Converting Between Number Forms

Standard Notation ➡ Number Expanded Notation

1.   Begin by identifying the place value of each digit in the number.

Number: 402,810

Place Value Chart														
trillions			billions			millions			thousands			ones		
									4	0	2	8	1	0
hundreds	tens	ones	hundreds	tens	ones	hundreds	tens	ones	hundreds	tens	ones	hundreds	tens	ones

2.   Starting from the leftmost digit, write the digit followed by an appropriate number of zeros behind the digit. The number of zeros should match the number of digits behind the digit of interest. A plus sign "+" separates each place value.

Number: 402,810

start   end

$$400,000 + 00,000 + 2,000 + 800 + 10 + 0$$

start   end

$$400,000 + 00,000 + 2,000 + 800 + 10 + 0$$

start   end

3.   It is common practice to remove all numbers composed of only zeros to produce a reduced number expanded notation.

number expanded notation

$$400,000 + 00,000 + 2,000 + 800 + 10 + 0$$

$$400,000 + \cancel{00,000} + 2,000 + 800 + 10 + \cancel{0}$$

$$400,000 + 2,000 + 800 + 10$$

reduced number expanded notation

Converting Between Number Forms

Number Expanded Notation ➡️ Standard Notation

1. Convert the number from reduced number expanded notation to number expanded notation.

reduced number expanded notation

70,000,000 + 2,000,000 + 500,000 + 20

⬇️

70,000,000 + 2,000,000 + 500,000 + 00,000 + 0,000 + 000 + 20 + 0

number expanded notation

2. Combine the first digit of each number in number expanded notation starting from the left to switch to standard notation. Commas separate each period.

70,000,000 + 2,000,000 + 500,000 + 00,000 + 0,000 + 000 + 20 + 0

⬇️

72,500,020

⬇️

72,500,020

Converting Between Number Forms

Number Expanded Notation ➡️ Word Name

1. Convert the number from number expanded notation to reduced number expanded notation.

number expanded notation

400,000,000 + 00,000,000 + 2,000,000 + 000,000 + 00,000 + 0,000 + 200 + 00 + 0

⬇️

400,000,000 + ~~00,000,000~~ + 2,000,000 + ~~000,000~~ + ~~00,000~~ + ~~0,000~~ + 200 + ~~00~~ + ~~0~~

⬇️

400,000,000 + 2,000,000 + 200

reduced number expanded notation

2. Identify each of the periods in the reduced expanded notation.

400,000,000 + 2,000,000 + 200

millions   ones

3. Recombine from reduced number expanded notation to word form starting from the leftmost period. Commas separate each period.

400,000,000 + 2,000,000 + 200

millions   ones

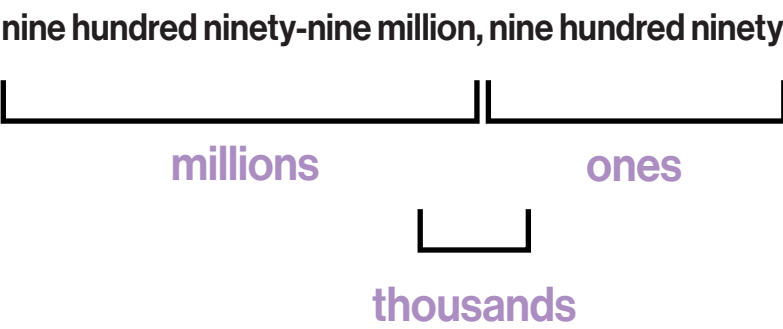start   end

four hundred two million,

two hundred

four hundred two million, two hundred

Converting Between Number Forms
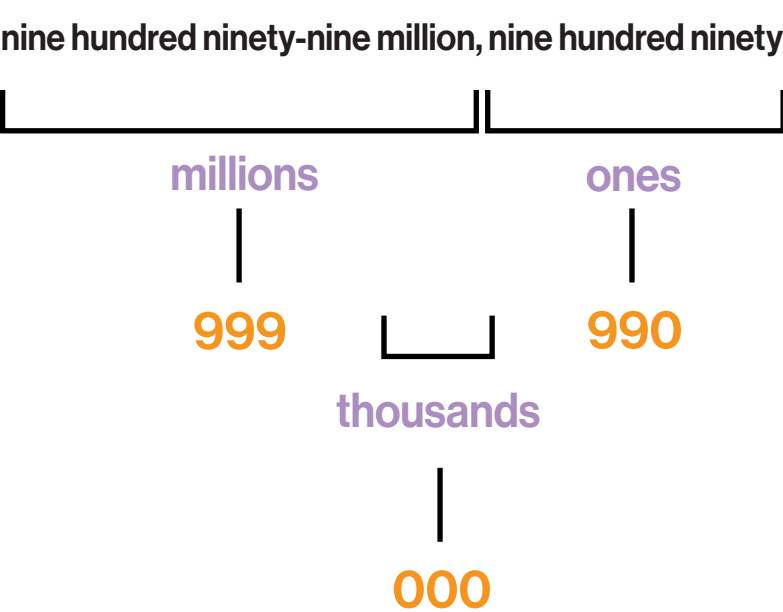
Word Name ➡️ Number Expanded Notation

1. Identify each of the periods in the word form.

nine hundred ninety-nine million, nine hundred ninety

millions | ones

thousands

2. Identify each of the digits in the word form.

nine hundred ninety-nine million, nine hundred ninety

millions | ones

999 | **990**

thousands

000

Converting Between Number Forms

Word Name ➡️ Number Expanded Notation

3. Recombine from word form to expanded notation starting from the leftmost digit. Plus signs "+" separate each place value.

nine hundred ninety-nine million, nine hundred ninety

millions   **ones**

999   **990**
start   end

thousands

000

900,000,000 + 90,000,000 + 9,000,000 + 000,000 + 00,000 + 0,000 + 900 + 90 + 0

4. Change from expanded notation to reduced expanded notation.

number expanded notation

900,000,000 + 90,000,000 + 9,000,000 + 000,000 + 00,000 + 0,000 + 900 + 90 + 0

⬇️

900,000,000 + 90,000,000 + 9,000,000 + ~~000,000 + 00,000 + 0,000~~ + 900 + 90 + ~~0~~

⬇️

900,000,000 + 90,000,000 + 9,000,000 + 900 + 90

reduced number expanded notation