Oxford Revise | AQA GCSE Maths Foundation| Answers

Chapter 3 Standard form

Question	Answer	Extra information	Marks
3.1 (a)	$156\,000\,000$		1
3.1 (b)	$0.008\,02$		1
3.2 (a)	4.8×10^{10}		1
3.2 (b)	7.03×10^{-5}		1
3.2 (c)	9.5×10^{7}		1
3.2 (d)	6.8×10^{-5}		1
3.3	1.5×10^{8}		1
3.4	Put all numbers either in standard or ordinary form and then compare. Order, biggest to smallest is: 2.3×10^{5}, 2.1×10^{4}, 2200, 0.21×10^{4}	Converting at least two of the numbers correctly to an alternative form Any three in the correct order Correct answer	1 1 1
3.5	The virus is 5×10^{-8} m, so it is smaller	Writing both numbers in the same form Correct answer	1 1
3.6 (a)	6×10^{2}		1

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Question	Answer	Extra information	Marks
3.6 (b)	2×10^{-4}		1
3.6 (c)	8×10^{-2}		1
3.6 (d)	6×10^{7}		1
3.7	No, he is not correct. In order for a number to be written in standard form, the number, A, multiplied by the power of 10, must be such that $1.0 \leq A < 10$ The correct answer is 1.8×10^{7}	Identified answer as wrong, and provides correct explanation	1
3.8	2.1×10^{3}	Identified answer in ordinary form as 2100 Correct answer (in standard form)	1 1
3.9 (a)	$(5\times10^{4})+(6\times10^{5}) = 50000+600000$ $= 650000$ $= 6.5\times10^{5}$	Converting the numbers in brackets to ordinary form or the same power of 10 Correct answer	1 1
3.9 (b)	$(9\times10^{-3})-(3\times10^{-4}) = 0.009-0.0003$ $= 0.0087$ $= 8.7\times10^{-3}$	Converting the numbers in brackets to ordinary form or the same power of 10 Correct answer	1 1
3.9 (c)	$(2.1\times10^{8})\times(3\times10^{-5}) = 6.3\times10^{8-5}$ $= 6.3\times10^{3}$	Converting the numbers in brackets to ordinary form or the same power of 10 Correct answer	1 1

Question	Answer	Extra information	Marks
3.9 (d)	$(8.2\times10^{3})\div(4.1\times10^{7}) = 2\times10^{3-7}$ $= 2.0\times10^{-4}$	Converting the numbers in brackets to ordinary form or the same power of 10 Correct answer	1 1
3.10 (a)	6.0×10^{5}		1
3.10 (b)	3.0×10^{5}		1
3.10 (c)	6.5×10^{-3}		1
3.10 (d)	3.5×10^{-10}		1
3.11	$(2\times10^{4})\times(2\times10^{2})^{2} = (2\times10^{4})\times(4\times10^{4})$ $= 8\times10^{8}$	Correct first step, i.e. $(2\times10^{2})^{2} = (4\times10^{2})$ Correct answer in standard form	1 1
3.12	Earth's diameter = 1.2742×10^{7} m Jupiter's diameter = 14.2984×10^{7} m While Jupiter's diameter, written this way is not in standard form, it is written with the same power of 10 as Earth's diameter. This shows that Jupiter's diameter is $(14.2984\div1.2742)$ times greater than Earth's, which is closer to 10 times greater, not 1000 times greater.	Converting Earth's diameter to standard form Converting Jupiter's diameter to the same power of 10 as Earth's Correct conclusion and reason	1 1 1

Question	Answer	Extra information	Marks
3.13	$z = \frac{(2.5\times10^8)(4\times10^7)}{(2.5\times10^8)+(4\times10^7)}$ $= \frac{10\times10^{15}}{2.9\times10^8}$ $= 34482758.62$ $= 3.45\times10^7 \ \ (3\text{ sf})$	Numerator correct, or rewritten as 1×10^{16} Denominator correct or decimal equivalent Correct final answer, in standard form, to 3 sf	1 1 2
3.14	No. A prime number, by definition, has exactly two factors: itself and 1. The number 1 has only one factor.		1
3.15 (a)	$\frac{1}{16}$		1
3.15 (b)	1		1
3.15 (c)	$\frac{27}{8}$		1
3.15 (d)	$\frac{3}{4}$		1