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Making Sense of Fractions

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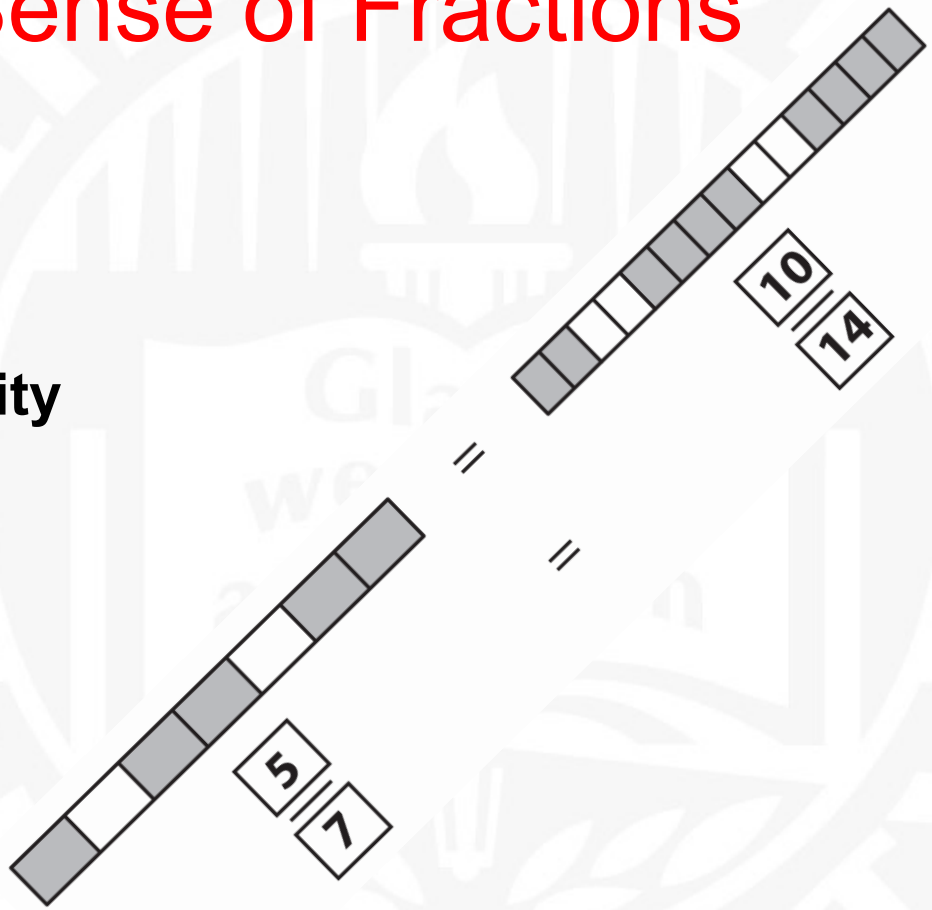

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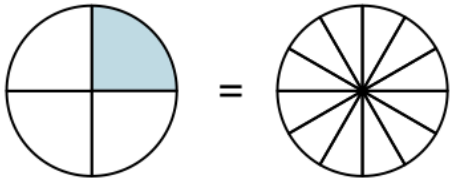
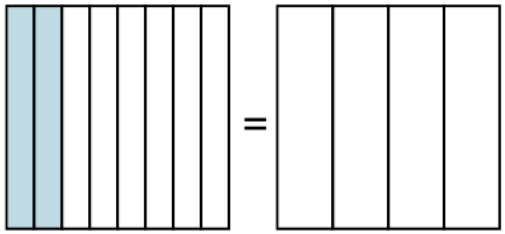
My Go to For Fractions

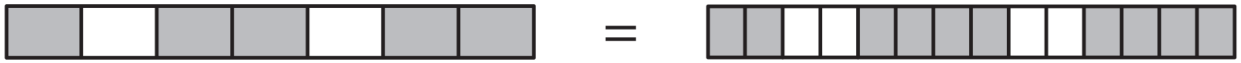
Shade in the visual fraction to find the equivalent fraction.

