Keeping the Big Ideas at the Center

Support your students in thinking about mathematics as an integrated and connected set of Big Ideas, rather than isolated topics.

To help you ensure deep, active learning for all of your students, the California Mathematics Framework centers instruction around the investigation of grade-level Big Ideas. These Big Ideas enfold clusters of standards together and are connected to each other and to authentic real-world and mathematical contexts. By designing instruction around student investigations that are focused on a set of interconnected Big Ideas, students are able to link many mathematical understandings into a coherent whole (Chapter 1, pages 15–17).

Each Big Idea falls under one or more Content Connections (CC1, CC2, CC3, and CC4). These Content Connections help organize and connect each set of grade-level Big Ideas and provide mathematical coherence across the grades (Chapter 1, page 24).

Content Connections

- **CC1** Reasoning With Data
- **CC2** Exploring Changing Quantities
- **CC3** Taking Wholes Apart, Putting Parts Together
- **CC4** Discovering Shape and Space

Meet the Big Ideas for Grade 1

Amplify Desmos Math California, Grade 1 is designed around the seven California Big Ideas for Grade 1 as described in the California Mathematics Framework (Chapter 6, page 45). The Big Ideas are represented by circles of varying sizes, with the size of each circle indicating the relative importance of the Big Idea it represents. This is determined by the number of connections, represented by line segments, the Big Idea has with other Big Ideas. Big Ideas are considered to be connected to one another when they enfold two or more of the same standards. The color of each Big Idea indicates its associated Content Connection (Chapter 1, page 15).

In Grade 1, students spend the majority of their time investigating authentic problems that are structured to connect content standards, practice standards, and one or more Big Ideas. For more information about the development of the Big Ideas in Grade 1, refer to the Progression of Big Ideas that precedes each sub-unit.

On the following pages, you can read more about the Grade 1 Big Ideas as outlined by the California Mathematics Framework (Chapter 6, pages 45–46) as well as how Amplify Desmos Math California develops each Big Idea and connects it to other Big Ideas.
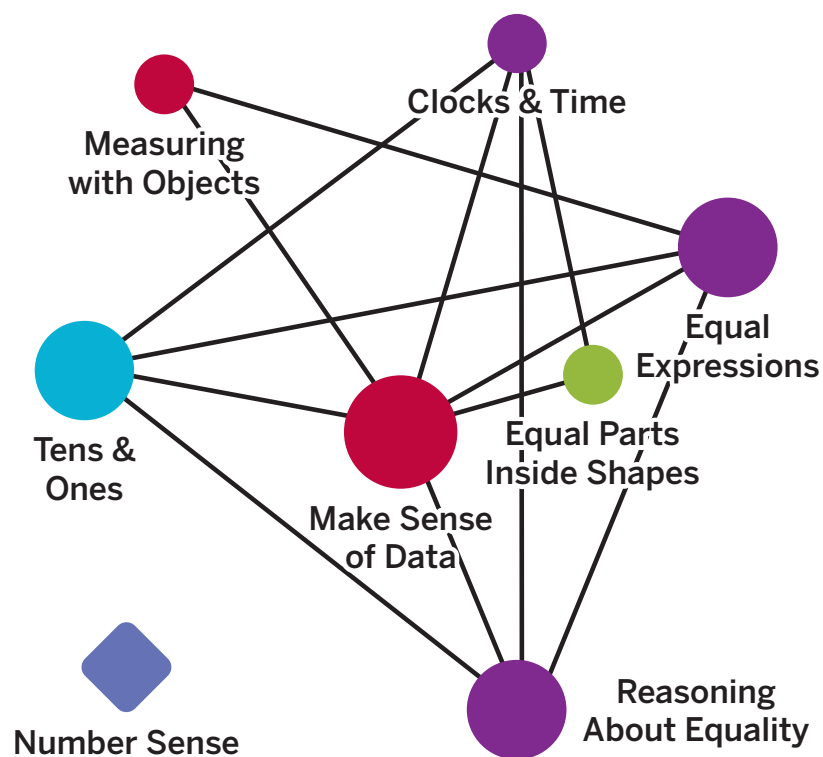
CC1 Make Sense of Data

