

Multiplying Powers (with the Same Base)

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Rule #1 - Keep the base and
Add the exponents

Example

$$3^2 \cdot 3^4 = 3^{2+4} = 3^6$$

$$3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$$

$$3^2 \cdot 4^3$$

$$3 \cdot 3 \cdot 4 \cdot 4 \cdot 4$$

$$3^2 \cdot 4^3$$

if the bases
are NOT the
same, you
CANNOT
Simplify

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Practice: Simplify using exponents

$$\textcircled{1} m^4 \cdot m^3 \cdot m^2 = m^9$$

$$m \cdot m \cdot m \cdot m \cdot m \cdot m \cdot m \cdot m \cdot m$$

$$4 + 3 + 2$$

$$\textcircled{2} \left(\frac{1}{2}\right)^3 \cdot \left(\frac{1}{2}\right)^5 \cdot \left(\frac{1}{2}\right)^1 = \left(\frac{1}{2}\right)^9$$

$$\textcircled{3} n^3 \cdot n^4 \cdot 3^5 \cdot 3^2$$

$$n^7 \cdot 3^7$$

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On own

$$\textcircled{1} \underbrace{n^6 \cdot n^4}_{n^{10}} \cdot \underbrace{m^1 \cdot m^1}_{m^2}$$

$$\textcircled{2} \underbrace{6^7 \cdot 6^2}_{6^9} \cdot \underbrace{5 \cdot 5^2}_{5^3}$$

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What if...

$$\textcircled{1} \underbrace{3 \cdot m^4}_{3 \cdot 2} \cdot \underbrace{2 \cdot m^3}_{4+3=7}$$

$$6m^7$$

$$\textcircled{3} \underbrace{m \cdot m \cdot m \cdot m}_{m^4} \cdot \textcircled{2} \underbrace{m \cdot m \cdot m}_{m^3} :$$

$$6m^7$$

Steps

- ① Multiply Coefficients
- ② Keep base
- ③ Add Exponents

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$$\textcircled{2} \quad 4v^2 \cdot 3v$$

$$12v^3$$

$$\textcircled{3} \quad 2w^2x^2 \cdot 3wx^4$$

$$6w^3x^6$$

$$\textcircled{4} \quad 3a^3b^2 \cdot 5a^2b$$

$$15a^5b^3$$

$$\textcircled{5} \quad 2w^3 \cdot 3x^2$$

$$6w^3x^2$$

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Practice

$$\textcircled{1} \quad m^4n^2 \cdot m^3 \cdot n$$

$$m^7n^3$$

$$\textcircled{2} \quad 5a^2b \cdot 3a^4$$

$$15a^6b$$

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