Exponents

worksheet

1. Circle all of the following that are true about 3^4.

   a. 3^4 is equivalent to $3 \cdot 4$.

   b. 3^4 is equivalent to $4 \cdot 4 \cdot 4$.

   c. 3^4 is equivalent to $3 \cdot 3 \cdot 3 \cdot 3$.

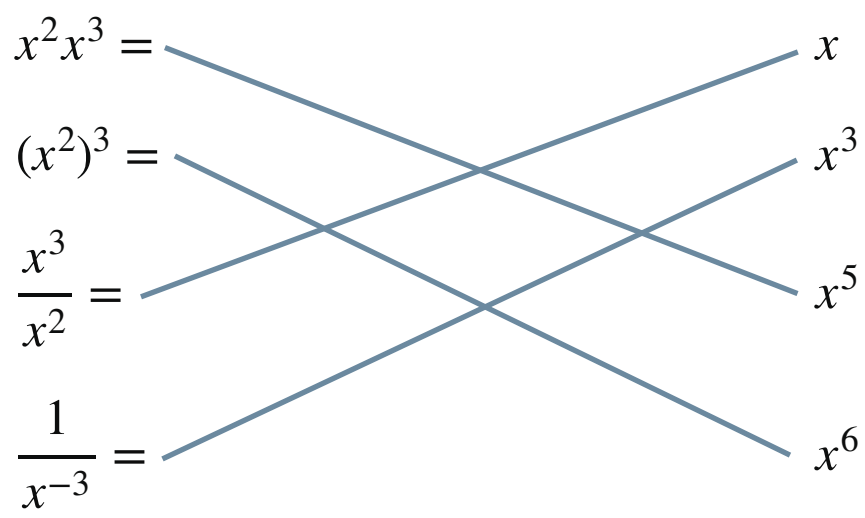
   d. 3^4 is equivalent to $\sqrt[4]{3}$.

2. Select the choice that gives $2x^3 + 5x^3$ in simplest form.

   $7x^3$ $\qquad$ $7x^6$

   $7x^9$ $\qquad$ $2x^3 + 5x^3$

3. Match the expression on the left with an equivalent form on the right.



Exponents

KEY POINTS	NOTES
Exponents	A superscript number in the upper right of a base number. It means to multiply the base number times itself the number of times of the exponent value. Ex: $3^2 = 3 \cdot 3 = 9$.
Add/subtract ex. expressions	Like terms are needed add or subtract exponential expressions. Combine coefficients and leave the variable exponential expression. Ex: $3x^2 + 2x^2 = 5x^2$.
Product rule	When multiplying exponential expressions with like bases, add the exponents. $x^a \cdot x^b = x^{a+b}$. Ex: $x^2 \cdot x^3 = x^{2+3} = x^5$
Quotient rule	When dividing exponential expressions with like bases subtract the exponents. $\frac{x^a}{x^b} = x^{a-b}$. Ex: $\frac{x^5}{x^2} = x^{5-2} = x^3$.
Power rule	When a power is raised to a power, multiply exponents. $(x^a)^b = x^{a \cdot b}$. Ex: $(2^2)^3 = 2^6 = 64$.
Quotient rule	When an exponential expression is divided by another with like bases, subtract their ex-

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ponents. $\frac{x^a}{x^b} = x^{a-b}$.

Ex: $\frac{x^4}{x^2} = x^{4-2} = x^2$.