

How Do You Multiply Powers
With The Same Base?

$$\begin{aligned} 7^2 \cdot 7^3 &= \overbrace{7 \cdot 7}^{\text{Factors}} \cdot \overbrace{7 \cdot 7 \cdot 7}^{\text{Factors}} \\ &= \underline{\underline{7^5}} \end{aligned}$$

Conclusion: When the product of
the Powers have the Same Base,
The Base Stays the Same and
We add the exponents.

Product of Powers

$$7^3 \cdot 7^3 = 7^{3+3} = \underline{\underline{7^6}}$$

$$2^4 \cdot 2^2 = 2^{4+2} = \underline{\underline{2^6}}$$

$$x^3 \cdot x^4 = x^{3+4} = \underline{\underline{x^7}}$$

$$6^3 \cdot 6^2 = 6^{3+2} = \underline{\underline{6^5}}$$

$$2^1 \cdot 2^4 = 2^{1+4} = \underline{\underline{2^5}}$$

$$a^4 \cdot a^6 = a^{4+6} = \underline{\underline{a^{10}}}$$

$$x^2 \cdot x^7 = x^{2+7} = \underline{\underline{x^9}}$$

$$a^m \cdot a^n = \underline{\underline{a^{m+n}}}$$

How Do You Find The Power Of a Power

$$a^3 = a \cdot a \cdot a$$
$$a = (7^2)$$

$$\begin{aligned} (7^2)^3 &= (7^2) \cdot (7^2) \cdot (7^2) \\ &= \underline{7 \cdot 7} \cdot \underline{7 \cdot 7} \cdot \underline{7 \cdot 7} \\ &= \underline{\underline{7^6}} \end{aligned}$$

We think ... We Multiply
The Exponents!

$$\begin{aligned} (5^4)^3 &= \underline{(5^4)} \cdot \underline{(5^4)} \cdot \underline{(5^4)} = 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \\ &= \underline{\underline{5^{12}}} \end{aligned}$$
$$(x^3)^3 = x^{3 \cdot 3} = \underline{\underline{x^9}}$$

Conclusion: With a Power to a Power
We Multiply the Exponents.

Summary: Power ^{exponents}
Multiply \Rightarrow Add
Power \Rightarrow Multiply

O.T.L.

- ① Pg 440: CROQ All } Paper 1
Write Question
Show Work, Write Ans
- ② Pg 448: 20-91 all } Paper Two