

Student Name: \_\_\_\_\_

Grade: \_\_\_\_\_

Date: \_\_\_\_\_

Subject: Mathematics

Subject Teacher: Abdulkader Amro

## MATHEMATICS ASSESSMENT- M1L3 Powers of Monomials

### Powers and Exponents — Multiple-Choice Questions

*Directions: Choose the one best answer for each question. Each question has exactly one correct answer.*

#### SECTION A • MULTIPLE-CHOICE

1. Simplify the expression:  $(7^2)^3$ .

- A.  $7^5$
- B.  $7^6$
- C.  $14^6$
- D.  $7^9$

2. Simplify the expression:  $(8^3)^3$ .

- A.  $8^6$
- B.  $24^3$
- C.  $8^9$
- D.  $8^{12}$

3. Simplify the expression:  $(d^7)^6$ .

- A.  $d^{42}$
- B.  $d^{13}$
- C.  $d^{49}$
- D.  $6d^7$

4. Simplify the expression:  $(z^7)^3$ .

- A.  $z^{10}$
- B.  $z^{21}$
- C.  $z^4$
- D.  $3z^7$

5. Simplify the expression:  $(2m^5)^6$ .

- A.  $12m^{30}$
- B.  $2^6m^{30}$
- C.  $2^5m^{36}$
- D.  $64m^{25}$

6. Simplify the expression:  $(7a^5b^6)^4$ .

- A.  $7^4a^9b^{10}$
- B.  $28a^{20}b^{24}$
- C.  $7^8a^{20}b^{24}$
- D.  $7^4a^{20}b^{24}$

7. Simplify the expression:  $(-3w^3z^8)^5$ .

- A.  $-15w^{15}z^{40}$
- B.  $243w^{15}z^{40}$
- C.  $-243w^{15}z^{40}$
- D.  $-243w^8z^{15}$

8. Simplify the expression:  $(-5r^4s^{10})^4$ .

- A.  $-625r^{16}s^{40}$
- B.  $625r^{16}s^{40}$
- C.  $20r^{16}s^{40}$
- D.  $625r^4s^{14}$

9. Which is greater: 1,000 or  $(6^2)^3$ ?

- A. 1,000
- B.  $(6^2)^3$
- C. They are equal
- D. There is not enough information

10. The original question asks you to select all expressions that simplify to the same expression. How many of the listed expressions simplify to the same expression as  $(x^3y^4)^2$ ?

- A. 1
- B. 2
- C. 3
- D. 4

- ☐  $(x^3y^4)^2$
- ☐  $(x^2y)^2$
- ☐  $(x^3)^2y^6$
- ☐  $x^6(y^4)^2$
- ☐  $(x^3)^2(y^2)^4$

11. A square floor has a side length of  $7x^5y^6$  units. A square tile has a side length of  $x^2y$  units. How many tiles will it take to cover the floor?

- A.  $49x^6y^{10}$
- B.  $7x^3y^5$
- C.  $49x^{10}y^6$
- D.  $7x^7y^7$

**12.** A cube has a side length of  $3x^6$  units. A smaller cube has a side length of  $x^2$  units. How many smaller cubes will fit in the larger cube?

- A.  $9x^{12}$
- B.  $27x^8$
- C.  $27x^{12}$
- D.  $3x^{18}$

**13.** Which statement correctly explains why  $(4^2)^4 = (4^4)^2$ ?

- A. Both sides equal  $4^6$ .
- B. Both sides equal  $4^8$ .
- C. The exponents are added:  $2 + 4 = 6$ .
- D. The bases are different, so the expressions are not equal.

**14.** Describe all positive integers  $n$  that make  $[(\frac{1}{2})^4]^n$  less than  $(\frac{1}{2})^7$ .

- A.  $n = 1$  only
- B.  $n \geq 2$
- C.  $n \leq 2$
- D. All positive integers

**15.** Without computing, determine which number is greater:  $[(-4)^4]^5$  or  $-[(4^{12})^3]$ .

- A.  $[(-4)^4]^5$
- B.  $-[(4^{12})^3]$
- C. They are equal
- D. Neither is greater

**16.** Charlotte states that  $(4^3)^3$  can be rewritten as  $2^{18}$ . Which explanation correctly justifies her statement?

- A.  $(4^3)^3 = 4^6 = 2^{12}$
- B.  $4^3 = 2^6$ , so  $(4^3)^3 = (2^6)^3 = 2^{18}$
- C.  $4^3 = 2^3$ , so  $(4^3)^3 = 2^9$
- D. The exponents 3 and 3 are added to get  $2^6$