



# Common Core Planning for Content & Practice

**Preparing Los Angeles Students for  
College and Career**





# Outcomes

- Plan a Common Core aligned problem-based lesson using John Van de Walle's Three-Phase Structure
  - Teachers will be expected to facilitate (at least) one problem-based lesson a week during the 2013-14 school year
- Identify strategies that meet the needs of our diverse learners: English learners (EL), Standard English learners (SEL), Students with Disabilities (SWD), and students identified as Gifted and Talented (GATE)
- Make connections between the Common Core Standards for Mathematical Practice and the enVisionMATH program





# Three-Phase Structure

**BEFORE**

**DURING**

**AFTER**

## Thinking Through a Lesson Protocol

The main purpose of the *Thinking Through a Lesson Protocol* is to prompt you in thinking deeply about a specific lesson that you will be teaching that is based on a cognitively challenging mathematical task.

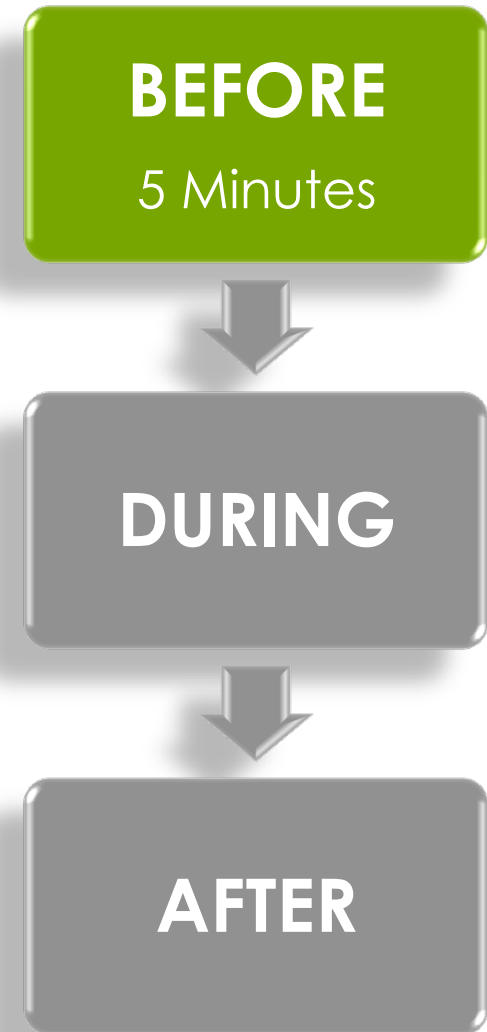
| SET-UP<br><i>Selecting and setting up a mathematical task</i>                                                                                                                                                        | EXPLORE<br><i>Supporting students' exploration of the task</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | SHARE, DISCUSS, AND AN<br><i>Sharing and discussing the task</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>or</p> <p>5</p> <p>for<br/>Orchestrating<br/>Productive<br/>Mathematics<br/>Discussions</p> <p>Margaret S. Smith<br/>Mary Kay Stein</p> <p>NCTM NATIONAL COUNCIL OF<br/>TEACHERS OF MATHEMATICS</p> <p>CORWIN</p> | <ul style="list-style-type: none"> <li>As students are working independently or in small groups:           <ul style="list-style-type: none"> <li>What questions will you ask to focus their thinking?</li> <li>What will you see or hear that lets you know how students are thinking about the mathematical ideas?</li> <li>What questions will you ask to assess students' understanding of key mathematical ideas, problem solving strategies, or the representations?</li> <li>What questions will you ask to advance students' understanding of the mathematical ideas?</li> <li>What questions will you ask to encourage students to share their thinking with others or to assess their understanding of their peer's ideas?</li> </ul> </li> <li>How will you ensure that students remain engaged in the task?           <ul style="list-style-type: none"> <li>What will you do if a student does not know how to begin to solve the task?</li> <li>What will you do if a student finishes the task almost immediately and becomes bored or disruptive?</li> <li>What will you do if students focus on non-mathematical aspects of the activity (e.g., spend most of their time making beautiful poster of their work)?</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>How will you orchestrate the class discussion so that you accomplish your mathematical goals? Specifically:           <ul style="list-style-type: none"> <li>Which solution paths do you want to have shared during the class discussion? In what order will the solutions be presented? Why?</li> <li>In what ways will the order in which solutions are presented help develop students' understanding of the mathematical ideas that are the focus of your lesson?</li> <li>What specific questions will you ask students will:               <ul style="list-style-type: none"> <li>make sense of the mathematical ideas you want them to learn?</li> <li>expand on, debate, and question solutions being shared?</li> <li>make connections between the mathematical strategies that are presented?</li> <li>look for patterns?</li> <li>begin to form generalizations?</li> </ul> </li> </ul> </li> <li>What will you see or hear that lets you know that students in the class understand the mathematical ideas that you intended for them to learn?</li> <li>What will you do tomorrow that will build on this lesson?</li> </ul> |

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# Three-Phase Structure

- **Activate prior knowledge**
- **Review vocabulary**
- **Pose the problem**
- **Ensure that students understand the task**





