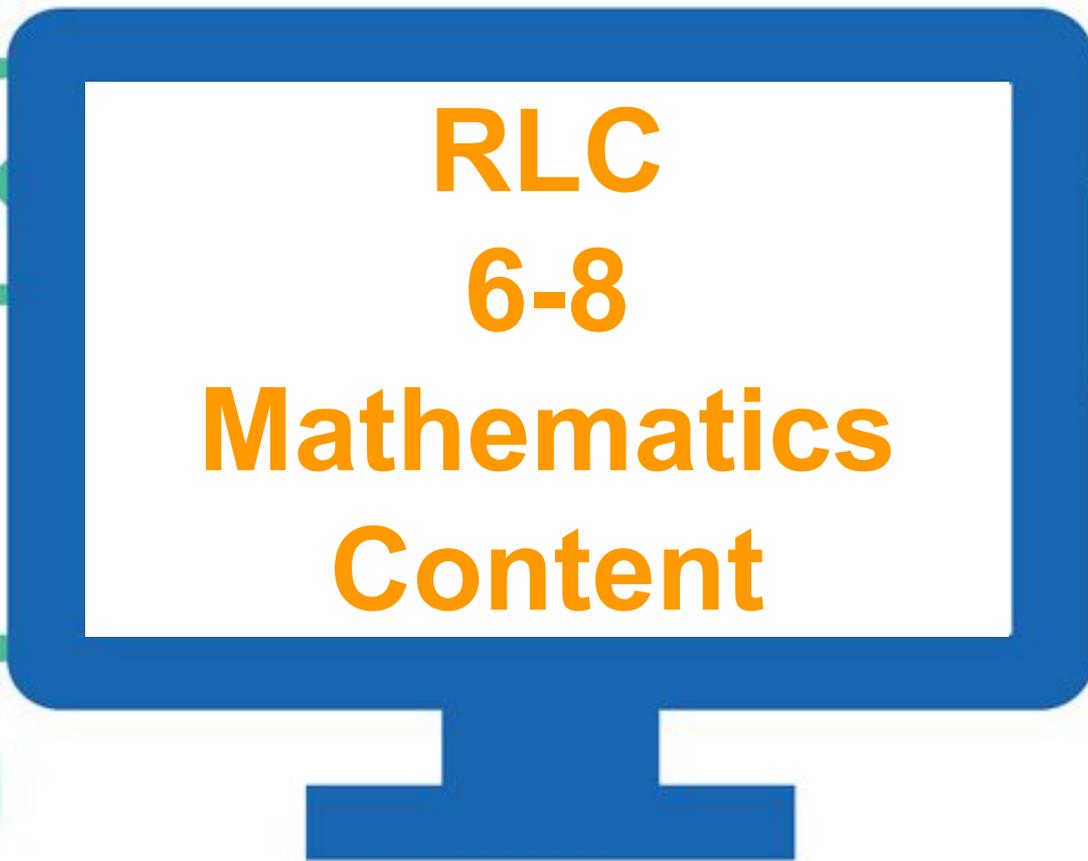
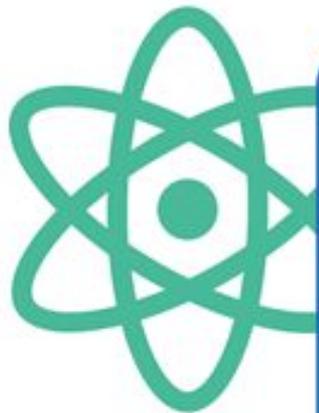


RLC

Remote Learning Chats





RLC

6-8

**Mathematics
Content**



It's My Pleasure to Introduction to You!



Monise Seward
DeKalb County Public Schools
Special Education
@MoniseLSeward

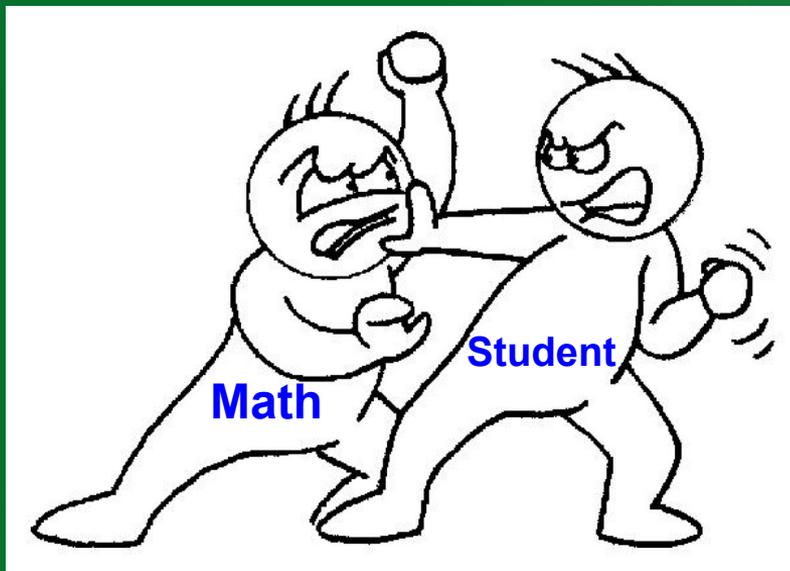


Norma Arroyo
Gwinnett County Public Schools
ELL/ESOL



Kenneth Golden
Cobb County Public Schools
Gifted

Not That...



