1. Define i.

2. What is the value of i^2?

3. In which profession/career is the concept of i used most often?

4. Simplify $\sqrt{-121}$

5. Simplify $\sqrt{-80}$

6. Write the following number in complex form $(a + bi)$: $\sqrt{-25} + 10$

In $7 - 11$, simplify the following expressions.

7. $(-1 + 6i) + (-4 + 2i)$

8. $(2 - 5i) - (3 + 4i)$

9. $(-6i)(3i)$

10. $(-4i)^2$

11. $(2 + 5i)(-3 + 5i)$

12. Two complex numbers are equal. Find the values of x and y when the following is true:
$x + 18i = -8 + 2yi$

13. Suppose $p = 4 + i$ and $q = -3 - 2i$. Evaluate $p^2 + 2q - 3$

14. The formula $V = IR$ relates voltage (V in volts) to current (I in amps) and resistance (R in ohms). Find the voltage if the current is $11 + 6i$ amps and the resistance is $7 - 3i$ ohms.

15. In a series circuit, the total resistance is found by $R_t = R_1 + R_2$. Find the total resistance if $R_1 = 8 + 2i, R_2 = 4 + i$.

16. In a parallel circuit, the total resistance is found by $R_t = \frac{R_1 \cdot R_2}{R_1 + R_2}$. Find the resistance in a parallel circuit with $R_1 = 8 + 2i, R_2 = 4 + i$.

17. Solve the following equation for x: $9x^2 + 16 = 0$

18. Solve the following equation for x: $x^3 + 64 = 0$