Name _____ Date _____

10-2 Estimating Square Roots (pages 415–417)

You can estimate to find the square root of a number that is not a perfect square.

EXAMPLE

Estimate $\sqrt{13}$ to the nearest whole number.

Since 13 is not a perfect square, estimate $\sqrt{13}$ by finding the two perfect squares closest to 13.

1, 4, 9, 16, 25, … *List some perfect squares. 13 is between 9 and 16.*

$\sqrt{9} < \sqrt{13} < \sqrt{16}$ *Find the square root of each number.*

$3 < \sqrt{13} < 4$

This means that $\sqrt{13}$ is between 3 and 4. Since 13 is closer to 16 than 9, then the best whole number estimate for $\sqrt{13}$ is 4.

Try These Together

Estimate each square root to the nearest whole number.

1. $\sqrt{7}$

HINT: Between which two perfect squares does 7 fall?

2. $\sqrt{48}$

HINT: Between which two perfect squares does 48 fall?

PRACTICE

Estimate each square root to the nearest whole number.

3. $\sqrt{75}$ **4.** $\sqrt{93}$ **5.** $\sqrt{119}$

6. $\sqrt{150}$ **7.** $\sqrt{288}$ **8.** $\sqrt{464}$

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

9. $\sqrt{30}$ **10.** $\sqrt{45}$ **11.** $\sqrt{63}$ **12.** $\sqrt{90}$

13. $\sqrt{130}$ **14.** $\sqrt{333}$ **15.** $\sqrt{750}$ **16.** $\sqrt{1{,}122}$

17. Money Matters The Etherton family purchased a square lot for their new home that has an area of one acre. An acre is 4,840 square yards. How many yards is one side of their property? Round to the nearest tenth of a yard.

18. **Standardized Test Practice** Find $\sqrt{65}$ to the nearest tenth.

A 8.0 **B** 8.1 **C** 9.0 **D** 9.1

Answers: **1.** 3 **2.** 7 **3.** 9 **4.** 10 **5.** 11 **6.** 12 **7.** 17 **8.** 22 **9.** 5.5 **10.** 6.7 **11.** 7.9 **12.** 9.5 **13.** 11.4 **14.** 18.2 **15.** 27.4 **16.** 33.5 **17.** 69.6 yards **18.** B