STANDARD FORM: ÷

Standard Form is a convenient way of writing very large or very small numbers. It is written in the form $\boldsymbol{a \times 10^n}$ where 'a' is a number between 1 and 9. Large numbers can be divided in standard form. Simply divide the whole numbers first and then SUBTRACT the indices for the powers of 10. If the whole number is greater than 9, then readjust your answer to make it a number between 1 and 9, ensuring your index is also adjusted accordingly. Be careful with negative indices. When you subtract a negative index, it becomes positive. **Remember $10^0 = 1$.**

$(6 \times 10^7) \div (8 \times 10^4)$
$= (6 \div 8) \times (10^{7-4})$
$= 0.75 \times 10^3$ *(this **is not** in standard form)*
$= 7.5 \times 10^2$ *(this **is** in standard form)*

$(1.5 \times 10^3) \div (7.5 \times 10^8)$
$= (1.5 \div 7.5) \times (10^{3-8})$
$= 0.2 \times 10^{-5}$ *(this **is not** in standard form*
$= 2 \times 10^{-6}$ *(this **is** in standard form)*

$(5.2 \times 10^{-4}) \div (1.6 \times 10^{-5})$
$= (5.2 \div 1.6) \times (10^{-4-(-5)})$
$= 3.25 \times 10^1$ *(this **is ALREADY** in standard form)*

1. Divide the following:

a) $(8 \times 10^7) \div (4 \times 10^3)$ b) $(9 \times 10^3) \div (3 \times 10^4)$ c) $(4 \times 10^6) \div (1 \times 10^4)$

d) $(8 \times 10^3) \div (4 \times 10^8)$ e) $(3 \times 10^2) \div (4 \times 10^5)$ f) $(2 \times 10^5) \div (5 \times 10^3)$

2. Divide the following:

a) $(6 \times 10^{12}) \div (2 \times 10^8)$ b) $(4 \times 10^2) \div (5 \times 10^{-3})$ c) $(4.8 \times 10^9) \div (8 \times 10^{-3})$

d) $(3.5 \times 10^{-3}) \div (5 \times 10^{-6})$ e) $(8.1 \times 10^6) \div (9 \times 10^{-5})$ f) $(7 \times 10^3) \div (5 \times 10^8)$

3. Use the following to answer the questions below: $\boldsymbol{V} = (6 \times 10^4)$ $\boldsymbol{W} = (5.5 \times 10^{-3})$ $\boldsymbol{Y} = (3 \times 10^5)$ $\boldsymbol{Z} = (4 \times 10^3)$

a) Y ÷ V b) W ÷ Z c) Y ÷ W d) W ÷ V

4. The radius of the earth is 6.371×10^9 mm. Find this distance in km.

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5. Find the value of 'M' in the formula $\boldsymbol{M = \frac{E}{R}}$ if $E = 3 \times 10^3$ and if $R = 4 \times 10^{-6}$

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6. How can you write $\boldsymbol{452.23 \times 10^3}$ in its CORRECT form?

a) 45.2×10^4 b) 4.5223×10^5 c) 4522.3×10^2

7. What is $\boldsymbol{(3.1 \times 10^4) \div (1.3 \times 10^5)}$ written in standard form?

a) 2.384×10^{-1} b) 2.384×10^9 c) 23.84×10^{-2}

8. How can you write $\boldsymbol{0.0476 \times 10^2}$ in its CORRECT form?

a) $47.6. \times 10^1$ b) 4.76×10^4 c) 4.76×10^0