Math Solutions
FOUNDED BY MARILYN BURNS

Fraction Sense is Tied to Common Sense

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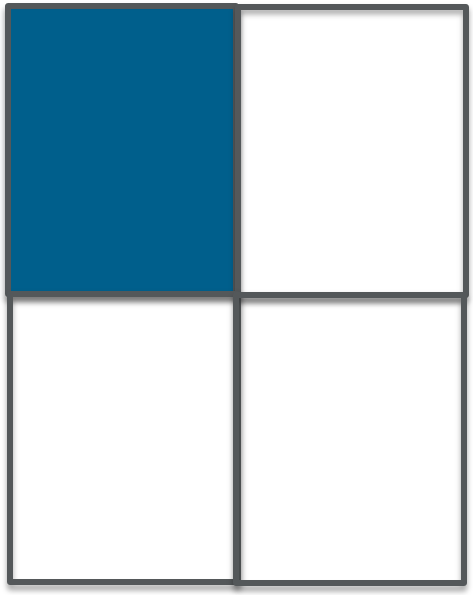
#NCTMAnnual #inspiringchange

Why Focus on Fractions?

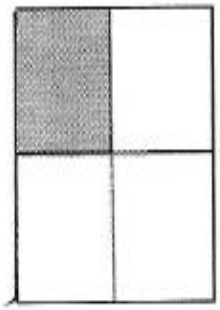
"Sadly, students without a strong understanding of fractions find it difficult to progress very far in mathematics. In fact, researchers have found that there is a strong positive correlation between students' understanding of fractions and their overall success in mathematics (Gomez 2009). According to the Final Report of the National Mathematics Advisory Panel (2008), understanding fractions is a foundation skill essential to success with algebra."

Classroom Scenario

Write the fraction to show how much of the large square is shaded.

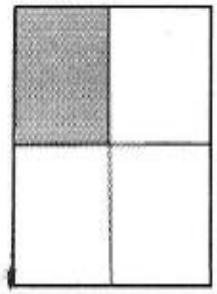


What fraction is shaded? Tell me how you know.



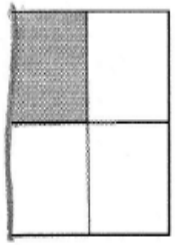
$\frac{1}{4}$ Because 1 out of the 4 boxes is colored in.

What fraction is shaded? Tell me how you know.



$\frac{1}{4}$ The square has four squares inside it and one is shaded

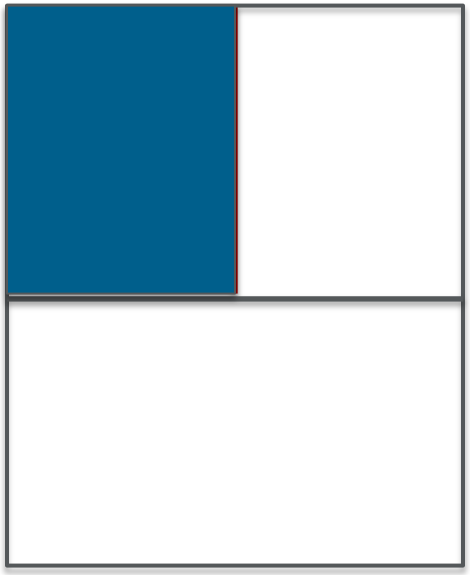
What fraction is shaded? Tell me how you know.



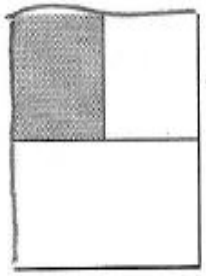
$\frac{1}{4}$ 4 en total
3 en blanco
1 en negro

Classroom Scenario

Write the fraction to show how much of the large square is shaded.

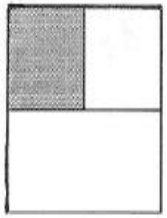


What fraction is shaded? Tell me how you know.



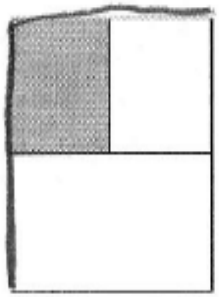
1/3 Because 1 out of th 3 boxes is colored in.

What fraction is shaded? Tell me how you know.



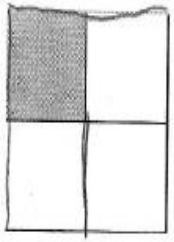
1/3 There is two squares and one rectangle and one square is shaded

What fraction is shaded? Tell me how you know.



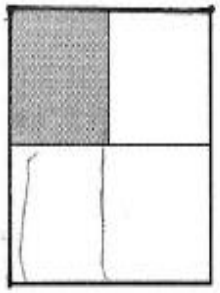
1/3 3 en total
2 en blanco
1 en negro

1. What fraction is shaded? Tell me how you know.



This fraction is one fourth because even if it has a rectangle and two square it is still one fourth.

