

**Math 2 Unit 11 Worksheet 3A**  
**Imaginary and Complex Numbers**

Name: \_\_\_\_\_  
Date: \_\_\_\_\_ Per: \_\_\_\_\_

[1-9] Rewrite using the imaginary number  $i$ .

1.  $\sqrt{-36}$

2.  $\sqrt{-4}$

3.  $\sqrt{-1}$

4.  $\sqrt{-16}$

5.  $\sqrt{-12}$

6.  $\sqrt{-24}$

7.  $\sqrt{-64}$

8.  $\sqrt{-7}$

9.  $\sqrt{-27}$

[10-15] Find the sum or difference.

10.  $(7 + 4i) + (3 - 5i)$

11.  $(4 - 2i) - (8 - 7i)$

12.  $(8 + 3i) + 2(12 - 8i)$

13.  $(3 + i) + (12 - 13i)$

14.  $(7 + 5i) - 3(18 + 5i)$

15.  $(24 - 13i) - 2(17 + 8i)$

[16-25] Multiply.

16.  $(4i)(7i)$

17.  $(12i)(4i)$

18.  $(2i)(5i)(8i)$

19.  $(2i)(5i)(8i)(10i)$

20.  $(1 + 5i)(4 - 2i)$

	1	+	5i
4			
-2i			

21.  $(2 - 3i)(2 + 3i)$

	2	+	3i
2			
-3i			

22.  $(4 + 8i)^2$

23.  $(2 - 9i)(3 + 4i)$

24.  $(3 - 7i)(3 + 7i)$

25.  $(6 - 8i)(4 - 7i)$

26. Simplify the following to include at most one  $i$ .

$i^1 = \underline{\hspace{2cm}}$

$i^2 = \underline{\hspace{2cm}}$

$i^3 = \underline{\hspace{2cm}}$

$i^4 = \underline{\hspace{2cm}}$

$i^5 = \underline{\hspace{2cm}}$

$i^6 = \underline{\hspace{2cm}}$

$i^7 = \underline{\hspace{2cm}}$

$i^8 = \underline{\hspace{2cm}}$

$i^9 = \underline{\hspace{2cm}}$

$i^{10} = \underline{\hspace{2cm}}$

27. What patterns do you notice in your answers on number 26?

28. Based on the patterns you noticed, simplify the following to include at most one  $i$ .

$i^{12} = \underline{\hspace{2cm}}$

$i^{23} = \underline{\hspace{2cm}}$

$i^{28} = \underline{\hspace{2cm}}$

$i^{46} = \underline{\hspace{2cm}}$