



March 2018

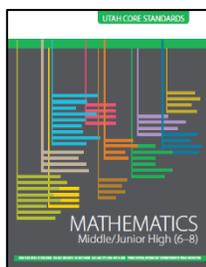
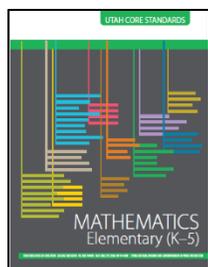
Elementary School Mathematics Instructional Newsletter

Resources

The Utah State Standards for Mathematics are available online. Click on your grade band below:

K-5

6-8



The Go Math 2015 User Guide is available online. Click the Go Math picture to access the guide. The Table of Contents are hyperlinked to sections within the document. Each section has step-by-step instructions along with video tutorials.

Navigating Go Math! 2015 User Guide



Granite School District
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ThinkCentral.com



Suggested Go Math Resources to Use When Preparing an Assessment

Getting Ready for PARCC



Getting Ready for the PARCC® Assessments (SE),

Includes 2 pages of questions per standard. Log into Go Math. Click on the *Getting Ready for PARCC* icon from the Go Math main dashboard or from **Resources**. Select

- [Standards Practice Test](#) from the menu. Scroll down to the desired standard to view the questions.

Personal Math Trainer



Personal Math Trainer, G6

Log into Go Math. Click on the *Personal Math Trainer* icon. Select + **Standards-Based Assignments** from the menu. Select the Strand and Standard. Click *Assign* by the desired assessment or homework assignment. Note: Each assessment may be modified. (See pages 49-50 in Navigating Go Math Guide)

Elementary Mathematics Contact Information:

Dee Rigdon dpriqdon@graniteschools.org





Webb's Depth of Knowledge (DOK) was developed by Norman Webb in 1997. It is a model to analyze how deep students must think to answer questions and complete activities. DOK can be defined as complexity of thinking. Webb's DOK should be considered when assigning tasks, activities, or assessments for your students. It is important for teachers to expose their students to activities that represent all DOK levels to increase the cognitive rigor in math instruction and assessment.

Dr. Karin Hess combined two widely accepted measures of describing cognitive rigor—Bloom's Taxonomy and Webb's Depth of Knowledge Levels.

- The Hess Cognitive Rigor Matrix (CRM) is a tool developed to enhance assessment planning and instructional practices in the classroom.
- It compares the varying levels of DOK applied to mathematical understanding and practices by students.
- Each intersection of Bloom-Webb in the CRM provides a focus on differing complexity and engagement.
- Rigor increases as you go from top to bottom on the chart and from DOK 1 to DOK 4.

