

**Creating AHAs**

What are they really thinking?  
Assessing for depth of understanding.

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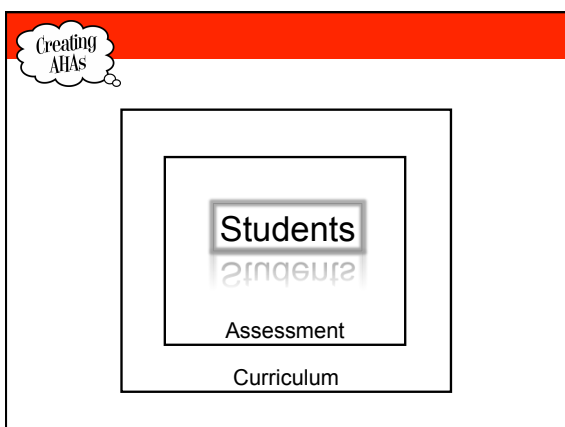
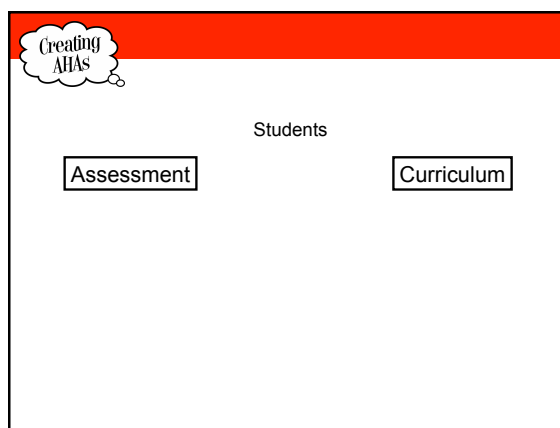
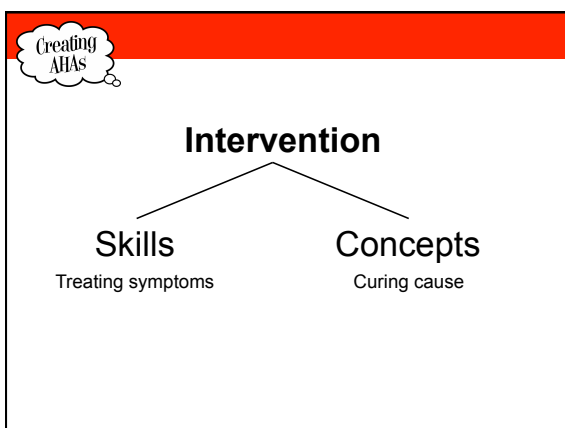
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**Creating AHAs**

Diagnosing the problem

4 + 5 = 5	Ends/starts?
4 + 6 = 6	
4 + 7 = 7	Disconnects?
4 + 8 = 8	
4 + 9 = 9	Interventions?

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**Take a few moments to think about how you would assess a student's understanding of subtraction.**

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**Take a few moments to think about how you would assess a student's understanding of subtraction.**

Were your questions conceptually focused or procedurally focused?

What representations did you assess?

What language did you assess?

What models did you assess?

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Write down everything you know about subtraction.

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$$52 - 29$$

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67

82

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$$9 \frac{1}{2} - 3 \frac{5}{8}$$

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Take a moment to review your answers.

Why those questions?

Are they similar to your questions? How are they different?

What am I trying to learn about the students' understandings of subtraction?

What other questions could be added?

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**Protocol for conducting whole class or small group interviews**

- Have students record their answers on their own paper.
- Walk around the room and look at students' answers throughout the entire interview. This will allow for additional follow-up questions or a change in direction if needed. It will also provide for quick identification of struggling students and students with quite sophisticated understandings.
- Begin with an open-ended question. It is important to determine what students have internalized without any prompts.
- Ask questions that will provide insights into conceptual understandings and depth of understanding.
- Periodically ask students to write how they know, how they would convince someone else they are correct, or how they would explain the idea to a younger student.

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Write down everything you know about subtraction.

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Story of Manuel

5 - 3

Who is interpreting the symbols?

Interviewing is a learning experience.

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52 - 29

Fifty-two minus twenty-nine.

Fifty-two subtract twenty-nine.

Fifty-two take away twenty-nine.

Fifty-two remove twenty-nine.

Fifty-two is how many more than twenty-nine?

