

19. **TEXAS TAKS REASONING** What is a completely simplified expression for $\sqrt{108}$?
- (A) $2\sqrt{27}$ (B) $3\sqrt{12}$ (C) $6\sqrt{3}$ (D) $10\sqrt{8}$

ERROR ANALYSIS Describe and correct the error in simplifying the expression or solving the equation.

20.
$$\begin{aligned}\sqrt{96} &= \sqrt{4} \cdot \sqrt{24} \\ &= 2\sqrt{24}\end{aligned}$$

21.
$$\begin{aligned}5x^2 &= 405 \\ x^2 &= 81 \\ x &= 9\end{aligned}$$

EXAMPLES 3 and 4

on pp. 267–268
for Exs. 21–34

SOLVING QUADRATIC EQUATIONS Solve the equation.

22. $s^2 = 169$ 23. $a^2 = 50$ 24. $x^2 = 84$
25. $6z^2 = 150$ 26. $4p^2 = 448$ 27. $-3w^2 = -213$
28. $7r^2 - 10 = 25$ 29. $\frac{x^2}{25} - 6 = -2$ 30. $\frac{t^2}{20} + 8 = 15$
31. $4(x - 1)^2 = 8$ 32. $7(x - 4)^2 - 18 = 10$ 33. $2(x + 2)^2 - 5 = 8$
34. **TEXAS TAKS REASONING** What are the solutions of $3(x + 2)^2 + 4 = 13$?
- (A) $-5, 1$ (B) $-1, 5$ (C) $-2 \pm \sqrt{3}$ (D) $2 \pm \sqrt{3}$
35. **TEXAS TAKS REASONING** Describe two different methods for solving the equation $x^2 - 4 = 0$. Include the steps for each method.
36. **TEXAS TAKS REASONING** Write an equation of the form $x^2 = s$ that has (a) two real solutions, (b) exactly one real solution, and (c) no real solutions.
37. **CHALLENGE** Solve the equation $a(x + b)^2 = c$ in terms of a , b , and c .

PROBLEM SOLVING

EXAMPLE 5

on p. 269
for Exs. 38–39

38. **CLIFF DIVING** A cliff diver dives off a cliff 40 feet above water. Write an equation giving the diver's height h (in feet) above the water after t seconds. How long is the diver in the air?

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39. **ASTRONOMY** On any planet, the height h (in feet) of a falling object t seconds after it is dropped can be modeled by $h = -\frac{g}{2}t^2 + h_0$ where h_0 is the object's initial height (in feet) and g is the acceleration (in feet per second squared) due to the planet's gravity. For each planet in the table, find the time it takes for a rock dropped from a height of 150 feet to hit the surface.

Planet	Earth	Mars	Jupiter	Saturn	Pluto
g (ft/sec ²)	32	12	76	30	2

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