

A Framework for Effective Teaching: Integrate Common Core Math Practices

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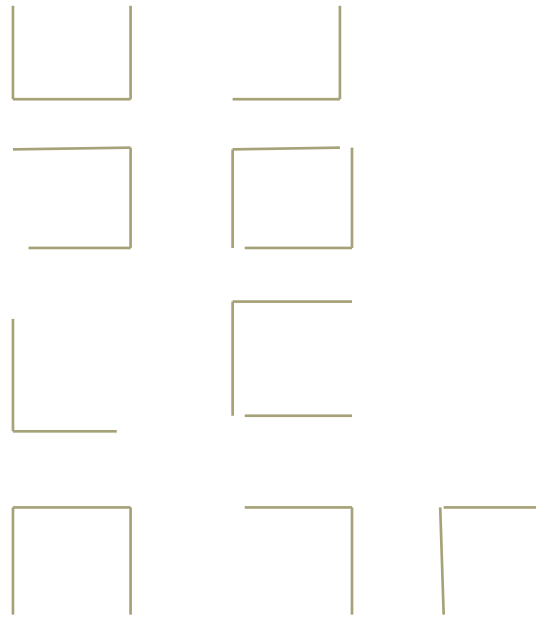
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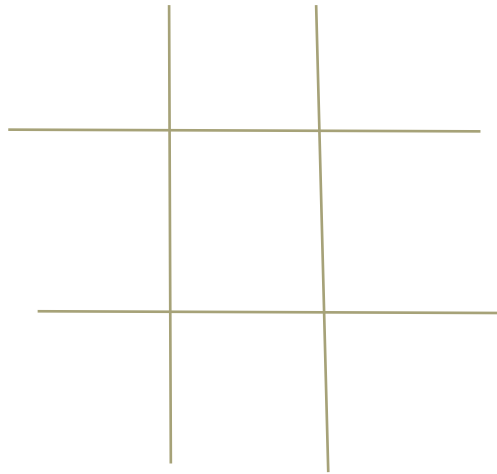
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- Get Ready for the Test!

You got 45 sec to memorize this!



Memorize this instead!



*The ultimate goal of teaching is
to support student **LEARNING!***

What is learning?

How do you know that learning is taking place?



According to National Research Council learning

- When students learn concepts with UNDERSTANDING, that knowledge becomes a TOOL to solve problems in novel situations.
- Learning is an ACTIVE process!
- New knowledge builds on students' pre existing knowledge- need to pay attention to students' prior conceptions and understandings.
- Making meaningful connections and seeing patterns is an important part of developing expertise.
- National Research Council. *How People Learn: Brain, Mind, Experience, and School: Expanded Edition*. Washington, DC: The National Academies Press, 2000

Three things to keep in mind as you teach:

- What do I want my students to learn?
- What are they learning?
- Am I being effective?

Improving teaching to support student learning:

- *Involves thinking about the process of planning and teaching including setting up the classroom environment and facilitating discussions.*



ACTIVE LEARNING VS. PASSIVE LEARNING

- <http://www.timssvideo.com/97>
- Whole Class discussion PDToolkit
 - Video Clip 1.4 (Also see 1.1 student interview)
- <http://pdtoolkit.pearson.com/>



Framework for Supporting Learning

- Setting up the physical space
- Classroom Routines
- Lesson Planning
- Teacher questioning (To start and facilitate discussion)

source) Lamberg,
(2012), Whole
Class Discussions:
Improving in-depth
Mathematical
Thinking and
learning

Lamberg (2012) Framework from Whole Class Mathematics discussion book.

- Can download copy of framework from my blog and math project website.
- These websites contain additional resources for teaching and understanding the Common Core standard:
- <http://mathdiscussions.wordpress.com/whole-class-discussion-framework-checklist/>
- <http://nevadamathproject.com/nevada-mathematics-project/resources/>
- This Framework allows you to see the “big picture” of teaching and how the parts such as whole class discussion fits in. Facilitating discussions that support learning involves having all these pieces work together.

	Not met	Work in Progress	Working Great	To do list	Tools from Whole Class Discussion book
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Setting up the Classroom					(Chapter 2) *P.36 Checklist
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Setting up Physical Space



Cultivating Classroom Environment/Routines	Not Met	Work in Progress	Working Great	Note: Routines for (Communicating/Listening Takes place during whole class discussion. These routines take time to develop.)	(Chapter 3) *P.60 Strategies for Your Classroom, Ideas for Developing classroom Routines
Routines for Preparing for Discussion					Standards of Mathematical Practice 1,4,5,7,8
Routines for Communicating					Standards of Mathematical Practice 2,3
Routines for Listening/Reflecting					Standards of Mathematical Practice 1

What does a discussion look like in your class?