How many more is fifty-two than twenty-nine?

How many fewer is twenty-nine fifty-two?

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52 - 29

53 - 30

49 - 26

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$52 - 29$

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If Sammi purchased something from you that cost \$27 and paid for it with a \$50 bill, describe how you would count back her change. Represent on a number line.

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67                      82

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$9 \frac{1}{2} - 3 \frac{5}{8}$

$9 - 3 \frac{1}{8}$

$6 \frac{1}{2} - \frac{5}{8}$

$6 - \frac{1}{8}$

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Mrs. Gonzalez collects frogs (stuffed, figurines, funny ones). She got 5 new frogs for her birthday. Now she has 61 frogs. How many frogs did she have before her birthday? Write an equation.

$61 - 5 = x$

$x + 5 = 61$

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Assessing for depth understanding

Assess before starting a unit—don't waste any instructional time on what they already know.

Assess during a unit to determine what they really think.

Always assess but don't always test.  
(How much instructional time is lost to testing?)

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**Take a few moments to think about how you would assess a student's understanding of fractions.**

- We want questions to be conceptually focused.
- We want to assess the representations the student uses.
- We want to assess the language used.
- We want to assess the models used.

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Write down everything you know about fractions.

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Creating AHAs

\* \* \*

\* \* \*

Show 1/3

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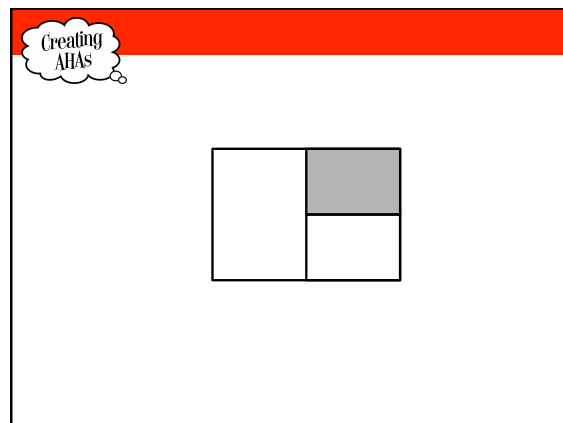
$1/2 = 4/8$

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$1/2 \neq 4/8$

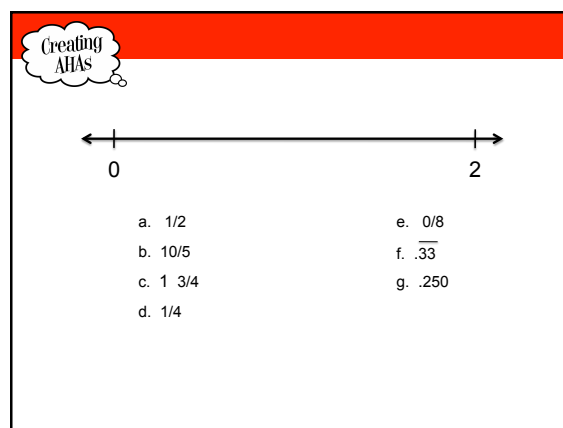
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.375



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$\frac{6}{4}$



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Take a moment to review your answers and your comfort with the questions.

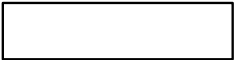
What did I learn about your understandings of common and decimal fractions?

What would I learn about your students' understandings of common and decimal fractions?

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Write down everything you know about fractions.

