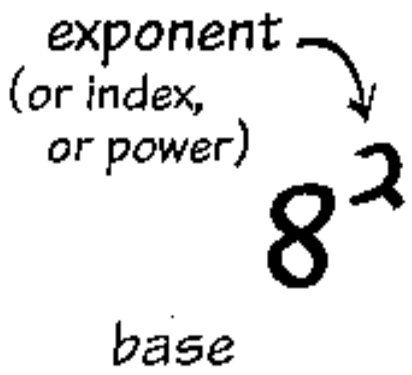
Unit 4 Exponential Functions **Name: _____**
Day 0 Number Exponents Notes and Worksheet **Date: _____ Hour: _____**



What is an exponent?

The exponent of a number says
how many times to use the number in a multiplication.

Exponents are also called Powers or Indices.

In 8^2 the "2" says to use 8 *twice* in a multiplication, so

$$8^2 = 8 \times 8 = 64$$

8^2 could be called "8 to the power 2" or "8 to the second power", or simply "8 squared"

Example 1:

$5^3 = 5 \times 5 \times 5 = 125$

5^3 could be called "5 to the third power", "5 to the power 3" or simply "5 cubed"

Example 2:

$2^4 = 2 \times 2 \times 2 \times 2 = 16$

2^4 could be called "2 to the fourth power" or "2 to the power 4" or simply "2 to the 4th"

Exponents make it easier to write and use repeated multiplications

For example, 9^6 is easier to write and read than $9 \times 9 \times 9 \times 9 \times 9 \times 9$

You can multiply any number by itself as many times as you want using exponents.

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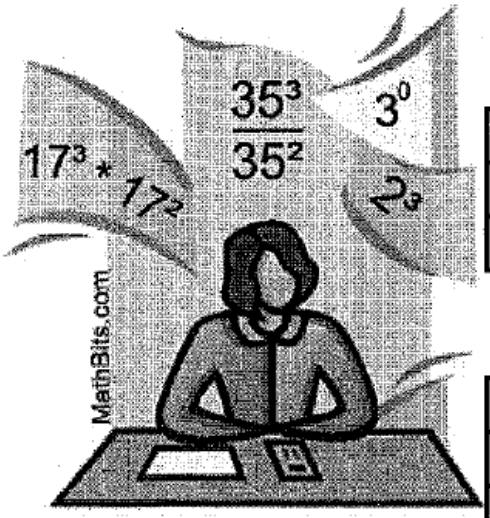
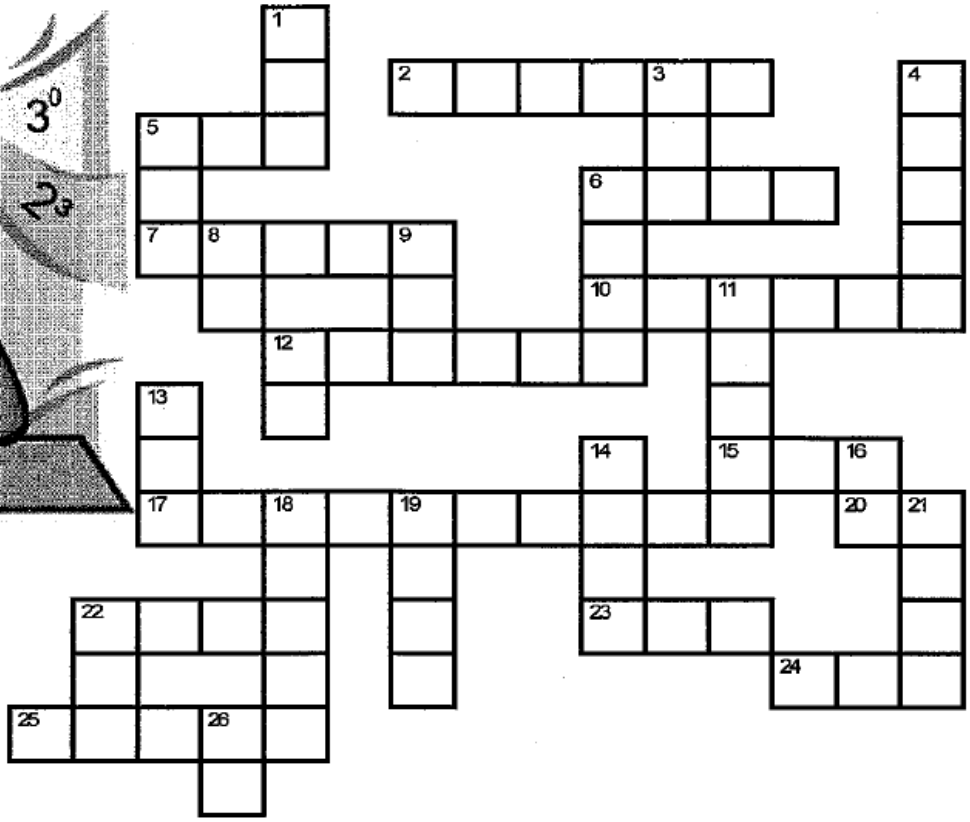
Simplify each expression. Then, you may use a calculator once each expression has been simplified.





Across

2 $712^4 / 712^2$

5 $5\left(12^4 / 12^2\right)$

6 $2^3 \times 2^8$

7 $312^2 \times 312^0$

10 $320^4 / 320^2$

12 $6^4 \times 6^3$

15 $15^8 / 15^6$

17 $185^6 / 185^2$

20 $10^2 - 59$

22 $11^5 / 11^2$

23 $10^2 \times 8$

24 $6(10^2 + 8^2)$

25 $10^4 + 65$

Down

1 $5(5^2) + 5(5^3)$

3 $(4 \times 10^2) + (3 \times 10)$

4 $10^3 \times 10 \times 9$

5 $3^4 \times 3^2$

6 $46^2 / 46^0$

8 $8^0 + 8^1 + 8^2$

9 $8^3 - 83$

11 $145^4 / 145^2$

12 $26^4 / 26^3$

13 $10^0 + 10^1 + 10^2$

14 $8(8^2 + 8^3)$

16 $54^3 / 54^2$

18 $5^3 \times 5^4$

19 $6(16 + 8)^2$

21 $38^3 / 38$

22 $10^8 / 10^6$

26 $2^2 \times 2^4$