Ex) $\frac{1}{4} = \frac{3}{12}$



1) $\frac{2}{8} =$



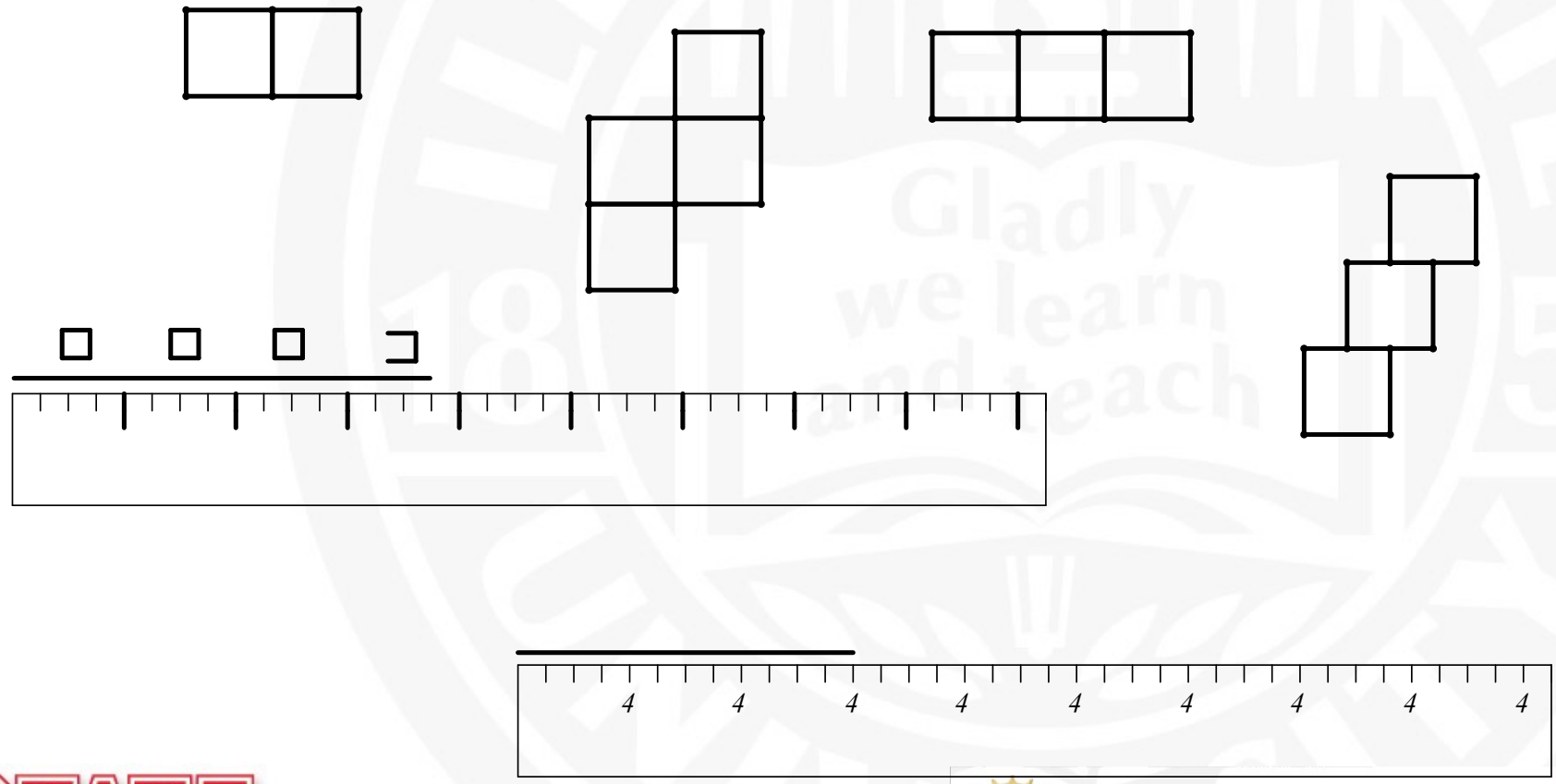


$\frac{5}{7} = \frac{10}{14}$

My Go To Fails Me!

