

8.EE.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used.

Argentina has a population of approximately 4×10^7 people, and Switzerland has a population of approximately 8×10^6 people. How many times greater is Argentina's population than Switzerland's?

- A) 2
- B) 4
- C) 5
- D) 7

How long would it take a rocket to travel 4×10^6 miles if its speed was 1.6×10^3 miles per hour?

- A) 6.4×10^9 hours
- B) 2.5×10^3 hours
- C) 6.4×10^{10} hours
- D) 2.5×10^2 hours

Malcolm sent 1.2×10^3 text messages last month. At this rate, about how many text messages will Malcolm send in 1 year?

- A) 14.4×10^3 texts
- B) 1.44×10^5 texts
- C) 1.44×10^4 texts
- D) 14.4×10^4 texts

Find the quotient: $(3 \times 10^6) \div (2 \times 10^{-2})$

- A) 1.5×10^4
- B) 1.5×10^8
- C) 6×10^4
- D) 6×10^8

The table shows the population estimates for 3 countries in scientific notation.

Population Estimates

Country	Number of People
P	5.4×10^8
Q	6.0×10^8
R	3.0×10^5

Convert to standard, add, then put ans. in sci. Not.

Part A

What number, written in scientific notation, represents the combined total population of countries P and Q? Show your work or explain your answer.

$$5.4 \times 10^8 + 6.0 \times 10^8 = 1.14 \times 10^9$$

Part B

How many times greater is the population of Q than the population of R? Show your work or explain your answer.

$$\frac{6.0 \times 10^8}{3.0 \times 10^5} = 2.0 \times 10^3$$

Part C

The population of P is predicted to increase by 10% during the next 20 years. What number, written in scientific notation, represents the predicted total population of P? Show your work.

$$5.4 \times 10^8 \times 1.10 = 5.94 \times 10^8$$

8.EE.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used.

Which is the quotient of $\frac{4.18 \times 10^8}{1.1 \times 10^{-2}}$?

- A. 3.8×10^6
- B. 3.8×10^{10}
- C. 3.8×10^{14}
- D. 3.8×10^{16}

Neptune is one of the larger planets, with a mass of approximately 1×10^{26} kg. Mercury is the smallest planet, with a mass that is approximately 3×10^{23} kg. About how many times larger than Mercury is Neptune?

- A. 333 times
- B. 3,333 times
- C. 33,333 times
- D. 333,333 times

In 2012, with approximately 8.1×10^6 people, New York City is the most populous city in the United States. Los Angeles, California, is the second most populous city in the United States, with about 3.8×10^6 people. Approximately, what is the population of the two most populous cities in the United States combined?

- A. 1.1×10^6
- B. 1.9×10^6
- C. 1.19×10^7
- D. 11.9×10^7

Which is the product of $(1.35 \times 10^5)(4.89 \times 10^3)$?

- A. 6.24×10^8
- B. 6.6015×10^5
- C. 6.6015×10^8
- D. 66.015×10^7

In a biology class, Melanie measures 2.25×10^{-3} liter of pond water in a test tube for a lab experiment. Her partner Penelope adds 0.00328 liter to the test tube. How much pond water do they now have for the experiment?

- A. 2.25328×10^{-3} L
- B. 3.28×10^{-3} L
- C. 5.53×10^{-3} L
- D. 7.38×10^{-3} L

What is the product of $(8 \times 10^{-2}) \cdot (1.5 \times 10^{-5})$?

- A. 1.2×10^{-6}
- B. 1.2×10^{-7}
- C. 1.2×10^{-8}
- D. 1.2×10^{-10}

The planet Neptune is approximately 4.5×10^9 kilometers from the sun. The planet Earth is approximately 1.5×10^8 kilometers from the sun. About how many times further from the sun is Neptune than Earth? Explain your answer.

$$\frac{4.5 \times 10^9}{1.5 \times 10^8} = 3.0 \times 10^1$$