

## Fraction Class

*Suppose we want to design a class to represent a fraction in lowest terms.*

How will we represent this in a class? What should the instance variables be?

Operations we want the fraction to be able to do:

- Construct a fraction from a numerator and a denominator.
- Add, subtract, multiply, divide two fractions.
- Negate a fraction.
- Compare two fractions for equality, greater-than, less-than, etc.
- Convert the fraction to a decimal value.
- Convert the fraction into a String (for toString() and printing).

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Things to keep in mind when designing a class:

- What should be private and what should be public?
- What instance variables do I need? What methods do I need?
- How will the people **using** this class be using it? What is the best way to design the class to make it easy to use?
- What should be static and what should be non-static?
- Can I make the class immutable? (This makes life easier.) *Immutable* means the instance variables never change once they are set for the first time (usually in the constructor).