# Three-Phase Structure

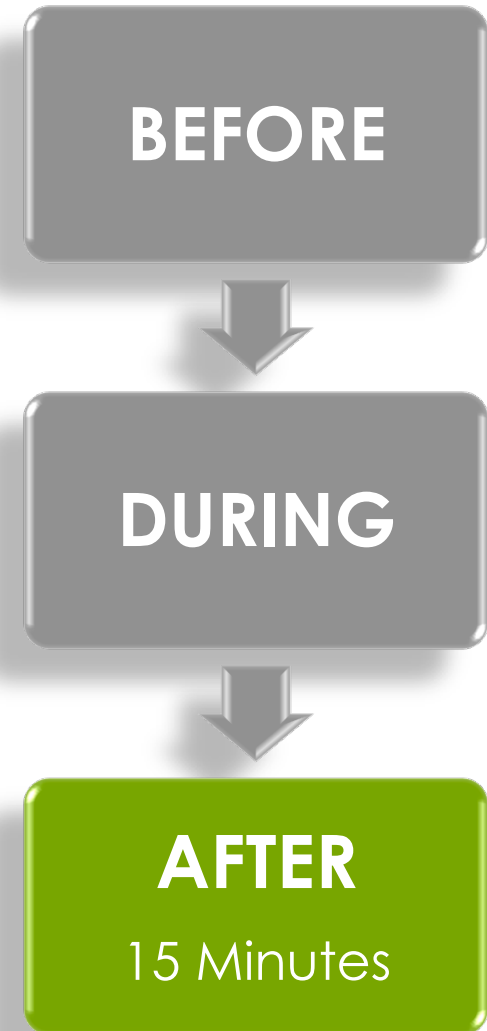
- Let go!
- Circulate as students independently work in pairs or groups
- Ask questions to focus, assess, and advance student thinking
- Decide which solutions will be selected for sharing





# Three-Phase Structure

- Facilitate the sharing of two or more solution paths
- Order selected solutions to help generate a mathematically productive discussion
- Facilitate a student-centered discussion so that students:
  - Develop an understanding of the concept
  - Add on to and question solutions shared
  - Make connections between the solutions presented
  - Find generalized characteristics within the problem
- Summarize the main idea and identify next steps, future problems





# Anticipating

As a grade level team,  
select one task for  
planning purposes.

## 2 Develop the Concept: Interactive

10–15 min

### Interactive Learning

**Overview** Students will write division as a fraction.

**Essential Question** How can you share items?

**California Content Standard NS 1.5** Explain different interpretations of fractions, for example, parts of a whole, parts of a set, and division of whole numbers by whole numbers; explain equivalence of fractions.

**Materials** Scissors, same-colored paper strips

#### Engage

**Set the Purpose** Students will write a fraction to name part of a region and a fraction.

**Connect** Name an item you shared with friends by dividing it into parts. [a pizza, an orange, a container of modeling clay]

#### Task

**Pose the Problem** Four friends want to share 3 submarine sandwiches. How much of a sandwich will each friend get? Use the paper strips. Work in pairs to model this problem. Write an explanation of how you solved the problem as well as the solution. Give students time to work. Then have them share their work and solutions with the class.

**Whole-Class Discussion** [3 ÷ 4] Write the problem on the board. Will each friend be able to get a whole sub? How do you know? [No, each person will get part of a sub because there are more people than subs.] Why did you divide each sub into 4 parts? [Because there are 4 people.] Divide 3 strips into fourths and label each part  $\frac{1}{4}$ . Cut the strips into parts. How many parts are there in all?

I divided each strip into 4 equal parts. I colored the parts of each sub a different color for each person. Each person gets  $\frac{1}{4}$  of each sub.

## Pose the Problem

*Four friends want to share 3 submarine sandwiches. How much of a sandwich will each friend get? Use the paper strips. Work in pairs to model this problem. Write an explanation of how you solved the problem as well as the solution.* Give students time to work. Then have them share their work and solutions with the class.



# Anticipating

- Evaluate the rigor of the task using the Task Analysis Guide.
- Modify the task as needed.
- Record the agreed upon task on the planning sheet.

Task Analysis Guide

| LOWER-LEVEL COGNITIVE DEMANDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | HIGHER-LEVEL COGNITIVE DEMANDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MEMORIZATION TASKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PROCEDURES WITHOUT CONNECTIONS TASKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | PROCEDURES WITH CONNECTIONS TASKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | DOING MATHEMATICS TASKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p>□ Involves either producing or reproducing previously learned facts, rules, formulae, or definitions OR identifying facts, rules, formulae, or definitions to solve a problem.</p> <p>□ Involved using a procedure because a procedure does not exist or because the time frame in which the task is being completed is too short to use a procedure.</p> <p>□ Are not ambiguous – such tasks involve exact reproduction of previously seen material and what is to be reproduced is clearly and directly stated.</p> <p>□ Have no connection to the concepts or meaning that underlie the facts, rules, formulae, or definitions being learned or reproduced.</p> | <p>□ Are algorithmic. Use of the procedure is either specifically called for or its use is evident based on prior instruction, experience, or placement of the task.</p> <p>□ Require limited cognitive demand for successful completion. There is little ambiguity about what needs to be done and how to do it.</p> <p>□ Have no connection to the concepts or meaning that underlie the procedure being used.</p> <p>□ Are focused on producing correct answers rather than developing mathematical understanding.</p> <p>□ Require no explanations, or explanations that focus solely on describing the procedure that was used.</p> | <p>□ Focus students' attention on the use of procedures for the purpose of developing deeper levels of understanding of mathematical concepts and ideas.</p> <p>✗ Suggest pathways to follow (explicitly or implicitly) that are broad general procedures that have close connections to underlying conceptual ideas as opposed to narrow algorithms that are opaque with respect to underlying concepts.</p> <p>□ Usually are represented in multiple ways (e.g., visual diagrams, manipulatives, symbols, problem situations). Making connections among multiple representations helps to develop meaning.</p> <p>□ Require some degree of cognitive effort. Although general procedures may be</p> | <p>✗ Requires complex and non-algorithmic thinking (i.e., there is not a predictable, well-rehearsed approach or pathway explicitly suggested by the task, task instructions, or a worked-out example).</p> <p>✗ Requires students to explore and to understand the nature of mathematical concepts, processes, or relationships.</p> <p>✗ Demands self-monitoring or self-regulation of one's own cognitive processes.</p> <p>✗ Requires students to access relevant knowledge and experiences and make appropriate use of them in working through the task.</p> <p>✗ Requires students to analyze the task and actively examine task constraints that may limit possible solution strategies and solutions.</p> |