- CCSS.MATH.CONTEN.3.NF.A.2
  - Understand a fraction as a number on the number line; represent fractions on a number line diagram.

Out of my Comfort Zone



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Wraps and Sides

- Get a handful of squares, and a few pipe cleaners.
  - Make a wrap (*w*)
  - A half wrap (*h*)

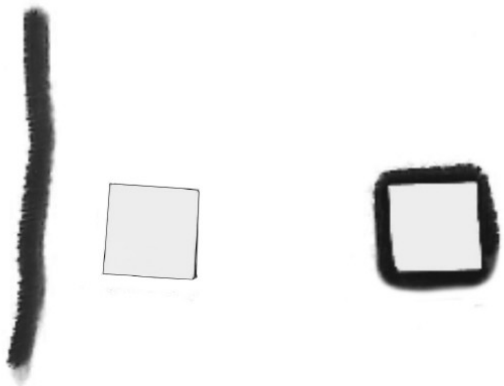
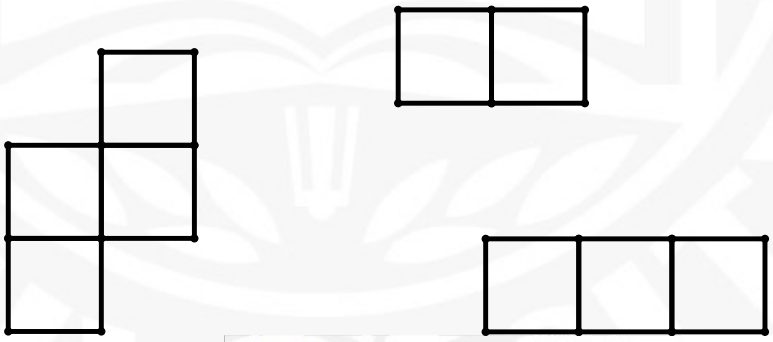


Fig. 4.7. Wrapping a 4-inch section of pipe cleaner around a square-inch tile

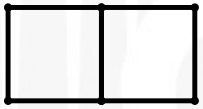
Start Measuring

- Create the three shapes below, one at a time, and measure the perimeter of each in
  - sides (*s*),
  - half wraps (*h*),
  - a combination of wraps (*w*) and half wraps (*h*) or sides (*s*).

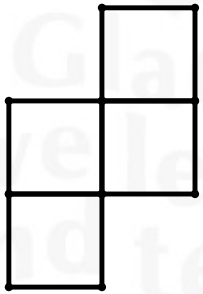


What's the measure? What's the Unit?

