Unit Test - Exponents and Scientific Notation

Multiple Choice Practice Test   Note: Actual test will have a short answer.
Identify the choice that best completes the statement or answers the question.

1. Write the number 0.853 in scientific notation.
   a. 0.853×10^0
   b. 85.3×10^{-2}
   c. 8.53×10^0
   d. 8.53×10^{-1}

2. Simplify $(4^8)^2$.
   a. 4^{16}
   b. 32^2
   c. 4^6
   d. 4^{10}

3. Which list shows the numbers in order from **least** to **greatest**?
   a. $2.7 \times 10^{-2}, 2.7 \times 10^{-3}, 7.2 \times 10^{-3}$
   b. $2.7 \times 10^{-3}, 2.7 \times 10^{-2}, 7.2 \times 10^{-3}$
   c. $2.7 \times 10^{-3}, 7.2 \times 10^{-3}, 2.7 \times 10^{-2}$
   d. $7.2 \times 10^{-3}, 2.7 \times 10^{-3}, 2.7 \times 10^{-2}$

4. Write the number 7.45×10^3 in standard notation.
   a. 0.00745
   b. 7,450
   c. 745
   d. 74,500

5. Evaluate $(-3)^{-4}$.
   a. -81
   b. $\frac{1}{81}$
   c. $-\frac{1}{81}$
   d. 81

6. Divide. Write the quotient as a power.
   $$\frac{8^8}{8^3}$$
   a. 40
   b. 8^5
   c. 8^{11}
   d. Cannot combine

7. Write $(y)(y)(y)(y)$ in exponential form.
   a. 4^y
   b. y^5
   c. y^4
   d. y^{-4}

8. Simplify $\frac{9x^0 y^{-6}}{z^{-7}}$.
   a. $9xy^6 z^7$
   b. $\frac{9y^6}{z^7}$
   c. $\frac{9z^7}{y^6}$
   d. $\frac{9}{y^6 z^7}$

9. Divide. Write the quotient as a power.
   $$\frac{16^{10}}{17^3}$$
   a. 10^9
   b. 16^{13}
   c. Cannot combine
   d. 16^7

10. Evaluate $a^0 b^{-2}$ for $a = -2$ and $b = -3$.
   a. $\frac{1}{9}$
   b. 0
   c. $-\frac{2}{9}$
   d. -9

11. Simplify $\dfrac{q^9 y^{14}}{(qy)^7}$.
   a. $q^2 y^7$
   b. $q^9 y^{14}$
   c. $q^9 y^2$
   d. Cannot simplify

12. Simplify $(2.2 \times 10^{11}) \div (1 \times 10^4)$ and write the answer in scientific notation.
   a. 2.2×10^4
   b. 22
   c. 2.2×10^{11}
   d. 2.2×10^7

13. Simplify $\left(\dfrac{4x^7}{x^2 y^4} \right)^2$.
   a. $\dfrac{16}{x^7 y^8}$
   b. $\dfrac{8x^{10}}{y^8}$
   c. $\dfrac{8x^9}{y^6}$
   d. $\dfrac{16x^{10}}{y^8}$

14. Simplify $\left(\frac{3}{4} \right)^{-2}$.
   a. $-\frac{2}{3}$
   b. $\frac{16}{9}$
   c. $\frac{9}{16}$
   d. -2

15. Multiply $\left(5.6 \times 10^{-7} \right)\left(6.1 \times 10^4 \right)$ and write the answer in scientific notation.
   a. 3.416×10^{-5}
   b. 2.87×10^{-3}
   c. 34.16×10^{-28}
   d. 34.16×10^{-3}

16. Simplify $m^3 \bullet y^6 \bullet m^2$.
   a. $m^5 y^6$
   b. $(m \bullet y)^{11}$
   c. my^6
   d. $m^6 y^6$

17. Simplify $\dfrac{-3v^0 s^{-2}}{k^{-8}}$.
   a. $\dfrac{-3k^8}{s^2}$
   b. $\dfrac{-3}{s^2 k^8}$
   c. $-3vs^2 k^8$
   d. $\dfrac{-3s^2}{k^8}$

18. Simplify $\dfrac{a^3 b^8}{(ab)^2}$.
   a. $a^3 b^4$
   b. Cannot simplify
   c. ab^6
   d. $a^3 b^8$

19. Simplify $\left(\dfrac{3x^8}{x^4 y^4}\right)^2$.

    a. $\dfrac{6x^{10}}{y^6}$

    b. $\dfrac{9}{x^6 y^8}$

    c. $\dfrac{6x^8}{y^8}$

    d. $\dfrac{9x^8}{y^8}$

20. Simplify $(7 \times 10^8) \div (1 \times 10^5)$ and write the answer in scientific notation.

    a. 7×10^3

    b. 7

    c. 7×10^5

    d. 7×10^8

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Answer Section

MULTIPLE CHOICE

1. D
2. A
3. C
4. B
5. B
6. B
7. C
8. C
9. C
10. A
11. A
12. D
13. D
14. B
15. A
16. A
17. A
18. C
19. D
20. A