## Pose the Problem

*Four friends want to share 3 submarine sandwiches. How much of a sandwich will each friend get? ~~Use the paper strips.~~ Work in pairs to model this problem. Write an explanation of how you solved the problem as well as the solution.* Give students time to work. Then have them share their work and solutions with the class.



Think  Pair  Share 

*There is no decision that teachers make that has a greater impact on students' opportunities to learn and on their perceptions about what mathematics is than the selection or creation of the tasks with which the teacher engages students in studying mathematics.*

- Lappan & Briars, 1995





# Anticipating

- Review the math goals and suggestions for activating prior knowledge.
- What might you add to meet the needs of our diverse learners (EL, SEL, SWD, At-Risk, GATE)?
- Record ideas on the Interactive Learning handout



## 2 Develop the Concept: Interactive

 10-15 min

### Interactive Learning

**Overview** Students will write division as a fraction.

**Essential Question** How can you share items?

**California Content Standard NS 1.5** Explain different interpretations of fractions, for example, parts of a set, and division of whole numbers by whole numbers; explain equivalence of fractions.

**Materials** Scissors, same-size paper strips (5 per group)

**Engage** **Set the Purpose** *You have already learned to write a fraction to name part of a region or a set. Today you will learn to write a division problem as a fraction.*

**Connect** *Name an item you have shared with friends by dividing it into parts. [a pizza, an orange, a container of modeling clay]*

**Math Goals**

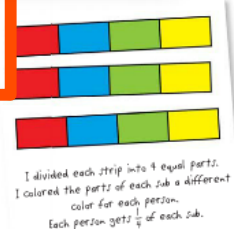
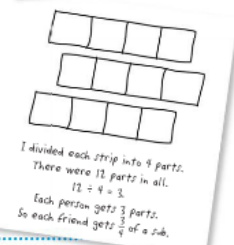
**Pose the Problem** *Four friends want to share 3 submarine sandwiches. How much of a sandwich will each friend get? Use the paper strips. Work in pairs to model the problem. Write an explanation of how you solved the problem as well as the division problem. Give students time to work. Then have them share their solutions with the class.*

**Whole-Class** *You need to divide to find out how much each friend will get? [No, each person will get part of a sub more than subs.] Why did you divide each sub into 4 people? Divide 3 strips into fourths and into parts. How many parts are there in all? How many parts can you divide the parts. How many fourths are in 3 after 3 ÷ 4. We have used a fraction to solve the problem. What part of the division problem? [the divisor] How much of a sub will each person get? [1/4]*

**Interaction** *Partner. Divide to find what part of a banana each friend will get. Then use paper strips to model the problem and check your solution. [3/4]*

**Extend** Write on the board:  
 $\square \div 10 = \frac{9}{10}$  and  $5 \div \square = \frac{5}{8}$   
 Find the missing numbers. [9; 8]

**eTools** Fractions  
[www.pearsonsuccessnet.com](http://www.pearsonsuccessnet.com)



# Anticipating

## PROBLEM BASED INTERACTIVE LEARNING

### STANDARD/S:

NS 1.5 – Explain different representations of fractions, equivalent fractions and division of whole numbers by whole numbers.

### TASK

Four friends want to share 3 submarine sandwiches. How much of a sandwich will each friend get?

Model the problem and write an explanation of how you solved the problem.

### POSSIBLE SOLUTIONS

Solve the problem as many ways as possible on the planning sheet.

## 2 Develop the Concept: Interactive



### Interactive Learning

**Overview** Students will write division as a fraction.



**Essential Question** How can you share items?

**California Content Standard NS 1.5**

Explain different interpretations of fractions, for example, parts of a whole, parts of a set, and division of whole numbers by whole numbers; explain equivalence of fractions.

Materials: scissors, same-size paper strips (5 per group)

**Purpose** You have already learned to write a fraction to name part of a region or a set. Today you will learn to write a division problem as a fraction.

