21. **TAKS REASONING** What is the standard form of the expression $(2 + 3i) - (7 + 4i)$?

(A) -4 (B) $-5 + 7i$ (C) $-5 - i$ (D) $5 + i$

EXAMPLES 4 and 5 on pp. 277–278 for Exs. 22–33

MULTIPLYING AND DIVIDING **Write the expression as a complex number in standard form.**

22. $6i(3 + 2i)$ **23.** $-i(4 - 8i)$ **24.** $(5 - 7i)(-4 - 3i)$

25. $(-2 + 5i)(-1 + 4i)$ **26.** $(-1 - 5i)(-1 + 5i)$ **27.** $(8 - 3i)(8 + 3i)$

28. $\frac{7i}{8 + i}$ **29.** $\frac{6i}{3 - i}$ **30.** $\frac{-2 - 5i}{3i}$

31. $\frac{4 + 9i}{12i}$ **32.** $\frac{7 + 4i}{2 - 3i}$ **33.** $\frac{-1 - 6i}{5 + 9i}$

EXAMPLE 6 on p. 278 for Exs. 34–41

PLOTTING COMPLEX NUMBERS **Plot the numbers in the same complex plane.**

34. $1 + 2i$ **35.** $-5 + 3i$ **36.** $-6i$ **37.** $4i$

38. $-7 - i$ **39.** $5 - 5i$ **40.** 7 **41.** -2

EXAMPLE 7 on p. 279 for Exs. 42–50

FINDING ABSOLUTE VALUE **Find the absolute value of the complex number.**

42. $4 + 3i$ **43.** $-3 + 10i$ **44.** $10 - 7i$ **45.** $-1 - 6i$

46. $-8i$ **47.** $4i$ **48.** $-4 + i$ **49.** $7 + 7i$

50. **TAKS REASONING** What is the absolute value of $9 + 12i$?

(A) 7 (B) 15 (C) 108 (D) 225

STANDARD FORM **Write the expression as a complex number in standard form.**

51. $-8 - (3 + 2i) - (9 - 4i)$ **52.** $(3 + 2i) + (5 - i) + 6i$ **53.** $5i(3 + 2i)(8 + 3i)$

54. $(1 - 9i)(1 - 4i)(4 - 3i)$ **55.** $\frac{(5 - 2i) + (5 + 3i)}{(1 + i) - (2 - 4i)}$ **56.** $\frac{(10 + 4i) - (3 - 2i)}{(6 - 7i)(1 - 2i)}$

ERROR ANALYSIS ***Describe*** **and correct the error in simplifying the expression.**

57.

$$(1 + 2i)(4 - i)$$
$$= 4 - i + 8i - 2i^2$$
$$= -2i^2 + 7i + 4$$

58.

$$|2 - 3i| = \sqrt{2^2 - 3^2}$$
$$= \sqrt{-5}$$
$$= i\sqrt{5}$$

59. **ADDITIVE AND MULTIPLICATIVE INVERSES** The additive inverse of a complex number z is a complex number z_a such that $z + z_a = 0$. The multiplicative inverse of z is a complex number z_m such that $z \cdot z_m = 1$. Find the additive and multiplicative inverses of each complex number.

a. $z = 2 + i$ **b.** $z = 5 - i$ **c.** $z = -1 + 3i$

60. **TAKS REASONING** Find two imaginary numbers whose sum is a real number. How are the imaginary numbers related?

CHALLENGE **Write the expression as a complex number in standard form.**

61. $\frac{a + bi}{c + di}$ **62.** $\frac{a - bi}{c - di}$ **63.** $\frac{a + bi}{c - di}$ **64.** $\frac{a - bi}{c + di}$

= WORKED-OUT SOLUTIONS on p. WS1 = TAKS PRACTICE AND REASONING