

8th Math Unit 5/6 Information
Linear Functions & Linear Models

CRCT Domain & Weight: Algebra & Functions 20%

[Flip Book for Unit 5/6](#)

[Overview of Unit 5/6](#)

[Prerequisites: Unit 5/6](#)

Unit Length: Approximately 25 days

[Checklist for Unit 5/6](#)

[Study Guide for Unit 5/6](#)

[Study Guide KEY for Unit 5/6](#)

Calculators should be used on all standards.

Click on the links below for resources by Concept:

[Concept ONE: Rate of Change](#)

[Concept TWO: Relationships and Functions](#)

[Concept THREE: Linear and Non-Linear Functions](#)

[Concept FOUR: Qualitative Graphs](#)

TCSS

Concept One: Rate of Change (Slope)

Standard(s) & Essential Questions	Vocabulary	Resources	Assessment
<p>MGSE8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. <i>For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.</i></p> <p>E.Q. What does the slope of the function line tell me about the unit rate?</p> <p>MGSE8.EE.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y=mx$ for a line through the origin and the equation $y=mx+b$ for a line intercepting the vertical axis at b.</p>	<ul style="list-style-type: none"> • Unit rate • Slope • y-intercept • proportional relationship • similar triangles • origin • coordinate plane • vertical • horizontal 	<p>Activator – Slope Intercept Form Music Video</p> <p>Activator – Rise Up, Run Out Music Video</p> <p>Video – Using SLOPE in construction (This Old House)</p> <ul style="list-style-type: none"> • Eureka Math (2014 Common Core) TE SE License • Glencoe CCSS Math Text (McGraw-Hill, 2013) <ul style="list-style-type: none"> ○ Slope/Rate of Change p. 171-188 ○ $y = mx$ p. 189-198 ○ $y=mx+b$ p. 199-208 ○ Slope & similar triangles p. 561-568 <ul style="list-style-type: none"> ▪ Pre-teach <u>if needed</u>, using p. 553-560. • Slope Dude Video • Mini Task: Multiple Representations of Slope • I am...Who Has Slope • Super Mario Equations • Stained Glass Window • Constructed Response Practice ☺ <ul style="list-style-type: none"> ○ Caricatures ○ Cave Hiking ○ T-shirt Shop ○ Towing • Math Dude Video – Slope-Intercept Form • PowerPoint: Similar Triangles and Slope • CCGPS Frameworks Tasks <ul style="list-style-type: none"> ○ What's My Line? <ul style="list-style-type: none"> • Addresses similar triangles ○ Ditch Diggers <ul style="list-style-type: none"> • Application of slope 	<p><u>MGSE.8.EE.5</u></p> <p><u>MGSE.8.EE.6</u></p> <p>[Back to Top]</p>

TCSS

Concept Two : Relationships & Functions

Standard(s) & Essential Questions	Vocabulary	Resources	Assessment
<p>MGSE8.F.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x,y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.</p> <p>E.Q. How can we model relationships between quantities?</p> <p>E.Q. How can I find the rate of change from a table, graph, equation, or verbal description?</p> <p>E.Q. How can I find the initial value from a table, graph, equations, or verbal description?</p>	<ul style="list-style-type: none"> • Initial value • Rate of change • Linear function • Dependent variable • Independent variable 	<ul style="list-style-type: none"> • Eureka Math (2014 Common Core) License Concept Two ~ TE SE • Glencoe CCSS Math Text (McGraw-Hill, 2013) <ul style="list-style-type: none"> ○ Representing Relationships p. 263-276 ○ Functions p. 287-294 ○ Linear Functions p. 295-304 ○ Comparing properties of Functions p. 309-318 ○ Constructing Functions p. 319-326 • Cut & Paste Matching graph/slope/points <ul style="list-style-type: none"> ○ Scissors & glue make this messy and a bit noisy. ○ Alter it by asking students to write in answers instead of cutting and pasting? • Desk Hop Activity • Mix-Freeze-Pair Activity • PowerPoint: Stacking Cups Lab • Differentiated Task: Winter is Over <ul style="list-style-type: none"> ▪ 3 Versions! • Station Activities $y=mx+b$ <ul style="list-style-type: none"> ○ Station 1 – Complete a table & graph it ○ Station 2 – Find equation from table ○ Station 3 – Need algebra tiles to do it ○ Station 4 – More challenging • Station Activities - Graphing <ul style="list-style-type: none"> ○ Station 1 – Create lines with spaghetti ○ Station 2 – Create lines with spaghetti ○ Station 3 – Create lines with spaghetti ○ Station 4 – Good (no spaghetti) ☺ • Stacking Blocks Task <ul style="list-style-type: none"> ○ Task KEY ○ Lesson Plan ○ Bell Ringer & Ticket Out the Door 	<p style="text-align: center;">MGSE.8.F.4</p> <p style="text-align: right;">[Back to Top]</p>