- What are your classroom routines?
- How do you expect students to participate?
- What is your role as the instructor?

Three Levels of Planning

- The **First Level** of planning involves identifying long term and short term goals and figuring out how they connect.
- The **Second Level** of planning involves planning the actual lesson (selecting tasks) prior to teaching the lesson.
- The **Third Level** of planning takes place during the lesson based on student reasoning and sense making during the lesson.

(source) Lamberg, (2012), Whole Class Discussions: Improving in-depth Mathematical Thinking and learning

<p>Lesson Planning</p>				<p>Note: Third level of planning takes place during lesson/discussion. The purpose of the first 2 levels of planning is to situate the discussion in larger goals to support deeper learning.</p>	<p>(Chapter 4) *P.91 Strategies for Your Classroom (Three Levels of Planning)</p>
<p>First level Planning (Long term & Short Term Goals) Concepts (big ideas) Unit Plan (Sequencing/learning trajectory)</p>					<p>*P.92 Concept Map *P.93 Rubric for Unit Planning</p>

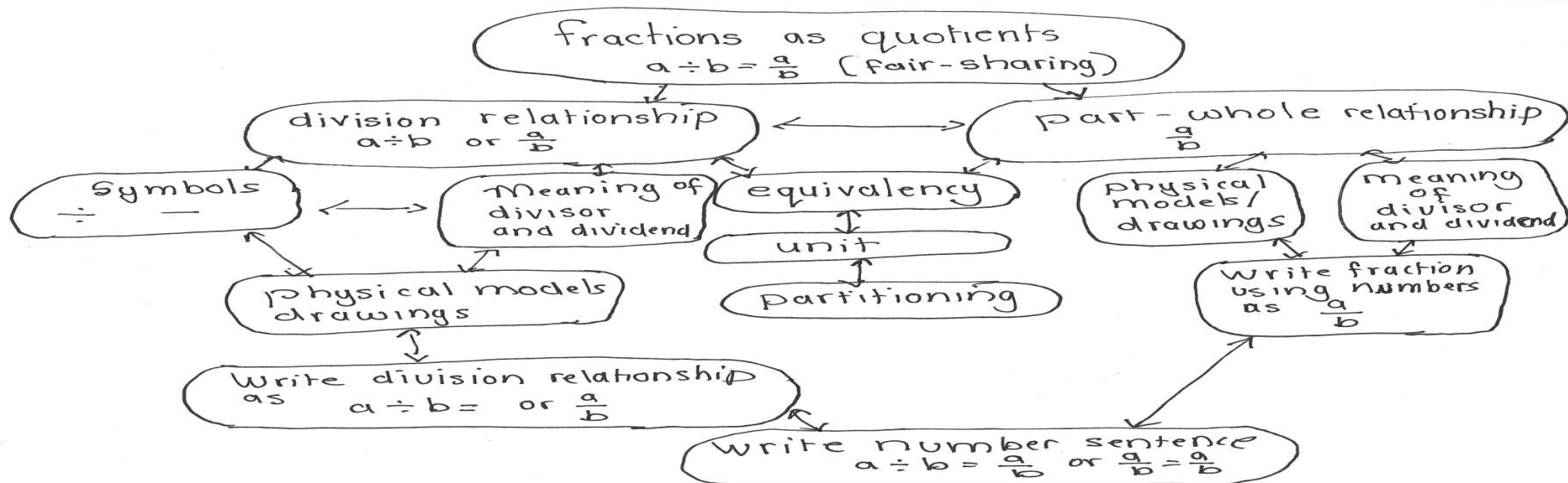
Pick a topic and think about:

- What concepts you want students to learn, what skills you want them to develop and create a concept map.

Long and Short Term Goals

source) Lamberg,
(2012), Whole Class
Discussions: Improving
in-depth Mathematical
Thinking and learning

- Develop Concept Map-identify how concepts and skills are inter-related.



Sequencing

Sequencing is critical for supporting student learning and helping them make connections.

Think about your lessons and how they build on each other.

How do you structure your instruction time?

- Think about the kinds of activities you do?

<p>Second Level of Planning 5 E-Lesson Plan- (Anticipating Student Reasoning/Misconceptions Errors, Format for using a problem solving approach to teaching and structuring time)</p>				<p>*P.94 Rubric for 5E Lesson Plan: Level 2</p>
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What do you Assess? How are students engaging in sense making? What are they learning?