What fraction is shaded? Tell me how you know.



$\frac{1}{4}$ they just want to trick you and not put the three pieces and the pieces have to be the same size

Which Does Not Belong

$$\frac{1}{2}, \frac{7}{14}, \frac{5}{3}, \frac{6}{12}$$

Which Does Not Belong

$$\frac{21}{7}, \frac{10}{3}, \frac{12}{4}, \frac{18}{3}$$

Coherence

- Begin to count on solid conceptual understanding of core content and build on it. Each standard is not a new event, but an extension of previous learning.

- Carefully connect the learning within and across grades so that students can build new understanding onto foundations built in previous years.

Get to the Whole

Beyond Invert & Multiply
by Julie McNamara

Using “Get to the Whole” Strategy

$$\frac{3}{4} + \frac{3}{4}$$

As you watch, consider…

- What does the teacher do to help other students understand Will's thinking?
- How might the previous use of the Cuisenaire Rods have encouraged Belen's strategy?

Extending “Get to the Whole” Strategy

$$\frac{1}{2} + \frac{3}{4}$$

Get to the Whole-Partner Task

1) $\frac{3}{10} + \frac{4}{5}$

2) $2\frac{5}{6} + \frac{5}{12}$

3) $\frac{1}{6} + 5\frac{11}{12}$

4) $\frac{1}{2} + \frac{5}{8}$

Work with your partner to find at least two solutions for each problem.

Examining the Work of Others

- Pair up with a different group at your table.
- After listening to the group explain, respond with one of the following:
  - –A question you might ask a student with this work sample.
  - –An understanding gained from the strategy used.
  - –A vertical alignment connection you notice.

Make a One

Materials:

- Group of 4
- Paper/Pencil
- Make a One deck of cards (Mix cards and place them face down)

Directions:

1. Each pair takes ten cards.
2. Use as many cards as you can to make fractions that add to 1. Write the equation on your paper.
3. Explain your equation to the other team. You will earn 2 points for each fraction you created.
4. When everyone has completed the round, return to step 1 and continue.
5. Play five rounds. Highest score wins

Tell Me All You Can

- Tell me all you can about the answer to the following expressions that does NOT include the answer.
- Quiet time – jot down all your ideas – share with a partner – share whole group
- Refer to the sentence stems for getting started

Tell Me All You Can

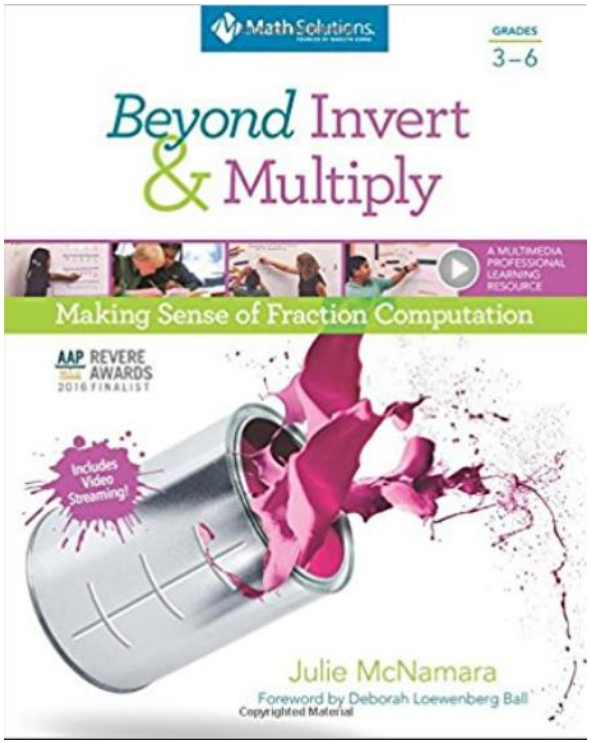
$$\frac{7}{8} \quad \_\_ \quad \frac{2}{3}$$

Tell Me All You Can

$$4\frac{5}{6} + 1\frac{1}{12}$$

- The answer is going to be **about** ___ because ___.
- The answer is going to be **between** ___ and ___ because ___.
- The answer is going to be **less** than __ because __.
- The answer is going to be **greater** than ___ because _____.

Guidelines When Developing Computation Strategies



1. **Let estimation and informal methods play a major role.**
2. Begin with simple contextual tasks.
3. **Connect the meaning of fraction computation with whole-number computation.**
4. Explore each of the operations using models.

Processing the Experience

- How will these ideas influence how you approach adding and subtracting fractions with your students?

Thank You!

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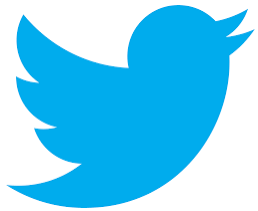

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