

Scientific Notation for Huge and Tiny Numbers

Grade 8 math · Test · Standards: 8.EE.A.3, 8.EE.A.4

Name: _____ Date: _____ Class: _____

This test has 8 questions worth 20 points in total and should take about 45 minutes. Give answers in scientific notation unless told otherwise, and show how you moved the decimal point or combined the exponents.

Standards: 8.EE.A.3, 8.EE.A.4 · **Level:** Grade 8

Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Write in scientific notation (3 points)

Write each number in scientific notation. (1 point each)

- a. 72,000,000
- b. 0.0000046
- c. 903,000

Question 2 Standard form (2 points)

Write in standard form. (1 point each)

- a. 5.07×10^{-3}
- b. 1.8×10^6

Question 3 Products and quotients (3 points)

Compute and write each answer in scientific notation.

- a. $(6 \times 10^4)(5 \times 10^3)$ (2 points)
- b. $(7.2 \times 10^8) \div (9 \times 10^3)$ (1 point)

Question 4 Order by size (2 points)

Order from least to greatest: 2.5×10^{-4} , 9×10^{-5} , 1.3×10^{-3} , 6×10^{-4} .

Question 5 Two reservoirs (3 points)

Reservoir A holds 4×10^6 gallons and Reservoir B holds 2×10^7 gallons.

- Write the division that compares the two. (1 point)
- Compute it. (1 point)
- Complete: Reservoir B holds ___ times as much water as Reservoir A. (1 point)

Reservoir A

Reservoir B

Reservoir sizes in millions of gallons.

Question 6 Addition and calculators (3 points)

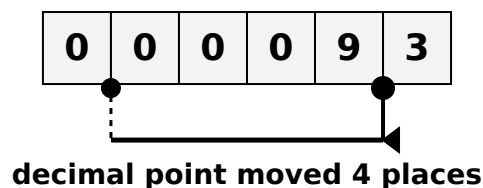
- Add: $8.1 \times 10^5 + 4.5 \times 10^4$. Write the sum in scientific notation. (2 points)
- A calculator shows $6.4\text{E}-5$. Write the number in standard form. (1 point)

Question 7 Pollen grain (2 points)

A pollen grain is about 2.5×10^{-5} meter wide. Which unit is most convenient: meters, millimeters (10^{-3} m) or micrometers (10^{-6} m)? Give the width in that unit.

Question 8 Decimal point journey (2 points)

The diagram shows the decimal point of 0.00093 moving. Write 0.00093 in scientific notation and explain why the exponent is negative.



The decimal point of 0.00093 slides to just after the 9.