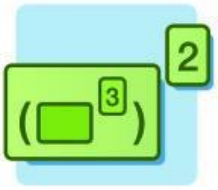
Name: _____ Date: _____ Period: _____

Power Pairs

Let's determine if expressions with exponents are equivalent.



Warm-Up

Evaluate each expression mentally. Try to think of more than one strategy.

1. 2^2

2. 2^3

3. $2^2 \cdot 2^3$

4. 2^5

Activity 1

Name: ..... Date: ..... Period: .....

Power Pairs

5. Here are two expressions.

$(3^4)^2$ $3^5 \cdot 3^3$

Discuss Are these expressions equivalent? How do you know?

6. You will use a set of cards to complete this activity. Follow the instructions on the presentation screen to play the game *Power Pairs* with your group. Record the pairs of equivalent expressions in the table.

Player's Name	Expression 1	Expression 2

Workspace:

Activity 2

Name: _____ Date: _____ Period: _____

Are They Equivalent?

7. Decide if the expressions in each pair are equivalent. Show your thinking.

	Expression 1	Expression 2	Equivalent? Circle one
a	$(5^5)^2$	$5^4 \cdot 5^3$	Yes No
b	$4^3 \cdot 2^5$	8^8	Yes No
c	$15^3 \cdot 2^3$	$(5 \cdot 2)^3 \cdot 3^3$	Yes No

8. Decide whether each expression is equivalent to 10^6. Rewrite any expressions that are *not* equivalent so that they are equivalent to 10^6.

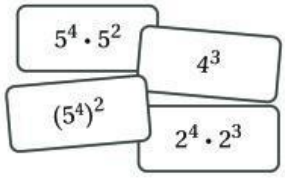
a $\frac{10 \cdot 10^4 \cdot 10^2}{10}$ **b** 100^5 **c** $10^3 + 10^3$ **d** $(10^2)^3$

Explore More

9. Write at least four different expressions that are equivalent to $(3^4)^2$ using only numbers, multiplication, and exponents.

Synthesis

10. What are some important things to remember when determining whether expressions with exponents are equivalent?



Things to Remember: