Oxford Revise | AQA GCSE Maths Higher | Answers

Chapter 1 Calculating with all four operations, place value, powers, and indices

Question	Answer	Extra information	Marks
1.1 (a)	$\begin{array}{r} {}^{1}\not{2}\,{}^{14}\not{5}\,{}^{1}.043 \\ -\ 1\ \ 7\ .820 \\ \hline 7.223 \end{array}$	Lining up the digits correctly in columns Correct answer	1 1
1.1 (b)	$17.12 \div 0.8 = 171.2 \div 8$ $= 21.4$	Dividing 171.2 by 8 Correct answer	1 1
1.2 (a)	$\frac{4 \times 5^2}{4 \times 5 \div 2} = \frac{4 \times 25}{20 \div 2} = \frac{100}{10} = 10$		1
1.2 (b)	$(1-0.1) \times 4 - (-10) = 0.9 \times 4 - (-10)$ $= 3.6 + 10$ $= 13.6$	Obtaining $0.9 \times 4 = 3.6$ Correct answer	1 1
1.2 (c)	$\frac{(-0.2) \times (-6)}{-1 + 0.7} = \frac{1.2}{-0.3} = -4$	Either 1.2 in the numerator, or -0.3 in the denominator Correct answer	1 1
1.3	Area of fence $= 1.4 \times 10.5 = 14.7$ m^2 Cost to paint it $= 14.7 \times 0.6 = £8.82$	Multiplying lengths Multiplying by unit cost Correct answer	1 1 1
1.4	0.01 is the decimal equivalent of the fraction $\frac{1}{100}$, so Thema is correct.	Correct explanation	1

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1.5	In order to add exponents, the base numbers must be the same. $2^3 \times 5^2 = 2 \times 2 \times 2 \times 5 \times 5$ $= 8 \times 25$ $= 200$ whereas $10^5 = 10 \times 10 \times 10 \times 10 \times 10$ $= 10\,000$	Correct explanation	1
1.6	$\frac{(2)^7 \times (2^4)^{-1}}{2} = \frac{2^7 \times 2^{-4}}{2}$ $= \frac{2^3}{2}$ $= 2^2$	Correct simplification of the numerator Correct answer	1 1
1.7 (a)	$\left(3^{\frac{1}{4}}\right)^{\frac{1}{4}} = 3^{\frac{1}{4} \times \frac{1}{4}} = 3^{\frac{1}{16}}$		1
1.7 (b)	$a^{\frac{1}{6}}$		1
1.8 (a)	$8^{\frac{2}{3}} = \left(\sqrt[3]{8}\right)^2 = 2^2 = 4$	Getting the cube root of $8 = 2$ Correct answer	1 1
1.8 (b)	$\left(\frac{16}{9}\right)^{-\frac{2}{4}} = \left(\frac{9}{16}\right)^{\frac{2}{4}} = \left(\frac{9}{16}\right)^{\frac{1}{2}}$ $= \sqrt{\frac{9}{16}} = \frac{\sqrt{9}}{\sqrt{16}} = \frac{3}{4}$	Getting $\frac{9}{16}$ Getting $\frac{\sqrt{9}}{\sqrt{16}}$ Correct answer	1 1 1

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1.9	$3\times\sqrt{27}=3\times27^{\frac{1}{2}}$ $=3^{1}\times(3^{3})^{\frac{1}{2}}$ $=3^{1}\times3^{\frac{3}{2}}$ $=3^{\frac{5}{2}}$ Therefore, $n=\frac{5}{2}$	Attempting to write 27 with base 3 $3^{\frac{3}{2}}$ Correct answer	1 1 1
1.10	$2\frac{2}{3}=\frac{8}{3}$ Reciprocal of $\frac{8}{3}$ is $\frac{3}{8}$ Expressed as a decimal, $\frac{3}{8}=0.375$	Rewriting as an improper fraction Correct answer	1 1

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1.11	$\frac{1}{a} = 2^{-3} = \frac{1}{2^3}$ so $a = 2^3 = 8$ $2^b = 2^1 \times 2^{\frac{1}{2}} = 2^{\frac{3}{2}}$ $b = \frac{3}{2} = 1.5$ $\frac{1}{\sqrt[c]{2}} = 2^{-\frac{1}{3}} = \frac{1}{2^{\frac{1}{3}}} = \frac{1}{\sqrt[3]{2}}$ therefore $c = 3$ So, $\frac{ab}{c} = \frac{8 \times 1.5}{3} = 4$	Correct value of *a* Correct value of *c* Correct fraction Correct answer	1 1 1 1
1.12	$\left(\frac{1}{3}\right)^3 = \frac{1}{27}$ $3^{-2} = \frac{1}{9}$ $\left(-\frac{1}{2}\right)^4 = \frac{1}{16}$ $-\left(\frac{1}{4}\right)^{-2} = -16$ $2^{-1} = \frac{1}{2}$ So the order is: $-\left(\frac{1}{4}\right)^{-2}, \left(\frac{1}{3}\right)^3, \left(-\frac{1}{2}\right)^4, 3^{-2}, 2^{-1}$	Correctly converting to fractions without indices Correct answer	1 1

Question	Answer	Extra information	Marks
1.13 (a)	There are nine choices for each digit. $9\times9\times9\times9=9^4=6561$		1 1
1.13 (b)	The number of pin codes that DON'T contain an 8 is $8^4=4096$ Subtract this from 6561 to give 2465	All possible codes – Codes not containing an 8 Correct answer	1 1
1.14	There are 15×8 ways to choose a chocolate bar and a drink ($=120$ ways) There are 6×8 ways to choose a packet of crisps and a drink ($=48$ ways) There are $15\times6\times8$ ways to choose a chocolate bar, crisps and a drink ($=720$ ways) $120+68+720=888$ ways	Correctly finding 120 ways Correctly finding 48 ways Correctly finding 720 ways Correct answer	1 1 1 1
1.15	$8\times7=56$ gives the number of games when playing each other team twice. So twice this number gives the number of games played when playing each other team four times, which is 112.	$8\times7=56$ seen Correct answer	1 1
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