6

Exponents

Q1. If the following products are expressed in exponential form what would be the exponents and bases? Fill in the blanks in the table:

Product	Exponents	Base
$5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5$	_____	_____
$a \times a \times a \times a$	_____	_____

Q2. Fill in the blanks:

a. $(3^7 \times 2^8) \div (3^5 \times 2^3) =$ _____ $\times$ _____

b. $3^7 \times$ _____ $\times 3^2 = 3^{12}$

c. $\dfrac{3^5 \times 2^5}{3^4 \times 2^2} =$ _____ $\times$ _____

d. $(7^4)^3 \times 7^2 =$ _____

Q3. Match the numbers with their correct scientific notation:

2813000	2.8013×10^7
361400	2.813×10^6
28013000	3.6104×10^6
3610400	3.614×10^5

Q4. Express each of the following in exponential form:

a. $\dfrac{81}{49} = \dfrac{\square}{\square}$

b. $\dfrac{-1000}{1331} = \dfrac{\square}{\square}$

Q5. If x = –2, a = 5, b = 2, prove:

$x^a \times x^b = x^{a+b}$

Q6. Find the value of x in the following:

a. $(3^2 \times 2^5) / 2^x = 18$

$x =$ _____

b. $x^4 \times 10^3 = 8.1 \times 10^4$

$x =$ _____

Q7. Find the least number by which 1008 should be divided to make it a perfect square.

Answer: _____

Q8. Find the smallest number by which 5488 should be divided to make it a perfect cube.

Answer: _____

Q9. Find the cube of each of the following:

a. -7 : _____

b. 1.1 : _____

Q10. Find whether evaluating the following expressions will result in a positive or negative integer:

	Expression		Positive/Negative
a.	$(-1)^{23}$	:	_____
b.	$(3)^{21}$	:	_____
c.	$(-2)^{123}$	:	_____
d.	$(-5)^{58}$	:	_____

Answers

1.

Product	Exponents	Base
$5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5$	7	5
$a \times a \times a \times a$	4	a

2. a. $3^2 \times 2^5$; b. 3^3; c. 3×2^3; d. 7^{14}

3.

2813000	2.813×10^6
361400	3.614×10^5
28013000	2.8013×10^7
3610400	3.6104×10^6

4. a. $\frac{3^4}{7^2}$; b. $\left(\frac{-10}{11}\right)^3$

5. $x^a \times x^b = x^{a+b}$

$LHS = (-2)^5 \times (-2)^2 = (-32) \times 4 = -128$

$RHS = (-2)^{5+2} = (-2)^7 = -128$

$\therefore$ LHS = RHS

6. a. $x = 4$; b. $x = 3$

7. 7

8. 2

9. a. –343; b. 1.331

10. a. Negative; b. Positive; c. Negative; d. Positive