**Connect** Name an item you have shared with friends by dividing it into 4 parts. [a pizza, an orange, a container of modeling clay]

Four friends want to share 3 submarine sandwiches. How much of a sandwich will each friend get? Use the paper strips. Work in pairs to model the problem. Write an explanation of how you solved the problem and the solution. Give students time to work. Then have them share their work and solutions with the class.

What do you need to divide to find out how much each friend will get? [3] Write the problem on the board. Will each friend be able to get a whole sub? How do you know? [No, each person will get part of a sub because there are more people than subs.] Why did you divide each sub into 4 parts? [Because there are 4 people.] Divide 3 strips into four equal parts. How many parts does each person get? [3] How many parts are there in all? [12] Cut the strips into parts. How many parts are there in all? [12] How many parts does each person get? [3] How many parts are there in each of 4 groups? [3] Divide the parts. How many fourths are there in each group? [3 fourths] Write  $\frac{3}{4}$  after  $3 \div 4$ . We have used a fraction to show division. The numerator is what part? [the divisor] How much of a sub each friend get? [ $\frac{3}{4}$  of a sub] **LSB1 EL1.0**

Write on the board: Five friends will share 2 bananas. Work with your partner. Divide to find what part of a banana each friend will get. Then use paper strips to model the problem and check your solution. [2]

Write on the board:  
 $10 \div 5 = \frac{2}{5}$  and  $5 \div 10 = \frac{1}{2}$   
Find the missing numbers. [9; 8]

**eTools** Fractions  
www.pearsonsuccessnet.com

Possible Solution Paths

I divided each strip into 4 equal parts. I colored the parts of each sub a different color for each person. Each person gets  $\frac{3}{4}$  of each sub.

I divided each strip into 4 parts. There were 12 parts in all.  $12 \div 4 = 3$ . Each person gets 3 parts. So each friend gets  $\frac{3}{4}$  of a sub.



# Anticipating

## Grade Level Discussion:

- What misconceptions might students have?
- What errors might students make?
- Which three student solution paths might be shared during the After phase? Why?
  - Number them sequentially and record a rationale.





# College & Career Ready

Master Plan

Common Core

Teaching & Learning Framework

**2 Develop the Concept: Interactive**

**Interactive Learning**

10-15 min

**Overview** Students will...

**Essential Question** How can you...

**California Content Standard NS 1.5** Explain different parts of a fraction and its equivalence.

**Materials** Scissors,...

**Engage** Set the Problem: part of a fraction. Connect into parts.

**Pose the Problem** Four friends sandwich this problem as the whole work and...

**Whole-Class Discussion** What do you [3 ÷ 4] whole sub because the into 4 part label each [12] How put in each each group to show the dividend? will each friend...

**Small-Group Interaction** Write on the partner. Do use paper.

**Extend** Write on the ÷ 10 Find the m...

**Revised Lesson Design Template**

Talent Management Division  
Supporting All Employees  
333 South Broadway Avenue, 14<sup>th</sup> Floor  
Los Angeles, CA 90027  
Telephone: (213)241-3444 - Fax: (213)241-8920

| Class Profile                                                                                                                                                                                                                                      |                                   |                                                   |                                    |                                   |                                                           |                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------|------------------------------------|-----------------------------------|-----------------------------------------------------------|-------------------------------------|
| Teacher Name:<br>Click here to enter text.                                                                                                                                                                                                         |                                   | Subject/Grade Level:<br>Click here to enter text. |                                    |                                   | Lesson Date/Time:<br>Click here to enter text.            |                                     |
| Class Composition (Record in numbers)                                                                                                                                                                                                              |                                   |                                                   |                                    |                                   |                                                           |                                     |
| Male:<br>Click here to enter text.                                                                                                                                                                                                                 | FBB:<br>Click here to enter text. | Basic:<br>Click here to enter text.               | Adv:<br>Click here to enter text.  | SWD:<br>Click here to enter text. | Language Proficiency Levels:<br>Click here to enter text. |                                     |
| Female:<br>Click here to enter text.                                                                                                                                                                                                               | BB:<br>Click here to enter text.  | Prof:<br>Click here to enter text.                | GATE:<br>Click here to enter text. | ELs:<br>Click here to enter text. | SELs:<br>Click here to enter text.                        | Other:<br>Click here to enter text. |
| Instructional Goals and Objectives                                                                                                                                                                                                                 |                                   |                                                   |                                    |                                   |                                                           |                                     |
| Standards (1a EI.1): What standard(s) or portion of a standard does your lesson address?<br>Click here to enter text.                                                                                                                              |                                   |                                                   |                                    |                                   |                                                           |                                     |
| Learning Outcomes (1a EI. 1; 1c EI. 2): What are the conceptual understandings, content, and knowledge that you want students to learn? What do you want students to understand to do in relation to the standard(s)?<br>Click here to enter text. |                                   |                                                   |                                    |                                   |                                                           |                                     |
| Assessment (1e EI. 1): What formal or informal assessment at the close of the lesson do you want students to have met the lesson objectives (e.g.: student work, exit ticket)?<br>Click here to enter text.                                        |                                   |                                                   |                                    |                                   |                                                           |                                     |
| Language Objective (1b EI. 1; 1c EI. 2): What language forms and functions do you want students to use for English Learners and Standard English Learners?<br>Click here to enter text.                                                            |                                   |                                                   |                                    |                                   |                                                           |                                     |
| Academic Language taught or reviewed (1a EI.1; 1c EI. 1; 1c EI. 2): What academic language do you want students to use?<br>Click here to enter text.                                                                                               |                                   |                                                   |                                    |                                   |                                                           |                                     |

