Name _____

Packed Full of Power

Numbers can be abbreviated using exponential and scientific notation.

An **exponent** tells how many times a factor is multiplied by itself.

$5^3 = 5 \times 5 \times 5 = 125$ 5 is multiplied by itself 3 times.

Scientific notation is the power of 10 multiplied by another number between 1 and 9.

$7{,}000{,}000 = 7 \times 10^6$

Hint: To know what power of 10 to use, simply match the power of 10 to the number of zeros in the number.

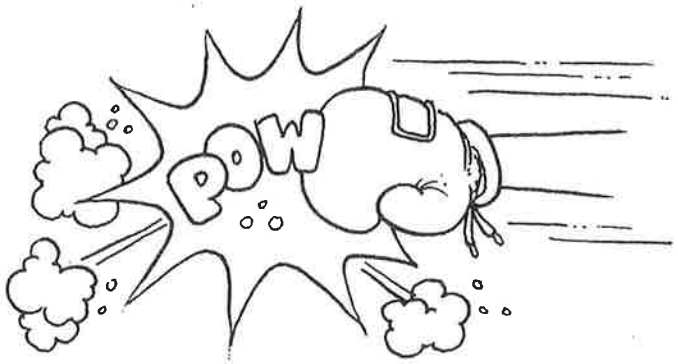
$4{,}\underline{000} = 4 \times 10^3$ $\underline{900{,}000} = 9 \times 10^5$

Write each number using an exponent.

A. 3 to the fourth power _____

B. 6 to the third power _____

C. 9 to the eighth power _____



Solve.

D. $2^3 =$ _____ $6^2 =$ _____ $4^4 =$ _____ $7^3 =$ _____

E. $3^2 =$ _____ $1^{10} =$ _____ $3^4 =$ _____ $9^2 =$ _____

F. $4^3 =$ _____ $2^5 =$ _____ $0^4 =$ _____ $3^3 =$ _____

Write the value.

Clue: $10^1 = 10$, $10^2 = 100$, $10^3 = 1{,}000$, $10^4 = 10{,}000$, $10^5 = 100{,}000$, $10^6 = 1{,}000{,}000$

G. $3 \times 10^2 =$ _____ $8 \times 10^3 =$ _____ $6 \times 10^6 =$ _____

H. $6 \times 10^4 =$ _____ $4 \times 10^5 =$ _____ $5 \times 10^2 =$ _____

Riddle

Name _____

What happened when the frog parked its car in a "No Parking" zone?

Find the prime factorization for each number below. Then write the corresponding letter on the line in front of the number. The letters will spell out the solution when read from **bottom to top**, starting on the right.

Y 4 = 2 x 2

_____ 6 = _____

_____ 9 = _____

_____ 10 = _____

_____ 12 = _____

_____ 15 = _____

_____ 18 = _____

_____ 20 = _____

_____ 21 = _____

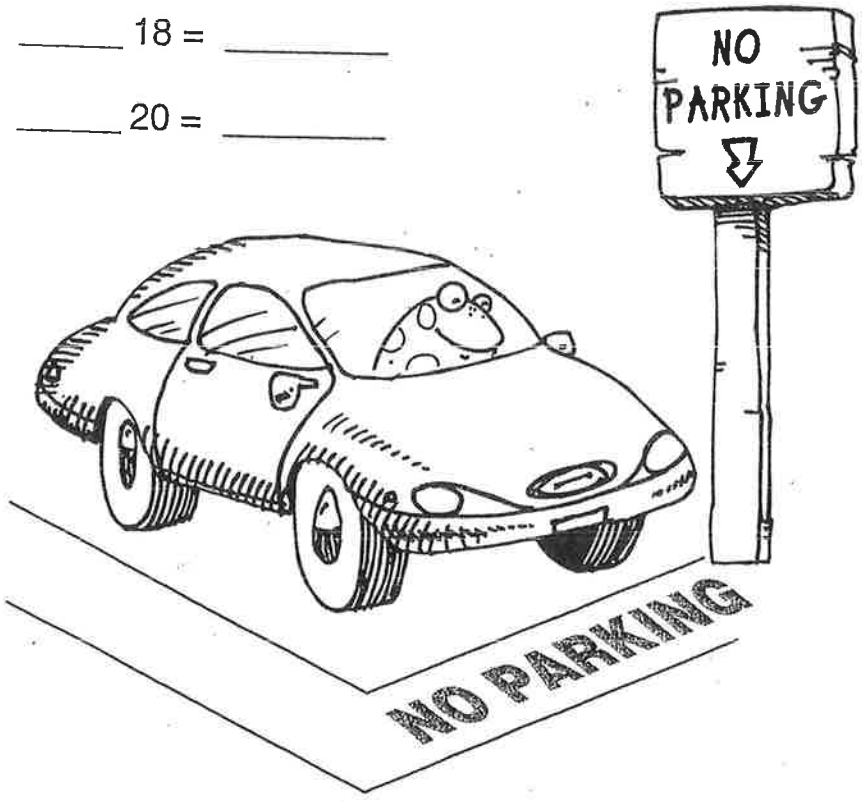
_____ 25 = _____

_____ 27 = _____

_____ 30 = _____

_____ 32 = _____

2 × 3	A
2 × 5	A
3 × 5	A
5 × 5	A
2 × 2 × 3	D
2 × 2 × 2 × 2 × 2	I
2 × 3 × 3	O
3 × 7	S
2 × 2 × 5	T
2 × 3 × 5	T
3 × 3	W
3 × 3 × 3	W
2 × 2	Y



Calculate prime factorization for numbers less than 250