

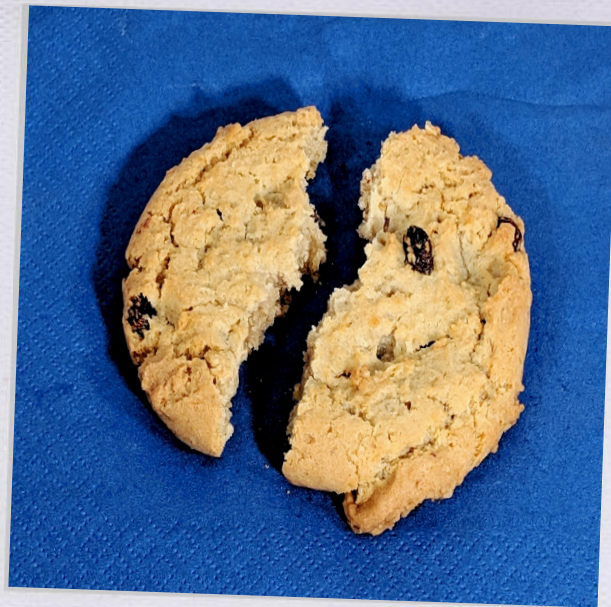
"I'll take the Bigger Half!"

Creating In-Depth Fraction Number Sense

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#NCTMSD19

#NCTManual

... slides continued from first file ...



Things to get right NOW ...

... to set up enduring understandings

- ❑ UNITS are important
- ❑ Same-sized parts \neq same-shaped parts
- ❑ Equivalent fractions may be mathematically equivalent but not contextually equivalent
- ❑ On a number line, the fraction represents BOTH the distance from zero to the positive fraction AND the location of the fraction on the number line



UNITS are important



Half-breakfast



... UNITS are important ...



... UNITS are important ...



... UNITS are important ...



... UNITS are important ...



UNITS are important

- ❑ Fractions (and numbers) are meaningless without a unit that defines the whole (search #unitchat on Twitter)
- ❑ Equivalent fractions depend on the same size unit whole
- ❑ Often the unit whole is implied, not stated



Half-breakfast



Same-sized parts \neq
same-shaped parts



"Just cut me a sliver!"



Same-sized parts \neq
same-shaped parts

Draw a shape for each situation
and divide it into pieces such that:

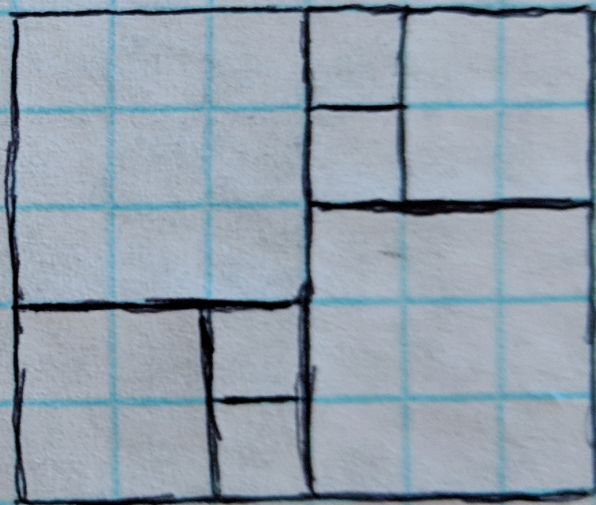
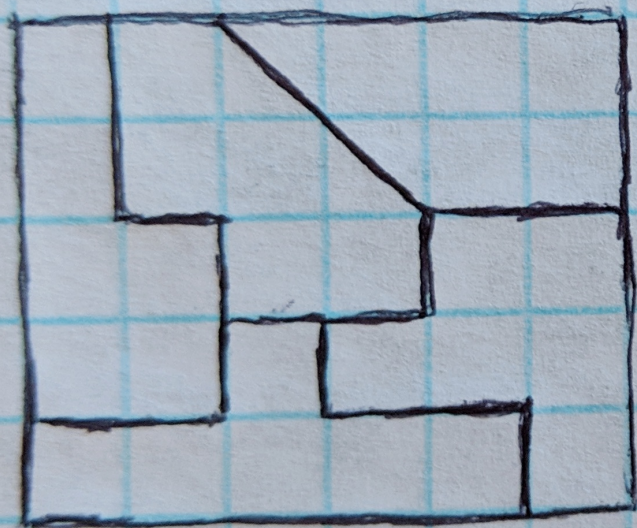
- ❑ The pieces are same size, but not the same shape
- ❑ The pieces are the same shape, but not the same size.