Click on Hess Cognitive Rigor Matrix

TOOL 2				
HESS COGNITIVE RIGOR MATRIX (MATH-SCIENCE CRM): Applying Webb's Depth-of-Knowledge Levels to Bloom's Cognitive Process Dimensions				
Bloom's Taxonomy	Webb's DOK Level 1 Recall & Reproduction	Webb's DOK Level 2 Skills & Concepts	Webb's DOK Level 3 Strategic Thinking/Reasoning	Webb's DOK Level 4 Extended Thinking
Remember Retrieve knowledge from long-term memory, recognize, recall, facts, data, or formulas.	<ul style="list-style-type: none"> Recall, identify, or recognize facts, principles, properties, or formulas. Identify connections among representations or numbers (e.g., numbers and their names). 	Use these Hess CRM curricular examples with most mathematics or science assignments or assessments.		
Understand Construct meaning, clarify, explain, represent, translate, illustrate, give examples, classify, categorize, summarize, generalize, infer, or logical conclusions, predict, compare, contrast, match like items, explain, construct models.	<ul style="list-style-type: none"> Translate an expression or formula into a graph or number line. Interpret a word problem. Interpret mathematical models, graphs, or tables. Interpret scientific data, graphs, or tables. Interpret mathematical models, graphs, or tables. 	<ul style="list-style-type: none"> Specify and explain relationships (e.g., how variables are related, cause-effect). Make and record observations. Interpret results or compare. Make basic inferences or logical predictions from data observations. Use models, diagrams to represent or explain mathematical concepts. Make and explain estimates. 	<ul style="list-style-type: none"> Use concepts to solve non-routine problems. Apply, generalize, or connect ideas and justify responses. Apply thinking/reasoning when more than one solution or approach is possible. Apply phenomena in terms of concepts. 	<ul style="list-style-type: none"> Relate mathematical or scientific concepts to other content areas, other domains, or other concepts. Develop generalizations of the results obtained and the strategies used (then re-apply in new settings) and apply them to new problem situations.
Apply Carry out or use a procedure in a given situation, or use (apply) to an unfamiliar task.	<ul style="list-style-type: none"> Follow simple procedures (single type directions). Calculate, convert, use scale or rate (e.g., reading). Apply algorithms or formulas (e.g., area, perimeter). Apply known equations. Apply formulas among representations in numbers, or written and between numbers and rates. 	<ul style="list-style-type: none"> Take or construct an activity to collect and perform. Take notes or produce multiple concepts or definition points. Interpret information from a table, graph, or figure and use it to solve a problem. Interpret mathematical models, graphs, or tables. 	<ul style="list-style-type: none"> Design investigations for specific purposes or research questions. Conduct a designed investigation. Use concepts to solve non-routine problems. Use to show reasoning, planning, and methods. Interpret between problems in symbolic notation when not about quantities. 	<ul style="list-style-type: none"> Collect or derive generalizations among many alternatives to solve a problem. Conduct a project that involves a problem, identifies solution paths, solves the problem, and reports results.
Analyze Break into constituent parts, determine how parts relate, differentiate between related, opposite, similar, but different, cause, effect, etc.	<ul style="list-style-type: none"> Interpret information from a table or graph to answer a question. Identify whether specific information is contained in graphs, representations (e.g., table, graph, chart, diagram), or text. Identify a pattern/ trend. 	<ul style="list-style-type: none"> Categorize, classify, analyze, data, figures based on characteristics. Organize or order data. Compare/contrast figures or data. Collect appropriate data and organize to display data. Interpret data from a sample graph. Interpret data from a sample graph. Interpret data from a sample graph. 	<ul style="list-style-type: none"> Design information within or across data sets or texts. Analyze and draw conclusions from data, citing evidence. Generate a pattern. Interpret data from sample graph. Analyze and compare differences between procedures or solutions. 	<ul style="list-style-type: none"> Analyze multiple sources of evidence. Analyze complex/abstract themes. Collect, analyze, and evaluate information.
Evaluate Make judgments based on criteria, check, defend, recommend or refuse, judge, critique.	<ul style="list-style-type: none"> Use - standardized generalizations - stating an opinion about providing any support for it. 	<ul style="list-style-type: none"> Compare, contrast, and justify. Generate conjectures or hypotheses based on observations or past knowledge and experience. 	<ul style="list-style-type: none"> Use evidence and develop a logical argument for concepts or solutions. Interpret concepts and connect related mathematical results. Use evidence to justify or defend a solution. Synthesize information within one data set, text, or text. Formulate an original problem given a situation. Use to solve a mathematical problem for a complex situation. 	<ul style="list-style-type: none"> Collect, analyze, and evaluate information to draw conclusions. Apply understanding in a novel way. Apply understanding in a novel way. Apply understanding in a novel way.
Create Develop original ideas into new patterns/variables, generate, hypothesize, design, plan, produce.	<ul style="list-style-type: none"> Generate ideas, concepts, or perspectives related to logic. 	<ul style="list-style-type: none"> Generate conjectures or hypotheses based on observations or past knowledge and experience. 	<ul style="list-style-type: none"> Synthesize information within one data set, text, or text. Formulate an original problem given a situation. Use to solve a mathematical problem for a complex situation. 	<ul style="list-style-type: none"> Collect, analyze, and evaluate information to draw conclusions. Apply understanding in a novel way. Apply understanding in a novel way. Apply understanding in a novel way.

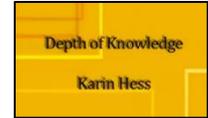
- Click [here](#) for more information on how Bloom & Webb merge on the CRM chart.
- Click [here](#) to view Bloom & Webb comparison

Webb's DOK levels name four different ways students interact with content. Each level represents a different complexity of cognition.

- Level 1 - Recall
- Level 2 - Skills and Concepts
- Level 3 - Strategic Thinking
- Level 4 - Extended Thinking

Click [here](#) for Webb's DOK levels.

Click on the picture to view Dr. Karin Hess explanation of each DOK level.



- Webb's DOK focuses on the kind of thinking required—not the difficulty.
- Webb's DOK does not use verb cues. Rigor and DOK levels are determined by what comes after the verb. Click on [example](#).
- When the Mathematical Practices are applied to math content, the DOK Levels are increased. Click on the chart below.

Depth + Thinking	Common Core + DOK = Math Standards & Math Practices			
	Level 1	Level 2	Level 3	Level 4
Remember	Recall & Reproduction	Skills & Concepts	Strategic Thinking/Reasoning	Extended Thinking
Understand	Identify to produce	Model with mathematics	Construct viable arguments	Communicate mathematically
Apply	Use units to measure	Use ratios to compare	Use ratios to compare	Use ratios to compare
Analyze	Identify patterns	Use units to measure	Use ratios to compare	Use ratios to compare
Evaluate	Use units to measure	Use ratios to compare	Use ratios to compare	Use ratios to compare
Create	Use units to measure	Use ratios to compare	Use ratios to compare	Use ratios to compare

- Click [here](#) for question stems inspired by Hess' CRM Matrix.
- Click [here](#) for more information on Webb's DOK by Karin Hess.



