

Grade 9

WEEK 5

Lesson # 2

Topic: Approximation

Sub-Topic: Standard form, significant figure

Objectives:

Students will:

- ✓ Write numbers in standard form correctly;
- ✓ Change numbers to the nth significant form;

Content:

Standard Form

Standard form is a way of writing very large numbers in a shorter form. The word standard tells us of a certain way in which something is done. The general form is

$$A \times 10^n$$

Where A is the decimal number, and nth is the index.

Example: 34678 is written in standard form as

$$3.5 \times 10^4$$

Remember: the direction of movement determines the power of the index. It is the opposite to the number line.

EZY MATHS

Number – Standard Form

Basic Structure

$1 \leq a < 10 \leftarrow a \times 10^b \rightarrow \text{Whole number}$

$2.83 \times 10^6 = 2830000$
Positive power of 10 = Large number

$3.14 \times 10^{-4} = 0.000314$
Negative power of 10 = Small decimal number

Add/Subtract Standard form

Take numbers out of Standard form.
Add/Subtract values.
Convert answer back to Standard form.

$(3.23 \times 10^4) + (8.2 \times 10^3)$
 $= 32300 + 8200$
 $= 40500$
 $= \underline{\underline{4.05 \times 10^4}}$

Multiply/Divide Standard form

Separate the numbers and powers of 10.
Multiply/Divide numbers,
Apply laws of indices to power of 10s
Give answer in Standard form

$(4.6 \times 10^4) \times (3 \times 10^3)$
 $4.6 \times 3 \times 10^4 \times 10^3$
 $13.8 \times 10^7 \times$
 $\underline{\underline{1.38 \times 10^8}}$ ✓

$(1.56 \times 10^{-4}) \div (7.5 \times 10^{-7})$
 $1.56 \div 7.5 \times 10^{-4} \div 10^{-7}$
 $0.208 \times 10^3 \times$
 $\underline{\underline{2.08 \times 10^2}}$ ✓

a) Round off to 2, 3 and 5 significant figures respectively for each column:

- | | | |
|--------------------|--------------------|-----------------------|
| 1) 5.45383 = | 4) 3.744 = | 7) 0.03899994 = |
| 2) 00294 = | 5) 04.6034 = | 8) 8.002575 = |
| 3) 4.9032 = | 6) 0083982 = | 9) 9.663143 = |

b) Write the following in standard form:

- | | | |
|----------------------|-------------------|-----------------------|
| 10) 937.74 = | 12) 479.3 = | 14) 0.0000055 = |
| 11) 0.000488 = | 13) 37554 = | 15) 30.04 = |

Reference:

<https://www.bing.com/images/search?view=detailV2&ccid=rkOvQYMV&id=B2491904718BC47DEEC0E96F66F5AB068E237434&thid=OIP.rkOvQYMVNslazTCyuBN-k>