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 more or less are in one category than in another.
🕐 1.MD.2, 1.MD.4, 1.MD.3, 1.MD.1, 1.NBT.1, 1.OA.1, 1.OA.2, 1.OA.3

Developing the Big Idea

Students develop this Big Idea across multiple units. In **Unit 1**, they use surveys to collect data and organize data using categories. Students consider ways to create data representations that will be clear to others and explain how the various features are helpful for interpreting the data. They move on to represent the sum of 2 categories in a tally chart by creating equal expressions and justifying whether statements that describe those 2 categories are true or false. Students wrap up the unit by asking, interpreting, and answering questions based on survey data. In **Unit 2**, they continue to interpret data to ask and answer questions, now recognizing that both addition and subtraction equations can be used to find a difference. In **Unit 5**, students further their interpretation of data as they add and subtract within 100 to answer questions about data. In **Unit 6**, they measure length and use the data to answer comparison questions using addition and subtraction. In **Unit 7**, students sort shapes into categories and then use flexible number strategies to answer questions about data based on clocks and time.

Spotlight on . . .

In Unit 1, Lesson 14, Activity 2, students connect the Big Ideas *Make Sense of Data* and *Equal Expressions*. They interpret a data representation with 3 categories and write an addition equation that represents a true statement about the sum of 2 of those categories.

Connecting to Other Big Ideas

CC1 Measuring With Objects Unit 6 (Lesson 10)

CC2 Clocks & Time Unit 7 (Lesson 14)

CC2 Equal Expressions Unit 1 (Lessons 5, 13 and 14), Unit 2 (Lessons 15 and 16), Unit 6 (Lessons 10 and 15)

CC2 Reasoning About Equality Unit 1 (Lesson 14), Unit 2 (Lesson 15), Unit 5 (Lesson 14), Unit 7 (Lesson 14)

CC3 Tens and Ones Unit 5 (Lesson 14), Unit 7 (Lesson 14)

CC4 Equal Parts Inside Shapes Unit 7 (Lesson 8)

Connecting to Number Sense

NS Flexibly Add and Subtract Unit 1 (Lessons 13 and 14), Unit 2 (Lessons 15 and 16), Unit 5 (Lesson 14), Unit 6 (Lessons 10 and 15)


CC1 Measuring With Objects

Express the length of an object by units of measurement e.g., the stapler is 5 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. *This Big Idea is also categorized under CC2: Exploring Changing Quantities.* 🕐 1.MD.1 1.MD.2, 1.OA.5

Developing the Big Idea

Students develop this Big Idea throughout **Unit 6**. They explore different methods of comparing object lengths, including direct and indirect comparison. Students develop measurement concepts by using non-standard units of length measure and by reasoning about the relationships between different lengths. They move on to express the length of an object by counting the units of measurement in groups of tens and ones. Students measure length and use the data to answer comparison questions using addition and subtraction.

Spotlight on . . .

In **Unit 6, Lesson 7, Activity 2**, students connect the Big Ideas *Measuring With Objects* and *Tens and Ones*. They use unit cubes to measure the length of a tape that represents the length of a Prairie Falcon wingspan. They count the unit cubes using any strategy, including counting by tens and ones.
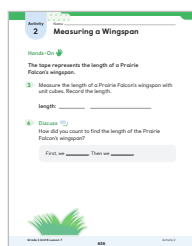
Connecting to Other Big Ideas

CC1 Make Sense of Data Unit 6 (Lesson 10)

CC2 Equal Expressions Unit 6 (Lesson 10)

CC2 Reasoning About Equality Unit 6 (Lesson 3)

CC3 Tens and Ones Unit 6 (Lessons 7–9)

Connecting to Number Sense

NS Flexibly Add and Subtract Unit 6 (Lesson 10)

Keeping the Big Ideas at the Center (continued)

CC2 Clocks & Time

Read and express time on digital and analog clocks using units of an hour or half hour.
🕐 1.MD.3, 1.NBT.2, 1.G.3

Developing the Big Idea

Students develop this Big Idea throughout **Unit 7**. They begin by reading digital and analog clocks by only looking at the hour hand to tell time to the hour and to the half hour. They then look at the moving minute hand and partition analog clocks into 2 equal halves to tell time to the half hour, using the phrase *half past*. They wrap up Unit 7 by reading and telling time using digital and analog clocks to the hour and half hour.

