

Student Name: _____

Grade: _____

Date: _____

Subject Teacher: Abdulkader Amro

MATHEMATICS ASSESSMENT-M1L1 Powers and Exponents*Powers, Exponents, and Algebraic Expressions***Directions:** Choose the one best answer for each question. Show your work where appropriate.**SECTION A • MULTIPLE-CHOICE****1. Write the expression $(-7) \cdot (-7) \cdot 5 \cdot 5 \cdot 5 \cdot 5$ using exponents.**

- A. $(-7)^2 \cdot 5^4$
- B. $(-7)^4 \cdot 5^2$
- C. $7^2 \cdot 5^4$
- D. $(-7)^2 \cdot 5^2$

2. Write $n \cdot n \cdot p \cdot p \cdot p \cdot r \cdot r \cdot r$ using exponents.

- A. $n^3p^2r^2$
- B. $n^2p^3r^3$
- C. $n^2p^2r^3$
- D. $n^3p^3r^2$

3. Evaluate $3^4 - (-4)^2$.

- A. 65
- B. 97
- C. -65
- D. -97

4. Evaluate $6 + 2^6$.

- A. 18
- B. 64
- C. 70
- D. 128

5. Evaluate $x^3 - y^2$ if $x = 2$ and $y = \frac{3}{4}$.

- A. $7\frac{7}{16}$
- B. $7\frac{1}{16}$
- C. $8\frac{7}{16}$
- D. $8\frac{9}{16}$

6. Evaluate $(g + h)^3$ if $g = 2$ and $h = -3$.

- A. -27
- B. -1
- C. 1
- D. 27

7. Replace $\square$ with $<$, $>$, or $=$ to make a true statement: $(-3)^4 \square (-4)^3$.

- A. $<$
- B. $>$
- C. $=$
- D. $\leq$

8. A scientist estimates that, after a certain amount of time, there would be $2^5 \cdot 3^3 \cdot 10^5$ bacteria in a Petri dish. How many bacteria is this?

- A. 8,640,000
- B. 86,400,000
- C. 864,000,000
- D. 8,640,000,000

9. Select the set containing all of the expressions that evaluate to negative rational numbers.

- A. $(-9)^4$ only
- B. $(\frac{-4}{5})^3$, $3^5 - 10^4$, and $(9.8)^2 - 10^2$
- C. $3^5 - 10^4$ and $(\frac{3}{8})^2$
- D. $(\frac{-4}{5})^3$, and $(\frac{-3}{8})^2$

10. The table shows the approximate number of species of each type of tree. Palm: $2^3 \cdot 3 \cdot 5^3$.

Maple: 2^7 . How many more species of palm tree are there than maple tree?

- A. 2,744
- B. 2,872
- C. 3,128
- D. 3,000

11. The table shows the approximate number of lakes in two different states. Florida: $3 \cdot 10^4$.

Minnesota: $2^3 \cdot 5^2 \cdot 109$. How many more lakes does Florida have than Minnesota?

- A. 7,200 fewer lakes
- B. 8,200 more lakes
- C. 9,100 more lakes
- D. 21,800 fewer lakes

12. Without evaluating, explain why $(-8.4)^5$ is less than 2^2 .

- A. An odd power keeps the negative sign, while 2^2 is positive.
- B. A negative base raised to an odd power is always positive.
- C. Any fifth power is less than any square.
- D. Because $8.4 < 2$.

13. A student evaluated $(x^2 - y)^3$ if $x = -4$ and $y = 7$ as shown: $(-4^2 - 7)^3 = (-16 - 7)^3 = (-23)^3 = -12,167$. What is the correct value?

- A. -343
- B. -729
- C. 729
- D. 12,167

14. Determine whether the statement is true or false: The expressions $(-x)^y$ and $-x^y$ have the same value.

- A. True for all real x and y .
- B. False; the expressions are always opposites.
- C. False; they have the same value only when y is odd (under the usual integer-exponent interpretation).
- D. True only when x is negative.

15. A student finds that $(\frac{1}{4})^2 = (\frac{1}{2})^4$ and concludes that $(\frac{1}{3})^2 = (\frac{1}{3})^3$. Is this reasoning correct?

- A. Yes, because equivalent powers can always be transferred to new bases.
- B. No; although $(\frac{1}{4})^2 = (\frac{1}{2})^4$ the conclusion is false because $\frac{1}{9} \neq \frac{1}{8}$.
- C. Yes, because 2 and 3 are consecutive exponents.
- D. No; $(\frac{1}{4})^2$ is not equal to $(\frac{1}{2})^4$.