But This...



6th Grade

“Equity is about more than just having internet access.”



Instructional Practices

1. Start each year by reading students' IEPs. That practice will remain the same.
2. The dreaded 'D' word (Data)
3. **(a)** Addressing Essential Knowledge & Skills: Pacing suggestions & CC. **(b)** Independent PD, Research, & Reading.

Instructional Resources

Diagnostic, Formative & Summative

1. **Virtual Diagnostics**
2. **Virtual Instruction**
3. **Formative & Summative Assessments: 3 Act Tasks**

Addressing 6th Grade Content

Unit 1
(4 – 5 weeks)

Number System
Fluency

MGSE6.NS.1
MGSE6.NS.2
MGSE6.NS.3
MGSE6.NS.4

MGSE6.NS.2 Fluently divide multi-digit numbers using the standard algorithm.

MGSE6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, including reasoning strategies such as using visual fraction models and equations to represent the problem.

“Why did you switch the order of the standards?” you might be asking!

Answer: If I ensure that students know $24 \div 12 = 2$, then they will have already ‘done’

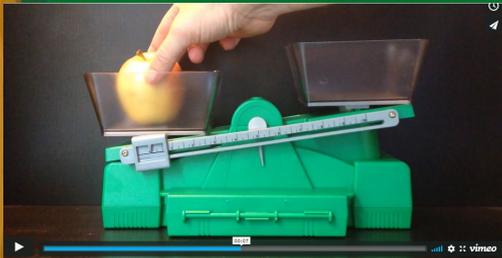
$$\begin{array}{r} 24 \\ 12 \end{array}$$

3 Act Task ‘Layered’ Implementation

- ◆ Use as Formative Assessment
- ◆ Introduce Task at beginning of unit
- ◆ Have students make notes about what they notice and/or what they think they should do
- ◆ Ask if they’ve ever had to perform that type of problem IRL (home, store, etc.)
- ◆ As lesson progresses, have students go back & add new thoughts/ideas

The Apple Task

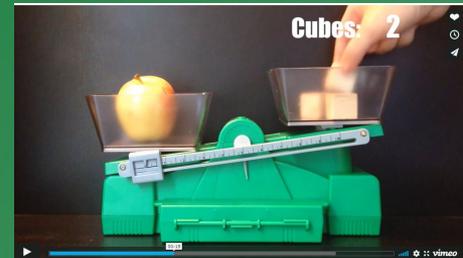
Act 1



Act 2



Act 3



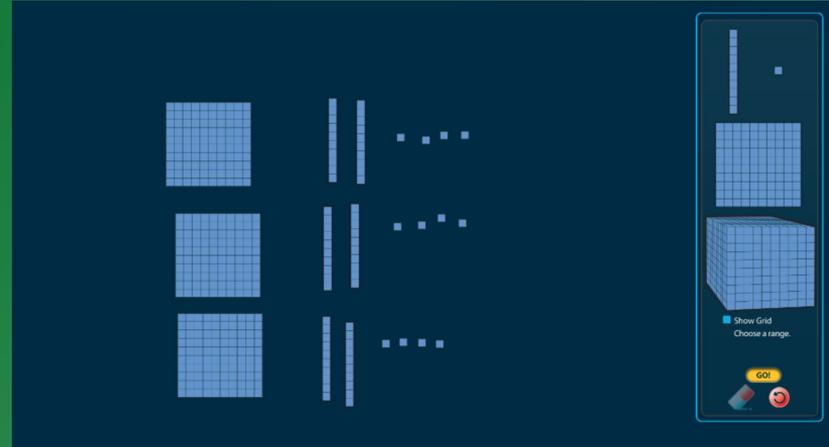
Instructional Strategies

Which of the following quotients has the same value as $5.04 \div 7$?

- a. $5.04 \div 70$
- b. $50.4 \div 70$
- c. $504,000 \div 700$
- d. $504,000 \div 700,000$

Explain your reasoning in your groups.

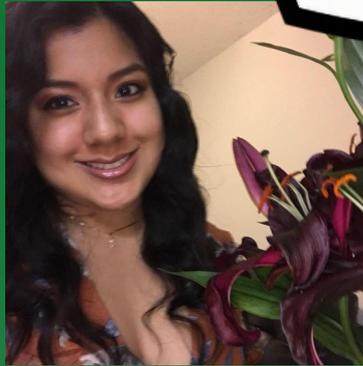
Incorporating the Standards for Mathematical Practice



Visual Mathematics
Use of Manipulatives

7th Grade

“I’m not going back to teach 6th grade standards. I’m going to determine how the 6th grade standards align with the 7th grade content I will teach.”