Spotlight on . . .

In **Unit 7, Lesson 15, Activity 1,** students connect the Big Ideas *Clocks & Time* and *Equal Parts Inside Shapes*. They partition analog clocks into 2 equal halves to build an understanding of telling time using the phrase *half past*.

Connecting to Other Big Ideas

CC1 Make Sense of Data Unit 7 (Lesson 14)

CC2 Reasoning About Equality Unit 7 (Lesson 14)

CC3 Tens and Ones Unit 7 (Lesson 14)

CC4 Equal Parts Inside Shapes Unit 7 (Lesson 15)


CC2 Equal Expressions

Understand addition and subtraction, using various models, such as connecting 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). 🕐 1.OA.6, 1.OA.7, 1.OA.2, 1.OA.1, 1.OA.8, 1.OA.5, 1.OA.4, 1.OA.3, 1.NBT.4

Developing the Big Idea

Students develop this Big Idea across multiple units. In **Unit 1**, they match addition story problems to equal expressions. Students build on this understanding in **Unit 2** to represent and solve *Put Together/Take Apart* story problems, justifying why addends can be added in any order and why they can be represented by addition and subtraction equations. They continue working toward this Big Idea as they add or subtract to make 2 groups equal and represent and solve *Compare, Difference unknown* story problems. Students recognize that both addition and subtraction equations can be used to find a difference. They wrap up Unit 2 as they make sense of, represent, and solve a variety of story problems using addition and subtraction. In **Unit 3**, students further their understanding of addition and subtraction by composing and decomposing numbers up to 10 and teen numbers, using these as strategies for solving subtraction problems. In **Unit 4**, they use flexible number strategies to add and subtract multiples of tens to and from two-digit numbers. Then in **Unit 5**, students flexibly add and subtract within 100, identifying when composing a ten is necessary. In **Unit 6**, they use flexible number strategies to solve problems involving length measures using addition and subtraction.

Spotlight on . . .

In **Unit 2, Lesson 16, Activity 1,** students connect the Big Ideas *Equal Expressions* and *Make Sense of Data*. They interpret a table of data with 3 categories to ask "how many more" and "how many fewer" questions about 2 of the categories. They use addition and subtraction to answer their questions and represent them with equations.
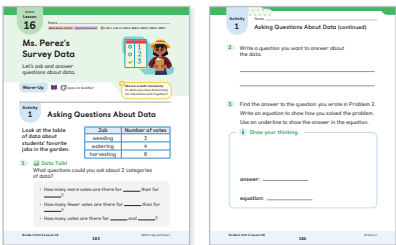
Connecting to Other Big Ideas

CC1 Make Sense of Data Unit 1 (Lessons 5, 13 and 14), Unit 2 (Lessons 15 and 16), Unit 6 (Lessons 10 and 15)

CC1 Measuring With Objects Unit 6 (Lesson 10)

CC2 Reasoning About Equality Unit 1 (Lessons 7–12, 14), Unit 2 (Lessons 7, 11, 15 and 19), Unit 3 (Lessons 1–6, 8–16, 18–20), Unit 4 (Lessons 5, 6, 12 and 13), Unit 5 (Lessons 1–13), Unit 6 (Lessons 11–14)

CC3 Tens and Ones Unit 1 (Lesson 6), Unit 3 (Lessons 6–9, 20), Unit 4 (Lessons 4–6, 12 and 13), Unit 5 (Lessons 1–13)

Connecting to Number Sense

NS Organize and Count Unit 3 (Lesson 6), Unit 4 (Lessons 4, 5, 12, 13)

