

1.5

Expanded Form and Scientific Notation

► **GOAL:** Express and compare numbers using expanded form and scientific notation.

1. Fill in the blanks to express each number in scientific notation.

a) $821 = 8.21 \times 10^{\text{---}}$

b) $4385 = 4.385 \times 10^{\text{---}}$

c) $625.7 = 6.257 \times 10^{\text{---}}$

d) $8\ 500\ 000 = 8.5 \times 10^{\text{---}}$

2. Fill in each blank with the correct number.

a) $847 = 8 \times \text{---} + 4 \times \text{---} + 7 \times \text{---}$

b) $4956 = 4 \times \text{---} + 9 \times \text{---} + 5 \times \text{---} + 6 \times \text{---}$

c) $208 = \text{---} \times 10^2 + \text{---} \times 10 + \text{---} \times 1$

d) $\text{---} = 4 \times 10^2 + 3 \times 10$

3. Fill in the blanks in the chart.

	Standard form	Expanded form	Scientific notation
a)	250	$2 \times 10^2 + 5 \times 10$	2.5×10^2
b)		$3 \times 10^3 + 4 \times 10^2 + 8 \times 10 + 1 \times 1$	
c)			7.11×10^3
d)	9854		
e)			8.803×10^4
f)	10 772		
g)		$1 \times 10^5 + 9 \times 10^3 + 5 \times 1$	
h)			6.03×10^4

4. Write < or > to make each number sentence true.

a) 4.2×10^2 _____ 5000

b) $3 \times 10^5 + 2 \times 10 + 4 \times 1$ _____ 49 877

c) 7.73×10^4 _____ $6 \times 10^3 + 5 \times 10^2 + 7 \times 1$

At-Home Help

Scientific notation is a way of writing a number as a decimal between 1 and 10 multiplied by a power of 10. For example, 70 120 is written as 7.012×10^4 .

In a TI-15 calculator, you can enter the number 1.81×10^{11} like this: 1.81×10^{11}

The calculator will display the number like this:

(1.81×10^{11})

Expanded form is a way of writing a number that shows the value of each digit as a power of 10. For example, 1209 in expanded form is $1 \times 10^3 + 2 \times 10^2 + 0 \times 10^1 + 9 \times 1$. You can also leave out the zeros and write $1 \times 10^3 + 2 \times 10^2 + 9 \times 1$.