

## Unit 2 Exponents Study Guide

Student \_\_\_\_\_

1. What is the value of the expression  $8^{-2} \times 8^3$ ?

- A. 64
- B. 8
- C.  $\frac{1}{8}$
- D.  $\frac{1}{48}$

2. Which is equivalent to  $\frac{1}{81}$ ?

- A.  $9^{-2} \times 9^{-1}$
- B.  $3^{-3} \times 3^{-1}$
- C.  $3^3 \times 3$
- D.  $9 \times 3^{-2}$

3. Which number is equivalent to  $\frac{3^3 \times 3^{-3}}{3^2}$ ?

- A.  $\frac{1}{3^{11}}$
- B.  $\frac{1}{9}$
- C. 0
- D. 9

4. Which expression is equivalent to  $\frac{7^{15}}{7^5}$ ?

- A.  $7^3$
- B.  $7^{10}$
- C.  $7^{20}$
- D.  $7^{75}$

5. What is the value of  $5^3 \div 5$ ?

- A. 3
- B. 10
- C. 25

6. Which choice is equivalent to  $4^3 \times 4^{-4}$ ?

- A.  $-4$
- B.  $-\frac{1}{4}$
- C.  $\frac{1}{4}$
- D. 4

7. Which of these is equivalent to  $\frac{(2^{-4})^2 \times 2^{-5}}{2^{-6}}$ ?

Which of these is equivalent to

- A.  $2^{-19}$
- B.  $\frac{1}{2^7}$
- C.  $\frac{1}{2}$
- D.  $2^3$

8. Which expression is equivalent to  $6^{30}$ ?

- A.  $(6^{15})^{15}$
- B.  $6^{-10} \cdot 6^{-20}$
- C.  $6^5 \cdot 6^6$
- D.  $6^{12} \cdot 6^{18}$

9. Which expression is equivalent to  $(4^{-6} \cdot 4^4) + \left(\frac{2^6}{2^3}\right)$ ?

- A.  $\frac{1}{4^2} + 2^3$

B.  $\frac{1}{4^{24}} + 2^3$

C.  $\frac{1}{4^2} + 2^2$

D.  $\frac{1}{4^{24}} + 2^2$

10. Mrs. Jones asked her students to write an equivalent numerical expression

$$(2^{-4} \cdot 3^{-3})^3 \div (2^{-3} \cdot 3^{-2})^2.$$

to Which of these responses is correct?

A.  $2^0$

B.  $\frac{1}{2} \cdot \frac{1}{3^5}$

C.  $2^{-6} \cdot 3^{-5}$

D.  $2^{-18} \cdot 3^{-13}$

11. Which numerical expression is equivalent

$$(4^4)^3 \times 4 \times 3^0?$$

to

A.  $4^{12}$

B.  $4^{13}$

C.  $4^{12} \times 3$

D.  $4^{13} \times 3$

12. What is the value of the expression  $(2^3)(4^3)(2^{-4})$ ?

A. 32

B. 48

C. 64

D. 128

13. Which expression is equivalent to  $\frac{2^{-5}}{2^4}$ ?

A.  $2^9$

B. 2

C.  $\frac{1}{2}$

D.  $\frac{1}{2^9}$

14. Which expression is equivalent to  $(-3)^4 \times (-3)^2$ ?

A.  $(-3)^6$

B.  $(-3)^8$

C.  $(9)^8$

15. Which exponential form is equivalent to

$$8 \times 8 \times 8 \times m \times m \times m \times m?$$

A.  $3^8 \times m^4$

B.  $3^8 \times 4m$

C.  $8^3 \times m^4$

D.  $8^3 \times 4m$

16. Which expression is equivalent to  $\frac{10^{-2}}{10^{-14}}$ ?

A.  $10^7$

B.  $10^{12}$

C.  $10^{16}$

D.  $10^{28}$

17. What is the value of  $\frac{9^2}{(3^2 \cdot 3^2)}$ ?

A. 0

B.  $\frac{1}{81}$

C.  $\frac{1}{2}$

D. 1

18. Ernie is planning to buy a computer and his friend advised him to get one with a RAM size of  $2^9$  megabytes. Which is equivalent to  $2^9$  megabytes?
- A. 18 megabytes
  - B. 81 megabytes
  - C. 256 megabytes
  - D. 512 megabytes

**Vocabulary Matching**

- 1. \_\_\_\_\_ Multiplying with Like Bases
- 2. \_\_\_\_\_ Dividing with Like Bases
- 3. \_\_\_\_\_ Power of a Power
- 4. \_\_\_\_\_ Simplifying Powers
- 5. \_\_\_\_\_ Expanded Form
- 6. \_\_\_\_\_ Exponential Form
- 7. \_\_\_\_\_ Zero Exponents
- 8. \_\_\_\_\_ Negative Exponents

- a) keep the base and subtract the exponents
- b) example:  $(-2)^4$
- c) anything to this power equals 1
- d) keep the base and add the exponents
- e) to write the powers in reduced form
- f) example:  $(-2)(-2)(-2)(-2)$
- g) change the position
- h) multiply powers