

Practice 1.3

Simplify each expression. Write your answer in exponential notation.

1 $(2^6)^2$

2 $(3^4)^3$

3 $(10^5)^4$

4 $(10^7)^2$

5 $(25^3)^3$

6 $(x^6)^3$

7 $\left[\left(\frac{1}{8}\right)^3\right]^6$


8 $\left[\left(\frac{4}{5}\right)^2\right]^4$

9 $[(2y)^3]^8$

10 $[(57p)^4]^4$

11 $[(-6)^4]^3$

12 $[(-p)^2]^{11}$

- 13  *Math Journal* Michael thinks that $(a^3)^2 = a^5$. Is he correct? Why?

$(a^3)^2 = a^{3+2}$
$= a^5$



Hands-On Activity

EXPLORE THE POWER OF A POWER PROPERTY

Work in pairs.

In this activity, you and your partner will play a game in which you write and evaluate expressions in the form $(a^m)^n$. You will get a point for each expression you write, and the person with the greater score wins.

Materials:

- three stacks of five cards, each labeled with a number from 1 to 5

STEP

- 1 Shuffle each stack of number cards and place them in a pile. Each player randomly draws three cards, one from each pile.



STEP

- 2 Use your three cards to write an expression in the form $(a^m)^n$. For instance, if you draw 2, 4, and 5, you could write $(2^4)^5$, $(4^2)^5$, or another expression. Write as many expressions as you can. You may want to use a calculator to evaluate your expression. For instance, to evaluate $(2^4)^5$, you can use these keystrokes:

Press (2 ^ 4) ^ 5 ENTER .

STEP

- 3 Record your expressions and their values. Your partner should also record his or her expressions and their values. Check your partner's work.

STEP

- 4 Continue the game by replacing the cards you used and shuffling the piles.

Repeat **STEP 1** to **STEP 3** several more times. When you are finished, find each player's score by counting the number of correct expressions that each player has written. The player with the greater score wins.



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Is it correct to assume that using the greatest number drawn as the base will give the expression with the greatest possible value? Explain or give an example.