## Lesson Design Template

- Instructional Goals and Objectives
- Prior Knowledge
- Additional Support for Specific Groups of Learners



Think 🗨️ Pair ✌️ Share 🗨️

**“Pedagogy trumps curriculum. Or more precisely, pedagogy *is* curriculum, because what matters is how things are taught, rather than what is taught.”** (Wilian, 2011)

- *Common Core Mathematics in a PLC at Work* – Larson, Fennell, Lott Adams, Dixon, McCord Kobett, Wray





# The Standards for Mathematical Practice

## Overarching Habits of Mind

**MP1** Make sense of problems and persevere in solving them.★

**MP6** Attend to precision.

### Reasoning & Explaining

**MP2** Reason abstractly and quantitatively.

**MP3** Construct viable arguments and critique the reasoning of others.★

### Modeling & Using Tools

**MP4** Model with mathematics.★

**MP5** Use appropriate tools strategically.

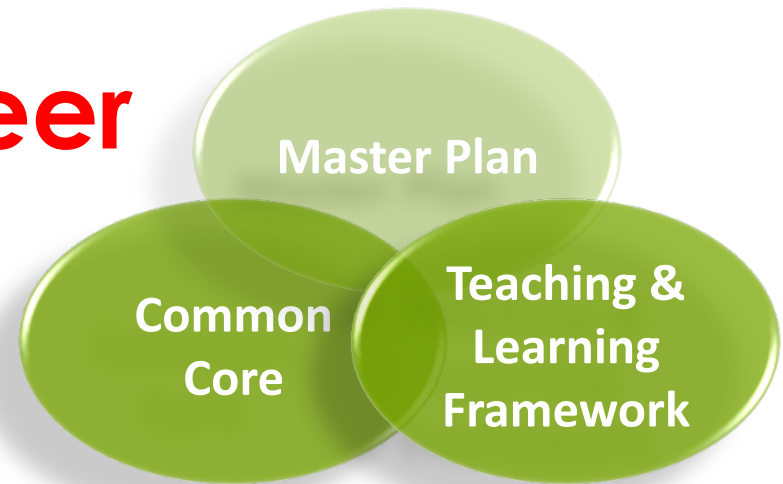
### Seeing Structure & Generalizing

**MP7** Look for and make use of structure.

**MP8** Look for and express regularity in repeated reasoning.



# College & Career Ready



| LAUSD TEACHING AND LEARNING FRAMEWORK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>STANDARD 1: PLANNING AND PREPARATION</b><br><b>a. Demonstrating Knowledge of Content and Pedagogy</b><br>1. Knowledge of Content and the Structure of the Discipline<br>2. Knowledge of Content-Related Pedagogy<br><b>b. Demonstrating Knowledge of Students</b><br>1. Awareness of Students' Skills, Knowledge, and Language Proficiency<br>2. Knowledge of How Children, Adolescents, and Adults Learn<br>3. Knowledge of Students' Special Needs<br>4. Knowledge of Students' Interests and Cultural Heritage<br><b>c. Establishing Instructional Outcomes</b><br>1. Value, Sequence, Alignment, and Clarity<br>2. Suitability for Diverse Learners<br><b>d. Designing Coherent Instruction</b><br>1. <i>Standards-Based Learning Activities</i><br>2. Instructional Materials, Technology, and Resources<br>3. <i>Purposeful Instructional Groups</i><br>4. <i>Lesson and Unit Structure</i><br><b>e. Designing Student Assessment</b><br>1. <i>Aligns with Instructional Outcomes</i><br>2. <i>Criteria and Standards</i><br>3. <i>Design of Formative Assessments</i><br>4. <i>Analysis and Use of Assessment Data for Planning</i> | <b>STANDARD 2: CLASSROOM ENVIRONMENT</b><br><b>a. Creating an Environment of Respect and Rapport</b><br>1. <i>Teacher Interaction with Students</i><br>2. Student Interactions with One Another<br>3. <i>Classroom Climate</i><br><b>b. Establishing a Culture for Learning</b><br>1. Importance of the Content<br>2. <i>Expectations for Learning and Achievement</i><br>3. Student Ownership of their Work<br>4. Physical Environment<br><b>c. Managing Classroom Procedures</b><br>1. <i>Management of Routines, Procedures, and Transitions</i><br>2. Management of Materials and Supplies<br>3. Performance of Non-Instructional Duties<br>4. Management of Parent Leaders, other Volunteers and Paraprofessionals<br><b>d. Managing Student Behavior</b><br>1. Expectations for Behavior<br>2. <i>Monitoring and Responding to Student Behavior</i>                                                                                                                                                                   |
| <b>STANDARD 5: PROFESSIONAL GROWTH</b><br><b>a. Reflecting on Practice</b><br>1. Accurate Reflection<br>2. <i>Use of Reflection to Inform Future Instruction</i><br>3. Selection of Professional Development Based on Reflection and Data<br>4. Implementation of New Learning from Professional Development<br><b>b. Participating in a Professional Community</b><br>1. Collaboration with Colleagues<br>2. Promotes a Culture of Professional Inquiry and Collaboration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>STANDARD 3: DELIVERY OF INSTRUCTION</b><br><b>a. Communicating with Students</b><br>1. <i>Communicating the Purpose of the Lesson</i><br>2. Directions and Procedures<br>3. Delivery of Content<br>4. Use of Academic Language<br><b>b. Using Questioning and Discussion Techniques</b><br>1. <i>Quality and Purpose of Questions</i><br>2. <i>Discussion Techniques and Structures</i><br><b>c. Structures to Engage Students</b><br>1. <i>Standards-Based Projects, Activities, and Tasks</i><br>2. <i>Purposeful and Productive Instruction</i><br>3. Use of Available Instructional Materials and Resources<br>4. Structure and Pacing<br><b>d. Using Assessment in Instruction to Advance Student Learning</b><br>1. <i>Assessment Criteria</i><br>2. Monitoring of Student Learning<br>3. <i>Feedback to Students</i><br>4. Student Self-Assessment and Monitoring of Progress<br><b>e. Demonstrating Flexibility and Responsiveness</b><br>1. <i>Responds and Adjusts to Meet Student Needs</i><br>2. Persistence |
| <b>STANDARD 4: ADDITIONAL PROFESSIONAL RESPONSIBILITIES</b><br><b>a. Maintaining Accurate Records</b><br>1. Tracks Progress Towards Identified Learning Outcomes<br>2. Tracks Completion of Student Assignments in Support of Student Learning<br>3. Manages Non-instructional Records<br>4. Submits Records on Time<br><b>b. Communicating with Families</b><br>1. Information About the Instructional Program<br>2. Information About Individual Students<br>3. Engagement of Families in the Instructional Program<br><b>c. Demonstrating Professionalism</b><br>1. Ethical Conduct and Compliance with School, District, State, and Federal Regulations<br>2. Advocacy/Intervention for Students<br>3. Decision-Making                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## Standard 3: Delivery of Instruction

