Name _____ Date _____ Class _____

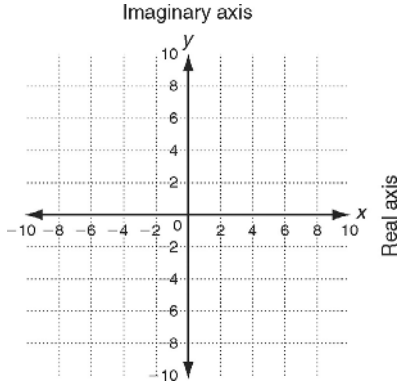
LESSON 13-2

Practice B

Operations with Complex Numbers

Graph each complex number.

1. -6
2. $4i$
3. $6 + 7i$
4. $-8 - 5i$
5. $-3i$



Find each absolute value.

6. $|4 + 2i|$

7. $|5 - i|$

8. $|-3i|$

Add or subtract. Write the result in the form *a* + *bi*.

9. $(-1 + 2i) + (6 - 9i)$

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

11. $(-5 + 2i) + (-2 + 8i)$

Multiply. Write the result in the form *a* + *bi*.

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

13. $(4 + 5i)(2 + i)$

14. $(-1 + 6i)(3 - 2i)$

Simplify.

15. $\dfrac{2 + 4i}{3i}$

16. $\dfrac{3 + 2i}{4 + i}$

17. $2i^{11}$

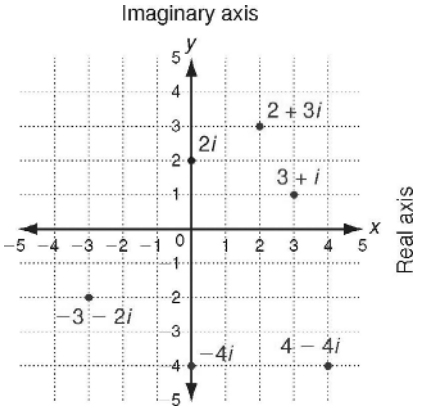
Solve.

18. In electronics, the total resistance to the flow of electricity in a circuit is called the impedance, Z. Impedance is represented by a complex number. The total impedance in a series circuit is the sum of individual impedances. The impedance in one part of a circuit is $Z_1 = 3 + 4i$. In another part of a circuit, the impedance is $Z_1 = 5 - 2i$. What is the total impedance of the circuit?

© Houghton Mifflin Harcourt Publishing Company

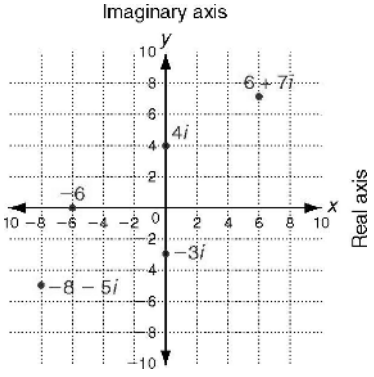
13-2 OPERATIONS WITH COMPLEX NUMBERS

Practice A



7. $2\sqrt{10}$
8. $\sqrt{10}$
9. 5
10. $10i$
11. $-4i$
12. $2 + 12i$
13. $4 + 6i$
14. $-3 - 4i$
15. $10 - 5i$
16. $6i$
17. $-20i$
18. $12 + 16i$
19. $-10 + 6i$
20. $7 - 11i$
21. $-8 + 9i$
22. $-i$
23. $\frac{5}{3} - \frac{2}{3}i$
24. $\frac{1}{5} + \frac{13}{5}i$

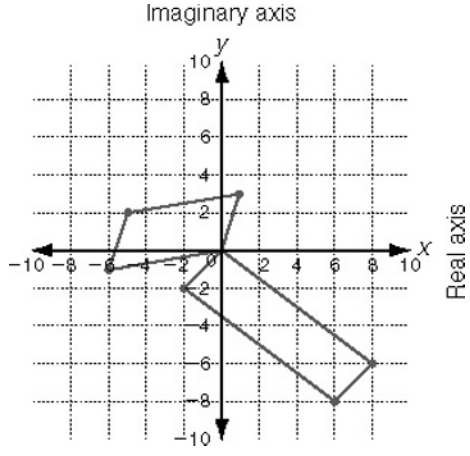
Practice B



6. $2\sqrt{5}$
7. $\sqrt{26}$
8. 3
9. $5 - 7i$
10. $-1 - 10i$
11. $-7 + 10i$
12. $9 + 6i$
13. $3 + 14i$
14. $9 + 20i$
15. $\frac{4}{3} - \frac{2}{3}i$
16. $\frac{14}{17} + \frac{5}{17}i$
17. $-2i$
18. $8 + 2i$

Practice C

1. $6\sqrt{5}$
2. $\sqrt{65}$
3. $\frac{\sqrt{2}}{2}$
4. $13 + 3i$
5. $-8 - 17i$
6. $\frac{1}{4} - \frac{1}{2}i$
7. $-5 + 2i$
8. $6 - 8i$



9. $\frac{53}{65} + \frac{31i}{65}$
10. $-14 - 80i$
11. $\frac{9}{5} + \frac{7i}{5}$
12. $2 - i$
13. $-4i$
14. 10
15. $14 + 5i$

Reteach

6. 8
7. $\sqrt{5}$
8. 3
9. $\sqrt{29}$
10. 9
11. 5
12. $9 - i$
13. $7 - 4i$
14. $4 + 8i$
15. $3 - 8i$
16. $-2i$
17. $-15 + 20i$
18. $10i$
19. $7 + 4i$
20. $-12 + 16i$

Challenge

1. Square roots should be simplified first.
2. 6; 6

© Houghton Mifflin Harcourt Publishing Company