

Scientific Notation Word Problems

Show all work as you solve the problems. All final answer must be in correct scientific notation form.

1. Suppose there are 5×10^6 bacteria in every liter of water. How many bacteria are there in 12 liters of water?

$$(5 \times 10^6)(12) = 60 \times 10^6 \\ = 6 \times 10^7$$

 6×10^7 bacteria

2. A TV show had 3.5×10^6 viewers for their first episode and 8.5×10^6 viewers for their second episode. How many viewers did they have overall?

$$3.5 \times 10^6 + 8.5 \times 10^6 = 12 \times 10^6 \\ = 1.2 \times 10^7$$

 1.2×10^7 viewers

3. In 2013 the Los Angeles Dodgers opening day payroll was about $\$2.16 \times 10^8$ and the Houston Astros opening day payroll was about $\$2.4 \times 10^7$. How much higher was the Dodgers' payroll?

$$\frac{2.16 \times 10^8 - 2.4 \times 10^7}{2.16 \times 10^8 - 0.24 \times 10^8} = 1.92 \times 10^8$$

 $\$1.92 \times 10^8$

4. The population of the United States is 3×10^8 and the population of the world is 7×10^9 . How many times larger is the population of the world than the U.S.?

$$\frac{7 \times 10^9}{3 \times 10^8} = 2.33 \times 10^1$$

The population of the world is 2.33×10^1 times that of the U.S.

5. The population of Mathville is 8.4×10^3 . The population of Algeville is 1.3×10^4 . How many more people are there in Algeville?

$$\frac{1.3 \times 10^4 - 8.4 \times 10^3}{1.3 \times 10^4 - 0.84 \times 10^4} = 0.46 \times 10^4$$

 4.6×10^3 more people

6. If the speed of light is 3×10^8 meters/second, how many seconds does it take light to reach the Earth, if the sun is 1.5×10^{11} meters from Earth?

$$\frac{1.5 \times 10^{11}}{3 \times 10^8} = 0.5 \times 10^3 = 5 \times 10^2$$

 5×10^2 seconds