

Standard Form is a convenient way of writing very large or very small numbers. It is written in the form $a \times 10^n$ where 'a' is a number between 1 and 9. For large numbers the power of 'n' will be positive. For numbers smaller than 1, the power of 'n' will be negative. To change a number into standard form, count the number of spaces it takes to move the decimal point into a position where the resulting number is between 1 and 9. The number of spaces moved will be the 'n' value in your answer. A movement to the left means the 'n' value will be positive. A movement to the right means the 'n' value will be negative.

Remember $10^0 = 1$.

Eg1. 0.00314 (move decimal **three** spaces right)

0003.14

Ans: 3.14×10^{-3}

Eg2. 1540.1 (move decimal **three** spaces left)

1.5401

Ans: 1.5401×10^3



1. Rewrite the following numbers as a number between 1 and 9 by placing a decimal point in the correct place:

- a) 2600 _____ b) 163 _____ c) 2500 _____ d) 9500 _____ e) 0.01 _____
 f) 0.007 _____ g) 62.6 _____ h) 500 _____ i) 0.13 _____ j) 51.5 _____

2. Place the decimal point where it **should be** in order to start to write the answer in standard form:

- a) 20.4 b) 0.14 c) 10.05 d) 0.01 e) 80.9 f) 95.0 g) 18.05
 h) 14.57 i) 551.4 j) 0.05 k) 0.009 l) 205.4 m) 689.0 n) 58.1

3. Find the value of the following numbers:

- a) 10^3 : _____ b) 10^2 : _____ c) 10^0 : _____ d) 10^4 : _____
 e) 10^{-1} : _____ f) 10^{-3} : _____ g) 10^{-2} : _____ h) 10^{-4} : _____

POSITIVE INDICES

4. Write the following numbers in expanded form:

- a) 2×10^2 : _____ b) 6×10^3 : _____ c) 3×10^4 : _____ d) 9×10^5 : _____
 e) 5×10^4 : _____ f) 8×10^2 : _____ g) 7×10^1 : _____ h) 4×10^3 : _____

5. Write the following numbers in expanded form:

- a) 2.4×10^2 : _____ b) 6.5×10^3 : _____ c) 3.1×10^3 : _____ d) 9.5×10^2 : _____
 e) 5.01×10^3 : _____ f) 8.84×10^4 : _____ g) 7.12×10^2 : _____ h) 4.05×10^1 : _____

NEGATIVE INDICES

6. Write the following numbers in expanded form:

- a) 5×10^{-2} : _____ b) 3×10^{-1} : _____ c) 7×10^{-3} : _____ d) 6×10^{-4} : _____
 e) 2×10^{-3} : _____ f) 4×10^{-2} : _____ g) 9×10^{-4} : _____ h) 8×10^{-1} : _____

7. Write the following numbers in expanded form:

- a) 5.1×10^{-2} : _____ b) 3.5×10^{-1} : _____ c) 17.6×10^{-3} : _____ d) 6.2×10^{-1} : _____
 e) 16.6×10^{-3} : _____ f) 242×10^{-2} : _____ g) 12.9×10^{-4} : _____ h) 46.18×10^{-3} : _____

8. Rewrite the following in standard form CORRECTLY:

- a) 45×10^2 _____ b) 810×10^{-5} _____ c) 45×10^{-2} _____
 d) 0.05×10^{-3} _____ e) 305×10^4 _____ f) 415.5×10^{-1} _____
 g) 10×10^4 _____ h) 34×10^{-1} _____ i) 0.11×10^3 _____
 j) 60×10^2 _____ k) 30.5×10^3 _____ l) 10.8×10^{-2} _____