Oxford Revise | AQA GCSE Maths Higher | Answers

Chapter 4 Fractions, decimals, percentages

Question	Answer	Extra information	Marks
4.1	16% = 0.16 $\frac{1}{6} = 0.1\dot{6}$ $\frac{17}{100} = 0.17$ Descending order: $\frac{17}{100}, \frac{1}{6}, 16\%, 0.165$	1 mark for $0.1\dot{6}$ (decimal must be recurring) 1 for correct answer	1 1
4.2	$26759 \times 1.2 = 32110.8$ $18 \times 1450.6 = 26110.8$ $32110.8 - 26110.8 = 6000$ Deposit = £6000	Correct multiplier for VAT Correct purchase price Correct calculation of the remainder Correct answer	1 1 1 1
4.3	$\frac{3}{4} - \frac{1}{3} = \frac{9}{12} - \frac{4}{12} = \frac{5}{12}$	Finding a common denominator Correct answer	1 1

Question	Answer	Extra information	Marks
4.4	Perimeter $= \dfrac{7}{2} + \dfrac{27}{5} + \dfrac{11}{5} = \dfrac{7}{2} + \dfrac{38}{5}$	Summing the lengths	1
	$= \dfrac{35}{10} + \dfrac{76}{10}$	Finding a common denominator	1
	$= \dfrac{111}{10}$		
	$= 11.1 \text{cm}$	Correct answer or equivalent	1
4.5	Area of triangle $= \dfrac{1}{2} \times \dfrac{6}{5} \times \dfrac{6}{5} = \dfrac{18}{25}$	Correct area found for the triangle	1
	Area of rectangle $= \dfrac{18}{25} = \dfrac{2}{5}x$	Using this area to make an equation involving the given length of the rectangle	1
	$x = \dfrac{18}{25} \times \dfrac{5}{2} = \dfrac{9}{5}$	Correct answer	1
4.6	$3\dfrac{3}{4} \div \dfrac{5}{6} = \dfrac{15}{4} \div \dfrac{5}{6}$		
	$= \dfrac{15}{4} \times \dfrac{6}{5} = \dfrac{9}{2}$		
	She can cut the material into 4 pieces of length $\dfrac{5}{6}$ m, with half of a piece, $\dfrac{5}{12}$ m, left over	Correct number of small pieces Correct fraction left over	1 1
4.7	$\dfrac{7}{10} = 70\%$	Converting numbers to be either both fractions or both decimals	1
	Thus $100 - 70 - 15 = 15\%$ were half-marathons	Subtracting from 100%	1
	$20 \times 0.15 = 3$ She ran 3 half-marathons	Multiplying by 20	1

Question	Answer	Extra information	Marks
4.8 (a)	$\dfrac{1}{18} = 0.05\dot{5}$	Long or short division Correct answer	1 1
4.8 (b)	$\dfrac{20}{33} = 0.\dot{6}\dot{0}$	Long or short division Correct answer	1 1
4.9	Let $x = 0.\dot{5}$ Then $10x = 5.\dot{5}$ $10x - x = 5$ $9x = 5$ $x = \dfrac{5}{9}$	Writing as x and $10x$ and subtracting Correct answer	1 1
4.10	Let $x = 0.\dot{6}\dot{4}$ $100x = 64.\dot{6}\dot{4}$ $100x - x = 64$ $99x = 64$ $x = \dfrac{64}{99}$	Writing as x and $100x$ and subtracting Correct answer	1 1

Question	Answer	Extra information	Marks
4.11	Let $x = 0.05\dot{6}$ $10x = 0.5\dot{6}$ $1000x = 56.5\dot{6}$ $1000x - 10x = 56$ $990x = 56$ $x = \dfrac{56}{990} = \dfrac{28}{495}$	Finding $10x$ and $1000x$ Subtracting to give a fraction, unsimplified Correct answer	1 1 1
4.12	% increase = $\dfrac{22-6}{6} \times 100\% = 266.666...\%$ $= 267\%$, to 3 sf	Finding the actual increase Finding $\dfrac{22-6}{6} \times 100\%$ Correct answer	1 1 1
4.13	3 hours and 15 minutes = 195 minutes Decrease = 195 − 180 = 15 minutes Percentage decrease : $\dfrac{15}{195} \times 100\% = 7.6923...\%$ $= 7.69\%$ (3 sf)	$(195 - 180) \div 195 \times 100\%$ Correct final answer (7.7% also acceptable)	1 1
4.14	$10\,000 \div 1250 = 8$ $8 \times 24 = £192$ $\dfrac{192-150}{150} \times 100\% = 28\%$	$10\,000 \div 1250 = 8$ Finding gross income 8×24 Correct method for percentage profit Correct answer	1 1 1 1

