

Writing large numbers in standard formSF 1 Write 4 560 000 in standard form.	Writing small numbers in standard formSF 2 Write 0.000 307 in standard form.	Standard form to ordinary numbersSF 3 Write 7.2×10^5 as an ordinary number.	Standard form to ordinary numbersSF 4 Write 5.9×10^{-3} as an ordinary number.
Multiplying in standard formSF 5 Work out $(3 \times 10^4) \times (6 \times 10^5)$ Give your answer in standard form.	Dividing in standard formSF 6 Work out $(2.4 \times 10^3) \div (6 \times 10^8)$ Give your answer in standard form.	Adding and subtracting in standard formSF 7 Work out, giving your answers in standard form, (a) $(4.2 \times 10^5) + (3.5 \times 10^4)$ (b) $(6 \times 10^{-3}) - (4 \times 10^{-4})$	Standard form on a calculatorSF 8 Use a calculator to work out $\frac{4.68 \times 10^9}{7.2 \times 10^3}$ Give your answer in standard form.
Speed, distance and time in standard formSF 9 Light travels at 3×10^8 metres per second. The Sun is 1.5×10^{11} metres from the Earth. How long does light from the Sun take to reach the Earth?	Population problems in standard formSF 10 The population of India is about 1.4×10^9. The population of Ireland is about 5×10^6. How many times larger is the population of India?		

AnswerSF 4 Small numbers (less than 1) have a negative power. $\times 10^{-3}$ is $\div 1000$: the digits jump 3 places to the right. Fill the empty place values with zeros. $5.9 \times 10^{-3} = 0.0059$ Remember: One digit before the point, then count the jumps.	AnswerSF 3 Big numbers have a positive power. $\times 10^5$: the digits jump 5 places to the left. Fill the empty place values with zeros. $7.2 \times 10^5 = 7.2 \times 100\,000 = 720\,000$ Remember: One digit before the point, then count the jumps.	AnswerSF 2 Small numbers (less than 1) have a negative power. One digit before the point: 3.07 10⁰ 10⁻¹ 10⁻² 10⁻³ 10⁻⁴ 10⁻⁵ 10⁻⁶ 3 . 0 7 4 jumps 0 . 0 0 0 0 3 0 7 0.000 307 = 3.07 $\times 10^{-4}$ Remember: One digit before the point, then count the jumps.	AnswerSF 1 Standard form = (a number from 1 up to, but not including, 10) $\times 10^{\text{power}}$ One digit before the point: 4.56 10⁶ 10⁵ 10⁴ 10³ 10² 10¹ 10⁰ 4 . 5 6 6 jumps 4 5 6 0 0 0 0 4 560 000 = 4.56 $\times 10^6$ Remember: One digit before the point, then count the jumps.
AnswerSF 8 4.68 $\boxed{\times 10^x}$ 9 $\boxed{\div}$ 7.2 $\boxed{\times 10^x}$ 3 $\boxed{=}$ The display shows 650 000: $650\,000 = 6.5 \times 10^5$ Check: $4.68 \div 7.2 = 0.65$ and $10^9 \div 10^3 = 10^6$, so the answer is $0.65 \times 10^6 = 6.5 \times 10^5$. Remember: Use the $\boxed{\times 10^x}$ key; it already includes the '$\times 10$'.	AnswerSF 7 (a) $420\,000 + 35\,000 = 455\,000 = 4.55 \times 10^5$ (b) $0.006 - 0.0004 = 0.0056 = 5.6 \times 10^{-3}$ Remember: Can't add powers: change to ordinary numbers first.	AnswerSF 6 Dividing: subtract the powers. $2.4 \div 6 = 0.4$, $10^3 \div 10^8 = 10^{-5}$ so the answer is 0.4×10^{-5}. 0.4 is less than 1, so $0.4 = 4 \times 10^{-1}$: $0.4 \times 10^{-5} = 4 \times 10^{-6}$ Remember: Numbers with numbers, powers with powers.	AnswerSF 5 Multiplying: add the powers. $3 \times 6 = 18$, $10^4 \times 10^5 = 10^9$ $(3 \times 10^4)(6 \times 10^5) = 18 \times 10^9$ 18 is not from 1 up to 10, so $18 = 1.8 \times 10^1$: $18 \times 10^9 = 1.8 \times 10^{10}$ Remember: Numbers with numbers, powers with powers.
		AnswerSF 10 How many times larger: divide the larger by the smaller. $\frac{1.4 \times 10^9}{5 \times 10^6} = 0.28 \times 10^3$ $(1.4 \div 5 = 0.28, 10^9 \div 10^6 = 10^3)$ $0.28 \times 10^3 = 2.8 \times 10^2$ India's population is about 280 times larger. Remember: Right formula, numbers in, answer in standard form.	AnswerSF 9 Time = $\frac{\text{distance}}{\text{speed}}$ $\frac{1.5 \times 10^{11}}{3 \times 10^8} = 0.5 \times 10^3$ $(1.5 \div 3 = 0.5, 10^{11} \div 10^8 = 10^3)$ $0.5 \times 10^3 = 5 \times 10^2$ s That is 500 s, or 8 minutes 20 seconds (metres $\div$ metres per second gives seconds). Remember: Right formula, numbers in, answer in standard form.