Unit 2: Powers and Exponent Laws

Name: _____

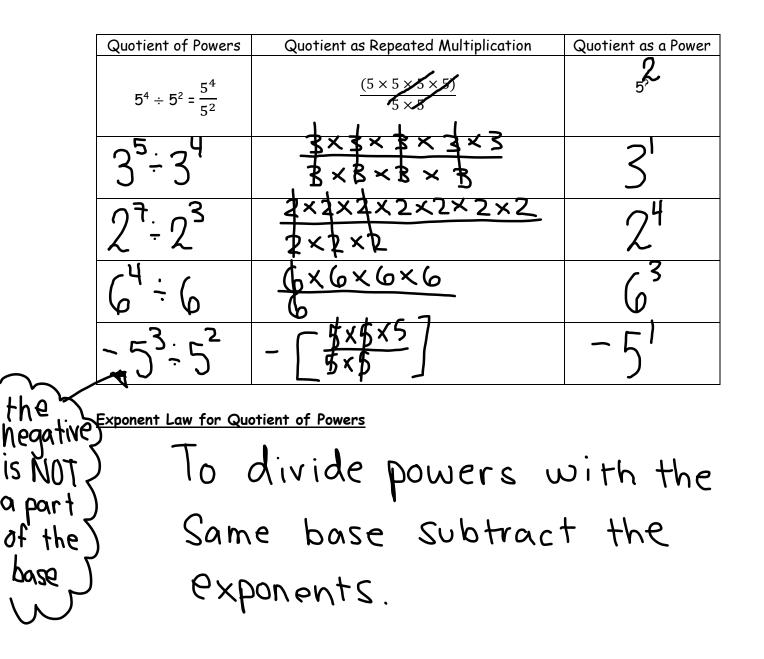
2.4 Exponent Laws I

| Product of Powers | Product as Repeated Multiplication | Product as a Power |
|------------------------------------|--|--------------------|
| $5^4 \times 5^2$ | (5×5×5×5) ×(5×5) | 56 |
| $3^2 \times 3^5$ | (3x3)x(3x3x3x3x3) | 3 |
| 2 ³ × 2 | $(2\times2\times2)\times2$ | 24 |
| $\binom{3}{6} \times \binom{4}{6}$ | $(6 \times 6 \times 6) \times (6 \times 6 \times 6)$ | (F) |
| $7^2 \times 7^3$ | $(7\times7)\times(7\times7\times7)$ | 75 |

Exponent Law for Product of Powers

To multiply powers with the same base add the exponents.

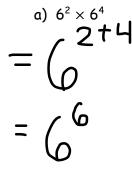
 $O_{W} \times O_{U} = O_{W + U}$

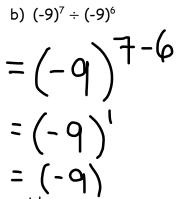


 $O_{W} = O_{V} = O_{W} - V$

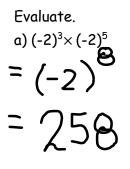
Example (1): Simplify Products and Quotients with the Same Base

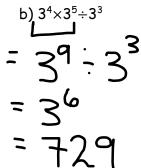
Write each expression as a power.





Example (2): Evaluating Expressions Using Exponent Laws





Example (3): Using Exponent Laws and the Order of Operations

Evaluate.
a)
$$6^{3} + 16^{2} \times 6^{5}$$

= $6^{3} + 6^{7}$
= $216 + 279936$
= 280152

b)
$$(-10)_{1}^{3}[(-10)^{5} \div (-10)^{2}] - 10^{7}$$

= $(-10)^{3} [(-10)^{3}] - 10^{7}$
= $(-10)^{6} - 10^{7}$
= $1000000 - 10000000$
= -9000000