

Alg I 7.2 notes.notebook

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Multiplying powers with the same base

The **big** idea...

$$3^4 \cdot 3^3 = (3 \cdot 3 \cdot 3 \cdot 3)(3 \cdot 3 \cdot 3) = 3^7 = 3^{4+3}$$

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

In general form: $a^m a^n = a^{m+n}$

The key to being able to add/subtract exponents is that the multiplied terms must have the same base.

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5) $(x^2y)(x^3y^2)$

6) $(x^{-2}y^3)(x^5y^{-2})$

Complete the equation.

7) $7^9 \cdot 7 = 7^{16}$

8) $(x^5y)(x^2y^3) = y^6$

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Simplify.

1) $7^5 \cdot 7^3$

2) $x^{-11} \cdot x^6$

3) $6^{-3} \cdot 6^5$

4) $x^4 \cdot x^7$

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Scientific notation is used to show very big or very small numbers and is in the form $a \times 10^b$ where $1 \leq a < 10$.

Write the number in scientific notation.

9) 43,260,000,000

10) 0.000041

Write the number in standard form.

11) 8.2×10^3

12) 3.71×10^{-7}

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Multiply. Write in scientific notation.

13) $(4 \times 10^3)(2 \times 10^5)$ 14) $(6 \times 10^{-5})(7 \times 10^8)$

15) $(0.3 \times 10^8)(1.4 \times 10^5)$