14.4 Exercises

Check It Out
Help with Homework
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Vocabulary and Concept Check

1. **VOCABULARY** How are rational numbers and irrational numbers different?
2. **WRITING** Describe a method of approximating $\sqrt{32}$.
3. **VOCABULARY** What are real numbers? Give three examples.
4. **WHICH ONE DOESN'T BELONG?** Which number does *not* belong with the other three? Explain your reasoning.

$-\frac{11}{12}$ | 25.075 | $\sqrt{8}$ | $-3.\overline{3}$

Practice and Problem Solving

Tell whether the rational number is a reasonable approximation of the square root.

5. $\frac{559}{250}, \sqrt{5}$
6. $\frac{3021}{250}, \sqrt{11}$
7. $\frac{678}{250}, \sqrt{28}$
8. $\frac{1677}{250}, \sqrt{45}$

Classify the real number.

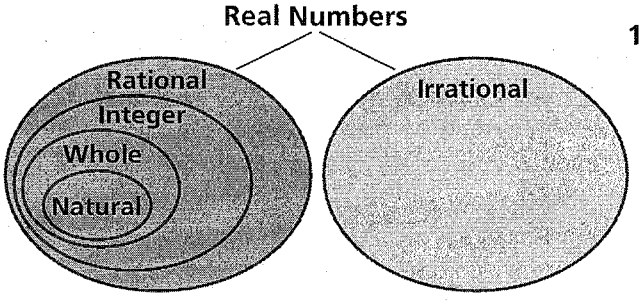
9. 0 Rational
10. $\sqrt[3]{343}$ Rational
11. $\frac{\pi}{6}$ Irrational
12. $-\sqrt{81}$ Rational
13. -1.125 Rational
14. $\frac{52}{13}$ Rational
15. $\sqrt[3]{-49}$ Irrational
16. $\sqrt{15}$ Irrational

17. **ERROR ANALYSIS** Describe and correct the error in classifying the number.

$\sqrt{144}$ is irrational.

$\sqrt{144}$ is 12 which is rational

18. **SCRAPBOOKING** You cut a picture into a right triangle for your scrapbook. The lengths of the legs of the triangle are 4 inches and 6 inches. Is the length of the hypotenuse a rational number? Explain.



19. **VENN DIAGRAM** Place each number in the correct area of the Venn Diagram.
    a. the last digit of your phone number
    b. the square root of any prime number
    c. the ratio of the circumference of a circle to its diameter

Estimate the square root to the nearest (a) integer and (b) tenth.

20. $\sqrt{46}$
21. $\sqrt{685}$
22. $-\sqrt{61}$
23. $-\sqrt{105}$
24. $\sqrt{\frac{27}{4}}$
25. $-\sqrt{\frac{335}{2}}$