

# GVC Companion Guide: First Grade

## Guiding Philosophy, CGI, Cognitively Guided

### Instruction:

- ❖ We invite you to consider the following:
  - Students need space and time to make sense of mathematics.
  - Students need time to explain their thinking.
  - Take time to notice, strategically share, and celebrate diverse student thinking.
  - Use questioning to elicit, support, and extend thinking.
  - Facilitate student-centered discussions to deepen understanding and create spaces for sense-making.



## Seven Guiding Principles of Cognitively Guided Instruction, CGI:

We tie these principles to the Social Justice Standards, learning for justice anti-bias framework - [Learning for Justice Website](#)

1. Every student comes to math class knowing some mathematics
2. Every student is capable of extending their mathematical ideas
3. Knowing the development of children's thinking helps you know how to support learning— "What am I working toward?"
4. Details of children's thinking support instructional decision making
5. Must challenge our assumptions about what students know and are able to do
6. Must create space for the participation of each and honor the different ways in which students are participating
7. Identity shapes participation, so want to position students competently

## First Grade Focus and Tips

- ❖ Start the school year with growth mindset work doing Inspirational Week of Math tasks doing [Inspirational Week of Math tasks](#) from YouCubed.org at Stanford (listed as weeks but is actually year 1, 2, 3, 4... of its existence). Set classroom norms and excitement for a great year of mathematics ahead! Consider using throughout the year with a big kick off week one using parts of any of the "weeks" provided. Work with your PLC to collaborate together on which to use when. Site offers numerous resources to support differentiation/enrichment and community communication.
- ❖ Consider the [Cognitively Guided Instruction Formative Assessment Tasks](#) to gauge where students are in their thinking at the start of the year. Can be administered in parts (e.g. 1-2 problems at a time) and it can also be given multiple times a year to show progression and progress.
- ❖ Establish structures and norms through sense-making routines. Sense-making routines/warm-ups are powerful structures to create student agency and access.
  - [Downey CGI resources by grade](#)
  - [learningfromchildren.org/listening-to-childrens-thinking/resources](#)
  - Dot Talks <http://ntimages.weebly.com/>
  - Number Strings <https://numberstrings.com/>
  - [Choral Counting](#)
  - Multiple Representations (Fray Model: [sample images](#) consider application quadrant)



- Always, Sometimes, or Never | True-False ... and why? | Give example(s) and/or counter-example(s) [rich.maths-ASN](#) | [true/false routine](#)
  - [Same but Different](#)
  - [Number-Math Talks](#) | [Making Number Talks Matter](#)
  - Error Analysis [“My Favorite No”](#) – My favorite wrong answer/Error Analysis
  - Which one doesn’t belong? (WODB) [Which one doesn’t belong?](#)
  - [Academic Talk protocol\(English learners++\)](#) | [Partner A/Partner B \(Academic Talk protocol\)](#)
  - [Estimation 180](#) | [Estimysteries](#) | [Splat](#)
  - [Open Middle](#) (open-ended questions)
  - [Would You Rather](#)
  - [Number Routines](#)
  - [Counting Collections](#)
  - [Data Talks](#)
- ❖ Intentional Talk. Let’s remember the **all-important share out opportunities**: [variety of share outs and their templates](#)
  - ❖ Padlet of [Sense Making Routines and Supports](#) thanks to SMMUSD MTLs–mathematics teacher leaders
  - Consider using [kid lit books](#) as part of math warm ups = a way to talk about shapes/positions (supporting concepts) [Maths from Stories](#) and [Describe-Draw-Describe \(DDD\)](#)

## Throughout the Year:

- ❖ Place value is the overarching concept in first grade.
- ❖ Problem solving is done on a weekly basis throughout the school year using all problem types (addition, subtraction, multiplication, and division/fair sharing problems). Many of the skills, concepts, and strategies in the guides are embedded in rich problem solving experiences.
- ❖ Use Number Talks/Number Strings to reinforce computation strategies and relationships between operations. (This can include: true/false number sentences, equalities and inequalities, open number sentences, a sequence of equations that demonstrate specific consistencies, etc.)
- ❖ [Illustrative Mathematics](#) is a common core aligned resource. It is OpenUp Resources’ base.
- ❖ Reference [Math Milestones](#) as examples of tasks that promote student thinking around the grade’s big ideas.