### b. Using Questioning and Discussion Techniques

#### 1. Quality and Purpose of Questions

#### 2. Discussion Techniques and Student Participation



# Questioning

- Record MP3 aligned questions you will ask during each of the three phases.
- Effective questions often begin with **How**, **What**, & **Why**.

*A question not asked is a door not opened.*

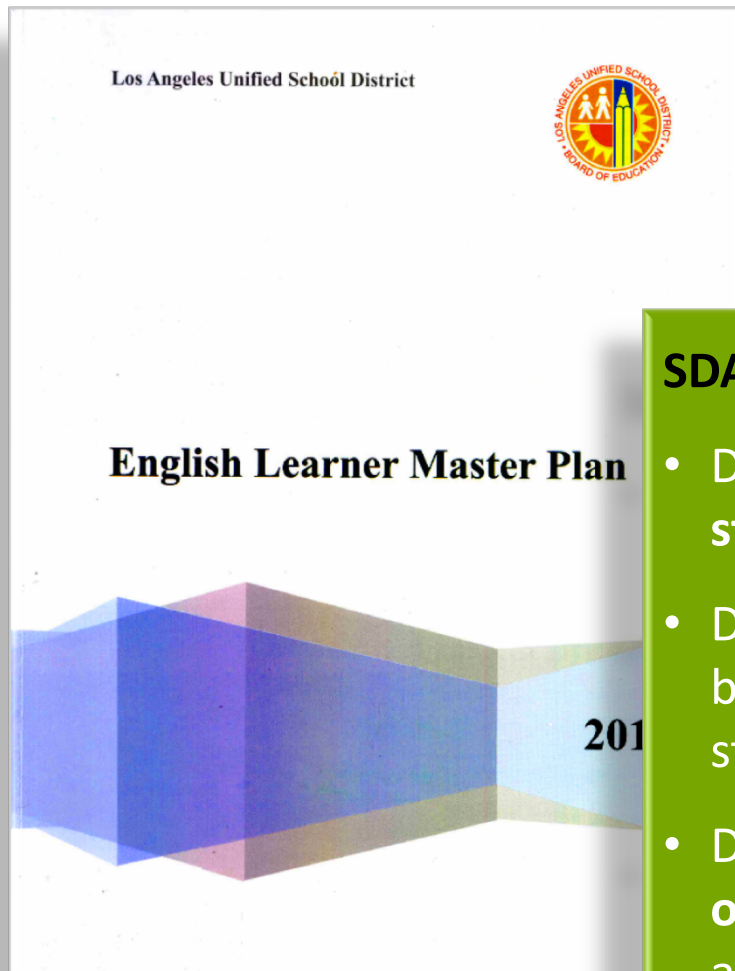
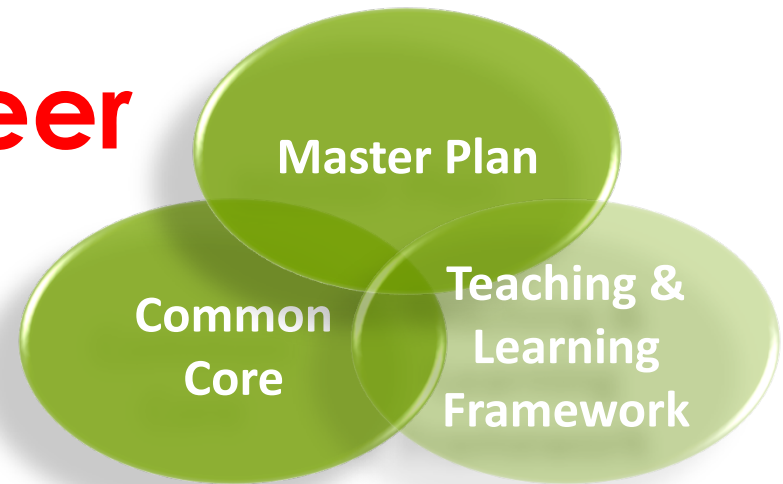
- Marilee Goldberg, *The Art of the Question*