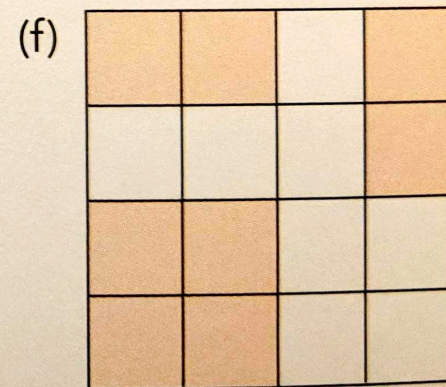
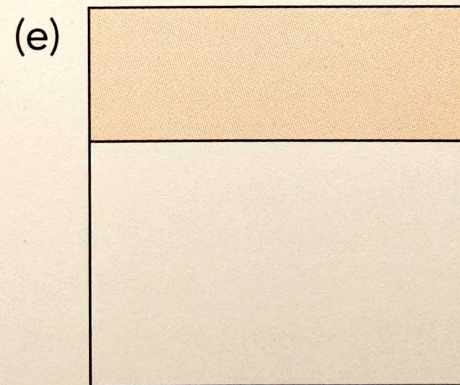
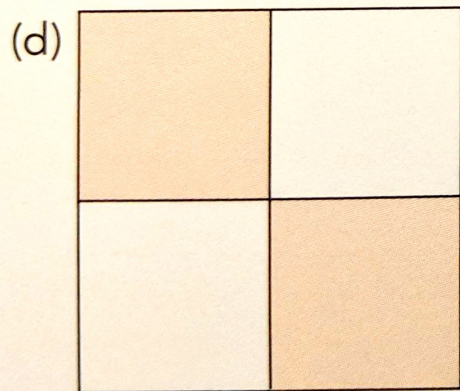
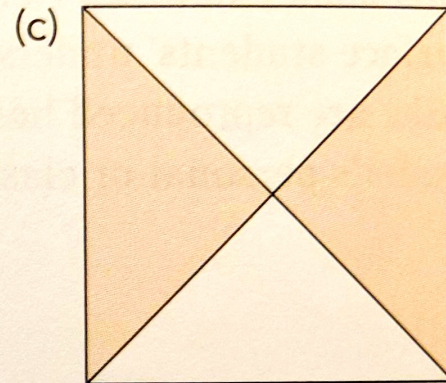
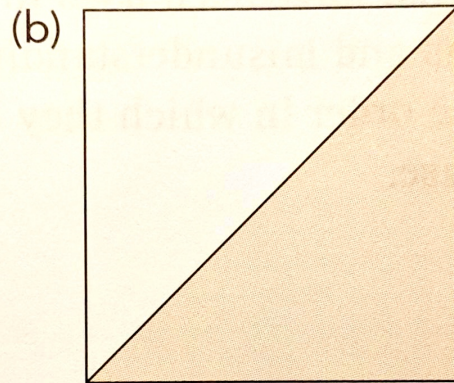
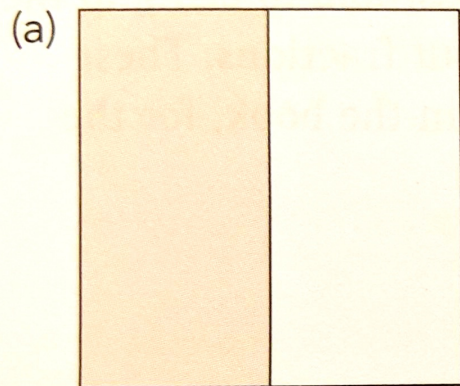


"Just cut me a sliver!"

