Chapter Review/Test

Concepts and Skills

Tell whether each number is written correctly in scientific notation. If incorrectly written, state the reason.

1 $10 \cdot 10^2$ Incorrect; Coefficient $\nless 10$

2 $0.99 \cdot 10^{12}$ Incorrect; Coefficient $\ngeq 1$

3 $1.4 \cdot 10^2$ Correct

4 $0.4 \cdot 10^{25}$ Incorrect; Coefficient $\ngeq 1$

Write each number in scientific notation.

5 714,000 $7.14 \cdot 10^5$

6 0.00087 $8.7 \cdot 10^{-4}$

Write each number in standard form.

7 $3.46 \cdot 10^2$ 346

8 $5.4 \cdot 10^4$ 54,000

Identify the greater number in each pair of numbers.

9 $7.8 \cdot 10^{-5}$ and $5.4 \cdot 10^{-7}$ $7.8 \cdot 10^{-5}$

10 $1.4 \cdot 10^{-5}$ and $6 \cdot 10^{-4}$ $6 \cdot 10^{-4}$

11 $6.5 \cdot 10^{-15}$ and $9.3 \cdot 10^{-12}$ $9.3 \cdot 10^{-12}$

12 $3.5 \cdot 10^{-2}$ and $4 \cdot 10^{-3}$ $3.5 \cdot 10^{-2}$

Evaluate. Write your answer in scientific notation. Round the coefficient to the nearest tenth.

13 $2.44 \cdot 10^3 + 1.9 \cdot 10^5$ $1.9 \cdot 10^5$

14 $3.12 \cdot 10^{-3} - 3 \cdot 10^{-3}$ $1.2 \cdot 10^{-4}$

15 $2.4 \cdot 10^{-2} \cdot 5 \cdot 10^{-1}$ $1.2 \cdot 10^{-2}$

16 $3.2 \cdot 10^8 \div (1.6 \cdot 10^4)$ $2 \cdot 10^4$

Express each of the following in prefix form. Choose the most appropriate unit.

17 $2.8 \cdot 10^3$ meters 2.8 km

18 $1.5 \cdot 10^{-6}$ meter 1.5 μm

19 $6.4 \cdot 10^9$ bytes 6.4 GB

20 $4.8 \cdot 10^{-9}$ gram 4.8 ng

Problem Solving

The table shows the length of two organisms. Use the table to answer questions **21** to **23**.

Organism	Length
Eriophyid mite	250 μm
Patiriella parvivipara (smallest starfish)	5 mm

21 Which organism is longer? Patiriella parvivipara

22 Express the length of the eriophyid mite in millimeters. $2.5 \cdot 10^{-1}$ mm

23 Write each length in scientific notation using the basic unit. $2.5 \cdot 10^{-4}$ m; $5 \cdot 10^{-3}$ m

The top five materials used in the automotive industry in the United States in 2000 are as shown in the table. Use the table to answer questions **24** to **26**. Write your answers in scientific notation. Round coefficients to the nearest tenth.

Material	Total Consumption (T)
Plastic	46,240
Aluminium	11,320
Steel	$9.894 \cdot 10^7$
Glass	5,417,000
Rubber	$2.86 \cdot 10^6$

24 How much more plastic was used than aluminium? $3.5 \cdot 10^4$ T

25 How much more steel was used than glass? $9.4 \cdot 10^7$ T

26 Find the total consumption of these materials used by the automotive industry in 2000. $1.1 \cdot 10^8$ T

27 The table shows the weights of some animals. Round your answers to the nearest tenth.

Animal	Weight (lb)
African bush elephant	$2.706 \cdot 10^4$
Hippopotamus	$9.9 \cdot 10^3$
Walrus	$4.4 \cdot 10^3$

a) About how many times greater than the weight of a walrus is the weight of a hippopotamus? 2.3

b) About how many times greater than the weight of a hippopotamus is the weight of an African bush elephant? 2.7