Math extra examples

Some extra examples, if you are having any trouble:

In Scalar Values:			In Scientific Notation:		
10 ×	10 =	100	$10^1 \times 10^1 = 10^2 =$		100
10 ×	100 =	1 000	$10^1 \times 10^2 = 10^3 =$		1 000
10 ×	1 000 =	10 000	$10^1 \times 10^3 = 10^4 =$		10 000
10 ×	10 000 =	100 000	$10^1 \times 10^4 = 10^5 =$		100 000

and so on.

You can see that

100 × 1 000 = **10 × 10** × 1 000 = 10 × 10 000 = 100 000 OR $10^2 \times 10^3 = 10^5$

To answer the question, *What is the value of* **2000 × 300** ?

There are several possible common **incorrect** answers including

60 000 or 6 000 000

To get to the correct answer, make separate pieces of the problem:

2 000 = 2 × 1 000 and 300 = 3 × 100

This gives

2 000 × 300 = (2 × 1 000) × (3 × 100)

= 2 × 1 000 × 3 × 100

Since the order of multiplication does not matter,

the original problem can be rewritten as:

2 000 × 300 = 2 × 3 × 1 000 × 100

= (2 × 3) × (1 000 × 100)

= 6 × 100 000

= 600 000

OR in 10^x notation, the same problem would be written:

$(2.0 \times 10^3) \times (3.0 \times 10^2) = (2 \times 3) \times (10^3 \times 10^2) = 6 \times 10^5$

Remember, in multiplying powers of ten, simply add the exponents,

which is (3 + 2 = 5) for this problem

$10^2 \times 10^3 = 10^{2+3} = 10^5 = 10 \times 10 \times 10 \times 10 \times 10 = 100000$

When dividing powers of ten, subtract the exponents:

$10^6 \div 10^3 = 10^{6-3} = 10^3 = 10 \times 10 \times 10 = 1000$

To express 56,000 in scientific notation:

extract the scalar value = (56),

and place the decimal point so there is one numeral in the ones place = (5.6)

extract the multiples of ten = (10,000), and convert to 10^x ($10{,}000 = 10^5$)

So, 56,000 is equivalent to 5.6×10^5

10,000 has 4 zeros; therefore, 3 zeros have to be placed to the right of the number, '5.6', in order to move the correct number of decimal places.

5.6 x (10,000) = 56,000
Divide: 5.6 ÷ 10,000
3 zeros have to be placed to the left of the number, ‘5.6’, in order to move the correct number of decimal places.
5.6 ÷ 10,000 = 0.00056
3.828 x 100 = 382.8
382.8 ÷1000 = 0.3828