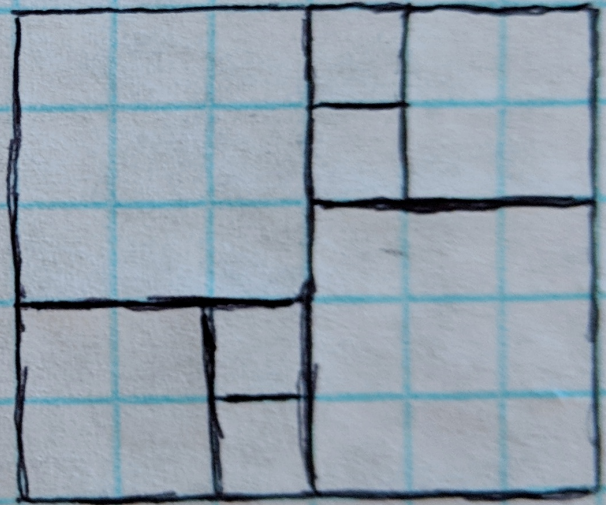
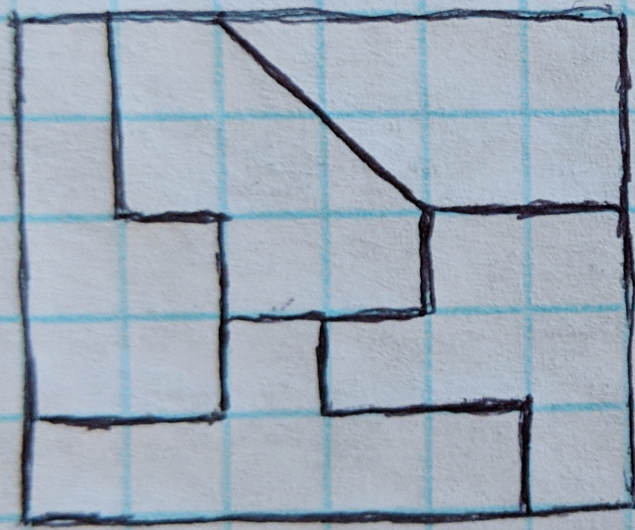


... same-sized parts \neq same-shaped parts ...





... same-sized parts \neq same-shaped parts ...



Same-sized parts \neq same-shaped parts

- ❑ Same-sized parts create “fair shares”
- ❑ Same-sized parts can be written as the same fraction of the whole
- ❑ Different-sized parts represent different fractions of the whole, but can be represented as a multiple of a smaller unit fraction

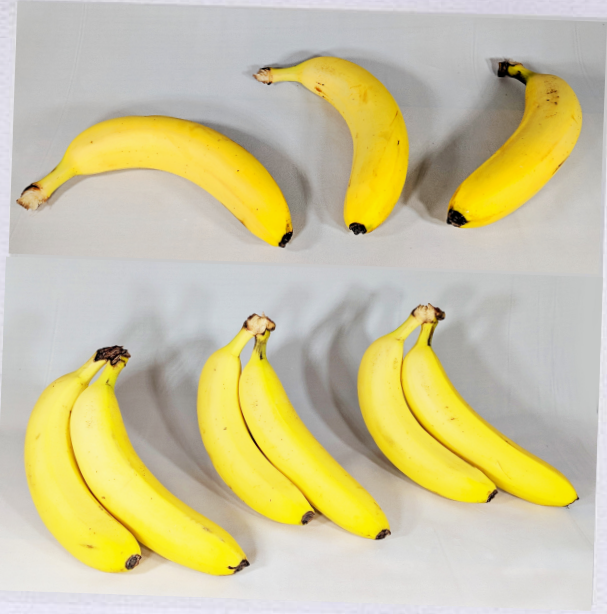


“Just cut me a sliver!”



Mathematically equivalent
 \neq contextually equivalent

Simplest form is not always "best"



$$\frac{1}{3} = \frac{2}{6}$$



Mathematically equivalent
 \neq contextually equivalent

Simplest form is not always “best”

Two examples:

- ❑ Fractions of a composite whole
- ❑ Pattern-finding



$$\frac{1}{3} = \frac{2}{6}$$



Activity:

With 5-6 people around you:

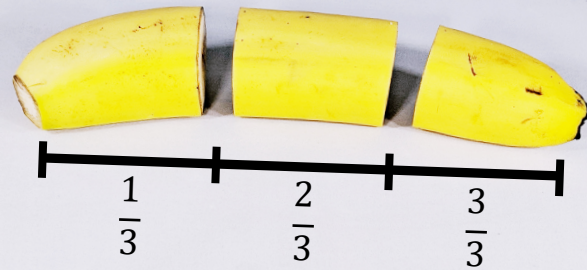
- ❑ Take your index cards with fractions on them
- ❑ Work together to create a number line on the floor where your number line is to scale
- ❑ Discuss why you put things where you did



Make a clothespin number line



Fractions show
distance from zero AND
location on # line



Fractions show
distance from zero AND
location on # line

We need to be explicit
about this dual meaning!



Three Types of Fractions ...

- part of a whole
- ~~part of a set~~
- comparison to a whole/unit
- a measure



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When given the choice of
which chocolate bar half he
would like ...



Reid chose the bigger half!



Credits & Resources

Special thanks to:

- ❑ [SlidesCarnival](#) for the beautiful and free presentation template
- ❑ The many photographers who share their free photos via [Unsplash](#) for people like us to use
- ❑ NCTM for publishing the [two resource books](#) referred to in this presentation and, in fact for the whole series!

Contact Me! I'd love to hear from you!

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