Question	Answer	Extra information	Marks
4.15	Let the original number be x. 50% increase = $x \times 1.5 = 1.5x$ From here, a 25% decrease $= 1.5x \times 0.75 = 1.125x$ Thus, the original number is 112.5% of the original number. Thus, the number has increased by 12.5%	Either 1.5 or 0.75 used as a multiplier 1.125 12.5% as a final answer	1 1 1
4.16	Multiplier for the numerator $= 1.48$ Multiplier for the denominator $= 1 - 0.875 = 0.125$ $37 \div 1.48 = 25$ $42 \div 0.125 = 336$ Original fraction $= \dfrac{25}{336}$	Either 1.48 or 0.125 used as a multiplier Either 25 or 336 Correct answer	1 1 1
4.17 (a)	Paul gets 6% interest on £2450 for 7 years: $\quad 2450 \times 7 \times 0.06 = £1029$ Keysha invests the same amount, for the same length of time, but gets compound interest: $\quad 2450 \times (1.06^7 - 1) = £1233.89$ Keysha gets $1233.89 - 1029 = £204.89$ more	$2450 \times 7 \times 0.06$ $2450 \times (1.06^7 - 1)$ Subtracting answers Correct answer	1 1 1 1

Question	Answer	Extra information	Marks
4.17 (b)	Phoebe needs m such that $m \times 1.06^{10} \geq 5000$ $m \geq \dfrac{5000}{1.06^{10}} = 2791.97\ldots$ In whole pounds, $m = £2792$	Correct inequality (or equation, as long as the final answer is expressed correctly as m being a minimum) $\dfrac{5000}{1.06^{10}}$ Correct answer	1 1 1
4.18	$£19.80 = 0.15 \times$ interest So, interest $= \dfrac{19.8}{0.15} = £132$ $\dfrac{132}{6000} \times 100\% = 2.2\%$	$\dfrac{19.8}{0.15}$ Correct method to find % Correct answer	1 1 1
4.19	$4000 \times (\text{multiplier})^5 = 4300$ $(\text{multiplier})^5 = 4300 \div 4000$ $(\text{multiplier}) = \sqrt[5]{\dfrac{4300}{4000}} = 1.01456\ldots$ $(100 + x)\% = 101.456\ldots\%$ $x = 1.5\%$ (1 d.p.)	$4000 \times (\text{multiplier})^5 = 4300$ $\sqrt[5]{\dfrac{4300}{4000}} = 1.01456\ldots$ Correct answer, to 1 dp	1 1 1
4.20 (a)	$0.97 \times 1.07^2 = 1.1105$ Percentage change is a 11.1% increase (3 sf)	Using 0.97 or 1.07 0.97×1.07^2 Correct answer	1 1 1
4.20 (b)	$285\,000 \div 1.1105\ldots = £256\,628.90$	Dividing by $1.1105\ldots$ Correct answer	1 1

Question	Answer	Extra information	Marks
4.21	$300 = 2 \times 2 \times 3 \times 5 \times 5$ $840 = 2 \times 2 \times 2 \times 3 \times 5 \times 7$ HCF = $2 \times 2 \times 3 \times 5 = 60$ LCM = $2 \times 2 \times 2 \times 3 \times 5 \times 5 \times 7 = 4200$	Prime factorisation of 300 Prime factorisation of 840 HCF LCM	1 1 1 1
4.22	$\left(\sqrt{3} + 2\sqrt{27}\right)^2 = \left(\sqrt{3} + 2\sqrt{27}\right)\left(\sqrt{3} + 2\sqrt{27}\right)$ $= 3 + 2\sqrt{3}\sqrt{27} + 2\sqrt{3}\sqrt{27} + 4 \times 27$ $= 3 + 2\sqrt{81} + 2\sqrt{81} + 108$ $= 111 + 2 \times 9 + 2 \times 9$ $= 111 + 18 + 18$ $= 147$	Correctly multiplying the contents of each set of brackets Realising that $\sqrt{3} \times \sqrt{27} = \sqrt{81}$ $\sqrt{81} = 9$ Fully correct answer	1 1 1 1

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