Chapter 1 Review

Vocabulary Review

Converse of the Pythagorean Theorem (p. 32)
coordinate plane (p. 37)
cube root (p. 14)
hypotenuse (p. 20)
irrational numbers (p. 11)
legs (p. 20)
ordered pair (p. 37)
origin (p. 37)
perfect cube (p. 14)
perfect square (p. 9)
Pythagorean Theorem (p. 20)
quadrants (p. 37)
rational number (p. 4)
real numbers (p. 11)
repeating decimal (p. 5)
square root (p. 9)
terminating decimal (p. 4)
Triangle Inequality Theorem (p. 31)
***x*-axis** (p. 37)
***x*-coordinate** (p. 37)
***y*-axis** (p. 37)
***y*-coordinate** (p. 37)

Choose the correct vocabulary term(s) above to complete each sentence.

1. The x-axis and the _?_ intersect at the _?_ and divide a coordinate plane into four _?_.
2. Since $4^3 = 64$, 4 is the _?_ of 64, and 64 is a _?_.
3. According to the _?_, it is not possible to construct a triangle with side lengths 3 m, 5 m, and 9 m because $3 + 5 \not> 9$.
4. A number such as 25, which is the square of a whole number, is a _?_.
5. The _?_ is the longest side of a right triangle.

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Skills and Concepts

Lesson 1-1

- To write equivalent fractions and decimals

Rational numbers are numbers that can be written as fractions using integers. Every rational number has a decimal expansion. If the expansion stops, or terminates in 0s, it is a **terminating decimal.** If the expansion repeats the same digit or group of digits, it is a **repeating decimal.**

Write the decimal expansion of each fraction. Tell whether the decimal expansion is a *terminating decimal* or a *repeating decimal*.

6. $\frac{3}{8}$
7. $\frac{17}{20}$
8. $\frac{9}{11}$
9. $\frac{5}{9}$
10. $\frac{7}{18}$
11. $\frac{29}{30}$

Lessons 1-2, 1-3

- To find and estimate square roots and to classify numbers as rational or irrational
- To find cube roots and to solve cube root equations

Irrational numbers are numbers that cannot be written as fractions using integers. The square of a whole number is a **perfect square.** The inverse of squaring a number is finding its **square root.** The cube of a whole number is a **perfect cube.** The inverse of cubing a number is finding its **cube root.**

Simplify each expression.

12. $\sqrt{81}$ **13.** $\sqrt{\frac{100}{121}}$ **14.** $\sqrt[3]{125}$ **15.** $\sqrt[3]{\frac{1}{8}}$

16. $\sqrt{\frac{1}{9}}$ **17.** $\sqrt{\frac{4}{25}}$ **18.** $\sqrt[3]{-\frac{8}{27}}$ **19.** $\sqrt[3]{0}$

Lessons 1-4, 1-5

- To use the Pythagorean Theorem to find the length of the hypotenuse of a right triangle
- To use the Pythagorean Theorem to find missing measurements of triangles

The **Pythagorean Theorem** states that if a and b are the lengths of the **legs** of a right triangle, and c is the length of the **hypotenuse,** then $a^2 + b^2 = c^2$.

Find the length of the hypotenuse given the lengths of the two legs. If necessary, round to the nearest tenth.

20. $a = 6, b = 8$ **21.** $a = 12, b = 6$ **22.** $a = 24, b = 40$

23. The base of a 24-ft ladder is 6 ft from the base of a house. To the nearest tenth, how far up the house does the ladder reach?

Lesson 1-6

- To solve problems using the Triangle Inequality Theorem and the Converse of the Pythagorean Theorem

The **Triangle Inequality Theorem** states that the sum of the lengths of any two sides of a triangle is greater than the length of the third side. The **Converse of the Pythagorean Theorem** states that, if the equation $a^2 + b^2 = c^2$ is true for the lengths of the sides of a triangle, then the triangle is a right triangle.

Is it possible to construct a triangle with the given side lengths? Explain.

24. 8 m, 10 m, 15 m **25.** 20 yd, 21 yd, 35 yd **26.** 5 mi, 10 mi, 15 mi

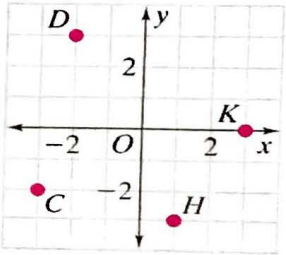
Determine whether the given lengths can be side lengths of a right triangle. Explain.

27. 6 m, 8 m, 14 m **28.** 28 yd, 45 yd, 53 yd **29.** 6 mi, 23 mi, 24 mi

Lesson 1-7

- To graph points and to use the Pythagorean Theorem to find distances in the coordinate plane

You can use the Pythagorean Theorem to find distances in the coordinate plane.



Find the distance between each pair of points. If necessary, round to the nearest tenth.

30. C and K **31.** D and H

32. H and K **33.** D and K