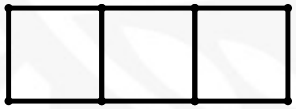
- $6s = 3h = 1w$ and $1h$



- $10s = 5h = 2w$ and $1h$



- $8s = 4h = 2w$



Drew: Third Grader

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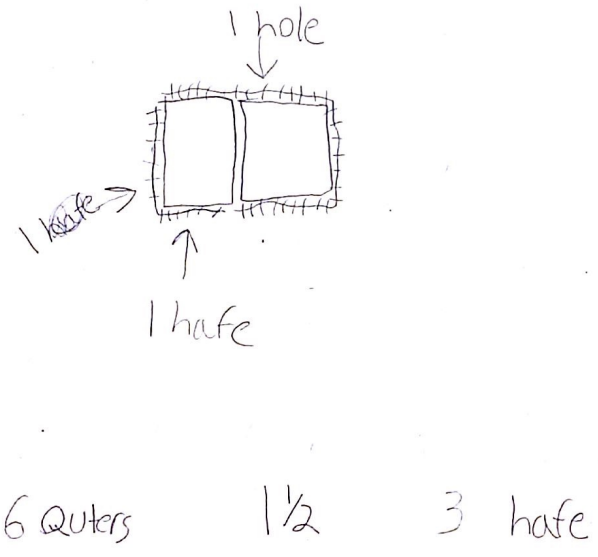
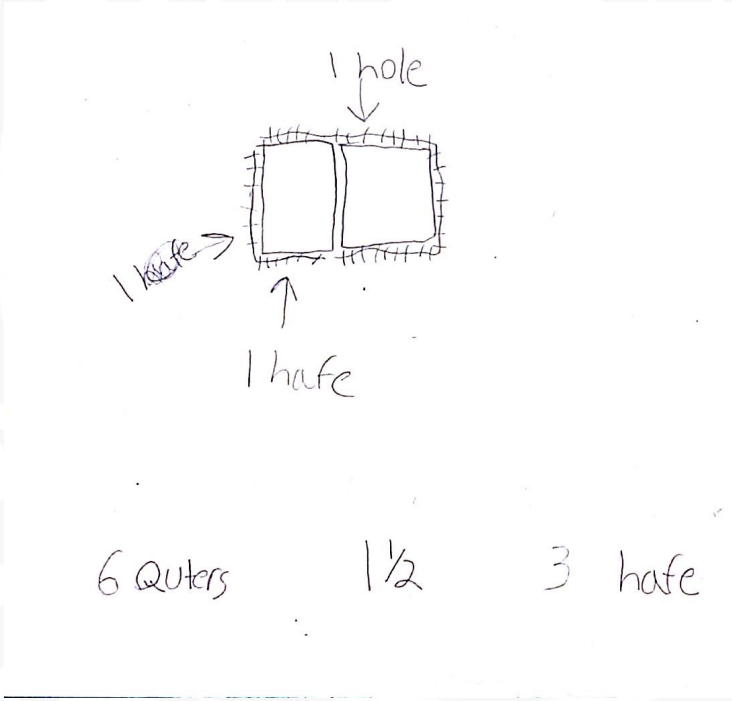
Drew's Thinking

- Drew spontaneously started using the language of halves and quarters and coordinated among the different units.



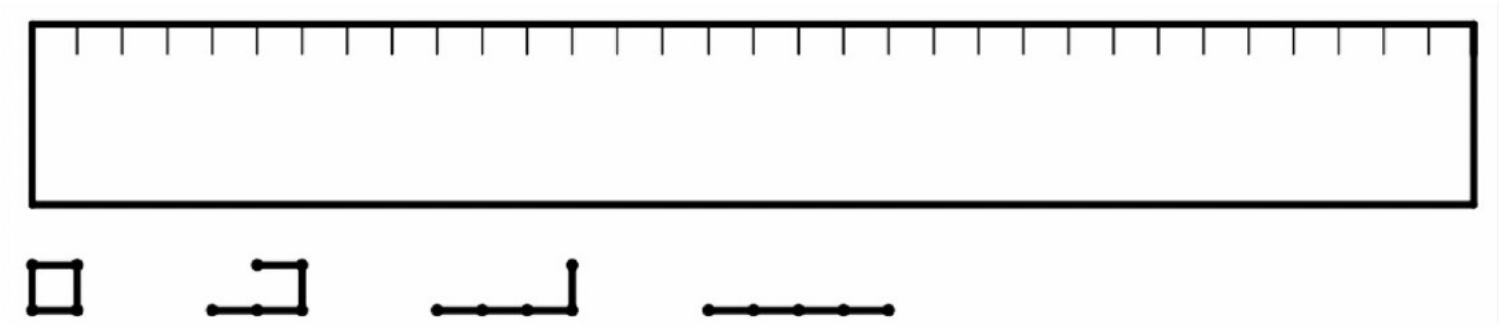
Measures and Units and Equivalent Fractions

- How does Drew's drawing convey equivalent fractions?