## THE THREE-PHASE STRUCTURE

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                        |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BEFORE (5 minutes)</b>  | <ul style="list-style-type: none"> <li>• Activate prior knowledge</li> <li>• Review vocabulary</li> <li>• Pose the problem</li> <li>• Ensure that students understand the task</li> </ul>                                                                                                                                                                                                                                                                                                                                                       | Open-Ended Questions:<br><i>What are we trying to find?</i><br><i>What do we know?</i>                                                                                                 |
| <b>DURING (20 MINUTES)</b> | <ul style="list-style-type: none"> <li>• Let go!</li> <li>• Circulate as students independently work in pairs or groups</li> <li>• Ask questions to focus, assess, and advance student thinking</li> <li>• Decide which solutions will be selected for sharing</li> </ul>                                                                                                                                                                                                                                                                       | Open-Ended Questions:<br><i>What do you think about what Javier said?</i><br><i>How would you prove that?</i><br><i>How did you reach that conclusion?</i><br><i>Why is that true?</i> |
| <b>AFTER (15 minutes)</b>  | <ul style="list-style-type: none"> <li>• Facilitate the sharing of two or more solution paths</li> <li>• Order selected solutions to help generate a mathematically productive discussion</li> <li>• Facilitate a student-centered discussion so that students: Develop understanding of the concept; Add on to and question the solutions shared; Make connections between the solutions presented; Find generalized characteristics within the problem</li> <li>• Summarize the main idea and identify next steps, future problems</li> </ul> | Open-Ended Questions:<br><i>Who can restate how ____ solved the problem?</i><br><i>What is the same about the solutions shared? What is different?</i>                                 |



# College & Career Ready



## SDAIE Interactions

- Do I provide many different **opportunities for students to talk** about the lesson concepts?
- Do I provide many **opportunities for questioning** between students and teacher and among students?
- Do I plan real-life (authentic) activities that offer **opportunities for listening, speaking, reading, and writing?**



# Grade Level Charting

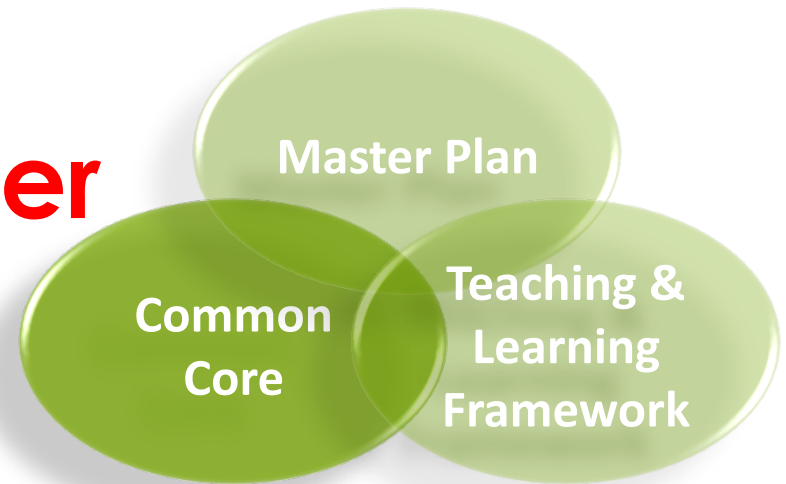
**Create a poster that demonstrates your problem-based learning, including:**

- **The task**
- **Three possible solution paths**
- **A key question for each phase**





# College & Career Ready



## Anchor Standards for ELA and Content Literacy

Reading 1: Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual **evidence** when writing or speaking to **support conclusions** drawn from the text.

Speaking and Listening 1: Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, **building on others' ideas** and **expressing their own clearly and persuasively**.



# Vertical Articulation

- Circulate the room with your school team.
- Record new ideas as peers share their posters.
- When you arrive at your grade level poster, present the work to your school team.

2 Develop the Concept: Interactive

10–15 min

Interactive Learning

Overview

Students will write division as a fraction.

Essential Question

How can you share items?

California Content Standard NS 1.5

Explain different interpretations of fractions, for example, parts of a whole, parts of a set, and division of whole numbers by whole numbers; explain equivalence of fractions.

Materials

Scissors, same-size paper strips (5 per group)

Engage

Set the Purpose

You have already learned to write a fraction to name part of a region or a set. Today you will learn to write a division problem as a fraction.

Connect

Name an item you have shared with friends by dividing it into equal parts.

