

Multiply and Divide Monomials

Lesson 1-3

1. **Monomial:** A monomial is a number, a variable, or a product of a number and one of more variables. Examples: 3, x, 3x

- I. **Product of Powers:** The **Product of Powers** rule states that to multiply powers with the same base, *add* their exponents.

Example 1) Simplify. Express using exponents.	Example 2) Simplify. Express using exponents.
$2^3 \cdot 2^2$	$2s^6(7s^7)$

- II. **Quotient of Powers:** The **Quotient of Powers** rule states that to divide powers with the same base, *subtract* their exponents.

Example 3) Simplify $\frac{k^8}{k}$. Express using exponents.	Example 2) Simplify $\frac{(-2)^{10} \cdot 5^6 \cdot 6^8}{(-2)^6 \cdot 5^8 \cdot 6^2}$.
$\frac{k^8}{k}$	$\frac{(-2)^{10} \cdot 5^6 \cdot 6^8}{(-2)^6 \cdot 5^8 \cdot 6^2}$

Independent Practice

Simplify. Express using exponents.

1. $5^2 \cdot 5^6$

2. $e^2 \cdot e^7$

3. $2a^5 \cdot 6a$

4. $4x^2 \cdot (-5x^6)$

5. $\frac{7^9}{7^3}$

6. $\frac{v^{14}}{v^6}$

7. $\frac{15w^7}{5w^2}$

8. $\frac{10m^8}{2m}$

9. $\frac{2^5 \cdot 3^7 \cdot 4^3}{2^1 \cdot 3^5 \cdot 4}$

10. $\frac{4^{15} \cdot (-5)^6}{4^{12} \cdot (-5)^4}$

11. $\frac{6^7 \cdot 7^6 \cdot 8^5}{6^5 \cdot 7^5 \cdot 8^4}$

12. $\frac{(-3)^6 \cdot 10^5}{(-3)^4 \cdot 10^3}$

13. A publisher sells 10^6 copies of a new book. Each book has 10^2 pages. How many pages total are there in all of the books sold? Write the answer using exponents.

14. Express the area of a square with sides of length $5ab$ as a monomial.