Number talks

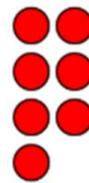
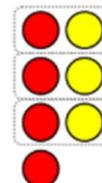
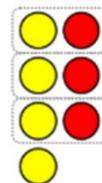
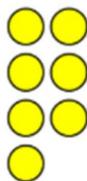
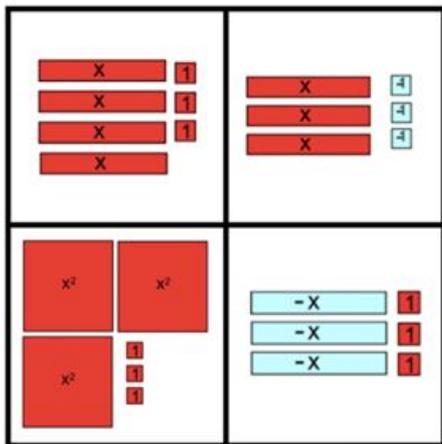
Which two are closer?

| | | |
|---------------|---------------|---------------|
| $\frac{1}{4}$ | $\frac{1}{2}$ | $\frac{3}{5}$ |
|---------------|---------------|---------------|

Estimate 4953 divided by 68

Notice and Wonders!

Which does not belong?

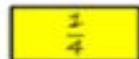
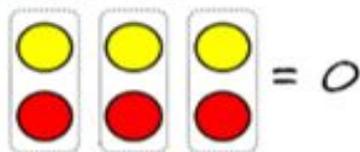


<https://wodb.ca/numbers.html>

<http://www.mathtalks.net/nt-9-12.html>

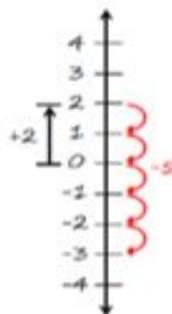
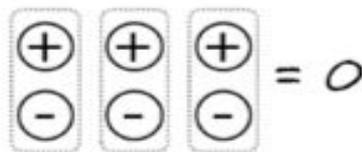
Concrete

For example, $3 + (-3) =$



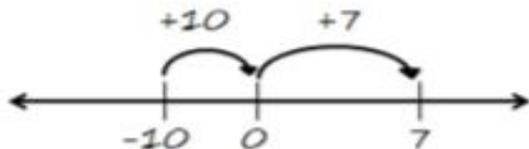
$$\frac{1}{4} + \frac{1}{4} = \frac{2}{4}$$

Semi-concrete



Semi abstract

$$-10 + 7$$



Abstract

Situation #1:

Use the ledger to record the information and answer the questions.

Note: On August 12, your beginning balance is \$0.00

- On August 16, you receive a check from your Grandmother for \$40 for your birthday.
- On August 16, you receive a check from your Parents for \$100 for your birthday.
- On August 17, you purchase a pair of pants from Old Navy for \$23.42.
- On August 18, you find \$5.19 in change during the day.
- On August 19, you purchase socks from Wal-Mart for \$12.76.

| DATE | TRANSACTION | PAYMENT (-) | DEPOSIT (+) | BALANCE |
|------|-------------------|----------------|----------------|---------|
| 8/12 | Beginning balance | | | \$0.00 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

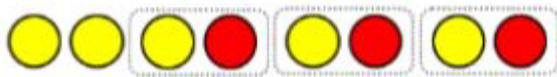
GDOE: Debit and Credit

Begin by representing +2 using two positive color counters:



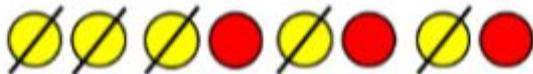
Ask students: *Can we remove 5 positive yellow counters?* Students will discover that we currently cannot perform this subtraction (using our current representation, students can only remove 2 color-counters).

Ask students how we could add three more positive color counters *without changing the problem's value*. Students will see that we can add 3 sets of zero pairs to the problem:



In this model, the total value remains positive two despite the three zero pairs.

Adding the zero pairs allows students to now remove positive 5 from the original positive 2.



As a result, $2 - 5$ or $2 - (+5) = -3$.

Resource:

