Standard Form Review

6 Write these numbers out in full.

a 2.5×10^2	**b** 3.45×10	**c** 4.67×10^{-3}	**d** 3.46×10
e 2.0789×10^{-2}	**f** 5.678×10^3	**g** 2.46×10^2	**h** 7.6×10^3
i 8.97×10^5	**j** 8.65×10^{-3}	**k** 6×10^7	**l** 5.67×10^{-4}

7 Write these numbers in standard form.

a 250	**b** 0.345	**c** 46 700
d 3 400 000 000	**e** 20 780 000 000	**f** 0.000 5678
g 2460	**h** 0.076	**i** 0.000 76
j 0.999	**k** 234.56	**l** 98.7654
m 0.0006	**n** 0.005 67	**o** 56.0045

6 a) 250 b) 34.5 c) 0.00467

d) 34.6 e) 0.020789 f) 5678

g) 246 h) 7600 i) 897000

j) 0.00865 k) 60,000,000 l) 0.000567

7) a) 2.5×10^2 b) 3.45×10^{-1} c) 4.67×10^{4}

d) 3.4×10^{9} e) 2.078×10^{10} f) 5.678×10^{-4}

g) 2.46×10^{3} h) 7.6×10^{-2} i) 7.6×10^{-4}

j) 9.99×10^{-1} k) 2.3456×10^{2} l) 9.87654×10^{1}

m) 6×10^{-4} n) 5.67×10^{-3} o) 5.60045×10^{1}

EXERCISE 10H

1 These numbers are not in standard form. Write them in standard form.

a 56.7×10^2	**b** 0.06×10^4	**c** 34.6×10^{-2}
d 0.07×10^{-2}	**e** 56×10	**f** $2 \times 3 \times 10^5$
g $2 \times 10^2 \times 35$	**h** 160×10^{-2}	**i** 23 million
j 0.0003×10^{-2}	**k** 25.6×10^5	**l** $16 \times 10^2 \times 3 \times 10^{-1}$
m $2 \times 10^4 \times 56 \times 10^{-4}$	**n** $18 \times 10^2 \div 3 \times 10^3$	**o** $56 \times 10^3 \div 2 \times 10^{-2}$

2 Work out the following. Give your answers in standard form.

a $2 \times 10^4 \times 5.4 \times 10^3$	**b** $1.6 \times 10^2 \times 3 \times 10^4$	**c** $2 \times 10^4 \times 6 \times 10^4$
d $2 \times 10^{-4} \times 5.4 \times 10^3$	**e** $1.6 \times 10^{-2} \times 4 \times 10^4$	**f** $2 \times 10^4 \times 6 \times 10^{-4}$
g $7.2 \times 10^{-3} \times 4 \times 10^2$	**h** $(5 \times 10^3)^2$	**i** $(2 \times 10^{-2})^3$

3 Work out the following. Give your answers in standard form, rounding off to an appropriate degree of accuracy where necessary.

a $2.1 \times 10^4 \times 5.4 \times 10^3$	**b** $1.6 \times 10^3 \times 3.8 \times 10^3$	**c** $2.4 \times 10^4 \times 6.6 \times 10^4$
d $7.3 \times 10^{-6} \times 5.4 \times 10^3$	**e** $(3.1 \times 10^4)^2$	**f** $(6.8 \times 10^{-4})^2$
g $5.7 \times 10 \times 3.7 \times 10$	**h** $1.9 \times 10^{-2} \times 1.9 \times 10^9$	**i** $5.9 \times 10^3 \times 2.5 \times 10^{-2}$
j $5.2 \times 10^3 \times 2.2 \times 10^2 \times 3.1 \times 10^3$	**k** $1.8 \times 10^2 \times 3.6 \times 10^3 \times 2.4 \times 10^{-2}$	

4 Work out the following. Give your answers in standard form.

a $5.4 \times 10^4 \div 2 \times 10^3$	**b** $4.8 \times 10^2 \div 3 \times 10^4$	**c** $1.2 \times 10^4 \div 6 \times 10^4$
d $2 \times 10^{-4} \div 5 \times 10^3$	**e** $1.8 \times 10^4 \div 9 \times 10^{-2}$	**f** $\sqrt{(36 \times 10^{-4})}$
g $5.4 \times 10^{-3} \div 2.7 \times 10^2$	**h** $1.8 \times 10^6 \div 3.6 \times 10^3$	**i** $5.6 \times 10^3 \div 2.8 \times 10^2$

c $2 \times 10^4 \times 6 \times 10^4$

f $2 \times 10^4 \times 6 \times 10^{-4}$

i $(2 \times 10^{-2})^3$

c) $2 \times 6 \times 10^4 \times 10^4$

$= 12 \times 10^8$

$= 1.2 \times 10^9$

f) $2 \times 6 \times 10^4 \times 10^{-4}$

$= 12 \times 10^0$

$= 12$

$= 1.2 \times 10^1$

i) $= 2^3 \times 10^{-6}$

$= 8 \times 10^{-6}$

a $2 \times 10^4 \times 5.4 \times 10^3$

d $2 \times 10^{-4} \times 5.4 \times 10^3$

g $7.2 \times 10^{-3} \times 4 \times 10^2$

a) $2 \times 5.4 \times 10^4 \times 10^7$

$= 10.8 \times 10^{11}$

$= 1.08 \times 10^{12}$

d) $2 \times 5.4 \times 10^{-4} \times 10^3$

$= 10.8 \times 10^{-1}$

$= 1.08 \times 10^0$

g) $7.2 \times 4 \times 10^{-3} \times 10^2$

$= 28.8 \times 10^{-1}$

$= 2.88 \times 10^0$

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c $(1.2 \times 10^4) \div (6 \times 10^4)$

f $\sqrt{(36 \times 10^{-4})}$

i $5.6 \times 10^3 \div 2.8 \times 10^2$

c) $\dfrac{1.2 \times 10^4}{6 \times 10^4}$

$= 0.2 \times 10^0$

$= 2 \times 10^{-1}$

f) $\sqrt{(36 \times 10^{-4})} = (36 \times 10^{-4})^{\frac{1}{2}}$

$= 6 \times 10^{-2}$

i) $\dfrac{5.6 \times 10^3}{2.8 \times 10^2} = 2 \times 10^1$

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a $5.4 \times 10^4 \div 2 \times 10^3$

d $2 \times 10^{-4} \div 5 \times 10^3$

g $5.4 \times 10^{-3} \div 2.7 \times 10^2$

a) $\dfrac{5.4 \times 10^4}{2 \times 10^3}$

$= 2.7 \times 10^1$

d) $\frac{2 \times 10^{-4}}{5 \times 10^{3}} = 0.4 \times 10^{-7}$

$= 4 \times 10^{-8}$

g) $\frac{5.4 \times 10^{-3}}{2.7 \times 10^{2}} = 2 \times 10^{-5}$

b $4.8 \times 10^{2} \div 3 \times 10^{4}$

e $1.8 \times 10^{4} \div 9 \times 10^{-2}$

h $1.8 \times 10^{6} \div 3.6 \times 10^{3}$

b) $\frac{4.8 \times 10^{2}}{3 \times 10^{4}} = 1.6 \times 10^{-2}$

e) $\frac{1.8 \times 10^{4}}{9 \times 10^{-2}} = 0.2 \times 10^{6} = 2 \times 10^{5}$

h) $\frac{1.8 \times 10^{6}}{3.6 \times 10^{3}} = 0.5 \times 10^{3} = 5 \times 10^{2}$