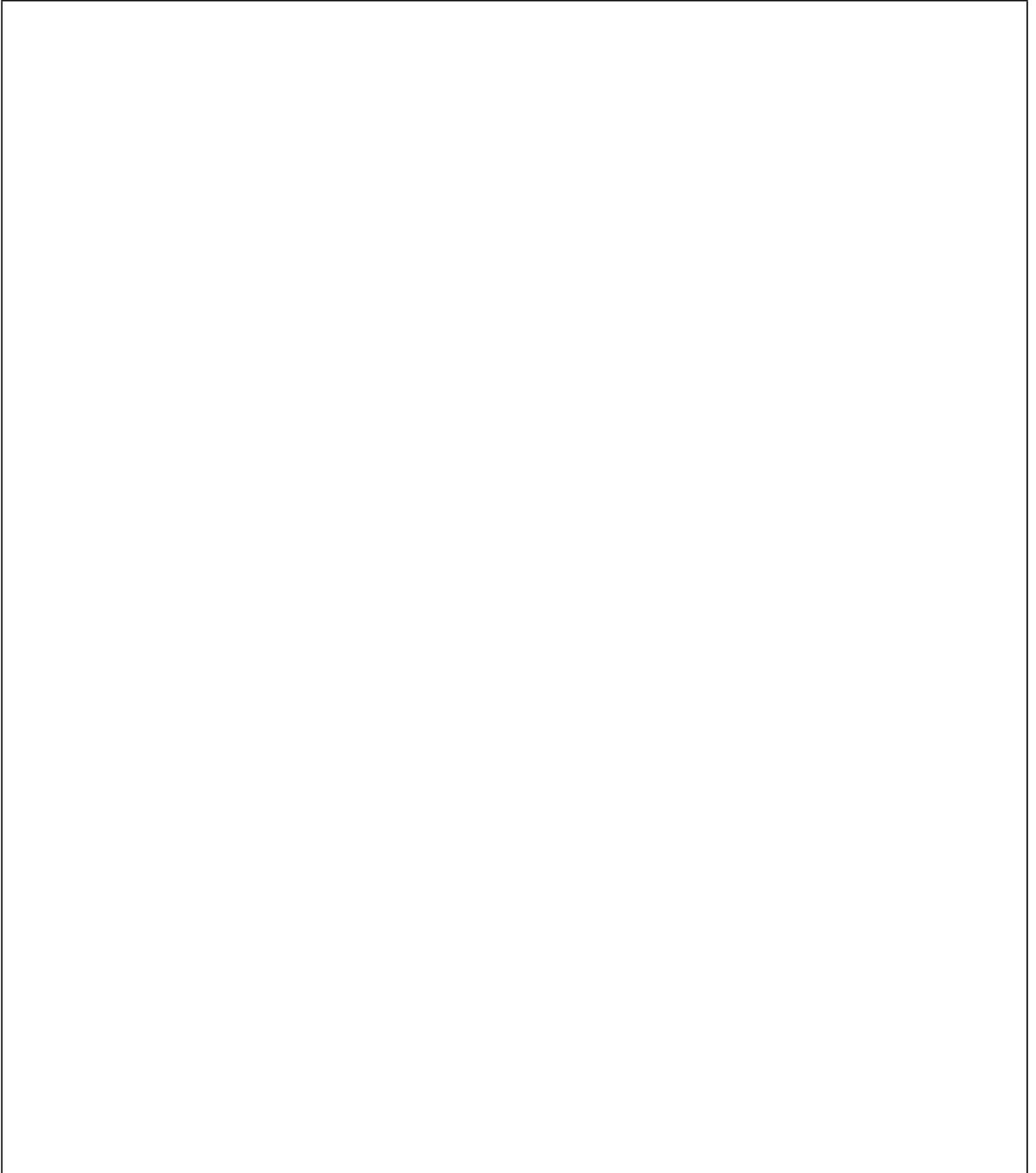## Brainstorming Representations

Multiple representations are incredibly important to mathematics and problem solving. Coming up with new, accurate representations and comparing representations are interesting (and challenging) mathematics.

Here are some of the ways students could be encouraged to represent a problem:

- Draw a picture.

- Draw a series of pictures (like a comic strip).

- Act the problem out.

- Build a three-dimensional model.

- Represent the problem using blocks or counters.

- Represent the problem using a number line or lines.

- Make a graph or graphs.

- Organize quantities in a table.

- Write relationships as equations.

- Tell a different story.

- Write the numbers or expressions in a different way, like:

  - Rewrite the fractions to have common denominators.

  - Rewrite the fractions as improper fractions, or as mixed numbers.

  - Simplify equations or expressions.

  - Express all of the quantities in terms of the smallest item.

  - Use expressions that have the same values but make calculations easier, like changing .375 to $\frac{3}{8}$ or changing $\frac{x}{2}$ to 0.5x.

  - Change how radicals or exponents are represented (e.g., change square root to raising to the $\frac{1}{2}$ power).

How can you represent the problem?