Teaching Fractions: A Conceptual Approach

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What do kids need to know about fractions?

✓ Fractions are just numbers.
✓ Fractions have a home on the number line.
✓ Pictures (like representations of other numbers) are just pictures. Fractions are not pizzas or triangles or squares.
✓ Arithmetic with fractions is similar to operations with whole numbers (+, −, ×, ÷)

Modified from: http://thinkmath.edc.org/index.php/Fractions_PowerPoint
3 Ways to Represent Fractions

1. Area (part of a whole as in 1/3 of a garden)
2. Measurement (or position on a number line)
3. Set or quantity (division, ½ of the class)
3 Ways to Represent Fractions

1. Area (part of a whole as in $1/3$ of a garden)
2. Measurement (or position on a number line)
3. Set or quantity (division, $1/2$ of the class)
Area

We divide a rectangle into 3 equal parts. We shade one of those parts to make $\frac{1}{3}$.
Area

Task

Joel’s farm has multiple gardens. Help Joel figure out what fraction of each garden is completed and what fraction of each garden still needs to be planted.
3 Ways to Represent Fractions

1. Area (part of a whole as in 1/3 of a garden)
2. Measurement (or position on a number line)
3. Set or quantity (division, ½ of the class)
Measurement
Measurement

How long is the line?
3 Ways to Represent Fractions

1. Area (part of a whole as in $\frac{1}{3}$ of a garden)
2. Measurement (or position on a number line)
3. Set or quantity (division, $\frac{1}{2}$ of the class)
Set or Quantity

\[
\frac{1}{2} \text{ of } 6 = \underline{3}
\]

\[
\frac{1}{5} \text{ of } 5 = \underline{1}
\]

What fraction of the candies are red?
Lots of Experiences

- Fractions:
  - $\frac{1}{2}$
  - $\frac{1}{3}$
  - $\frac{1}{4}$
  - $\frac{1}{5}$
  - $\frac{1}{6}$
  - $\frac{1}{8}$

- Lego bricks:
  - 1 whole
  - $\frac{1}{2}$
  - $\frac{1}{4}$
  - $\frac{3}{4}$

- Mathematical equation:
  - $\frac{1}{4} + \frac{3}{4} = \frac{4}{4} = 1$ whole
Lots of Experiences

Pattern Block Fractions

If $\text{blue hexagon} = 1$ whole, use pattern blocks to show the fractions below.

- $\frac{1}{2}$
- $\frac{2}{3}$
- $\frac{5}{6}$
- $\frac{1}{6}$