Scientific Notation

· This system makes use of "powers of 10", raising 10 to whatever value you need.
· You can get either really big numbers by using positive powers like 105 = 100 000
· You can also show really small numbers by using negative powers like 10-5 = 0.00001

Eg :
10^5 = 10 x 10 x 10 x 10 x10 = 100 000
10^{-5} = 1/10 x 1/10 x 1/10 x 1/10 x 1/10 = 0.00001
Don't worry about spending half a minute using your calculator to figure out what 105 equals. Instead, notice that 105 written out has five zeros.

Converting Numbers into Scientific Notation: Rules

1. Move the decimal over so that only one non-zero number is to the left of the decimal.
4 500 000 000 => **4.500 000 000**
0.000 000 010 => **000 000 01.0**
2. Count how many spaces over you moved the decimal. If you moved it to the left it's positive, if you moved it to the right it's negative.
4.500 000 000 => moved **9** spaces left (**+9**)
000 000 01.0 => moved **8** spaces right (**-8**)
3. Get rid of any numbers that are not sig digs. This might depend on the numbers you used in your calculation.
4.500 000 000 => **4.5**
I'm assuming that all those other zeros were probably just place holders
000 000 01.0 => **1.0**
I'll keep this last zero. Since it was written in the original number for such a small number, it's probably significant.
4. Write down the number, multiplied by 10 to the power of however many spaces you found in step 2.
4 500 000 000 = **4.5×10^9**
0.0 000 010 = **1.0×10^{-8}**

On Your Calculator

EXP (most Casio calculators)
EE (most TI calculators, and you might have to use the 2nd function key to use it)
10x
S.N.

On your calculator, type in the question as it's written.
· Remember, the calculator doesn't care about sig digs... it's up to you to round off the answer.
· Most of the time you'll be dealing with multiplying and dividing Scientific Notation, which makes it easier to figure out the sig digs.
· Use the rules we covered for sig digs, but don't look at the 10 to whatever power part... it does not count for sig digs.
· If you have to type in a negative number, use the (-) button on the calculator, not the subtraction button.