

**7.1 Exponent Properties**

Warm Up

$x^2 \cdot x^3 =$ $x \cdot x \cdot x \cdot x \cdot x$ $x^5$		$y^3 \cdot y^4 =$ $y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y$ $y^7$
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Oct 22-3:26 PM

**PRODUCT OF POWERS PROPERTY :**

$x^a \cdot x^b = x^{a+b}$

THIS ONLY WORKS IF THEY HAVE THE SAME BASE!!!

$x^2 \cdot x^3 = x^{2+3} = x^5$		$y^3 \cdot y^4 = y^{3+4} = y^7$
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Nov 2-12:38 PM

$(3)^2(3)^5(3)^4$ $3^{11}$		$(-2)^3(-2)^2$ $-2^5$
$(0.5)^5(0.5)^{-2}$ $(0.5)^3$		$8^1 \cdot 8^1 \cdot 8^2 \cdot 8^3$ $8^7$

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$a^3 \cdot a^2 \cdot a^6$ $a^{11}$		$x^{-2} \cdot x^7$ $x^5$
$y^2 \cdot y^5 \cdot y^1$ $y^8$		$b^{-5} \cdot b^3 \cdot b^9$ $b^7$

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Simplify the expression:

$4z^5 \cdot 9z^6$ $36z^{11}$		$3a^2 \cdot 2b^2 \cdot a^5$ $6a^7 b^2$
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Oct 22-3:40 PM

Simplify the expression:

$2x^3 y^4 \cdot 3x^4$ $6x^7 y^4$		$-4c^3 \cdot 7d^2 \cdot (-2c^{-2})$ $56cd^2$
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**Raising Exponents to a Power**

$$(x^a)^b = x^{a \cdot b}$$

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

$$(x^7)^5 = x^7 \cdot x^7 \cdot x^7 \cdot x^7 \cdot x^7 = \boxed{x^{35}}$$

Nov 6-3:40 PM

**What about these?**

PEMDAS

$$y^9(y)^6 = y^{15}$$

$$k^{-4}(k^2)^5 = k^{-4}(k^{10}) = \boxed{k^6}$$

Nov 3-1:01 PM

**POWER OF A PRODUCT PROPERTY:**

$$(x \cdot y)^a = x^a \cdot y^a$$

$$(y \cdot x^7)^2 = y^2 x^{14} = \boxed{x^{14} y^2}$$

$$(3 \cdot y^{\frac{1}{2}})^6 = 3^6 y^3 = \boxed{729 y^3}$$

$$(x \cdot y^2)^5 = x^5 y^{10} = \boxed{x^5 y^{10}}$$

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$$(3 \cdot x^4)^3 = 3^3 x^{12} = \boxed{27 x^{12}}$$

$$(2 \cdot b^5)^3 = 2^3 b^{15} = \boxed{8 b^{15}}$$

Nov 3-1:04 PM

**Now try these:** 😊

$$(y \cdot x^7)^2 (3 \cdot y^{\frac{1}{2}})^6 = (y^2 x^{14}) (3^6 y^3) = 3^6 x^{14} y^5 = \boxed{729 x^{14} y^5}$$

$$(x \cdot y^2)^5 (3 \cdot x^4)^3 = (x^5 y^{10}) (3^3 x^{12}) = \boxed{27 x^{17} y^{10}}$$

Nov 3-12:49 PM

$$(4x^2y)^3 \cdot x^5 = 4^3 x^6 y^3 \cdot x^5 = \boxed{64 x^{11} y^3}$$

$$(-x)^2 (-x)^4 (-x)^3 = (-1^2 x^2) (-1^4 x^4) (-1^3 x^3) = (1x^2)(1x^4)(-1x^3) = \boxed{-1x^9}$$

Nov 6-4:18 PM

Classwork: p.438 #4 - 44 even  
Copy the problem.

## Final Five

Simplify.

1.  $(3x^2)^3$

2.  $(3x^2)^3(3x)$

Nov 3-1:13 PM