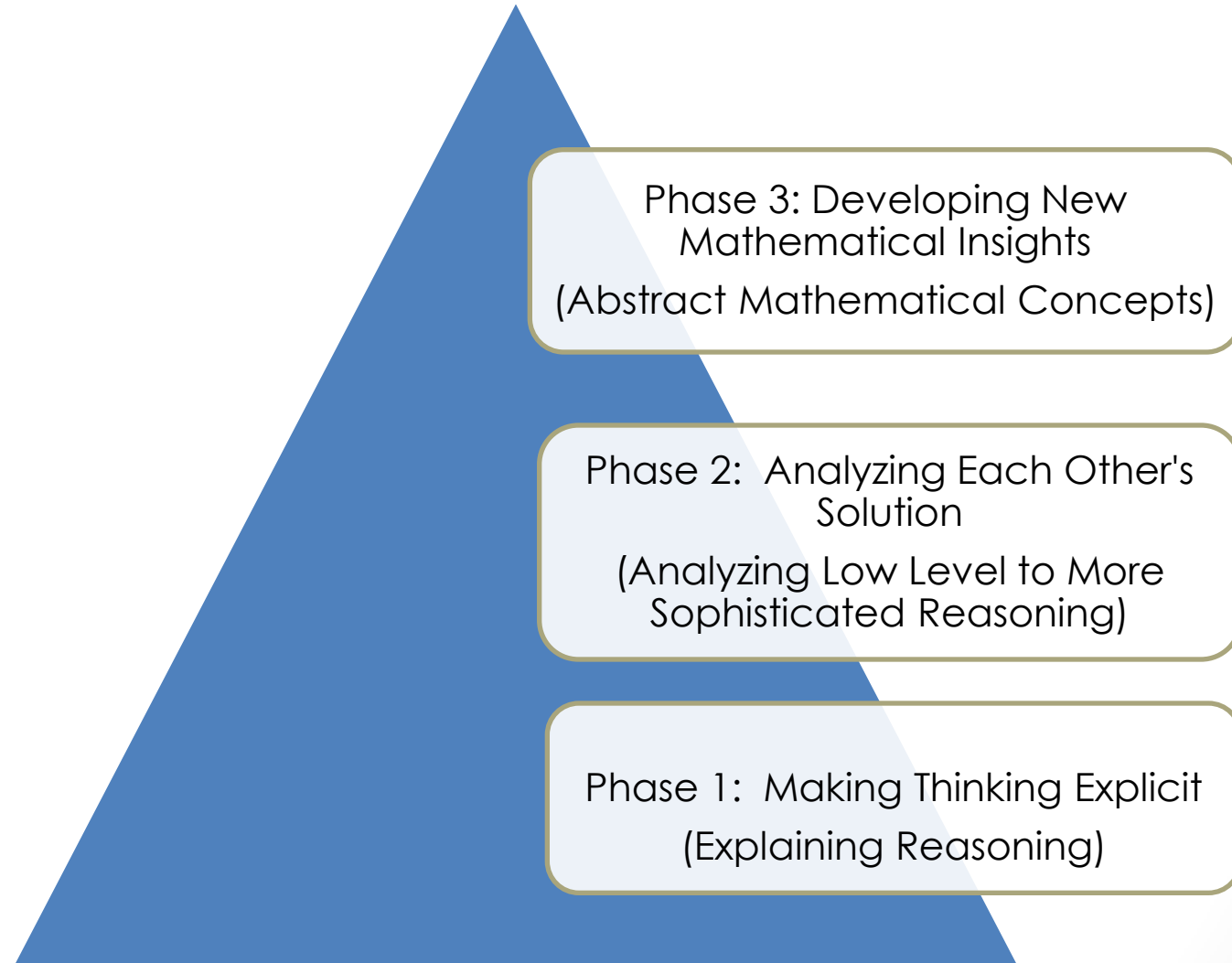


Takes Place During the Lesson

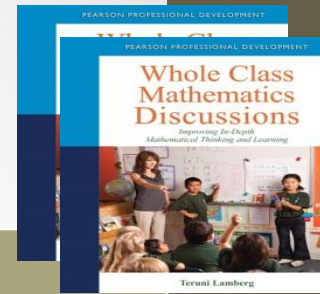
Third Level of Planning (Adapting discussion to support student understanding/needs) Making decisions on what to talk about based on student reasoning during lessons	Not met	Still Working	Working Great		*Rubric for Planning the Discussion: Level 3
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The Whole Class Discussion

Three Levels of Analysis and Sense making



source) Lamberg, (2012),
Whole Class Discussions:
Improving in-depth
Mathematical Thinking and
learning



Continuum: Levels of Understanding and Student Strategies



Inefficient strategies

Efficient Strategies

11111 11111 11111 11111 $5+5+5+5$

$5 \times 4 = 20$ $20 \div 5 = 4$

Simpler Representations (Concrete)

Abstract Representations

** + **

$2 + 2$

2 apples and 2 apples

two groups of two apples

two plus two

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Thank you!