

2.3 Multiplying Powers With The Same Base

Remember: Exponents group common bases that are being multiplied.

$7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 = 7^5$	$5 \cdot 5 \cdot a \cdot a \cdot a \cdot b = 5^2 a^3 b$
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What happens when we multiply powers connected by multiplication in an expression?

Class Notes – Expand the expression, then condense it.

LP#1 $4^3 \cdot 4^5$	$8^2 \cdot 8^4$
LP#2 $x^2 \cdot x^3$	$y^3 \cdot y^6$
LP#3 $3^3 \cdot m \cdot m^4 \cdot 3^2$	$6^2 \cdot x^4 \cdot x^3 \cdot 6^2 \cdot x$

Use what you observe above to complete the following.

Combine the like powers below into one power.

$x^a \cdot x^b =$	$x^a \cdot y^c \cdot x^b \cdot y^d =$
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The resulting exponents for the expression above are _____.

Class Notes – Simplify the following expressions.

LP#4 $7^6 \cdot 7^8$	$3^8 \cdot 3^{10}$	$x^4 \cdot x^7$	$m^9 \cdot m^3$
LP#5 $a^2 \cdot b^2 \cdot a^4$	$6^5 \cdot y \cdot y^9 \cdot 6^4$	$11^2 \cdot 11 \cdot w^2 \cdot 11^5$	$5^3 \cdot 5^6 \cdot p^3 \cdot p$

Review – Simplify the following expressions.

R#1 <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
R#2 <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
R#3 <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Homework – Simplify the following expressions.

- 1) 2) 3) 4) 5)
6) 7) 8) 9) 10)
11) 12) 13) 14) 15)
16) 17) 18) 19) 20)
21) 22) 23) 24) 25)

26) 27) 28) 29) 30)

Synthesis

Simplify the following expressions by expanding and then condensing.

- 31) 32) 33) 34)
35) 36) 37) 38)
39) 40) 41) 42)