NS Flexibly Add and Subtract Unit 1 (Lessons 6–12, 14), Unit 2 (Lessons 1-7, 11–20), Unit 3 (Lessons 2–4, 7–20), Unit 4 (Lessons 4–6, 12), Unit 5 (Lessons 1–13), Unit 6 (Lessons 10–15)

Reasoning About Equality

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). 🕐 1.OA.3, 1.OA.6, 1.OA.7, 1.NBT.2, 1.NBT.3, 1.NBT.4

Developing the Big Idea

Students develop this Big Idea across multiple units. In **Unit 1**, they use their developing number sense to create equal expressions, reasoning about equal amounts to justify whether statements that describe 2 categories are true or false. In **Unit 2**, students represent and solve *Put Together/Take Apart* story problems, justifying why addends can be added in any order and why they can be represented by addition and subtraction equations. They also reason about equality as they describe patterns in equations that have equal sums. Students build on this understanding to recognize that both addition and subtraction equations can be used to find a difference and justify why more than 1 equation can represent a story problem. Then in **Unit 3**, they use flexible number strategies to compose and decompose numbers up to 10, compose and decompose teen numbers, and reason about equal amounts in equations related to expressions of the form *10 + n*. In **Unit 4**, students use flexible number strategies to add and subtract multiples of tens to and from two-digit numbers and reason about equal amounts as they compare and order two-digit numbers. Then in **Unit 5**, they justify their reasoning about equal amounts as they flexibly add and subtract within 100, identifying when composing a ten is necessary. In **Unit 6**, students use flexible number strategies and reasoning about equal amounts to solve problems involving length measures using addition and subtraction. In **Unit 7**, they use flexible number strategies to answer questions about data based on clocks and time.

Spotlight on . . .

In **Unit 3, Lesson 5, Activity 1,** students connect the Big Ideas *Reasoning About Equality* and *Tens and Ones*. They represent teen numbers using 2 different ways, reasoning about how each representation shows equal amounts. They use place value reasoning about tens and ones to discuss how the representations are alike and different.
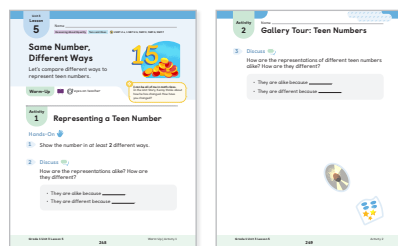
Connecting to Other Big Ideas

CC1 Make Sense of Data Unit 2 (Lesson 15), Unit 5 (Lesson 14), Unit 7 (Lesson 14)

CC1 Measuring With Objects Unit 6 (Lesson 3)

CC2 Clocks & Time Unit 7 (Lesson 14)

CC2 Equal Expressions Unit 1 (Lessons 7–12, 14), Unit 2 (Lessons 7, 11, 15 and 19), Unit 3 (Lessons 1–6, 8–16, 18–20), Unit 4 (Lessons 5, 6, 12 and 13), Unit 5 (Lessons 1–13), Unit 6 (Lessons 11–14)

CC3 Tens and Ones Unit 3 (Lessons 5, 6, 8, 9 and 20), Unit 4 (Lessons 5, 6, 12–22), Unit 5 (Lessons 1–14), Unit 7 (Lesson 14)

Connecting to Number Sense

NS Organize and Count Unit 3 (Lessons 5 and 6), Unit 4 (Lessons 5, 12, 13, 20 and 21)

NS Compare and Order on a Line Unit 4 (Lessons 14–19, 22)

NS Flexibly Add and Subtract Unit 1 (Lessons 7–12, 14), Unit 2 (Lessons 7, 11, 15 and 19), Unit 3 (Lessons 2–4, 7–16, 18–20), Unit 4 (Lessons 5, 6 and 12), Unit 5 (Lessons 1–14), Unit 6 (Lessons 11–14)

CC3
Tens and Ones

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.
🕐 1.NBT.4, 1.NBT.3, 1.NBT.1, 1.NBT.2, 1.NBT.6, 1.NBT.5

