



Name \_\_\_\_\_ Date \_\_\_\_\_

## Estimating Square Roots (Pages 386–389)

You can estimate the square roots of numbers that are not perfect squares.

### Estimating Square Roots

To estimate the square root of  $r$ , find perfect squares on each side of  $r$ . Use these to estimate.

### EXAMPLES

**A** Estimate  $\sqrt{38}$  to the nearest whole number.

*Find a perfect square a little less than 38 and one a little more than 38.  $\sqrt{36} < \sqrt{38} < \sqrt{49}$ , so  $6 < \sqrt{38} < 7$ . Since 38 is closer to 36 than 49, the best whole number estimate for  $\sqrt{38}$  is 6.*

**B** Estimate  $\sqrt{21.6}$  to the nearest whole number.

*Find a perfect square a little less than and a little more than 21.6.  $\sqrt{16} < \sqrt{21.6} < \sqrt{25}$ , so  $4 < \sqrt{21.6} < 5$ . Since 21.6 is closer to 25 than 16, the best whole number estimate for  $\sqrt{21.6}$  is 5.*

### Try These Together

1. Estimate  $\sqrt{69}$  to the nearest whole number.

*HINT: 69 is between the perfect squares 64 and 81.*

2. Estimate  $\sqrt{7}$  to the nearest whole number.

*HINT: Find the closest perfect squares on each side of 8.*

### PRACTICE

**Estimate to the nearest whole number.**

3.  $\sqrt{27}$

4.  $\sqrt{147}$

5.  $\sqrt{120}$

6.  $\sqrt{95}$

7.  $\sqrt{254}$

8.  $\sqrt{54}$

9.  $\sqrt{490}$

10.  $\sqrt{313}$

11.  $\sqrt{1.25}$

12.  $\sqrt{101}$

13.  $\sqrt{399}$

14.  $\sqrt{17.4}$

**15. Sewing** You are covering the top of a square stool with felt. The area of the top is 140 square inches. Estimate the length of one side of the top of the stool.



**16. Standardized Test Practice** How many whole numbers are there whose square roots are greater than 9 but less than 10?

A 10

B 15

C 18

D 22

Answers: 1. 8 2. 3 3. 5 4. 12 5. 11 6. 10 7. 16 8. 7 9. 22 10. 18 11. 1 12. 10 13. 20 14. 4 15. 12 in. 16. C