

```
/**
 * Manipuler et calculer avec des fractions.
 *
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 * @version 27/06/2019 7:00:50
 * Classe: 3GIG
 */
public class Fraction
{
    private int numerator;
    private int denominator;

    public Fraction(int pNumerator, int pDenominator)
    {
        setFraction(pNumerator, pDenominator);
    }

    public void setFraction(int pNumerator, int pDenominator)
    {
        numerator = pNumerator;
        denominator = pDenominator;

        simplify();
    }

    public int getNumerator()
    {
        return numerator;
    }

    public int getDenominator()
    {
        return denominator;
    }

    public double getDecimal()
    {
        return numerator / (double) denominator;
    }

    public String toString()
    {
        String res = "["+numerator;
        if (denominator != 1)
            res = res + "/" + denominator;
        res = res + " (" + getDecimal() + ")"]";
        return res;
    }

    public int gcd(int a, int b)
    {
        int h;
        while (b != 0)
        {
            h = a % b;
            a = b;
            b = h;
        }
        return a;
    }

    public int lcm(int a, int b)
    {
        return (a*b) / gcd(a, b);
    }

    public void simplify()
    {
        int g = gcd(numerator, denominator);
        numerator = numerator / g;
        denominator = denominator / g;
    }

    // ... suite page suivante ...
}
```

```
public void add(int pNumerator, int pDenominator)
{
    int l = lcm(denominator, pDenominator);
    int m1 = l / denominator;
    int m2 = l / pDenominator;

    numerator = numerator * m1 + pNumerator * m2;
    denominator = l;

    simplify();
}

public void subtract(int pNumerator, int pDenominator)
{
    add(-pNumerator, pDenominator);
}

public void multiply(int pNumerator, int pDenominator)
{
    numerator = numerator * pNumerator;
    denominator = denominator * pDenominator;

    simplify();
}

public void divide(int pNumerator, int pDenominator)
{
    multiply(pDenominator, pNumerator);
}

/**
 * operation:
 *  $f = f + pF$ 
 * (f est l'objet courant)
 */
public void add(Fraction pF)
{
    add(pF.getNumerator(), pF.getDenominator());
}

/**
 * operation:
 *  $f = f - pF$ 
 * (f est l'objet courant)
 */
public void subtract(Fraction pF)
{
    subtract(pF.getNumerator(), pF.getDenominator());
}

/**
 * operation:
 *  $f = f * pF$ 
 * (f est l'objet courant)
 */
public void multiply(Fraction pF)
{
    multiply(pF.getNumerator(), pF.getDenominator());
}

/**
 * operation:
 *  $f = f / pF$ 
 * (f est l'objet courant)
 */
public void divide(Fraction pF)
{
    divide(pF.getNumerator(), pF.getDenominator());
}
}
```

```
/**
 * Tester la classe Fraction.
 *
 * @author    biech153 (Biersbach Chris) / gamca174 (Gamboa Carlos) / olial319 (Olinger Alex)
 * @version   27/06/2019 7:00:50
 * Classe:    3GIG
 */
public class FractionTest
{
    /**
     * Programme principal.
     */
    public static void main(String[] args)
    {
        Fraction r;
        Fraction f1 = new Fraction(3, 10);
        Fraction f2 = new Fraction(2, 4);

        System.out.print(f1+" + "+f2+" = ");
        f1.add(f2);
        System.out.println(f1);

        System.out.print(f1+" - "+f2+" = ");
        f1.subtract(f2);
        System.out.println(f1);

        System.out.print(f1+" * "+f2+" = ");
        f1.multiply(f2);
        System.out.println(f1);

        System.out.print(f1+" / "+f2+" = ");
        f1.divide(f2);
        System.out.println(f1);
    }
}
```