NAME

**Module 11** Simplifying Algebraic Expressions with Polynomials
**Lesson 2** Using Scientific Notation


**Write in scientific notation.**

1. 243,000,000 **$2.43 \times 10^8$**

2. 0.00024 **$2.4 \times 10^{-4}$**

3. 0.0014 **$1.4 \times 10^{-3}$**

4. 36,000 **$3.6 \times 10^4$**

5. The daily newspaper circulation in Japan is about 53,200,000 or **$5.32 \times 10^7$** newspapers.

6. The area of an organism being studied in a lab is 0.00000043 or **$4.3 \times 10^{-7}$** square meters.

**Write in standard notation.**

7. $8.7 \times 10^9$ **8,700,000,000**

8. $5.6 \times 10^2$ **560**

9. $2.1 \times 10^{-5}$ **0.000021**

10. $3.7 \times 10^0$ **3.7**

11. There are more than $5.7 \times 10^5$ or **570,000** people living in Washington, D.C.

12. The width of a paramecium is approximately $1.05 \times 10^{-4}$ or **0.000105** m.

**Multiply or divide as indicated. Write answers in scientific notation and round to two decimal places.**

13. $(4 \times 10^3)(6 \times 10^8)$
**$2.4 \times 10^{12}$**

14. $(1.6 \times 10^5)(2.1 \times 10^{-3})$
**$3.36 \times 10^2$**

15. $\frac{2 \times 10^{-5}}{4 \times 10^{-1}}$
**$5 \times 10^{-5}$**

16. $\frac{6.4 \times 10^7}{1.6 \times 10^9}$
**$4 \times 10^{-2}$**

17. The mass of a proton is $1.67 \times 10^{-27}$ kg. The mass of an electron is $9.11 \times 10^{-31}$ kg. How many times greater is the mass of a proton?
**$1.83 \times 10^3$ times greater**

18. X-rays have a wavelength of $10^{-10}$ m. Radio waves have a wavelength $10^{14}$ times this length. What is the length of a radio wave?
**$10^4$ m**

**19.** The diameter of Earth is $1.27 \times 10^4$ km. Saturn has a diameter 9.44 times that of Earth. What is the diameter of Saturn?

**$1.20 \times 10^5$ km**

**20.** The distance from Earth to the sun is $1.5 \times 10^8$ km. The distance from Neptune to the sun is $5.916 \times 10^9$ km. How many times further is it from Neptune to the sun?

**$3.94 \times 10^1$ times**

**21.** The mass of Earth is $5.98 \times 10^{27}$ g. The mass of Pluto is $2 \times 10^{-3}$ times that of Earth. What is the mass of Pluto?

**$1.20 \times 10^{25}$ g**

**22.** Light travels about $9.5 \times 10^{12}$ km in one year. The closest star to Earth except for the sun is Proxima Centauri which is about 4.2 light years away. How many kilometers is it from Earth to Proxima Centauri?

**$3.99 \times 10^{13}$ km**

**23.** The mass of a neutron is $1.67 \times 10^{-27}$ kg. There are eight neutrons in a molecule of oxygen. What is the total mass of the neutrons in a molecule of oxygen?

**$1.34 \times 10^{-26}$ kg**

**24.** There were about $9.08 \times 10^5$ new homes sold in 2001. This is 1.7 times more than in 1990. How many new homes were sold in 1990?

**$5.34 \times 10^5$ homes**