# Laws of Exponents

#### A. Choose the correct answer:

1. What is the value of  $2^3 \times 2^2$  using laws of exponents?

a) 2⁵	b) 2 <sup>6</sup>
c) 2 <sup>1</sup>	d) 2³

## 2. What is $(5^4)^2$ equal to?

a) 5 <sup>6</sup>	b) 5 <sup>8</sup>
c) 5²	d) 5 <sup>7</sup>

#### 3. What is the simplified form of $9^7 \div 9^3$ ?

a) 9⁴		b) 9³

c) 9<sup>5</sup> d) 9<sup>6</sup>

#### 4. What is the value of $(2 \times 3)^2$ ?

- a) 6<sup>2</sup> b) 2<sup>2</sup> + 3<sup>2</sup>
- c)  $2^2 \times 3^2$  d) Both a and c
- 5. What is  $a^{o}$  equal to (where  $a \neq 0$ )?
  - a) 0 b) 1
  - c) a d) None of these

### **B.** Write the Missing Terms to Complete the Sentences:

- 1. According to the product law of exponents,  $a^m \times a^n = a^{-1}$ .
- 2. According to the quotient law,  $a^m \div a^n = a^{-1}$ .
- 3. (a<sup>m</sup>)<sup>n</sup> = a^\_\_\_\_.
- 4.  $(a \times b)^m = a^m \times \____.$
- 5.  $a^{o}$  is always equal to \_\_\_\_ (a  $\neq$  0).

## C. Mark each sentence with a True ( ✔) or False (X):

- 1.  $(a^m)^n = a^{m+n}$
- 2. a<sup>o</sup> = 1 for any non-zero a
- 3.  $(a \times b)^m = a^m + b^m$

4.  $a^5 \div a^2 = a^3$ 

5.  $a^{-n} = \frac{1}{a^n}$ 

## D. Figure out the answers to these questions:

- 1. Simplify:  $3^5 \times 3^2$  and explain which law of exponent you used.
- 2. Write and simplify the expression:  $(4^2)^3$
- 3. If a = 2 and b = 5, find the value of  $(a \times b)^2$  using laws of exponents.
- 4. Using laws of exponents, evaluate:  $6^7 \div 6^4$
- 5. Prove that  $a^n \times a^{-n} = 1$  using a = 2 and n = 3

## E. Challenge yourself with these questions:

- 1. Simplify:  $(2^3 \times 2^4) \div 2^2$
- 2. Evaluate:  $(5^2)^3 \times 5$
- 3. Find the value of  $(3 \times 4)^2$  using exponent laws
- 4. Simplify and write the final exponent:  $(x^{\scriptscriptstyle 5} \div x^2) \times x$
- 5. If  $a^{-3} = \frac{1}{27}$ , find the value of a.