Multiplying Exponential Expressions

Part A

Exponents allow you to rewrite some multiplication problems in a simpler form. Some exponent expressions can also be simplified. Copy and complete the table below in your notebook. Expand each expression into factored form and then rewrite it with new exponents as shown in the example.

Original Form	Factored Form	Simplified Exponent Form
$5^2 \cdot 5^5$	$(5 \cdot 5) \cdot (5 \cdot 5 \cdot 5 \cdot 5 \cdot 5)$	5^7
$2^2 \cdot 2^4$		
$3^7 \cdot 3^2$		
$x^3 \cdot x^5$		
$x^3y^2 \cdot xy^2$		
$7^2 \cdot x^3 \cdot 7 \cdot x^2$		
$2 \cdot x^4 \cdot 3 \cdot xy^2$		

1. Work with your group to compare the bases and exponents of the original form to the base and exponent of the simplified exponent form. **Write a statement to describe the relationship you see.**

2. Visualize how you would expand $20^{12} \cdot 20^8$ in your mind. What would this expression be in simplified exponent form? Describe your reasoning.

3. A group of students rewrote the expression $10^3 \cdot 5^4$ as 50^7. Is their simplification correct? Explain your reasoning.