[Think Smart for Smarter Balance–MyMath assessments](#) [Spanish Versions](#)

**TRIMESTER 1:** Teach addition and subtraction simultaneously. Teach Chapter 7 (organize, represent, and interpret data) as it relates to addition and subtraction (can be linked to “getting to know you” activities).

Students should build on <b>prior knowledge</b> of...	Students should <b>master</b> ...	Students should be <b>developing</b> and will continue to work on...
Counting	Adding/Subtracting within 20	Regrouping and bundles of 10
Skip Counting	Understand the equal sign	Place Value

Adding/Subtracting within 10	Relationship between addition and subtraction	Number Relationships
Grouping in tens and ones	Organize, represent, and interpret data	Problem Solving
Place Value		
Whole number relationships		

### SMMUSD Fall Interim Assessment – Operations & Algebraic Thinking

#### TRIMESTER 2: Place value, number relationships, two-digit addition and subtraction, geometry

Students should build on <b>prior knowledge</b> of...	Students should <b>master</b> ...	Students should be <b>developing</b> and will continue to work on...
Adding and subtracting tens	Place Value – understand meaning of tens and ones (ten is a bundle of 10 ones and can be regrouped to make one ten)	Add tens and ones with regrouping
Counting, reading, writing, and representing number to 120	Ten more/ten less, one more/one less from any position within 120	Comparing using $<$ , $>$ , $=$
	2D & 3D shapes and attributes	Fair Sharing
		Place Value
		Problem Solving

### SMMUSD Winter Interim Assessment – Numbers & Operations in Base Ten

#### TRIMESTER 3: Place value, measurement, fair sharing (along with Chapter 9 My Math), time (hour & $\frac{1}{2}$ hour)

Students should build on <b>prior knowledge</b> of...	Students should <b>master</b> ...	Students should be <b>developing</b> and will continue to work on...
Geometric shapes and their attributes	Adding tens and ones with regrouping	Place Value and Number Sense Concepts
Partitioning circles, and rectangles into halves and fourths	Calculating ten more, ten less (mental math)	Fair Sharing Concepts
Adding and subtracting with regrouping	Measuring lengths indirectly and by iterating length units	Problem Solving
Problem Solving	Telling and writing time in hours and half-hours using analog and digital clocks	
	Compose 2D and 3D composite shapes	

Strategies	Tools
<ul style="list-style-type: none"> <li>• Direct Modeling <ul style="list-style-type: none"> <li>o Concrete representation for each object that must be counted</li> <li>o Rote counting, cardinality, one-to-one correspondence</li> </ul> </li> <li>• Counting <ul style="list-style-type: none"> <li>o Starts with one number and uses a concrete representation for the second value</li> <li>o Number Conservation</li> </ul> </li> <li>• Invented Algorithms (Relational Thinking) <ul style="list-style-type: none"> <li>o More abstract thinking: concrete representations are not usually seen in these strategies</li> <li>o Using what I know to help me figure out what I don't know</li> <li>o Eg: Combining like units, incrementing, compensation</li> </ul> </li> </ul> <p>UCLA Mathematic Project, 2020</p>	<ul style="list-style-type: none"> <li>• Fingers</li> <li>• Counters</li> <li>• Tally Marks</li> <li>• Hundreds Chart</li> <li>• Number Line</li> <li>• Ten Frames</li> <li>• Base-10 Blocks</li> <li>• Paper and Pencil</li> <li>• Number Bonds</li> <li>• Arrays</li> <li>• Calculators</li> <li>• Tape Models</li> <li>• Etc.</li> </ul>

**For Grade One Mathematics, instructional time should focus on five [critical areas](#):**

- (1) Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20.
- (2) Start Day 1 – Developing understanding of whole number relationships and place value, including grouping in tens and ones.
- (3) Developing understanding of linear measurement and measuring lengths as iterating length units.
- (4) Reasoning about attributes of, and composing and decomposing geometric shapes.
- (5) Problem solving (all types of addition, subtraction, multiplication, and division/fair sharing problems).

