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ICS 4U1
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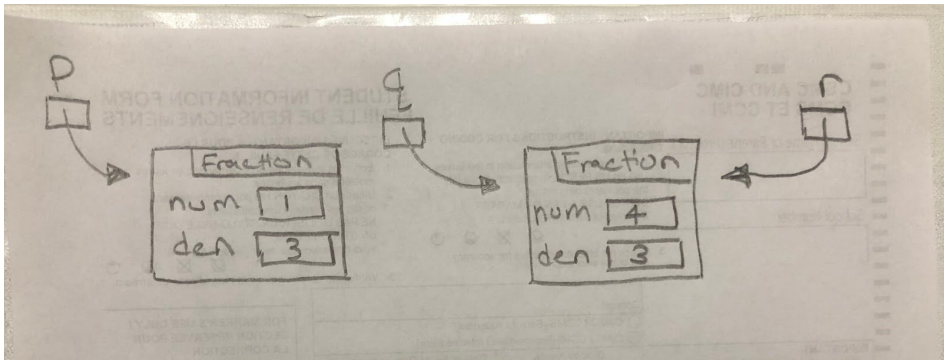
Homework - Section 6.1 (#1-7)

1 The difference between a local variable and a field is that a local variable is defined within a set of curly braces of a method and the variable can't be used outside the method, whereas a field is declared as a member of a class and is active along with the instance of that object class, meaning you can use a field outside the class.

2
```
Fraction f = new Fraction();
f.num = 1;
f.den = 5;
```

3
```
the variable p is not instantiated
p = new Fraction(); // correction
```

4 p = 1/3, q = 4/3, r = 4/3



5
a)
```
f1.num = f1.num * 2;
```
b)
```
int temp = f2.num;
f2.num = f2.den;
f2.den = temp;
```
c)
```
f1.num = f1.num * f2.num;
f1.den = f1.den * f2.den;
```

d)
```
f2.num = f1.num * f2.den + f2.num * f1.den;
f2.den = f1.den * f2.den;
```
e)
```
f1.num = Math.abs(f1.num);
f1.den = Math.abs(f1.den);
```

6 a)
```
Circle c1 = new Circle();
Circle c2 = new Circle();
c1.x = 1;
c1.y = 2;
c1.r = 4;
c2.x = -2;
c2.y = 0;
c2.r = 2;
```
b)
```
double distance = Math.sqrt(c1.x*c1.x + c2.y*c2.y);
System.out.println(distance);
```
c)
```
double centreSeparation = Math.sqrt(Math.pow(c1.x-c2.x, 2)
                                    +(Math.pow(c1.y-c2.y, 2));
System.out.println(centreSeparation);
```
d)
```
double minDistance = centreSeparation - c1.r - c2.r;
System.out.println(minDistance);
```

7 a)
```
class Complex
{
   double a;
   double b;
   double sum;
}
```
b)
```
Complex z1 = new Complex();
Complex z2 = new Complex();
z1.a = 2;
z1.b = 3;
z2.a = 5;
z2.b = -4;
```
c)
```
z1.sum = (z1.a + z1.b) + (z2.a + z2.b);
```