PARAGON CONVENT SCHOOL

SECTOR – 24B , CHANDIGARH

ANSWER KEY

CLASS – 7 **SUB – MATHS**

EXERCISE – 5B

Q-1. Simplify :

a. $2^3 \times 2^5 = 2^{3+5} = 2^8$
b. $7^2 \times 7^3 = 7^{2+3} = 7^5$
d. $(\frac{3}{2})^3 \times (\frac{3}{2})^2 = (\frac{3}{2})^{3+2} = (\frac{3}{2})^5$
g. $a^3 \times a \times a^4 = a^{3+1+4} = a^8$
h. $a^m \times a^3 = a^{m+3}$
j. $(-3)^5 \div (-3)^2 = (-3)^{5-2} = (-3)^3$

Q-2. Simplify :

a. $(2^3)^2 = 2^6$
b. $(3^4)^2 = 3^8$
c. $(5^2)^3 = 5^6$

Q-3. Simplify :

a. $(x^a)^b = x^{ab}$
b. $(x^2)^a = x^{2a}$
c. $(x^a)^3 = x^{3a}$
d. $(a^3)^4 = a^{12}$
i. $(a^x)(a^y) = a^{x+y}$

Q-4. Simply :

a. $(3 \times 4)^3 = 12^3$
b. $(2 \times 3)^2 = 6^2$
e. $(a \times b)^3 = (ab)^3$
j. $(2 \times 4)^{16} = 8^{16}$

Q-5. Express as a single power :

a. $a^3 \times b^3 = (ab)^3$

b. $a^x \times b^x = (ab)^x$
c. $3^4 \times 5^4 = 15^4$
i. $3^a \times 6^a = 18^a$
j. $10^x \times 0.5^x = (10 \times .05)^x = (5.0)^x = 5^x$

Q-6. Simplify :

a. $3^0 = 1$
b. $a^x \div a^x = a^{x-x} = a^0 = 1$
d. $2^0 \times 5^2 = 1 \times 25 = 25$
e. $a^0 \times b^3 = 1 \times b^3 = b^3$
f. $8^0 \times 3^0 = 1 \times 1 = 1$
h. $x^0 . y^0 = 1 \times 1 = 1$
i. $P^0 \div q^0 = 1 \div 1 = 1$

Q-7. Simplify ;

a. $\frac{(2^4)^2 \times 7^3}{8^2 \times 7} = \frac{2^8 \times 7^3}{(2^3)^2 \times 7} = \frac{2^8 \times 7^3}{2^6 \times 7^1} = (2)^{8-6} \times 7^{3-1} = 2^2 \times 7^2 = 4 \times 49 = 196$

b. $\frac{11^3 \times 5^3}{121 \times 5} = \frac{11^3 \times 5^3}{11^2 \times 5^1} = 11^{3-2} \times 5^{3-1} = 11^1 \times 5^2 = 275$
c. $(3^0 - 2^0) \times 6^0 = (1 - 1) \times 1 = 0 \times 1 = 0$
d. $\frac{5^3 \times 3^5 \times 6}{3^2 \times 25} = \frac{5^3 \times 3^5 \times 3 \times 2}{3^2 \times 5^2} = 5^{3-2} \times 3^{6-2} \times 2 = 5^1 \times 3^4 \times 2 = 5 \times 81 \times 2 = 810$
e. $[(5^2)^3 \times 5^4] \div 5^5$
$= [5^6 \times 5^4] \div 5^5$
$= 5^{10} \div 5^5 = 5^{10-5} = 5^5 = 3125$

Q-8. Find the value of x in the following :

a. $(2^2)^x = 64$
$= 2^{2x} = 2^6$
$= 2x = 6$
$= x = 6/2 = 3$
Hence , $x = 3$
b. $\frac{5^{3x} \times 25}{5^x} = 5^3 \times 125$

$= \frac{5^{3x} \text{ x } 5^2}{5^x} = 5^3 \text{ x } 5^3$

$= 5^{3x+2-x} = 5^{3+3}$

$= 5^{2x+2} = 5^6$

$= 2x + 2 = 6$

$= 2x = 6 – 2$

$= 2x = 4$

$= x = 2$

c. $\frac{2^4}{2^x} = 1$

$= \frac{2^4}{2^x} = \frac{1}{1}$

$= 2^4 = 2^x$

$= 4 = x$

$= x = 4$

d. $\frac{81 \text{ X } 3^{2x}}{3^3} = 1$

$= \frac{3^4 \text{ x } 3^{2x}}{3^3} = 1$

$= \frac{3^{4+2x}}{3^3} = \frac{1}{1}$

$= 3^{4+2x} = 3^3$

$= 4 + 2x = 3$

$= 2x = 3 -4$

$= 2x = -1$

$= x = \frac{-1}{2}$

EXERCISE – 5C

Q-1. Express the following numbers in scientific notation –

a. 56,30,000 = 5.63×10^6
b. 48.00,00,000 = 4.8×10^8
c. 7,86,40,000 = 7.864×10^7
e. 0.005 = 5×10^{-3}
f. 0.00000681 = 6.81×10^{-6}
g. 0.0000125 = 1.25×10^{-5}

Q-2. Write the Expanded notation –

a. $3.16 \times 10^4 = \frac{316 \times 10^4}{10^2} = 316 \times 10^{4-2} = 316 \times 100 = 31600$
b. $6.14 \times 10^6 = \frac{614 \times 10^6}{10^2} = 614 \times 10^{6-2} = 614 \times 10^4 = 614 \times 10000 = 6140000$
f. $6.13 \times 10^{-3} = \frac{613}{10^2 \times 10^3} = \frac{613}{10^5} = 0.00613$
g. $4 \times 10^{-6} = \frac{4}{10^6} = \frac{4}{1000000} = 0.000004$

Q-3. Express the following in scientific notation :

Sol : a. 1.989×10^{33} g

b. 9.11×10^{-28} g
c. 6.95×10^8m
d. 5.8×10^7 km