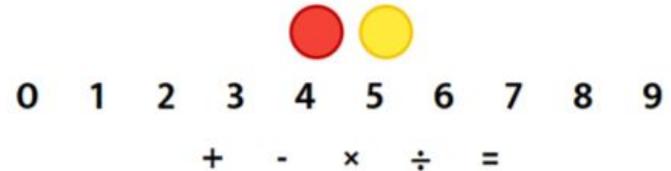
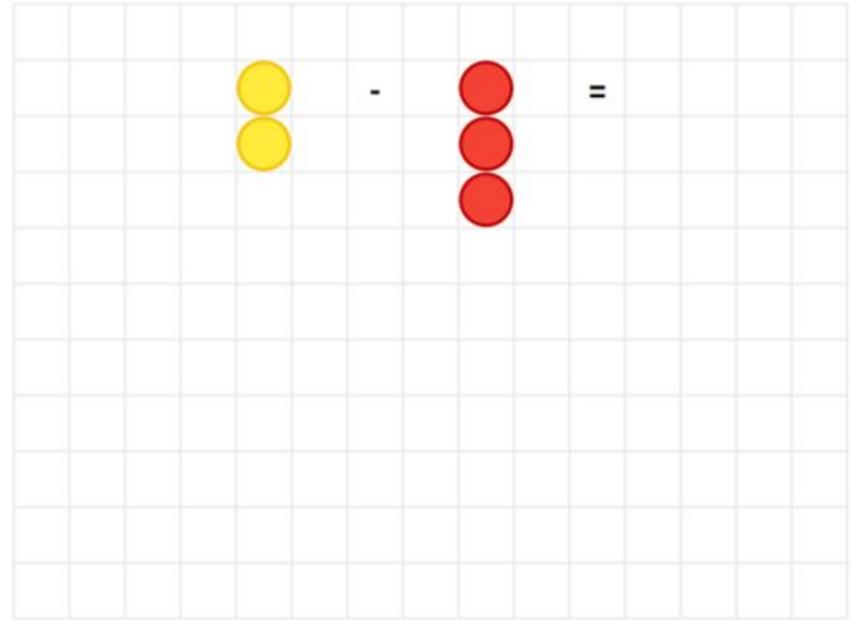
Gwinnett County Public Schools. Math Online Communication Center. 2020

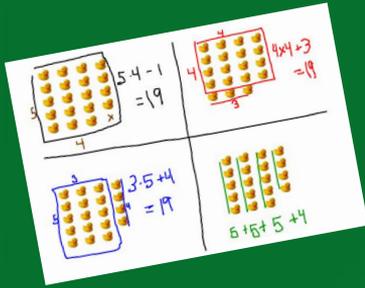
Virtual manipulatives

<https://toytheater.com/two-color-counter-numbers/>



GeoGebra





Partner Strategy Rounds

My strategy:

Round 1

| | |
|----------------------------|-------------------------------|
| Question for my partner: | My partner's question for me: |
| Reflection for my partner: | Reflection on my answer: |

Round 2

| | |
|----------------------------|-------------------------------|
| Question for my partner: | My partner's question for me: |
| Reflection for my partner: | Reflection on my answer: |

Balanced Numeracy Framework 6-12

Activating Strategy
(number talks)

- Discussion board (school platform, padlet, Nearpod discussion tool)
- Flipgrid
- **Zoom/google meets**

Mini-Lesson

- Screencastify/Screencast-O-Matic videos
- **zoom/google meets**

Differentiated Small
Group Instruction

- Google docs/Google slides
- Discussion boards
- **Zoom breakout rooms/google meets**

- H5P/EdPuzzles/Desmos/Geogebra/**Quizizz/ Nearpod**

Summary

- Discussion board (school platform, padlet, Nearpod discussion tool)
- Flipgrid
- **Zoom/google meets**

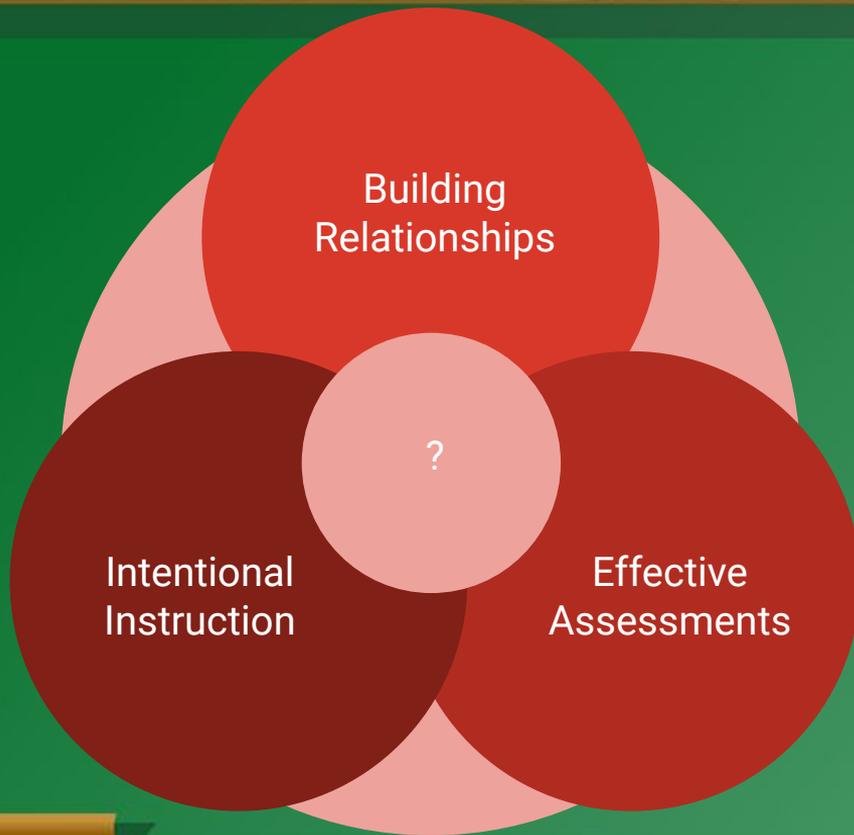
8th Grade



"Teaching with intentionality is just good teaching."



