Take care with floating-point values

- Consider

```
double a = 1;
double b = 0.1 + 0.1 + 0.1 + 0.1 + 0.1 + 0.1
                + 0.1 + 0.1 + 0.1 + 0.1
double c = .9999999999999999;
```

- Two true expressions!

```
c == b      b != a
```

- Two false expressions!

```
a == b      b != c
```

- Problem lies with the finite precision of the floating-point types
  - Instead with the ordering operators for closeness

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How to solve this

- Don't compare floating-point values if you can help it!
  - Both doubles and floats
- Need to test if the two doubles are "close" in value

```
final double EPSILON = 0.000001;
boolean foo = Math.abs (a-b) < EPSILON;
```

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