Reference [Math Milestones](#) as examples of tasks that promote student thinking around the grade's big ideas.

**[Standards for Mathematical Practices](#)** = the how-to of the content standards

MP1: Make sense of problems and persevere in solving them

MP2: Reason abstractly and quantitatively

MP3: Construct viable arguments and critique the reasoning of others

MP4: Model with mathematics

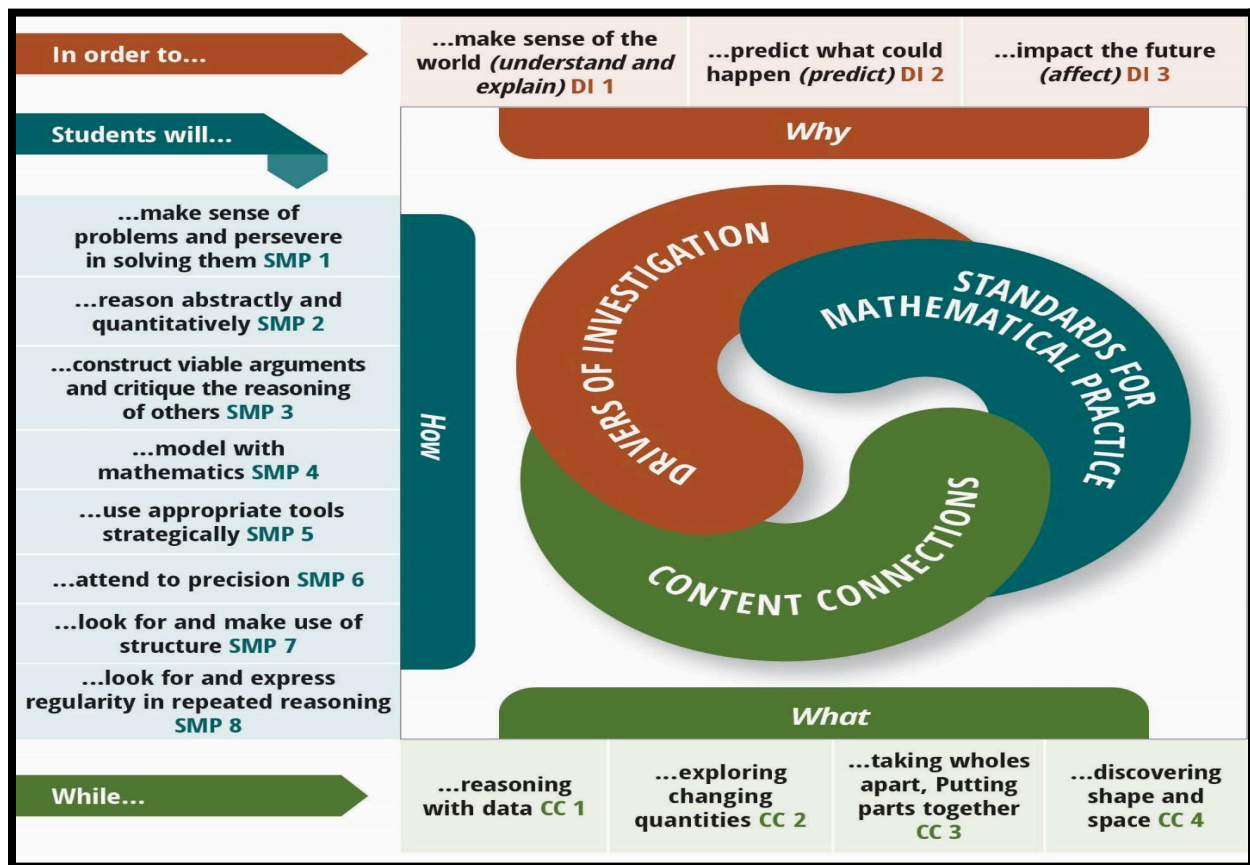
MP5: Use appropriate tools

MP6: Attend to precision

MP7: Look for and make use of structure <sup>1</sup>

MP8: Look for and express regularity in repeated reasoning

**Mathematical Practices 1-3-6 = connections to EL/ELD and NGSS standards: See 2013 [Critical Areas](#) for details of grade expectations**



GRADE ONE **BIG IDEAS** from 2023 CA MATH FRAMEWORK chapter 6



The graphic illustrates the connections and relationships of some first-grade mathematics concepts.