*So much
content, so
little time!*



*Teaching
8th grade
concepts*



Effective Assessments

Assessment Focuses

| Diagnostic | Formative | Summative |
|---|---|--|
| What must students understand? What have they missed last year? What will the test tell me? | How often am I checking? Do I grade all of it? What does this say about where the student is? | What are the weak strands? How can this improve teaching practices as a teacher? PLC? |

How will I **use** the assessment? & How will this guide my instruction?

Intentional Instruction

What to teach?

- Driven by diagnostic and summative
- Informed through your formative
- Standards (Not in isolation)
- ALDs

How to teach?

- Balanced Numeracy
- Flipped Classroom
- 3 ACT Tasks
- F.A.L. - Formative assessment lessons
- Build on prior knowledge
- Find ways to engage!
- Teach to the right and add scaffolds

How to teach? Pt. 2

- Teach the whole child
- Differentiate by giving choice
- Discussion board, Desmos, screen sharing, FlipGrid, virtual manipulatives, etc.
- Start concrete then, representational, then abstract with Prof. work

BE INTENTIONAL!

Combine Learning Targets in Assignments

Understand and apply the Pythagorean Theorem.

8.G.6. Explain a proof of the Pythagorean Theorem and its converse.

I can describe a proof of the Pythagorean Theorem and its converse.

8.G.7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

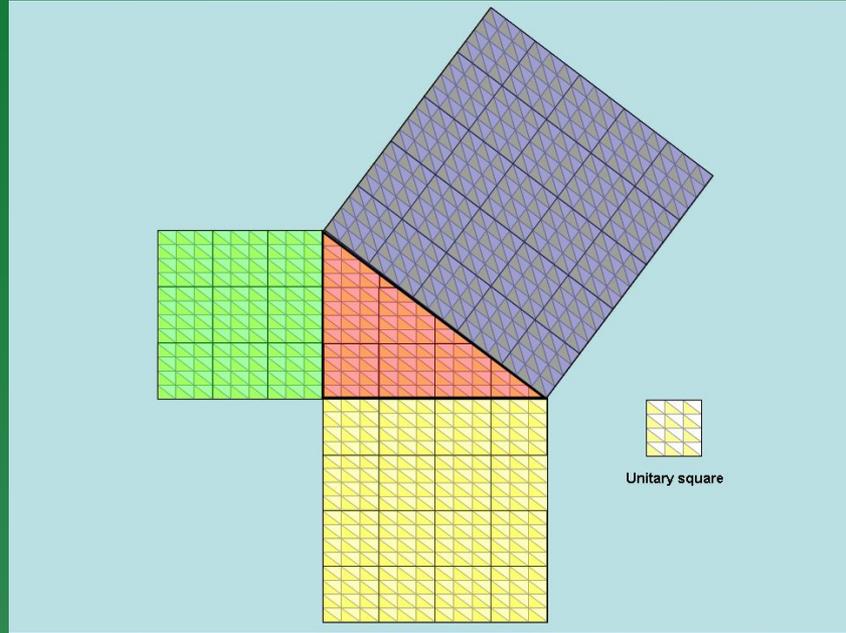
I can determine the unknown side lengths in a right triangle problem using the Pythagorean Theorem.

Concrete - Representational - Abstract

<https://www.didax.com/math/virtual-manipulatives.html>

<https://www.geogebra.org/>

<https://teacher.desmos.com/>

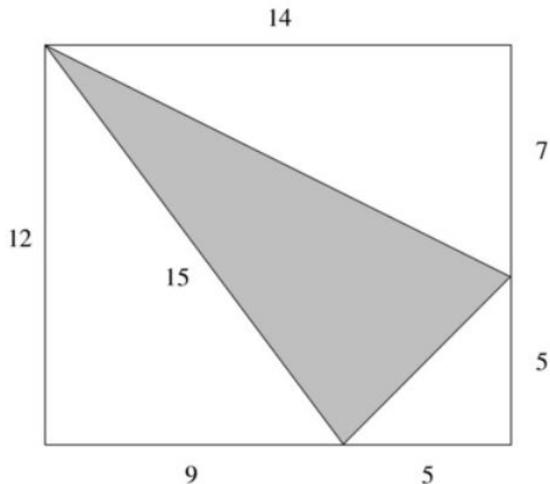


Teach to the right and add scaffolds

*What questions could we add
to guide the student?*

*Could we give this assignment
with no scaffolds?*

Three right triangles surround a shaded triangle; together they form a rectangle measuring 12 units by 14 units. The figure below shows some of the dimensions but is not drawn to scale.



