

Read sections 1.1 and 1.2 of your text: **College Algebra** by Abramson.

Simplify the expressions:

1.  $18 + (6 - 8)^3$

2.  $4 + 6 - 10 \div 2$

3.  $(12 \div 3 \cdot 3)^2$

4.  $2 \cdot 4 - 9(-1)$

Solve for the variable:

5.  $8(x + 3) = 64$

6.  $(11a + 3) - 18a = -4$

7.  $4(3 - 1)x = 4$

8.  $2(11c - 4) = 36$

Simplify each expression:

9.  $4 \cdot 3 + 18x \div 9 - 12$

10.  $\left(\frac{4}{9}\right)^2 \cdot 27x$

Simplify each expression:

11.  $10^6 \div (10^{10})^{-2}$

12.  $(b^3c^5)^3$

13.  $x^{-4}(x^2)^2$

14.  $\left(\frac{a}{2^3}\right)^2$

15.  $(b^{-3}c)^3$

16.  $x^2y^3z^5(x^3yz^{-2})^2$

17. To reach escape velocity, a rocket must travel at least  $2.2 \times 10^6$  ft/min . Rewrite the rate in standard decimal notation.

18. A dime is  $1.35 \times 10^{-3}$  m thick. Rewrite the number in standard decimal notation.

20. A terabyte is  $2^{40}$  bytes. Compute this number, then write it in scientific notation.

Compute the following:

21.  $(3.12 \times 10^5) \cdot (-4.7 \times 10^9)$

22.  $\frac{3.65 \times 10^{35}}{2.98 \times 10^{23}}$

23. One picometer is approximately  $3.397 \times 10^{-11}$  in. Rewrite this length using standard decimal notation.

24. Planck's constant is an important unit of measure in quantum physics. It describes the relationship between energy and frequency. The constant is written as  $6.62606957 \times 10^{-34}$  . Write Planck's constant in standard decimal notation. (This is long!)

25. Avogadro's constant is used to calculate the number of particles in a mole. A mole is a basic unit in chemistry to measure the amount of a substance. The constant is  $6.0221413 \times 10^{23}$  . Write Avogadro's constant in standard notation. (This is long!)

26. Compute:  $(3.26 \times 10^7)^{23}$

HINT (similar example):

$$(2.1 \times 10^{14})^9 = 2.1^9 \cdot 10^{14 \cdot 9} = 794.28 \cdot 10^{126} = 7.94 \times 10^2 \cdot 10^{126} = 7.94 \times 10^{128}$$