

# Reteaching 4-7

## Exponents and Multiplication

Simplify  $m^3 \cdot m^4$  and  $(n^2)^3$ .

The base of  $m^3$  is  $m$  and the base of  $m^4$  is  $m$ . So, they have the same base. To multiply variables with the same base, add the exponents.

$$m^3 \cdot m^4 = m^{3+4} = m^7$$

This rule works because you are combining 3 factors of  $m$  and 4 factors of  $m$ .

$$m^3 \cdot m^4 = (m \cdot m \cdot m) \cdot (m \cdot m \cdot m \cdot m) = m^7$$

Simplifying  $(n^2)^3$  involves raising a power ( $n^2$ ) to a power. To find a power of a power, multiply the exponents.

$$(n^2)^3 = n^{2 \cdot 3} = n^6$$

This rule works because you are using  $n^2$  as a factor 3 times.

$$(n^2)^3 = n^2 \cdot n^2 \cdot n^2 = (n \cdot n) \cdot (n \cdot n) \cdot (n \cdot n) = n^6$$

### Simplify each expression. Show an intermediate step.

1.  $4^7 \cdot 4^2 = (\underline{\hspace{2cm}}) \cdot (\underline{\hspace{2cm}}) = \underline{\hspace{2cm}}$
2.  $a^3 \cdot a^6 = (\underline{\hspace{2cm}}) \cdot (\underline{\hspace{2cm}}) = \underline{\hspace{2cm}}$
3.  $3x^2 \cdot 4x^5 = (\underline{\hspace{2cm}}) \cdot (\underline{\hspace{2cm}}) = \underline{\hspace{2cm}}$
4.  $3^4 \cdot 3^3 = (\underline{\hspace{2cm}}) \cdot (\underline{\hspace{2cm}}) = \underline{\hspace{2cm}}$
5.  $y^5 \cdot y^3 = (\underline{\hspace{2cm}}) \cdot (\underline{\hspace{2cm}}) = \underline{\hspace{2cm}}$
6.  $7r^4 \cdot 3r^2 = (\underline{\hspace{2cm}}) \cdot (\underline{\hspace{2cm}}) = \underline{\hspace{2cm}}$
7.  $(5^3)^4 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
8.  $(h^2)^5 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
9.  $(m^4)^8 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
10.  $(x^3y^2)^3 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
11.  $(2s^4t^5)^4 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
12.  $(-pqr^2)^3 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$