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\* \* \*

\* \* \*

Show 1/3

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$1/2 = 4/8$

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$1/2 \neq 4/8$

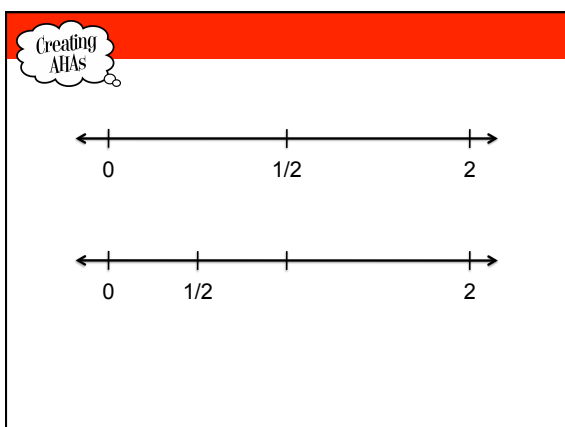
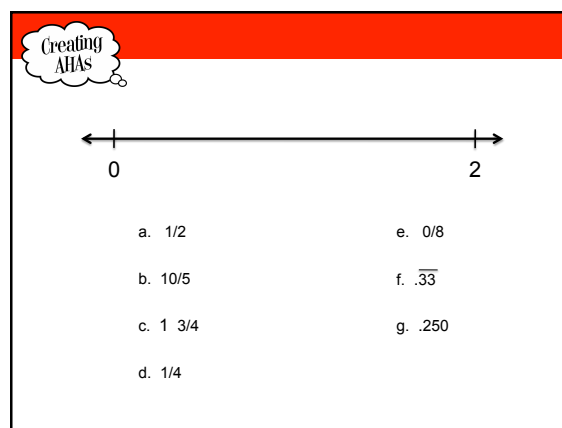
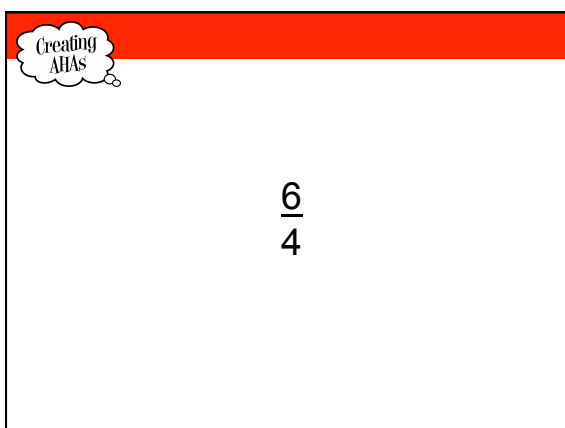
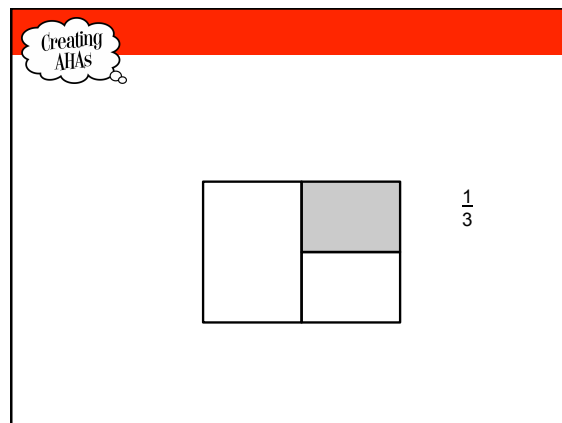
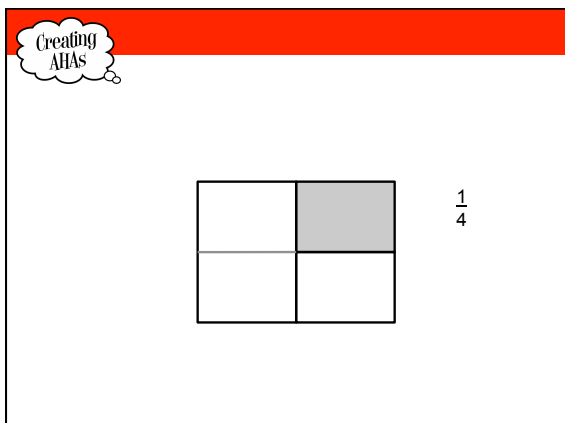
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.375

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$\frac{1}{3}$   $\frac{1}{4}$

Can't name



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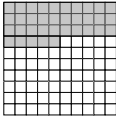
**AHAs:**

Not really “assessing” but are being curious about what students are really thinking.

Face does not cue...Students are more willing to discuss because it is non-threatening.

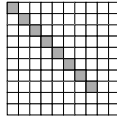


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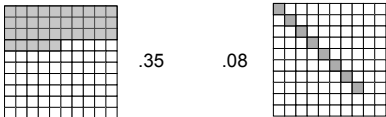
$\frac{35}{100}$       .35

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$\frac{8}{100}$       .8

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$\frac{35}{100}$       .35      .08       $\frac{8}{100}$       .8

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We cannot choose the appropriate instructional path or provide effective intervention until we determine what the students really think.

If designed well, whole group interviews are one tool for determining our students' depth of conceptual understanding.

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