NAME_____DATE_____

ALGEBRA II PRACTICE: COMPLEX NUMBERS

1-6. Simplify each expression.

1. $\sqrt{-12} \cdot \sqrt{-5} \cdot \sqrt{-10}$

2. i^{-235}

3. $\frac{2}{3}(6-5i)-2(3+4i)+\frac{1}{2}\left(\frac{4}{3}-i\right)$

4. $(3-5i)^3$

5. $\dfrac{7+2i}{3-4i}$

6. $(3-i)(2+3i)^{-2}$

7. Simplify. (Hint: use factoring) $(6-5i)(4+5i)^3 +(-6+5i)(4+5i)^3$

8. Find the absolute value of $8+5i$.

9. Find the reciprocal of $8 + 5i$. Write your answer in standard form. Check that your answer is correct by multiplying it by the original number. Before doing the multiplication, answer: what should your product be?
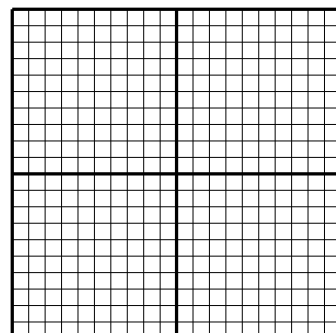
10a. Find $i + i^2 + i^3 + i^4$.

b. Find $i^{27} + i^{28} + i^{29} + i^{30}$.

c. Do you think you will get the same answer if you add any four consecutive powers of i? Explain in complete sentences.

11. Find the values of a and b that make the equation true: $(a + 3b) + 11i = -1 + (3a + 2b)i$

12. Find the average of the complex numbers $4 - 7i$ and $-2 + 5i$. Plot the two numbers and the average on the axes shown.

13. Solve the equation $x(x-4) = -2x^2 - 15$.

14. Find three complex numbers whose absolute value is 5. Only one of them may be a real or pure imaginary number.

15. If $(1+i)^{13} = a + bi$, find the values of a and b.

16. Complete the table.

	Real Part	Imaginary Part	Conjugate	Opposite
2 - 3i				
5i				
-10				