

Study Guide and Intervention

7NS2.3, 7AF2.1, 7AF2.2

Multiplying Monomials

The **Product of Powers Property** states that to multiply powers that have the same base, add the exponents: $a^n \cdot a^m = a^{n+m}$.

Example Multiply. Express using exponents.

1

$2^3 \cdot 2^2$

$$2^3 \cdot 2^2 = 2^{3+2}$$

$$= 2^5$$

The common base is 2.
Add the exponents.

2

$-2s^6(-7s^7)$

$$-2s^6(-7s^7) = (-2 \cdot -7)(s^6 \cdot s^7)$$

$$= (14)(s^{6+7})$$

$$= 14s^{13}$$

Commutative and Associative Properties
The common base is s .
Add the exponents.

3

$n^5 - n^{-3}$

$$n^5 - n^{-3} = n^{5-3}$$

$$= n^2$$

The common base is n .
Subtract the exponents.

Exercise**Multiply. Express using exponents.**

1. $3^4 \cdot 3^1$

2. $5^2 \cdot 5^5$

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

4. $2a^5 \cdot 6a$

5. $-3t^3 \cdot 2t^8$

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

7. $-6t^4 \cdot -3t^5$

8. $\left(\frac{3}{4}\right)^{-3} \cdot \left(\frac{3}{4}\right)^6$

9. $-6m^2 \cdot 4m$

10. $3s^6(-9s^{-2}h^2)$

11. $9a^2(-6a^{-5})$

12. $-2e^4z^{-4}(6e^{-6})$

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Dividing Monomials

The Quotient of Powers Property states that to divide powers that have the same base, subtract the exponents: $a^n \div a^m = a^{n-m}$.

Example Divide. Express using exponents.

1

$$\frac{k^8}{k}$$

$$\frac{k^8}{k} = k^{8-1}$$
$$= k^7$$

The common base is k .
Subtract the exponents.

2

$$\frac{28g^{12}}{-4g^3}$$

$$\frac{28g^{12}}{-4g^3} = \left(\frac{28}{-4}\right)\left(\frac{g^{12}}{g^3}\right)$$

$$= (-7)(g^{12-3})$$
$$= -7g^9$$

Commutative and Associative Properties

The common base is g .
Subtract the exponents.

3

$$\frac{5^8}{5^{-5}}$$

$$\frac{5^8}{5^{-5}} = 5^{8-(-5)}$$

$$= 5^{13}$$

Quotient of Powers.

Simplify.

Exercise**Divide. Express using exponents.**

1. $\frac{2^8}{2^6}$

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

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

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

5. $\frac{21z^{10}}{7z^9}$

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

7. $\frac{(-12)^3}{(-12)^3}$

8. $\frac{c^{20}}{c^{13}}$

9. $\frac{1^8}{1^6}$

10. $\frac{x^{-2}}{x^{-4}}$

11. $\frac{100^7}{100^6}$

12. $\frac{4^{-2}}{4^6}$