Transition to the Ruler

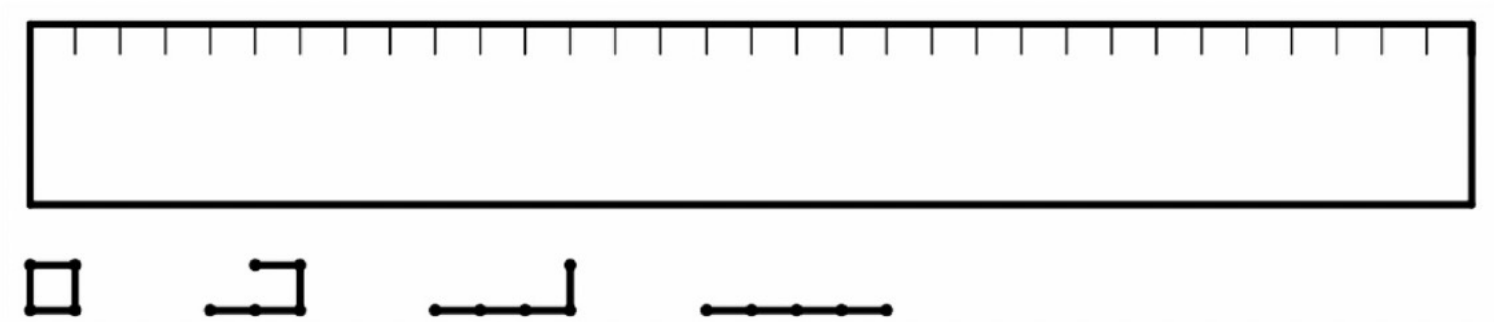
- Wraps and sides ruler
  - Imagine a smaller wrap that is 1-inch long



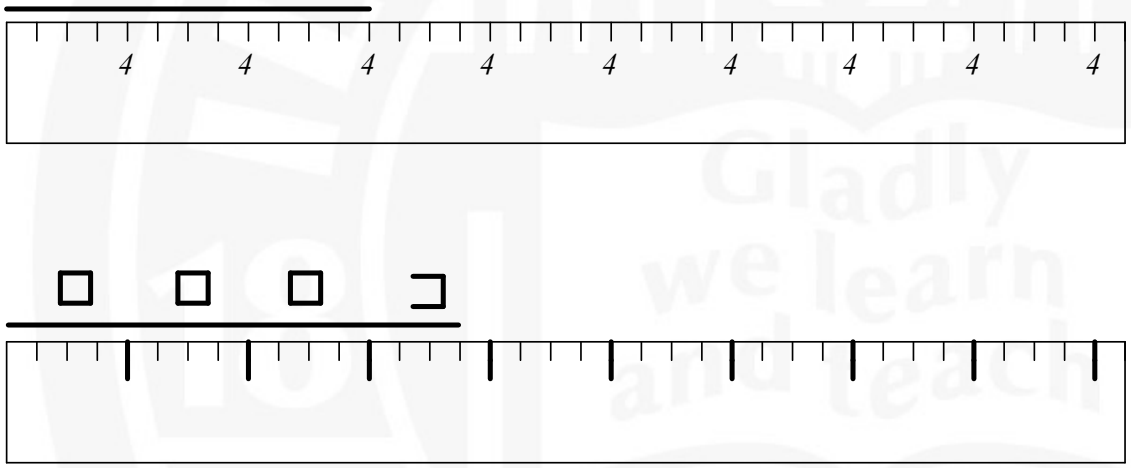
Transition to the Ruler

- CCSS.M ATH.CONTEN.3.NF.A.2
  - Understand a fraction as a number on the number line; represent fractions on a number line diagram.

