Chapter 4 Practice

1. Write an expression equivalent to $\left(\frac{2}{5}\right) \cdot \left(\frac{2}{5}\right) \cdot \left(\frac{2}{5}\right) \cdot \left(\frac{2}{5}\right)$ using a positive exponent.

2. Write the following expression using an exponent.

$(2y - 9)(2y - 9)(2y - 9)(2y - 9)(2y - 9)$

3. What is the value of the expression $6a^3 - \left(\frac{1}{9}b^4\right) - 15$ if $a = 3$ and $b = 3$?

4. Write 0.001 using a negative exponent other than –1.

5. Write the product of the expression $6^4 \cdot 6^{-8}$ using a positive exponent. Then write the product using a negative exponent.

6. Write and evaluate an expression for the following statement. Write your answer using scientific notation.

the quotient of ten to the sixth power and ten squared

7. Write and evaluate an expression for the following statement. Write your answer using scientific notation.

the product of seven cubed and three to the sixth power

8. The number of different hands possible in the game of bridge is about 635 billion. Write this number in scientific notation.

9. The number of neurons in the neocortex of the human brain is 3×10^{10}. The neocortex of a gorilla contains 7.5×10^8 neurons. Which mammal has more neurons?

10. In the following set of numbers, find the sum of the least and greatest number.

3.13×10^{-4} , 0.0313, 3.03×10^{-4}, 0.00303, and 3×10^{-4}

11. What number is twice as great as 7×10^{3}?

12. In 2010, the population of India was about 1.2×10^{9}. The population of Germany was 81,859,000. About how many times greater was the population of India than the population of Germany in 2010?

13. To find how many seconds it takes light to travel from the Sun to Earth, Maya uses her calculator to divide the total distance, 93e6 miles, by the distance light travels in one second, 1.86e3 miles. Write the quotient in scientific notation and in standard form.

14. If x^3 = 2,197, what is the value of x ?

15. Find $\sqrt{81} - \sqrt[3]{729}$.

16. Between which two consecutive integers on a number line does $\sqrt{47}$ lie?

17. Are all cube roots integers? If not, provide a counterexample.

18. SuLing plans to add trim to the edges of a square table. The area of the table is 625 square inches. How many inches of trim does she need for the table?

19. The mass of a neutron is $1.6749286 \times 10^{-27}$ kilogram. The mass of an electron is 9.1095×10^{-31} kilogram.

a. Estimate the mass of each particle using scientific notation.

b. What is the approximate total mass of both particles?

c. About how many times greater is the mass of a neutron than the mass of an electron?