

Lesson 8-2: Scientific Notation

Part 1: Writing Numbers in Scientific and Standard Notation

1. 080004a, P.I. 7.N.6

Expressed in decimal notation, 4.726×10^{-3} is

- [A] 0.004726 [B] 4,726
[C] 0.04726 [D] 472.6

2. 060301a, P.I. 7.N.6

The number 8.375×10^{-3} is equivalent to

- [A] 0.08375 [B] 8,375
[C] 0.008375 [D] 0.0008375

3. 080424a, P.I. 7.N.6

The number 156×10^{-2} is equivalent to

- [A] 156 [B] 0.0156
[C] 0.00156 [D] 0.156

4. 080511a, P.I. 7.N.5

The expression 0.62×10^3 is equivalent to

- [A] 62,000 [B] 0.062
[C] 6.2×10^4 [D] 6.2×10^2

5. 089904a, P.I. 7.N.7

Which expression is equivalent to 6.02×10^{23} ?

- [A] 602×10^{21} [B] 0.602×10^{21}
[C] 60.2×10^{21} [D] 6020×10^{21}

6. 080210a, P.I. 7.N.5

If 0.0347 is written by a scientist in the form 3.47×10^n , the value of n is

- [A] -3 [B] 3 [C] -2 [D] 2

7. 060720a, P.I. 7.N.5

According to the 2000 census, the population of New York State was approximately 18,900,000. How is this number expressed in scientific notation?

- [A] 18.9×10^6 [B] 1.89×10^7
[C] 1890×10^4 [D] 189×10^5

8. 010111a, P.I. 7.N.5

The distance from Earth to the Sun is approximately 93 million miles. A scientist would write that number as

- [A] 93×10^7 [B] 93×10^{10}
[C] 9.3×10^6 [D] 9.3×10^7

9. 080715a, P.I. 7.N.5

The video of the movie *Star Wars* earned \$193,500,000 in rental fees during its first year. Expressed in scientific notation, the number of dollars earned is

- [A] 193.5×10^6 [B] 1935×10^8
[C] 1.935×10^6 [D] 1.935×10^8

10. 080607a, P.I. 7.N.5

A micron is a unit used to measure specimens viewed with a microscope. One micron is equivalent to 0.00003937 inch. How is this number expressed in scientific notation?

- [A] 3.937×10^{-5} [B] 3.937×10^5
[C] 3937×10^{-8} [D] 3937×10^8

11. 010206a, P.I. 7.N.5
The approximate number of seconds in a year is 32,000,000. When this number is written in scientific notation, the numerical value of the exponent is
[A] 8 [B] 7 [C] -7 [D] 6
12. 060504a, P.I. 7.N.5
The mass of an orchid seed is approximately 0.0000035 gram. Written in scientific notation, that mass is equivalent to 3.5×10^n . What is the value of n ?
[A] -7 [B] -6 [C] -5 [D] -8
13. 010609a, P.I. 7.N.5
The size of a certain type of molecule is 0.00009078 inch. If this number is expressed as 9.078×10^n , what is the value of n ?
[A] 8 [B] 5 [C] -5 [D] -8
16. 060429a, P.I. A.N.4
If the mass of a proton is 1.67×10^{-24} gram, what is the mass of 1,000 protons?
[A] 1.67×10^{-23} [B] 1.67×10^{-22}
[C] 1.67×10^{-21} [D] 1.67×10^{-27}
17. 060029a, P.I. A.N.4
The distance from Earth to the imaginary planet Med is 1.7×10^7 miles. If a spaceship is capable of traveling 1,420 miles per hour, how many days will it take the spaceship to reach the planet Med? Round your answer to the *nearest day*.

Part 2: Using Scientific Notation

14. 060628a
What is the sum of 6×10^3 and 3×10^2 ?
[A] 6.3×10^3 [B] 18×10^5
[C] 9×10^5 [D] 9×10^6
15. 010018a, P.I. A.N.4
If the number of molecules in 1 mole of a substance is 6.02×10^{23} , then the number of molecules in 100 moles is
[A] 6.02×10^{22} [B] 6.02×10^{25}
[C] 6.02×10^{21} [D] 6.02×10^{24}

- [1] A
- [2] C
- [3] B
- [4] D
- [5] A
- [6] C
- [7] B
- [8] D
- [9] D
- [10] A
- [11] B
- [12] B
- [13] C
- [14] A
- [15] B
- [16] C

[3] 499 days and appropriate work is shown,

such as $\frac{17,000,000 \text{ miles}}{1420 \frac{\text{miles}}{\text{hour}} \times 24 \frac{\text{hours}}{\text{day}}}$.

[2] Appropriate work is shown, but one computational error is made or the student incorrectly calculates 1.7×10^7 by one decimal place.

or [2] Appropriate work is shown, but the answer is rounded incorrectly or is not rounded.

[1] $1.7 \times 10^7 = 17,000,000$ is shown.

or [1] $\frac{1.7 \times 10^7}{1420} = 11,971.831$ hours is shown.

or [1] 34,080 miles in 1 day is shown.

or [1] 499 but no work is shown.

[0] The student does not understand scientific notation.

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[17] obviously incorrect procedure.