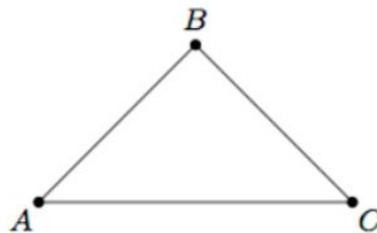
Is the shaded triangle a right triangle? Provide a proof for your answer.

Teach to the right and add scaffolds

What questions could we add
to guide the student?

Could we give this assignment
with no scaffolds?

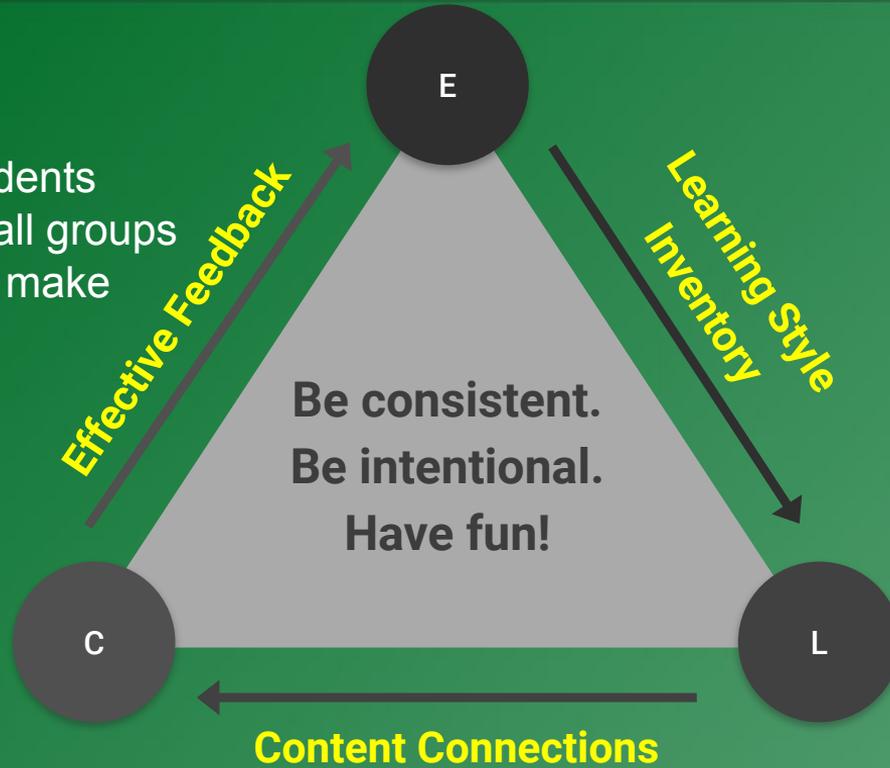
In triangle ABC below, $\angle B$ is a right angle and $|AB| = |BC|$:



