Curriculum Outcome

(N1) Demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by: representing repeated multiplication using powers; using patterns to show that a power with an exponent of zero is equal to one; solving problems involving powers.

(N2) Demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents.

Student Friendly:
“Learning the laws of Exponents "
Simplifying expressions before we try to evaluate them.

Section 2.5 Exponent Laws II

Fill in the following chart

Power	As Repeated Multiplication	As a Product of Factors	As a power
$(3^2)^5$	$(3^2)(3^2)(3^2)(3^2)(3^2)$ $=(3\times3)(3\times3)(3\times3)(3\times3)(3\times3)$	$3^{2\times5}$	3^{10}
$(4^2)^3$	$=(4^2)(4^2)(4^2)$ $=(4\times4)(4\times4)(4\times4)$	$4^{2\times3}$	4^6
$[(-2)^4]^3$			

What do we notice?

$$(2^3)^4 = 2^{12}$$

$$= 4096$$

Exponent Law for a Power of a Power

To raise a power to a power, multiply the exponents.

$$(a^m)^n = a^{mn}$$

Try this

Express the following as a single power

1) $(5^7)^8$ 2) $(10^2)^3$ 3) $[(-2)^4]^3$

Express the following as a single power then evaluate

1) $(2^3)^2$ 2) $(5^2)^3$ 3) $[(-3)^2]^4$

Fill in the following chart

Power	As Repeated Multiplication	As a Product of Factors	As a product of Powers
$(2^3 \times 3^2)^2$	$(2^3 \times 3^2)(2^3 \times 3^2)$ $(2\times2\times2)\times(3\times3)$ $(2\times2\times2)\times(3\times3)$	$2^{3\times2} \times 3^{2\times2}$	$2^6 \times 3^4$
$((-3)\times5)^2$			

Exponent Law for a Power of a Product

$$(ab)^m = a^m b^m$$

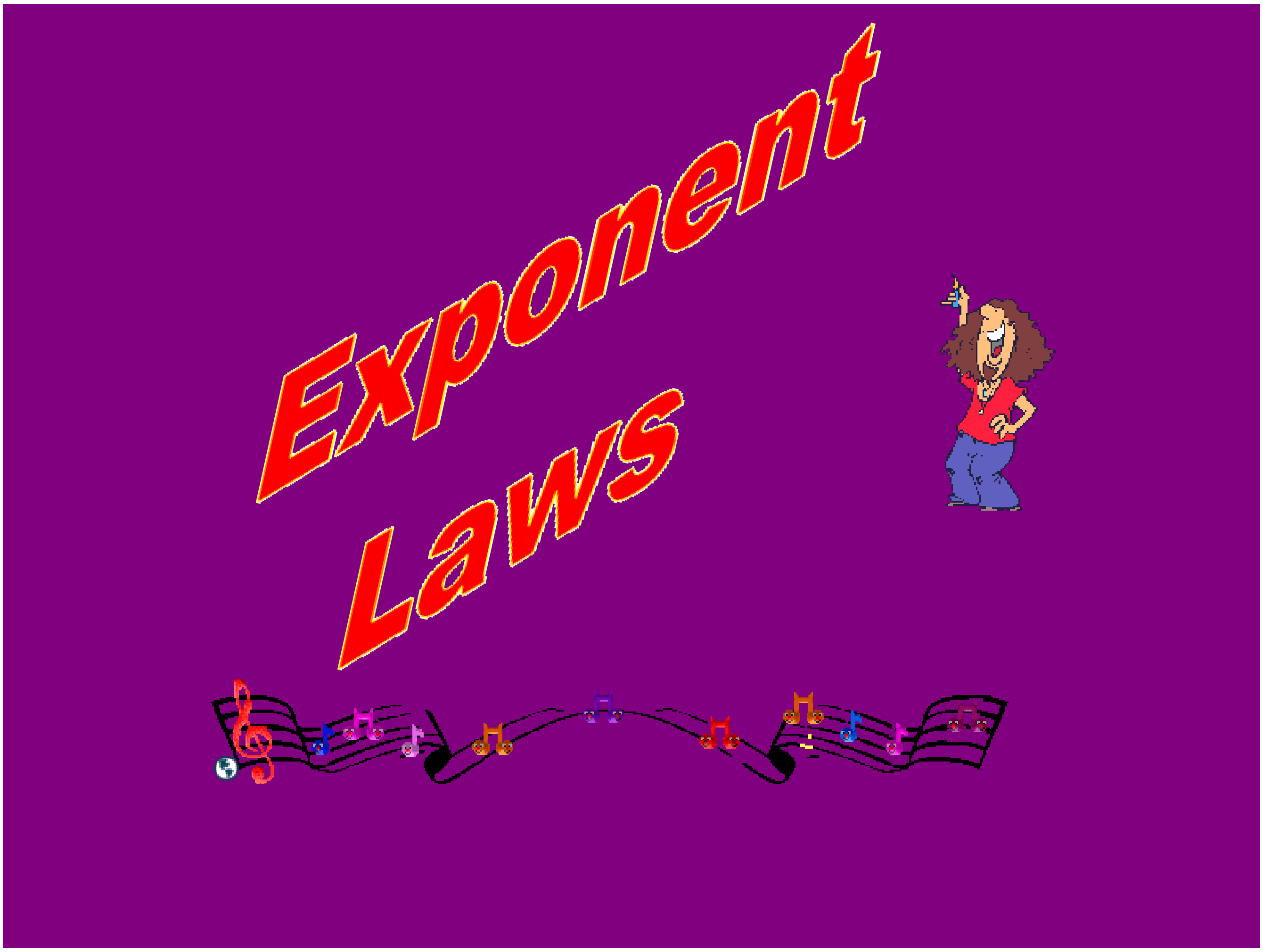
$$(7^3 \times 2^5)^4 = (7^{12})(2^{20})$$

Try this

Write as a power

1) $(3^5 \times 4^7)^6 = (3^{30})(4^{42})$

2) $(4^5 \div 3^4)^7 = (4^{35}) \div (3^{28})$


Exponent
Laws

Class/Homework

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