: @Mr_Oldfield for inspiring Desmos drawing hyperdoc Zack Patterson for the Linear Representation - word problems Desmos Activity Builder