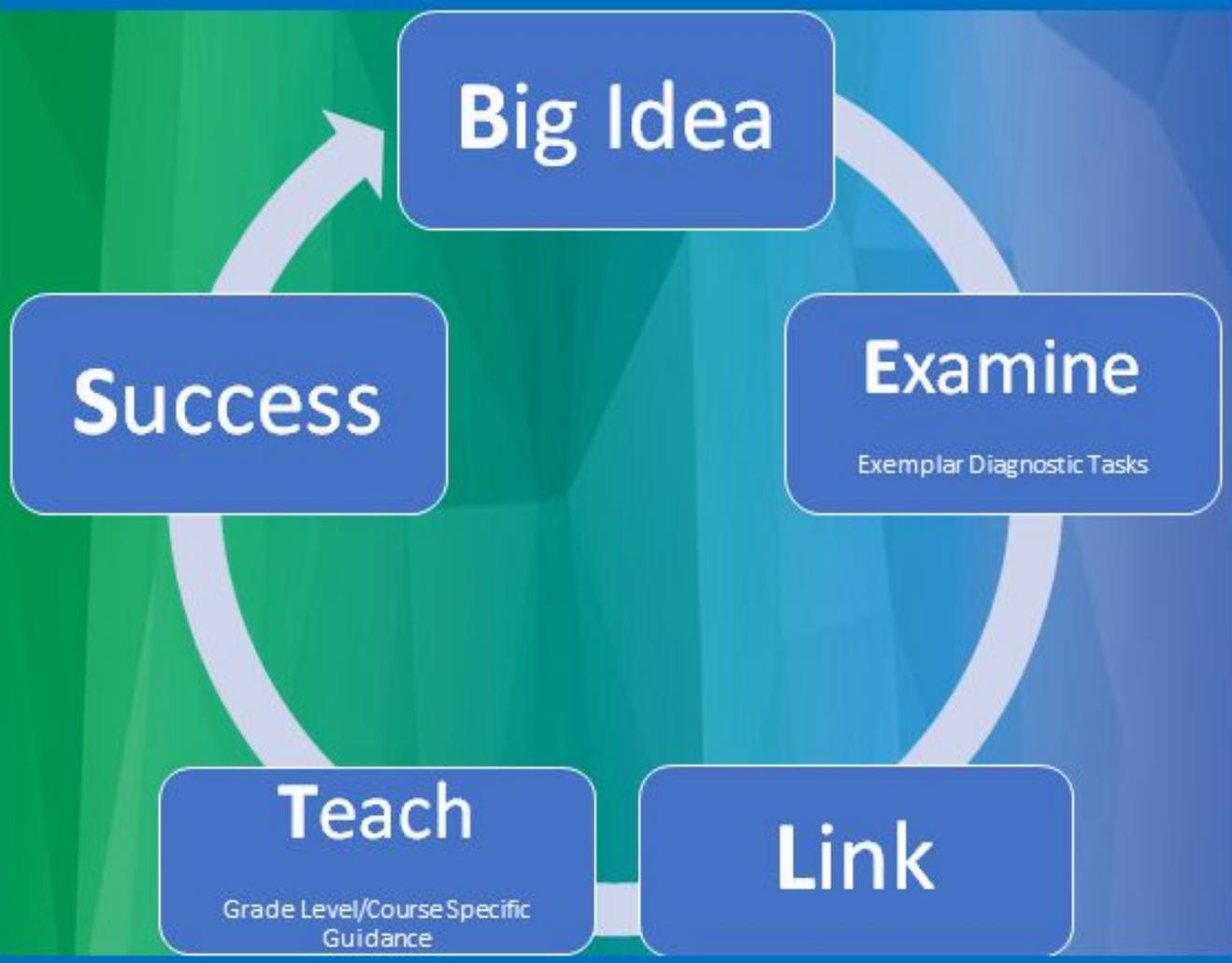
Draw a line segment joining one of the vertices of $\triangle ABC$ to the opposite side so that it divides $\triangle ABC$ into two triangles which are both similar to $\triangle ABC$. Explain, using rigid motions and dilations, why the triangles are similar.

Build Relationships

- Schedule conferences with students
- Schedule conferences with small groups
- Keep track of the progress you make



Start of
the School
Year Guide





6th Grade

GRADE LEVEL OVERVIEW

Sample Mathematics Learning Plan

| | |
|------------------------|---|
| Big Idea/ Topic | Complete understanding of division of fractions and extend the notion of number to the system of rational numbers, which includes negative numbers. |
|------------------------|---|

| | |
|---------------------------|--|
| Standard Alignment | Apply and extend previous understandings of multiplication and division to divide fractions by fractions. |
| | MGSE6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, including reasoning strategies such as using visual fraction models and equations to represent the problem. |
| | Compute fluently with multi-digit numbers and find common factors and multiples. |
| | MGSE6.NS.2 Fluently divide multi-digit numbers using the standard algorithm. |
| | MGSE6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. |
| | MGSE6.NS.4 Find the common multiples of two whole numbers less than or equal to 12 and the common factors of two whole numbers less than or equal to 100. Find the greatest common factor of 2 whole numbers and use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factors. (GCF) <i>Example: $36 + 8 = 4(9 + 2)$</i> Apply the least common multiple of two whole numbers less than or equal to 12 to solve real- world problems. |

| | |
|------------------------------|---|
| Diagnostic Assessment | Estimating Solutions Assessment Probe |
| | This probe can be implemented asynchronous or offline. Each student will need access to their own copy of the probe. To obtain valid diagnostic data, inform students calculators should not be used during the assessment. Instruct students to answer each question to the best of their knowledge and provide explanations even if they are unable to arrive at a solution for the question. |

| Anticipated Thinking | Students and Their Thinking | Big Idea |
|---|-----------------------------|--|
| Place Value Understanding Uses understanding of powers of 10 to estimate solutions (i.e. $0.1 = 1/10$, $1.8 \cdot 1/10 =$ digit shifts to the right) | | 5th grade: Understand place value |
| Known Facts to Determine Unknown Solutions Uses known facts to estimate unknown (i.e. $49 \div 7 = 7$, so $50 \div 7 = 7$. Therefore, $500 \div 7 = 70$) | | 3 rd grade: Develop an understanding of multiplication and division and strategies for multiplication and division within 100 |
| Overgeneralization Associates decreased value of solution with division | | 3 rd grade: Develop an understanding of multiplication and division and strategies for multiplication and division within 100 |
| Rounding Rounds to the nearest hundreds and/or tens before applying operations | | 4 th grade: Develop an understanding and fluency with multi-digit multiplication, and develop an understanding of dividing to find quotients involving multi-digit dividends, generalize place value understanding to multi-digit whole numbers |
| Only Whole Numbers Applies operations and records solutions with only whole number quantities considered. | | 4 th grade: Develop an understanding and fluency with multi-digit multiplication, and develop an understanding of dividing to find quotients involving multi-digit dividends, generalize place value understanding to multi-digit whole numbers |
| Algorithm Over Reasoning Applied an algorithm rather than using reasoning to determine an estimate | | 6th grade: Complete understanding of division of fractions and extend the notion of number to the system of rational numbers, which includes negative numbers |

