

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 5

ESCONDIDO ADULT SCHOOL • HiSET MATHEMATICS PREPARATION

## Scientific Notation Word Problems

CA HiSET Standard: NSQ.1 | 5 Problems

**Directions:** Solve each word problem. Show all work in the box provided. Write your final answer on the answer line. Express all answers in scientific notation unless otherwise directed.

**1**

The distance from Earth to the Sun is approximately  $1.5 \times 10^8$  km. The distance from Earth to Proxima Centauri (the nearest star) is about  $4.01 \times 10^{13}$  km. How many times farther is Proxima Centauri than the Sun from Earth? Express your answer in scientific notation.

*Show your work:*

Answer: \_\_\_\_\_

**2**

A single bacterium has a mass of approximately  $9.5 \times 10^{-13}$  grams. A lab sample contains  $2.4 \times 10^6$  bacteria. What is the total mass of all bacteria in the sample? Express your answer in scientific notation.

*Show your work:*

Answer: \_\_\_\_\_

**3**

The U.S. national debt is approximately  $.3 \times 10^{13}$  dollars. The U.S. population is about  $3.35 \times 10^8$  people. If the debt were split equally among every person, approximately how much would each person owe? Round your coefficient to the nearest tenth and express in scientific notation.

*Show your work:*

Answer: \_\_\_\_\_

**4**

Two rivers flow into a reservoir. River A carries  $6.2 \times 10^7$  liters per day; River B carries  $3.85 \times 10^7$  liters per day. A drought reduces the combined flow by  $2.1 \times 10^7$  liters. What is the new total daily flow? Express your answer in scientific notation.

*Show your work:*

Answer: \_\_\_\_\_

**5**

A computer processor performs  $3.2 \times 10^9$  calculations per second. A weather simulation requires  $7.68 \times 10^{15}$  total calculations. (a) How many seconds will the simulation take? (b) Convert that time to days. (Note: 1 day =  $8.64 \times 10^4$  seconds.) Express both answers in scientific notation.

*Show your work:*

Answer: \_\_\_\_\_

**ANSWER KEY — Instructor Copy**

1  $\approx 2.67 \times 10^5$  (Proxima Centauri is about 267,000 times farther than the Sun)

2  $\approx 2.28 \times 10^{-6}$  grams ( $9.5 \times 10^{-13} \times 2.4 \times 10^6 = 22.8 \times 10^{-7} = 2.28 \times 10^{-6}$  g)

3  $\approx 8.955 \times 10$  to the power of 3 dollars per person (roughly 9,000 per person)

4  $7.95 \times 10^7$  liters/day ( $6.20 + 3.85 = 10.05$ ;  $10.05 - 2.10 = 7.95$ ; keep exponent  $10^7$ )

5 (a)  $2.4 \times 10^6$  seconds (b)  $\approx 2.78 \times 10^1$  days (about 27.8 days)