

**CHAPTER 8 Test**

- Write a multiplication problem whose product is  $12x^5$ .  $(4x^3)(3x^2)$
- Explain why 3 is the square root of 9.  $3 \times 3 = 9$
- Draw a figure that can be used to estimate  $\sqrt{96}$ .  $\sqrt{81} = 9$ ,  $\sqrt{96} \approx 10$ ,  $\sqrt{100} = 10$

Evaluate each expression if  $x = 2$ ,  $y = 3$ ,  $z = -1$ , and  $w = -2$ .

- $3x^5 = 96$
- $5w^3y = -120$
- $12y^{-2} = \frac{4}{3}$
- $z^0 = 1$

Simplify each expression.

- $(a^3b^2)(a^5b) = A^8b^3$
- $\frac{xy^3}{y^5} = \frac{x}{y^2}$
- $m^{-10} = \frac{1}{m^{10}}$
- $\frac{-3r^2s^8}{12r^2s^5} = -\frac{s^3}{4}$

Express each number in scientific notation.

- $0.00000125 = 1.25 \times 10^{-6}$
- $36,000,000,000 = 3.6 \times 10^{10}$

Evaluate each expression. Express each result in scientific notation and standard form.

- $(8.2 \times 10^{-5})(1 \times 10^{-3}) = 8.2 \times 10^{-8} = 0.000000082$
- $\frac{6 \times 10^3}{2 \times 10^{-2}} = 3 \times 10^5 = 300,000$

Estimate each square root to the nearest whole number.

- $\sqrt{5} \approx 2$
- $\sqrt{20} \approx 4$
- $\sqrt{63} \approx 8$
- $\sqrt{395} \approx 20$

Find each missing measure. Round to the nearest tenth if necessary.

- $c = 10m$
- $b \approx 11.2ft$
- $a \approx 4.4in$

- Chemistry** The diameter of an atom is about  $10^{-8}$  centimeter and the diameter of its nucleus is about  $10^{-13}$  centimeter. How many times as large is the diameter of the atom as the diameter of its nucleus?  $10^5$  or 100,000 times
- Sports** Gymnastic routines are performed on a 40-foot by 40-foot square mat. Gymnasts usually use the diagonal of the mat because it gives them more distance to complete their routine. To the nearest whole number, how much longer is the diagonal of the mat than one of its sides?  $17ft$
- Sequences** The first term of the sequence  $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \dots$  can be written as  $2^0$ . Write the next three terms using negative exponents.  $2^{-1}, 2^{-2}, 2^{-3}$  (also  $2^{-4}, 2^{-5}, 2^{-6}$ )

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