TCSS

Concept Three : Linear and Non-Linear Functions			
Standard(s) & Essential Questions	Vocabulary	Resources	Assessment
<p>MGSE8.F.3 Interpret the equation $y=mx+b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. <i>For example, the function $A=s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.</i></p> <p>E.Q. How do I recognize non-linear functions in graphs? In tables? In charts?</p>	<ul style="list-style-type: none"> Linear Non-linear 	<ul style="list-style-type: none"> Eureka Math (2014 Common Core) License Concept Three ~ TE SE Glencoe CCSS Math Text (McGraw-Hill, 2013) <ul style="list-style-type: none"> Pages 327-334 Differentiated for Accelerated <ul style="list-style-type: none"> Pages 335-342 Always, Sometimes, Never Math Dude Video: Writing the Equation of a Line Decorating for the Dance <ul style="list-style-type: none"> Non-linear Key Differentiated Task: <ul style="list-style-type: none"> Forget The Formula <ul style="list-style-type: none"> Celsius vs. Fahrenheit 3 Versions Graphs Around the Room <ul style="list-style-type: none"> Work in Pairs to Match <ul style="list-style-type: none"> Equation/Graph/Slope/y-intercept/points Identify Linear and Non-linear Equations CCGPS Frameworks <ul style="list-style-type: none"> Mini Problems <ul style="list-style-type: none"> May use 1 or more Save the Zogs Computer Game <ul style="list-style-type: none"> Computer Lab Fun Practice Slope & y-intercept Cockroach Math Computer Game <ul style="list-style-type: none"> Computer Lab Fun Review/practice slope and y-intercept 	<p>MGSE.8.F.3</p> <p>[Back to Top]</p>

TCSS

Concept Four : Qualitative Graphs

Standard(s) & Essential Questions	Vocabulary	Resources	Assessment
<p>MGSE8.F.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.</p> <p>E.Q. How can I sketch a graph, given a verbal description?</p> <p>E.Q. How can I give a verbal description of a graph?</p>	<ul style="list-style-type: none"> • Qualitative • Functional relationship • Increasing • Decreasing • Linear • Non-linear • Dependent variable • Independent variable 	<ul style="list-style-type: none"> • Eureka Math (2014 Common Core) License Concept Four ~ TE SE • FUN!! Graphing Stories Videos <ul style="list-style-type: none"> ◦ Graphing Worksheet ◦ Man On a Slide Video ◦ Blowing Up a Balloon Video ◦ Running the Bases Video ◦ More Videos • Glencoe CCSS Math Text (McGraw-Hill, 2013) <ul style="list-style-type: none"> ◦ Pages 347-356 • Reteach Qualitative • Homework Qualitative Graphs • Practice analyzing Qualitative Graphs • Unit Review: Glencoe CCSS Math Text (McGraw-Hill, 2013) p. 358-360 • Unit Project Ideas p 361-362 	<p style="text-align: center;"><u>MGSE.8.F.5</u></p> <p style="text-align: right;"><u>[Back to Top]</u></p>