Problem Based Interactive Learning

STANDARD/S:

TASK

POSSIBLE EFFECTIVE QUESTIONS

Mathematical Practice Questions

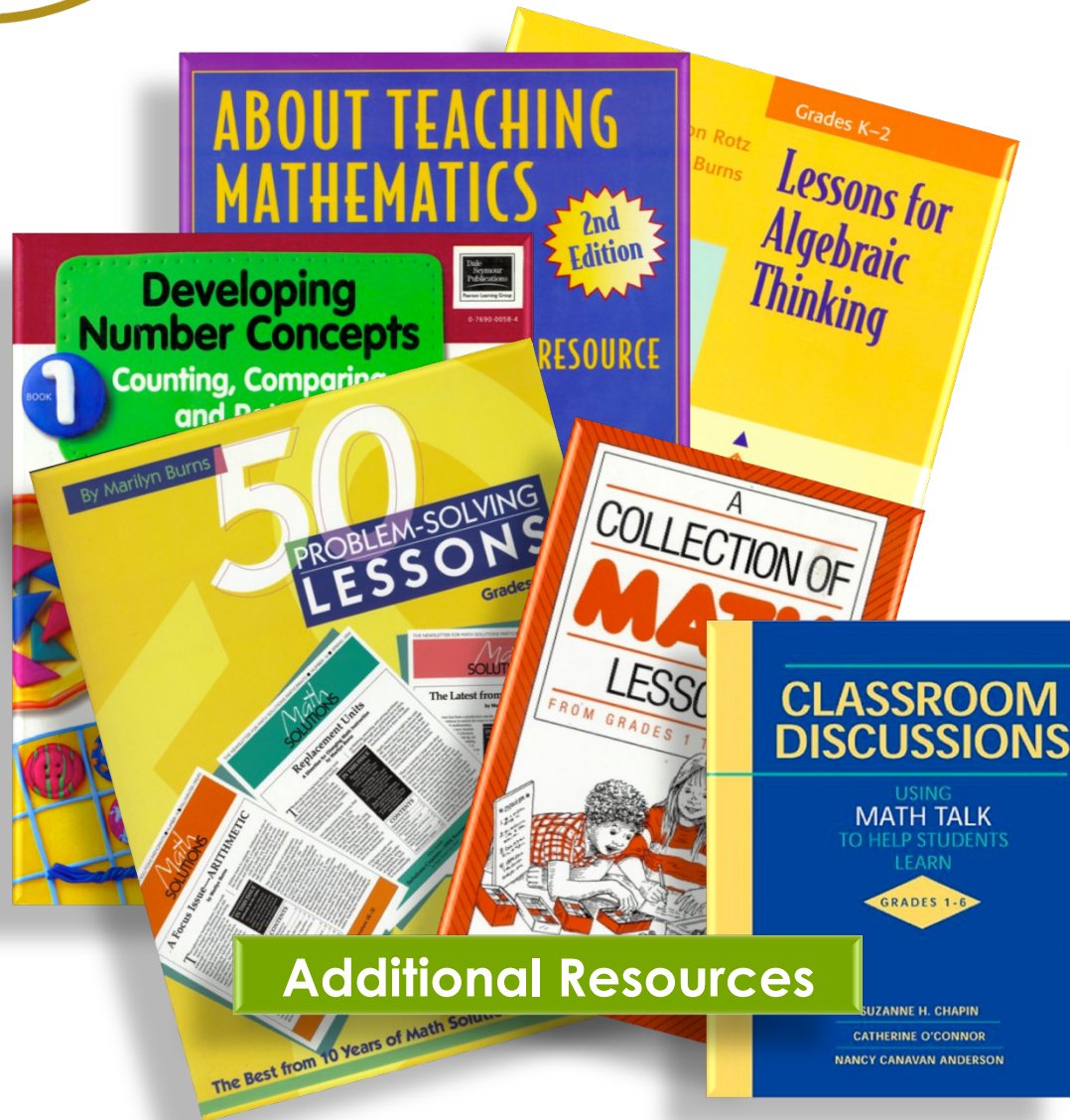
Create open-ended questions that can be used to encourage students to develop and apply each component of the standard.

The Three-Phase Structure

|                     |                                                                                                                                                                                                                                                                   |                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| BEFORE (5 minutes)  | <ul style="list-style-type: none"> <li>Activate prior knowledge</li> <li>Review vocabulary</li> <li>Pose the problem</li> <li>Ensure that students understand the task</li> </ul>                                                                                 | Open-Ended Questions: |
| DURING (20 MINUTES) | <ul style="list-style-type: none"> <li>Let go!</li> <li>Circulate as students independently work in pairs or groups</li> <li>Ask questions to focus, assess, and advance student thinking</li> <li>Decide which solutions will be selected for sharing</li> </ul> | Open-Ended Questions: |
| AFTER (5 minutes)   | Facilitate the sharing of two or three solutions                                                                                                                                                                                                                  | Open-Ended Questions: |



# Resources



Additional Resources



Literature Connections



enVisionMATH



# Thank You

**“Your goal will be to develop in students both conceptual understanding and procedural fluency of the CCSS content through the collaborative selection of high-cognitive-demand mathematical tasks with a focus on engagement with the Standards for Mathematical Practice”**

*Common Core Mathematics in a PLC at Work*

– Larson, Fennell, Lott Adams, Dixon, McCord Kobett, Wray

