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:

"Exponent Law for a Quotient of Powers"

Grade 9 Warm Up

Express each as a single power and then evaluate

1) $2^{20} \times 2^3 \div 2^7$

$2^{23} \div 2^7$

$= 2^{16}$

$= 65\,536$

2) $-(-5)^7 \times (-5)^2$

$= -(-5)^9$

$= -(-1953125)$

$= 1\,953\,125$

3) $\dfrac{8^{121}}{8^{118}}$

$= 8^3$

$= 512$

Simplify then Evaluate

4) $15(15^{12} \div 15^9) \div 5 + 1$

$15^1(\quad 15^3 \quad) \div 5 + 1$

$15^4 \div 5 + 1$

3

$50\,625 \div 5 + 1$

$10125 + 1$

$= 10\,126$

1

Remember to always use BEDMAS when evaluating

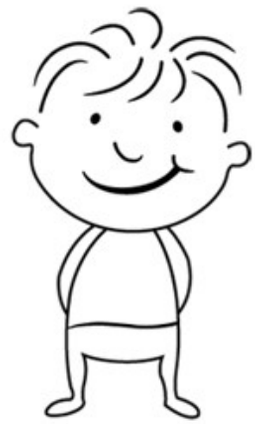
Simplify first (using exponent law I) THEN Evaluate each of the following:

1) $3^{10} \div 3^{6} + 3^{2}$

2) $-2^{3}(2^{9} \div 2^{7}) - 2^{1}$

3) $\dfrac{10^{1003}}{10^{1000}} - 1$

BEDMAS



Remember to always use BEDMAS when evaluating

Simplify first (using exponent law I) THEN Evaluate each of the following:

1) $3^{10} \div 3^{6} + 3^{2}$

$3^{4} + 3^{2}$ Simplified

$= 81 + 9$

$= 90$ Evaluated

2) $-2^{3}(2^{9} \div 2^{7}) - 2^{1}$

$-2^{3}(2^{2}) - 2^{1}$

$-2^{5} - 2^{1}$ Simplified

$-32 - 2$

$= -34$ Evaluated

3) $\dfrac{10^{1003}}{10^{1000}} - 1$

$10^{3} - 1$ Simplified

$1000 - 1$

999 Evaluated

Express each as a single power

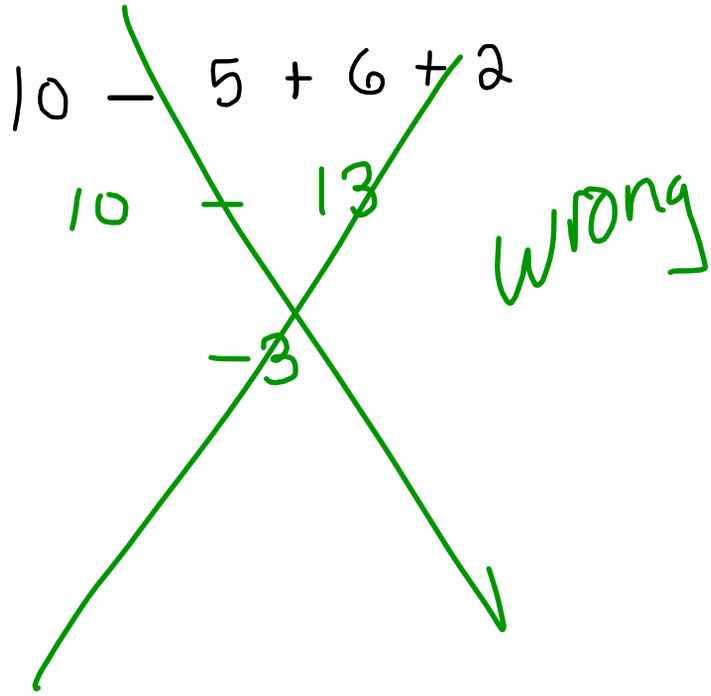
1) $6^2 \times 6^4$ 6^6	2) $-2^3 \times 2^7$ -2^{10}	3) $(-7)^2 \times (-7)^3$ $(-7)^5$
4) $\frac{12^{81}}{12^{79}}$ 12^2	5) $\frac{(-3)^{15}}{(-3)^{10}}$ $(-3)^5$	6) $\frac{(7)^5}{(7)^1}$ 7^4

Evaluate:

1) $3(10^2 - 6^2) \div 2 + 1$

$-(7^3 \times 7^5)$ vs $(-7)^3 \times (7)^5$

$-(7^8)$



wrong

$10 - 5 + 6 + 2$

$5 + 6 + 2$

$11 + 2$

13

Laws

1) $x^0 = 1$

2) $(x)^a (x)^b = x^{a+b}$

3) $\dfrac{(x)^b}{(x)^a} = x^{b-a}$

MUST COPY OUT QUESTION AND THEN ANSWER

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Questions :

3,4acegh, 5bdfh,6,7,8,10,11,13,17,18,19