Name _____ Class _____ Date _____

Practice 3-8

Finding and Estimating Square Roots

Tell whether each expression is *rational* or *irrational.*

1. $-\sqrt{64}$ **2.** $\sqrt{1600}$ **3.** $\pm\sqrt{160}$ **4.** $\sqrt{144}$

5. $\sqrt{125}$ **6.** $-\sqrt{340}$ **7.** $\sqrt{1.96}$ **8.** $-\sqrt{0.09}$

Use a calculator to find each square root to the nearest hundredth.

9. $\sqrt{20}$ **10.** $\sqrt{73}$ **11.** $-\sqrt{38}$ **12.** $\sqrt{130}$

13. $\sqrt{149.3}$ **14.** $-\sqrt{8.7}$ **15.** $\sqrt{213.8}$ **16.** $-\sqrt{320.7}$

17. $\sqrt{113.9}$ **18.** $-\sqrt{840.6}$ **19.** $-\sqrt{1348.9}$ **20.** $\sqrt{928.2}$

Simplify each expression.

21. $\sqrt{49}$ **22.** $-\sqrt{2.25}$ **23.** $\sqrt{\frac{1}{16}}$ **24.** $\sqrt{400}$

25. $\sqrt{6.25}$ **26.** $\pm\sqrt{\frac{36}{25}}$ **27.** $\sqrt{196}$ **28.** $\sqrt{2.56}$

29. $\sqrt{0.25}$ **30.** $\pm\sqrt{\frac{9}{100}}$ **31.** $\sqrt{576}$ **32.** $\pm\sqrt{\frac{121}{36}}$

33. $\sqrt{1600}$ **34.** $-\sqrt{0.04}$ **35.** $\sqrt{2500}$ **36.** $\sqrt{4.41}$

Between what two consecutive integers is each square root?

37. $\sqrt{40}$ **38.** $\sqrt{139}$ **39.** $-\sqrt{75}$ **40.** $\sqrt{93}$

41. $-\sqrt{105.6}$ **42.** $-\sqrt{173.2}$ **43.** $\sqrt{1123.7}$ **44.** $\sqrt{216.9}$

Solve the following problems. Round to the nearest tenth if necessary.

45. You are to put a metal brace inside a square shipping container. The formula $d = \sqrt{2x^2}$ gives the length of the metal brace, where x is the length of the side of the container. Find the length of the brace for each container side length.

a. $x = 3$ ft **b.** $x = 4.5$ ft **c.** $x = 5$ ft **d.** $x = 8$ ft

46. You are designing a cone-shaped storage container. Use the formula $r = \sqrt{\frac{3V}{\pi h}}$ to find the radius of the storage container. Find the radius when $V = 10{,}000$ ft^3 and $h = 10$ ft.