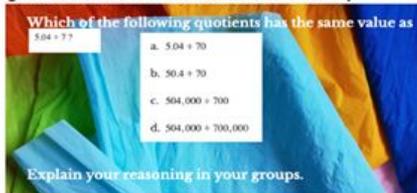
Synchronous - conducted live
at the same time

Asynchronous - learning at a
different time and location

Unplugged/Offline - not reliant
upon the use of the internet

Instructional Design

Engage (Incorporating the Standards for Mathematical Practice)



Which of the following quotients has the same value as $5.04 \div 7$?

- a. $5.04 \div 70$
- b. $50.4 \div 70$
- c. $504,000 \div 700$
- d. $504,000 \div 700,000$

Explain your reasoning in your groups.

Allot for 3-5 minutes for this activity. Student think time should encompass the majority of this activity time.

- **Synchronous**

Post the activating strategy for students to view. Allot time for students to jot their thinking on a separate sheet of paper. Encourage students to share their thinking with a partner or small group prior to sharing with the entire class. As students' share their thinking, the teacher should listen for interpretation of the number relationships.

Listen for students to acknowledge the following:

- Connection between same digit, but different value
- Mathematical terminology such as dividend, divisor, quotient
- Dividend and divisor should increase by the same power of 10

- **Asynchronous**

Utilize [Padlet](#) to encourage students to share their thinking with the entire class. As students' share their thinking, the teacher should review postings for interpretation of the number relationships.

Look for students to acknowledge to following:

- Connection between same digit, but different value
- Mathematical terminology such as dividend, divisor, quotient
- Dividend and divisor should increase by the same power of 10

- **Unplugged/ Offline**

For this activity, students will complete the task as instructed. Provide students with a Teacher Feedback page, which will engage students in next steps based on the data gathered from the activity. Consider using the instructions below:

If you answered:

A and C. Solve the problems again using a calculator. Which problems have the same quotient as $5.04 \div 7$? What do you notice about the dividends and divisors of those problems?

B and D. Move on to the Using the Partial Quotients Method

Differentiation: The purpose of this activating strategy is to focus on number relationship within the place value system. If the decimal quantity is a barrier for students, provide equations using only whole numbers.

Extension: Encourage students to record their conjecture for why the quotients are the same. Ask students to prove this concept works every time.

Evidence of Student Success

Anecdotal Notes:
Anticipating student thinking aids in keeping a pulse on how students are progressing towards the GSE as they go through the lesson. Prior to implementing a task or activity, it is helpful to consider possible understandings AND misunderstandings which may arise as students complete a task.

I Used to Think...But Now I Know... is a formative assessment as well as a self assessment. This occurs during the reflection portion of this sample learning plan.

Student Learning Supports

At all grades, the mathematics big ideas encourage students to reason mathematically, to evaluate mathematical arguments both formally and informally, to use the language of mathematics to communicate ideas and information precisely, and to make connections among mathematical topics and to other disciplines. The following strategies are intended to support students who are struggling to progress towards this goal:

Engaging Families

[OpenUp Resources Family Activities](#)- This resource from Illustrative Mathematics provides literature for parents/caregivers to understand the rationale of the strategies addressed within this unit. Sample problems are a part of this resource. Families are encouraged to work on the problems together.

Students' strengths and needs in these areas of cognitive functioning are integral to learning mathematics (Brody et al., 2002) and provide

providing a context for discussing the struggle that exists when carrying out written algorithms.

Mathematics Resources

| | | |
|------------------------------|-------------------------------|----------------------|
| Introduction | | |
| Kindergarten | 1st Grade | 2nd Grade |
| 3rd Grade | 4th Grade | 5th Grade |
| 6th Grade | 7th Grade | 8th Grade |
| Coordinate Algebra | Algebra I | Analytic Geometry |
| Geometry | Algebra II - Advanced Algebra | Precalculus |
| Calculus-Based HS Courses | | All Other HS Courses |
| Additional Teacher Resources | | |

<https://www.gadoe.org/Curriculum-Instruction-and-Assessment/Curriculum-and-Instruction/Documents/Mathematics/GADOE-Remote-Learning-Supplemental-Resources-for-Mathematics-K-12.pdf>



GaDOE Mathematics Team



@GADOEMath

Michael Wiernicki

Mathematics Elementary Program Specialist

Phone: 404-463-1736

Email: mwiernicki@doe.k12.ga.us

Lya R. Snell, Ph.D.

Mathematics Program Manager

Phone: 404-463-7087

Email: lsnell@doe.k12.ga.us

Jenise Sexton

Mathematics Special Education Program Specialist

Phone: 404-463-0634

Email: jsexton@doe.k12.ga.us