Read Schaum's outline on complex numbers in Chapter 1. Notice the author uses some special terminology, so that you will be able to work his practice problems.

- The notation $\mathbb{C}$ means the set of all complex numbers.
- **Definition**: A *complex number* z can be written in the form $z = a + bi$, where $a, b \in \mathbb{R}$. (The notation means a and b are elements of the set $\mathbb{R}$ of real numbers.)
- **Definition**: The *real part of* z is $\Re z = \Re(a + bi) = a$.
- **Definition**: The *imaginary part of* z is $\Im z = \Im(a + bi) = b$.
- **Definition**: The complex number z is *purely imaginary* if $z = 0 + ci$.
- Notice that real numbers are complex numbers with imaginary part equal to zero. (The real number x is the complex number $x + 0 \cdot i$.) This means $\mathbb{R} \subset \mathbb{C}$, i.e. the set of real numbers is a subset of the set of complex numbers.
- If $z_1 = z_2$, then the real parts must be equal ($\Re z_1 = \Re z_2$), and the imaginary parts must be equal ($\Im z_1 = \Im z_2$). Notice this means that *one complex equation* ($z_1 = z_2$) corresponds to *two real equations* ($\Re z_1 = \Re z_2$, $\Im z_1 = \Im z_2$).
- Arithmetic on complex numbers is the same as arithmetic on real numbers, taking into account that $i^2 = -1$.
- **Problem**: Let $z_1 = 2 + 2i$, $z_2 = 3 - 4i$. Calculate $z_1 + z_2$, $z_1 - z_2$, $z_1 z_2$, and z_1/z_2. Write your answers in the form $a + bi$.