Kindergarten

K.CC.5 Lesson Ideas →

Chapter 8 - K.CC.1-3, 5, 6 Represent, Count and Write 20 and Beyond
Chapter 9 - K.G.2,4 Identify and Describe 2-D shapes

Activities: [Pattern Block Barrier Game](#); [Describing Shapes](#);
[Georgia Standards Frameworks](#); [Speedy Space Shapes](#);
[Which Shape Doesn't Belong?](#); [Math and Literature](#)

1st Grade

Chapter 9 - 1.MD.1-3, 5 Measurement

Activities: [Time Check](#); [Curious George Clock](#);
[Which is Longest?](#); [Scoop and Order](#); [Time Game](#);
[Measuring with Snap Cubes](#); [Georgia Standards Frameworks](#) (See Unit 4); [Grandfather Clock](#);
[Go Fish Time](#); [1.MD.5](#); [Money Activities](#); [Show Me the Money](#)
 Enrichment: [MIC's Units 9/10](#)
[Math and Literature](#)



2nd Grade

Chapter 7 - 2.MD.7, 8 Money and Time
Chapter 8 - 2.MD.1-3, 5, 6, 9 Customary Length

Activities: [The Money Game](#); [Pocket Change](#); [Who Has? Coins](#);
[Time Check](#); [Coin Race](#); [Measuring Paths](#);
[Length Word Problems](#); [Measure it Twice](#); [Georgia Standards Frameworks](#) (See pages 18, 41, 51, and 63)
[Measurement Line Plot](#)
[Math and Literature](#)



Chapter 7

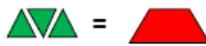
Chapter 8

3rd Grade

Chapter 8 - 3.NF.1, 2a, 2b, 3 Understand Fractions
Chapter 9 - .NF.3a,b, d Compare Fractions

Activities: [Roll a Fraction](#); [My Fraction Book](#);
[Exchange Game](#); [Rules for Comparing Fractions](#);
[Compare Fractions of a Whole](#); [Fractions on Number Lines](#);
[Comparing Fractions Game](#); [Fraction Activity](#)

***Note: Lessons 8.7, 8.8 and 8.9 work with fractions of a group or set which is not part of the 3rd grade core. Set representations should be postponed until the fifth grade when multiplying to find part of a group.



Enrichment: MICs [Units 8/9](#)

[Math and Literature](#)



3.NF.1, 2, 3

4th Grade

Chapter 8 - 4.NF.4abc Multiply Fractions by Whole Number
Chapter 9 - 4.NF.5, 6, 7; 4.MD.2 Relate Fractions and Decimals; Money

Activities: [Multiply Fractions - Using Pattern Blocks](#);
[Multiply a Unit Fraction by a Whole Number](#); [Fraction Pie Game](#);
[Georgia Frameworks - Unit 4](#); [Decimal Dimension](#);
[Sums of One](#); [Comparing Decimals](#); [Compare Pairs](#);
[Roll for One](#); [Decimal Challenge](#)

Learning Progressions - [Adding/Subtracting Decimals](#)

Enrichment: MICs [Units 7/8](#) and [Unit 9](#)

[Math and Literature](#)



Chapter 8

Chapter 9

5th Grade

Chapter 8 - 5.NF.3, 7 abc Divide Fractions
Chapter 9 - 5.MD.2; 5.G.1-2; 5.OA.3 Patterns & Graphing

Activities: [Divide a Whole Number by a Unit Fraction](#);
[Divide a Unit Fraction by a Whole Number](#); [Dividing Fractions - Pattern Blocks](#);
[Graph and Analyze Relationships](#); [Shapes on the Coordinate Plane](#);
[Fly on the Ceiling](#); [Fly on the Ceiling Game](#); [How Many Pages?](#);
[Patterns on the Coordinate Plane Task Cards](#); [High Five](#); [Line Plot](#); [Coordinates](#)



5.NF.3, 7

Enrichment: MICs [Units 7/8](#) and [Unit 9](#)

[Math and Literature](#)



Chapter 9

6th Grade

Chapter 8 - 6.EE.5, 7, 8 Algebraic Equations & Inequalities
Chapter 9 - 6.EE.9 Relationship between Variables

Activities: Finding x [Version 1](#), [Version 2](#), [Version 3](#);
[Small Group](#); [Graphing Inequalities](#); [Inequalities Foldable](#);
 Georgia Frameworks - [Unit 4](#) (also see p. 30)
 Graphing Stories; [The Crow and the Pitcher](#); [Card Sort](#)
 Enrichment: MICs Unit [Unit 8](#) and [Unit 9](#)
[Math Tasks - Unit 8](#) and [Unit 9](#)
[Conceptual Foundations - Expressions and Equations Part 3](#);
[Math and Literature](#)



6.EE.9

6.EE.5, 7, 8