Developing the Big Idea

Students develop this Big Idea across multiple units. In **Unit 1**, they use their understanding of counting to solve addition story problems. They build on this understanding in **Unit 3** to think about teen numbers as a ten and some ones, composing and decomposing teen numbers to add and subtract some ones. Students wrap up **Unit 3** by choosing strategies for subtraction problems as they think about teen numbers being composed of a ten and some ones. In **Unit 4**, they begin to think about organizing collections of items by counting by tens. Students move on to represent two-digit numbers as groups of tens and some ones and reason about the relative magnitudes of numbers as they use place value understanding to compare and order two-digit numbers. Then in **Unit 5**, students add and subtract within 100, identifying when composing a ten is necessary. In **Unit 6**, they express the length of an object by units of measurement and count the units of measurement in groups of tens and ones. In **Unit 7**, they use flexible number strategies to answer questions about data based on clocks and time.

Spotlight on . . .

In **Unit 5, Lesson 14, Activity 2,** students connect the Big Ideas *Tens and Ones, Reasoning About Equality*, and *Make Sense of Data*. They interpret a set of data by answering questions, writing an addition or subtraction equation to represent the situation. They use place value understanding and groups of tens and ones to help them add and subtract.
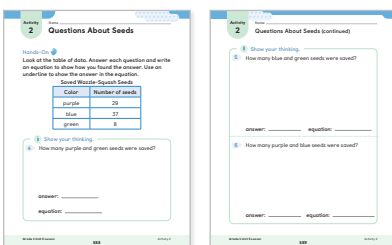
Connecting to Other Big Ideas

CC1 Make Sense of Data Unit 5 (Lesson 14), Unit 7 (Lesson 14)

CC1 Measuring With Objects Unit 6 (Lessons 7–9)

CC2 Clocks & Time Unit 7 (Lesson 14)

CC2 Equal Expressions Unit 1 (Lesson 6), Unit 3 (Lessons 6–9, 20), Unit 4 (Lessons 4–6, 12, 13), Unit 5 (Lessons 1–13)

CC2 Reasoning About Equality Unit 3 (Lessons 5, 6, 8, 9 and 20), Unit 4 (Lessons 5, 6, 12–22), Unit 5 (Lessons 1–14), Unit 7 (Lesson 14)

Connecting to Number Sense

NS Organize and Count Unit 3 (Lessons 5, 6), Unit 4 (Lessons 2–5, 7–11, 20, 21)

NS Compare and Order on a Line Unit 4 (Lessons 14–19, 22)

NS Flexibly Add and Subtract Unit 1 (Lesson 6), Unit 3 (Lessons 7–9, 20), Unit 4 (Lessons 4–6), Unit 5 (Lessons 1–14)

Keeping the Big Ideas at the Center (continued)

CC4 Equal Parts Inside Shapes

Compose two-dimensional shapes on a plane as well as in three-dimensional 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.

🕐 1.G.3, 1.G.2, 1.G.1, 1.MD.3

Developing the Big Idea

Students develop this Big Idea throughout **Unit 7.** They sort shapes into groups and categories and then move on to compose two-dimensional and three-dimensional shapes based on their attributes. Students partition circles and rectangles into halves and quarters and identify equal parts of shapes. They use their understanding of halves to understand and express time to the half hour.

Spotlight on . . .

In **Unit 7, Lesson 10, Activity 1,** students work toward the Big Idea *Equal Parts Inside Shapes*. Through the context of a food potluck, students partition squares, rectangles, and circles into equal parts of halves or fourths using a variety of strategies.
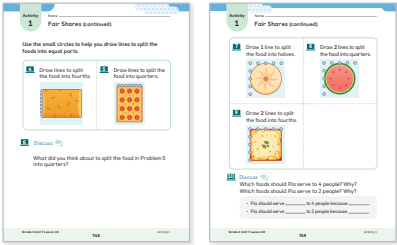
Connecting to Other Big Ideas

CC1 Make Sense of Data Unit 7 (Lesson 8)

CC2 Clocks & Time Unit 7 (Lesson 15)

Connecting to Number Sense

NS Organize and Count Unit 7 (Lesson 7)