Direct connections include the following:

- Clocks & Time directly connects to: Equal Parts Inside Shapes, Reasoning About Equality, Make Sense of Data, Tens & Ones
- Equal Expressions directly connects to: Reasoning About Equality, Make Sense of Data, Tens & Ones, Measuring with Objects
- Reasoning About Equality directly connects to: Equal Expressions, Clocks & Time, Make Sense of Data, Tens & Ones
- Tens & Ones directly connects to: Reasoning About Equality, Make Sense of Data, Equal Expressions, Clocks & Time
- Measuring with Objects directly connects to: Equal Expressions, Make Sense of Data
- Equal Parts Inside Shapes directly connects to: Clocks & Time, Make Sense of Data

Make Sense of Data directly connects to: Reasoning About Equality, Tens & Ones, Measuring with Objects, Clocks & Time, Equal Expressions, Equal Parts Inside Shapes.

### CONTENT CONNECTIONS ~ BIG IDEAS ~ CONTENT STANDARDS

CC1~reasoning with data CC2~exploring changing quantities

CC3~taking wholes apart, putting parts together CC4~discovering shape and space

Content Connections	Big Ideas	Grade One Content Standards
Reasoning with Data	<b>Make Sense of Data</b>	<b>MD.2, MD.4, MD.3, MD.1, NBT.1, OA.1, OA.2, OA.3:</b> Organize, order, represent, and interpret data with two or more categories; ask and answer questions about the total number of data points, how many are in each category, and how many <u>more or less are in one category than in another.</u>
Reasoning with Data and Exploring Changing Quantities	<b>Measuring with Objects</b>	<b>MD.1 MD.2, OA.5:</b> Express the length of an object by units of measurement e.g., the stapler is five red Cuisenaire rods long, the red rod representing the unit of measure. Understand that the measurement length of an object is the number of units used to measure.
Exploring Changing Quantities	<b>Clocks &amp; Time</b>	<b>MD.3, NBT.2, G.3:</b> Read and express time on digital and analog clocks using units of an hour or half hour.



Content Connections	Big Ideas	Grade One Content Standards
Exploring Changing Quantities	<b>Equal Expressions</b>	<b>OA.6, OA.7, OA.2, OA.1, OA.8, OA.5, OA.4, OA.3, NBT.4:</b> Understand addition and subtraction, using various models, such as connected cubes. Compose and decompose numbers to make equal expressions, knowing that equals means that both sides of an expression are the same (and it is not simply the result of an operation).
Exploring Changing Quantities	<b>Reasoning about Equality</b>	<b>OA.3, OA.6, OA.7, NBT.2, NBT.3, NBT.4:</b> Justify reasoning about equal amounts, using flexible number strategies (e.g., students use compensation strategies to justify number sentences, such as $23 - 7 = 24 - 8$ ).
Taking Wholes Apart, Putting Parts Together	<b>Tens and Ones</b>	<b>NBT.4, NBT.3, NBT.1, NBT.2, NBT.6, NBT.5:</b> Think of whole numbers between 10 and 100 in terms of tens and ones. Through activities that build number sense, students understand the order of the counting numbers and their relative magnitudes.
Discovering Shape and Space	<b>Equal Parts inside Shapes</b>	<b>G.3, G.2, G.1, MD.3:</b> Compose 2D shapes on a plane as well as in 3D space to create cubes, prisms, cylinders, and cones. Shapes can also be decomposed into equal shares, as in a circle broken into halves and quarters defines a clock face.

**Drivers of Investigation.** Unifying reasons that both elicit curiosity and provide the motivation for deeply engaging with authentic mathematics.

D1~make sense of the world (understand and explain)

D2~predict what could happen (predict)

D3~impact the future (affect)