- Identify a length along the number line and report its **measure** and the **unit** used. (HANDOUT)



Student Ruler Modifications



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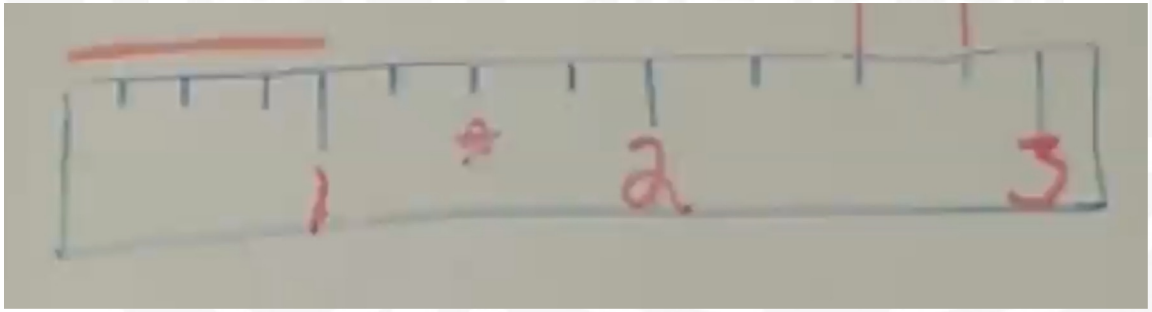
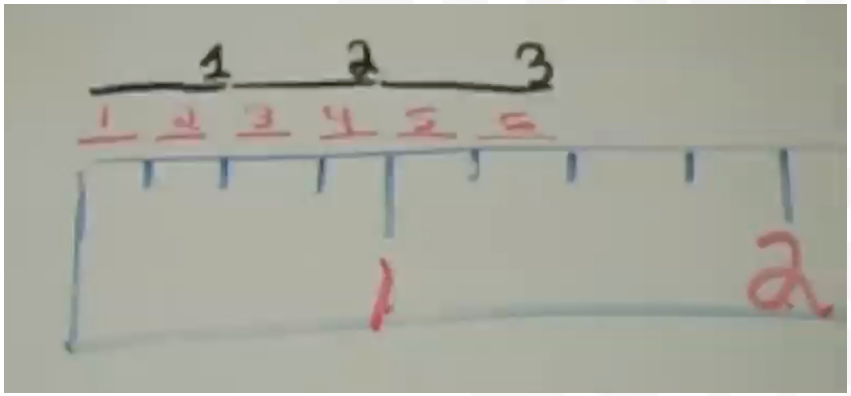
The Payoff

- CCSS.MATH.CONTEN.3.NF.A.2
  - Understand a fraction as a number on the number line; represent fractions on a number line diagram.



The Payoff

- CCSS.MATH.CONTEN.3.NF.A.2
  - Understand a fraction as a number on the number line; represent fractions on a number line diagram.



That location on the number line measures 3 if your unit is halves.

That location on the number line measures 6 if your unit is quarters.

