

Standard (index) form

How to ... *this number here is really important*

a) Write 8.2×10^5 as an ordinary number.

8 2 0 0 0 0

NOTE:-

to convert from a 'big' ordinary number to standard form

8 2 4 0 0 0 0 0 8.24×10^6 (1)

b) Write 0.000 376 in standard form.

this is what I call a 'teeny tiny' number so the power will be negative

0.000376 3.76×10^{-4}

and in reverse to convert from standard form to an ordinary number 7.68×10^{-3} *0.00768* = 0.00768 (1)

c) Work out the value of $(2.3 \times 10^{12}) \div (4.6 \times 10^3)$
Give your answer in standard form.

$\frac{2.3 \times 10^{12}}{4.6 \times 10^3} = 0.5 \times 10^9$ *BUT this isn't in standard form*
 $= 0.5 \left(\frac{1}{2}\right)$ $10^{12} \div 10^3 = 10^9$ $= 5 \times 10^8$
You might want to convert to an ordinary number at this stage and then into standard form (2)

Now have a go yourself ...

MUST - Write the following in standard form

- | | | |
|--------------|------------|----------------|
| a) 5000 | b) 700,000 | c) 600 |
| d) 82,000 | e) 43,000 | f) 561,000 |
| g) 56 | h) 34.7 | i) 60 |
| j) 0.00056 | k) 0.005 | l) 0.04 |
| m) 0.000 007 | n) 0.9 | o) 0.008 |
| p) 0.0047 | q) 0.987 | r) 0.000 803 4 |

SHOULD - Write the following as ordinary numbers

- | | | |
|---------------------------|--------------------------|--------------------------|
| a) 6×10^5 | b) 1×10^4 | c) 8×10^5 |
| d) 3.96×10^4 | e) 6.8×10^7 | f) 8.02×10^3 |
| g) 5.7×10^1 | h) 9.23×10^0 | i) 4.56×10^3 |
| j) 6×10^{-5} | k) 8×10^{-2} | l) 5×10^{-7} |
| m) 3×10^{-1} | n) 8.43×10^{-5} | o) 2.01×10^{-2} |
| p) 7.854×10^{-1} | q) 9.4×10^{-4} | r) 6.12×10^{-3} |

COULD - Work out the following write your answers in standard form

- | | |
|---|---|
| a) $(3 \times 10^6) \times (4 \times 10^3)$ | b) $(6 \times 10^5) \times (1.5 \times 10^3)$ |
| c) $(4 \times 10^{-7}) \times (3 \times 10^5)$ | d) $(4 \times 10^8) \times (2 \times 10^3)$ |
| e) $(8.6 \times 10^8) \div (2 \times 10^{13})$ | f) $(1 \times 10^{12}) \div (4 \times 10^3)$ |
| g) $(7 \times 10^{-9}) \div (7 \times 10^{-5})$ | h) $(2 \times 10^5)^2$ |

Use a calculator for the following:

- | | |
|---|---|
| i) $(3.4 \times 10^6) \times (7.1 \times 10^4)$ | j) $(4.56 \times 10^8) \div (3.2 \times 10^{-3})$ |
| k) $(3.5 \times 10^{11}) \div (6.5 \times 10^{16})$ | |

Exam Questions

Q1.

- a) Write 7900 in standard form.
- b) Write 0.000 35 in standard form.
- c) Write 8004 in standard form.
- d) Write 0.000 906 in standard form.
- e) Write 7.96×10^7 as an ordinary number.
- f) Write 4.06×10^{-6} as an ordinary number.

Q2.

In 2003 the population of Great Britain was 6.0×10^7 . In 2003 the population of India was 9.9×10^8 .

Work out the difference between the population of India and the population of Great Britain (use your calculator).

Give your answer in standard form.

Ready to be marked ?

Checklist

☐

Answer checked

☐

Working out shown



Keywords



Things to remember ...



What went well ...

Teacher comment ..