Mindset Mathematics: Visualizing and Investigating Big Ideas
Learning Target

Our goal for this workshop is to help create, encourage, or strengthen a growth mindset culture within all aspects of the math classroom.
Various resources from lessons, games, videos and research findings are all found at youcubed.org
Four Boosting Messages

https://goo.gl/wxKHHhb
Message #1

Everyone can learn math at high levels
Message #2

Believe in Yourself
Message #3

Struggle and Mistakes are Really Important
Message #4

Speed is not Important
Third Grade Big Ideas

- Seeing fractions: The parts and the wholes
- Being flexible with numbers
- Solving problems with data
- Tiling to understand area
- Understanding $\frac{1}{2}$
- Seeing multiplication as area
- Thinking around shapes
- Thinking in equal groups
Dozens of Dice
Work with a partner to roll a collection of dice and develop ways of counting all the dots, without counting them by ones.
Discuss

What strategies did you use to count the dots?

Why did you choose that strategy?
Dozens of Dice
Fourth Grade Big Ideas

- Illustration multiplication and division
- Using operations flexibly
- Units are a relationship
- Seeing patterns inside numbers
- Building and designing with shapes and angles
- Making and naming number patterns
- Modeling with unit fractions
- Exploring fraction equivalence
- What is a decimal?
Color-Coding Fractions
Ask

How many brownies will each person get if the brownies are equally shared among Sam and his three friends?
Play

Work with a partner to design ways to equally share the brownies. Find as many ways as you can by coloring the pans to show equal shares.
Discuss

How did you share the brownies? What fraction of the pan will each person get? What ways did you find to color-code the pan to show the equal shares?
Fifth Grade Big Ideas

Understanding fraction multiplication visually

Estimating with fractions

What does it mean to divide fractions?

Exploring the coordinate plane

Using fraction equivalence

Using numbers and symbols flexibly

Thinking in cubes

Thinking in powers of 10

Seeing and connecting patterns across representations
Four 4’s

**MIND YOUR 4s.** Use four 4s and any operations you can think of to create solutions for the following problems. *Anything goes!* The basic +, −, *, ÷ and concatenation (44), percentages, repeating decimals (…), and more get you started. Remember to include exactly 4 4s (that’s four 4s in each problem).

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<tr>
<td>1.</td>
<td>$\frac{4}{4} + \frac{4}{4}$</td>
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<td>$4 + 4$</td>
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<td>17.</td>
<td>$\sqrt{4} + \frac{4}{4}$</td>
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Play

With a partner, you are going to try to find every number from 1–20 using only four 4’s—All four of them have to be used each time and you may use any operation.
Link to Presentation

https://goo.gl/TShzGP
TEKS Correlation Charts

3rd Grade TEKS Correlation

4th Grade TEKS Correlation

5th Grade TEKS Correlation
Join the upcoming Elementary Math Book Study

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<thead>
<tr>
<th>3rd Grade:</th>
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<tbody>
<tr>
<td>Oct. 16th</td>
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<td>Feb. 4th</td>
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Speed and Time Pressure Blocks Working Memory.
Memorization vs. Conceptual Refinement
Low-Floor, High-Ceiling Tasks

➢ Allows learners to show what they can do, not what they can’t

➢ Provides Differentiation to nearly all learners; high flyers can explore and challenge themselves and less confident students can consolidate their thinking
Low-Floor, High-Ceiling Tasks

➢ Learners often raise their game when participating in discourse about the activity since they too had spent time on the same topic

➢ Promotes positive classroom culture
Low-Floor, High-Ceiling Tasks

➢ Offers many possibilities for learners to focus on more sophisticated process skills rather than more knowledge

➢ Mirrors real life math
Low-Floor, High-Ceiling Tasks

➢ Hits numerous Math Practice Standards
➢ Promotes the belief that “I can do math!”
➢ Helps students see that Math Is Fun!