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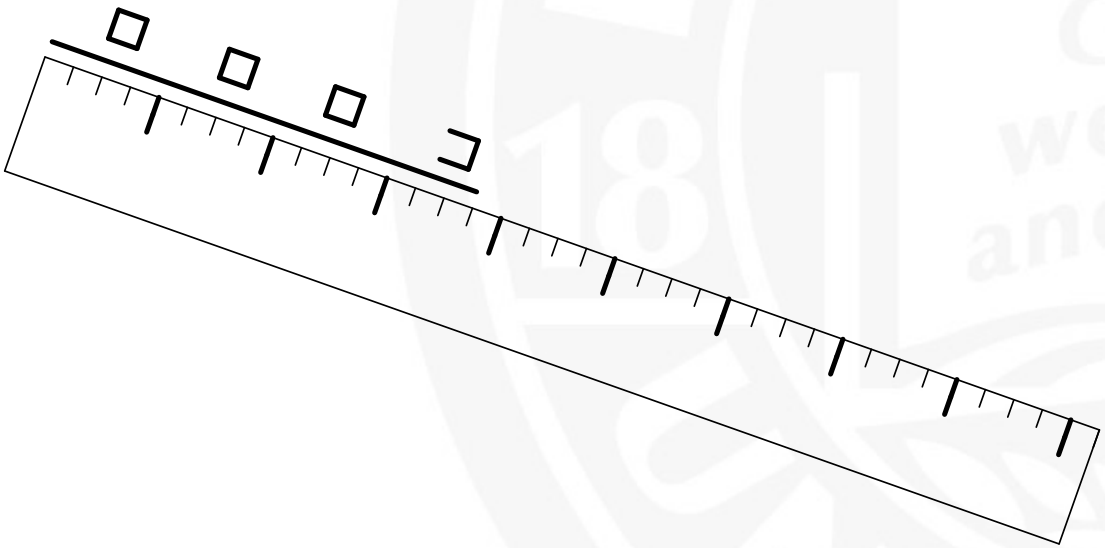
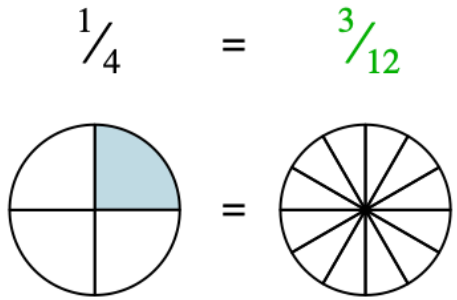
Compare the Models

- How is using length measurement different than the area model?



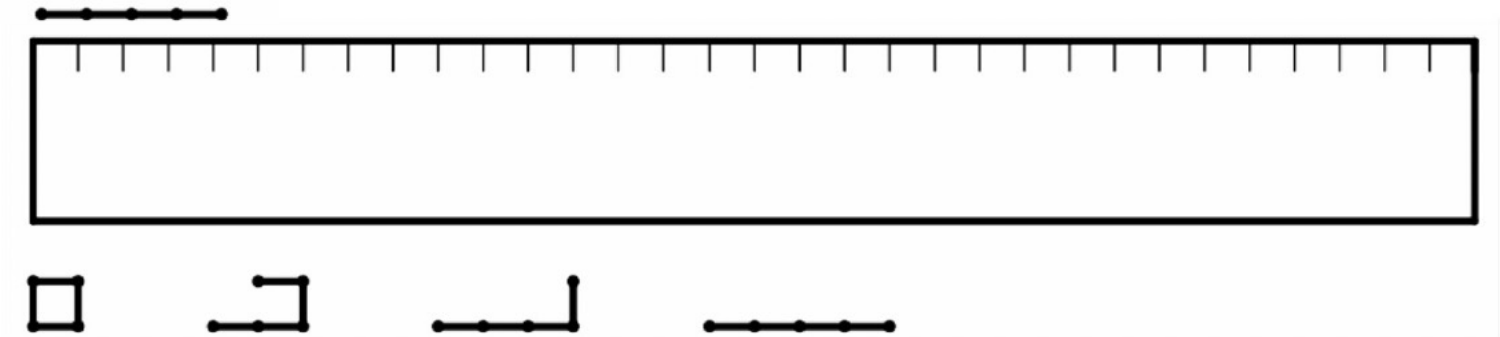


My Reflection

- The shifting between units is more natural
  - A side and a wrap are each reasonable things to call 1.
  - For an area model the other 1s are a “fractional” part of something else rather than a different object.

My Reflection

- The coordination of units is visual
  - I can see that $4s = 1w$.



My Reflection

- The transition to a unit fraction is supported (a measure and a unit).
  - $6s = 6 \text{ quarters} = 6(\frac{1}{4}) = \frac{6}{4}$

Grade 3

Develop understanding of fractions as numbers.

CCSS.MATH.CONTENT.3.NF.A.1

Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*.

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Thank you!
Questions/Comments/Reactions?

- Craig Cullen (cjculle@ilstu.edu)

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