A.N.4: Operations with Scientific Notation: Understand and use scientific notation to compute products and quotients of numbers

1 What is the product of 8.4×10^8 and 4.2×10^3 written in scientific notation?
1) 2.0×10^5
2) 12.6×10^{11}
3) 35.28×10^{11}
4) 3.528×10^{12}

2 What is the product of 12 and 4.2×10^6 expressed in scientific notation?
1) 50.4×10^6
2) 50.4×10^7
3) 5.04×10^6
4) 5.04×10^7

3 What is the product of (6×10^3), (4.6×10^5), and (2×10^{-2}) expressed in scientific notation?
1) 55.2×10^6
2) 5.52×10^7
3) 55.2×10^7
4) 5.52×10^{10}

4 What is the quotient of 8.05×10^6 and 3.5×10^2?
1) 2.3×10^3
2) 2.3×10^4
3) 2.3×10^8
4) 2.3×10^{12}

5 The quotient of (9.2×10^6) and (2.3×10^2) expressed in scientific notation is
1) 4,000
2) 40,000
3) 4×10^3
4) 4×10^4

6 If 3.85×10^6 is divided by 385×10^4, the result is
1) 1
2) 0.01
3) 3.85×10^2
4) 3.85×10^{10}

7 What is the value of $\dfrac{6.3 \times 10^8}{3 \times 10^4}$ in scientific notation?
1) 2.1×10^{-2}
2) 2.1×10^2
3) 2.1×10^{-4}
4) 2.1×10^4

8 The expression $\dfrac{6 \times 10^{-7}}{3 \times 10^{-3}}$ is equivalent to
1) 2×10^4
2) 2×10^{10}
3) 2×10^{-4}
4) 2×10^{-10}

9   State the value of the expression
$$\frac{(4.1 \times 10^2)(2.4 \times 10^3)}{(1.5 \times 10^7)}$$ in scientific notation.

10   If the mass of a proton is 1.67×10^{-24} gram, what is the mass of 1,000 protons?
1) 1.67×10^{-27} g
2) 1.67×10^{-23} g
3) 1.67×10^{-22} g
4) 1.67×10^{-21} g

11   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
1) 6.02×10^{21}
2) 6.02×10^{22}
3) 6.02×10^{24}
4) 6.02×10^{25}

12   In 1995, the federal government paid off one-third of its debt. If the original amount of the debt was $4,920,000,000,000, which expression represents the amount that was not paid off?
1) 1.64×10^4
2) 1.64×10^{12}
3) 3.28×10^8
4) 3.28×10^{12}

13   Two objects are 2.4×10^{20} centimeters apart. A message from one object travels to the other at a rate of 1.2×10^5 centimeters per second. How many seconds does it take the message to travel from one object to the other?
1) 1.2×10^{15}
2) 2.0×10^4
3) 2.0×10^{15}
4) 2.88×10^{25}

14   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*.

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Answer Section

1 ANS: 4   REF: 010927ia
2 ANS: 4   REF: 060927ia
3 ANS: 2   REF: 061127ia
4 ANS: 2   REF: fall0725ia
5 ANS: 4

$$\frac{9.2 \times 10^6}{2.3 \times 10^2} = 4 \times 10^4$$

REF: 081006ia
6 ANS: 1   REF: 060207a
7 ANS: 4   REF: 010319a
8 ANS: 3   REF: 011319ia
9 ANS:

$$6.56 \times 10^{-2}$$

REF: 081231ia
10 ANS: 4   REF: 060429a
11 ANS: 4   REF: 010018a
12 ANS: 4   REF: 060815b
13 ANS: 3

$$\frac{\text{distance}}{\text{speed}} = \frac{2.4 \times 10^{20} \text{ c}}{1.2 \times 10^5 \text{ cps}} = 2.0 \times 10^{15} \text{ s}$$

REF: 060308b
14 ANS:

$$499. \quad \frac{\text{distance}}{\text{speed}} = \frac{1.7 \times 10^7 \text{ miles}}{1420 \text{ mph}} \approx 11972 \text{ hours} \approx 499 \text{ days}$$

REF: 060029a