

CLASS 8

MATHS

REVISION NOTES

Revision Notes: Class 8 Maths Chapter 2 Power Play

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Class 8 Maths Chapter 2: Power Play — Quick Revision Notes

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Exponential notation: $a^n = a \times a \times \dots \times a$ (n times); a is the base, n is the exponent/power.

Product rule: $a^m \times a^n = a^{m+n}$ (same base, add exponents).

Quotient rule: $a^m \div a^n = a^{m-n}$ ($a \neq 0$, same base, subtract exponents).

Power of a power: $(a^m)^n = a^{m \times n}$.

Power of a product/quotient: $a^m \times b^m = (ab)^m$; $a^m \div b^m = (a \div b)^m$ ($b \neq 0$).

Zero exponent: $a^0 = 1$ for any $a \neq 0$ (0^0 is undefined).

Negative exponent: $a^{-n} = 1/a^n$, and $a^n = 1/a^{-n}$ ($a \neq 0$). All exponent laws extend to negative and zero integer exponents.

Standard (scientific) form: any number written as $x \times 10^y$, where $1 \leq x < 10$ and y is an integer. Compare exponents first when judging size — the exponent matters more than the coefficient.

Linear vs exponential growth: exponential (doubling/multiplicative) growth vastly outpaces linear (additive) growth over the same number of steps — e.g. paper folded 46 times reaches the Moon, while walking there step-by-step would take about 192 crore steps.

Number systems for large numbers: Indian system — lakh= 10^5 , crore= 10^7 , arab= 10^9 , kharab= 10^{11} , neel= 10^{13} , padma= 10^{15} ; International system — million= 10^6 , billion= 10^9 , trillion= 10^{12} , quadrillion= 10^{15} . Googol= 10^{100} .

Historical note: ancient Indian texts named very large powers of ten early — the Lalitavistara (≈ 1 st century BCE) names odd powers of ten up to 10^{53} , and Mahaviracharya's Ganita-sara-sangraha lists 24 place-value terms up to 10^{23} .