

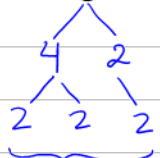
## 2.5 Combining Powers cont'd

Recap:

$$(a^m)^n = a^{m \cdot n} \quad \left\{ \left( \frac{a}{b} \right)^m = \frac{a^m}{b^m} \right\} (ab)^m = a^m \cdot b^m$$

$$(a^m)(a^n) = a^{m+n} \quad \left\{ \frac{a^m}{a^n} = a^{m-n} \right\} a^0 = 1$$

Simplify, do not solve  $\leftarrow$  leave in exponent form

$8^2 \times 4^3$  not the same base  

  
 $(2^3)^2 \cdot (2^2)^3$   
 $2^6 \times 2^6 = (2^6)^2 = 2^{12}$

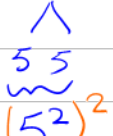
goal: Few bases as possible  
Few exponents as possible

ex.  $((3^2)(5^3))^2 (3^3 \times 5^4)^3$  distribute exponents  
 $3^4 \times 5^6 \times 3^9 \times 5^{12}$  combined same bases by adding exp.

$$3^{4+9} \times 5^{6+12}$$

$$\boxed{3^{13} \times 5^{18}}$$

$$(5^3 \times 25^2)^3$$

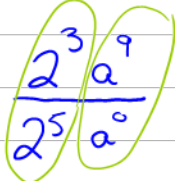


$$(5^3 \times 5^4)^3$$

$$(5^7)^3$$

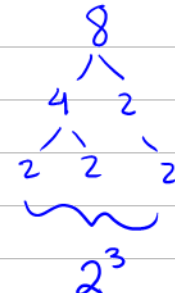
$$\boxed{5^{21}}$$

$$\frac{8a^9}{32a^0}$$

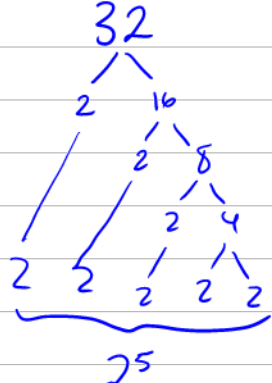


$$\frac{2^3 a^9}{2^5 a^0}$$

$$2^{-2} a^{9-0} = 2^{-2} a^9 = \boxed{\frac{a^9}{2^2}}$$



$$2^3$$



$$2^5$$