Putting aside the code you developed previously, make a new class called `Rational` to represent rational numbers. Use a `long` to store each part (numerator and denominator). Be sure your `main` function fully test the class.

1. Create a helper function called `gcd` to calculate the greatest common divisor for the two given parameters. See Euclid's algorithm (use google.com). Use this function to always store rationals in "lowest terms".
2. Create a default, one argument and two argument constructor. For the two argument constructor, throw an exception if the denominator is zero.
3. Supply functions to support addition, subtraction, multiplication and division of two rational operands. After each operation, the rational value should be in "lowest terms" and the denominator positive.
4. Please note the the denominator must always be positive. Negative rationals should be stored with a negative numerator.
5. Implement the insertion operator. (rational values should be displayed as numerator / denominator).
6. Supply a complete program that exercises your class.

You must supply a listing of your program and sample output.