# MATHEMATICS

## Class-7th

## Chapter-13

# Exponents and Powers

## Exercise-13.2

Part-II

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(viii) $\frac{2^8 \times a^5}{4^3 \times a^3}$ We know that prime factor form of $4 = 2 \times 2 = 2^2$

Therefore,

$$\frac{2^8 \times a^5}{4^3 \times a^3} = \frac{2^8 \times a^5}{(2^2)^3 \times a^3}$$

$$= \frac{2^8 \times a^5}{2^6 \times a^3}$$

$$= (2)^{8-6} \times (a)^{5-3}$$

[using $a^m \div a^n = a^{m-n}$]

$$= 2^2 \times a^2$$

$$= (2a)^2 \quad [\text{using } a^m \times b^m = (ab)^m]$$

(ix) $\frac{a^5}{a^3} \times a^8$

$$= (a^{5-3}) \times a^8$$

[using $a^m \div a^n = a^{m-n}$]

$$= a^2 \times a^8$$

$$= (a)^{2+8} = a^{10}$$ an exponential form

(x) $\frac{4^5 \times a^8 b^3}{4^5 \times a^5 b^2}$ prime factor form of $4 = 2^2$

Therefore, $\frac{4^5 \times a^8 b^3}{4^5 \times a^5 b^2} = \frac{(2^2)^5 \times a^8 b^3}{(2^2)^5 \times a^5 b^2}$

$= \frac{(2^{2\times5}) \times a^8 b^3}{(2^{2\times5}) \times a^5 b^2}$ [Using $(a^m)^n = a^{mn}$]

$= \frac{2^{10} \times a^8 b^3}{2^{10} \times a^5 b^2}$ $= (2)^{10-10} \times a^{8-5} \times b^{3-2}$

[using $a^m \div a^n = \frac{a^m}{a^n} = a^{m-n}$]

$= 2^0 \times a^3 \times b^1$

$= 1 \times a^3 \times b = a^3 b$. an exponential form.

(xi) $(2^3 \times 2)^2$

$= (2^{3+1})^2$ [Using $a^m \times a^n = a^{m+n}$]

$= (2^4)^2$ [Using $(a^m)^n = a^{mn}$]

$= 2^8$.

Q.3. Say true or false and justify.

(i) $10 \times 10^{11} = 100^{11}$

False; $10 \times 10^{11} = 100^{11}$

Justification:

LHS $= 10 \times 10^{11}$

$= 10^1 \times 10^{11}$

$= (10)^{1+11}$ [Using $a^m \times a^n = a^{m+n}$]

$= 10^{12}$.

RHS $= 100^{11}$.

$= (10^1 \times 10^1)^{11}$

$= (10^2)^{11}$

$= (10)^{2\times 11}$ Using $(a^m)^n = a^{mn}$.

$= 10^{22}$

Since, $10^{12} \neq 10^{22}$

Therefore, $10 \times 10^{11} \neq 100^{11}$.

(ii) $2^3 > 5^2$

False; $2^3 > 5^2$

Justification:

$2^3 = 2\times 2\times 2 = 8$.

And. $5^2 = 5\times 5 = 25$

Since, $8 < 25$

Therefore, $2^3 < 5^2$.