

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: $\frac{17}{100}, \frac{1}{6}, 0.165, 16\%$	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

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

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4.8 (a)	$\frac{1}{18} = 0.0\dot{5}$	Long or short division Correct answer	1 1
4.8 (b)	$\frac{20}{33} = 0.\dot{6}\dot{0}$	Long or short division Correct answer	1 1
4.9	Let $x = 0.\dot{5}$ Then $10x = 5.\dot{5}$ $10x - x = 5$ $9x = 5$ $x = \frac{5}{9}$	Writing as x and $10x$ and subtracting Correct answer	1 1
4.10	Let $x = 0.\dot{6}\dot{4}$ $100x = 64.\dot{6}\dot{4}$ $100x - x = 64$ $99x = 64$ $x = \frac{64}{99}$	Writing as x and $100x$ and subtracting Correct answer	1 1

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4.11	Let $x = 0.0\dot{5}\dot{6}$ $10x = 0.\dot{5}\dot{6}$ $1000x = 56.\dot{5}\dot{6}$ $1000x - 10x = 56$ $990x = 56$ $x = \frac{56}{990} = \frac{28}{495}$	Finding $10x$ and $1000x$ Subtracting to give a fraction, unsimplified Correct answer	1 1 1
4.12	$\% \text{ increase} = \frac{22-6}{6} \times 100\% = 266.666\dots\%$ $= 267\%$, to 3 sf	Finding the actual increase Finding $\frac{22-6}{6} \times 100\%$ Correct answer	1 1 1
4.13	3 hours and 15 minutes = 195 minutes Decrease = $195 - 180 = 15$ minutes Percentage decrease: $\frac{15}{195} \times 100\% = 7.6923\dots\%$ $= 7.69\%$ (3 sf)	$(195 - 180) \div 195 \times 100\%$ or equivalent Correct final answer (7.7% also acceptable)	1 1
4.14	$10\,000 \div 1250 = 8$ $8 \times 24 = \text{£}192$ $\frac{192-150}{150} \times 100\% = 28\%$	$10\,000 \div 1250 = 8$ Finding gross income 8×24 Correct method for percentage profit Correct answer	1 1 1 1

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

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4.17 (b)	Phoebe needs m such that $m \times 1.06^{10} \geq 5000$ $m \geq \frac{5000}{1.06^{10}} = 2791.97\dots$ In whole pounds, $m = \text{£}2792$	Correct inequality (or equation, as long as the final answer is expressed correctly as m being a minimum) $\frac{5000}{1.06^{10}}$ Correct answer	1 1 1
4.18	$\text{£}19.80 = 0.15 \times \text{interest}$ So, interest = $\frac{19.8}{0.15} = \text{£}132$ $\frac{132}{6000} \times 100\% = 2.2\%$	$\frac{19.8}{0.15}$ Correct method to find % Correct answer	1 1 1
4.19	$4000 \times (\text{multiplier})^5 = 4300$ $(\text{multiplier})^5 = 4300 \div 4000$ $(\text{multiplier}) = \sqrt[5]{\frac{4300}{4000}} = 1.01456\dots$ $(100 + x)\% = 101.456\dots\%$ $x = 1.5\%$ (1 d.p.)	$4000 \times (\text{multiplier})^5 = 4300$ $\sqrt[5]{\frac{4300}{4000}} = 1.01456\dots$ 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)	$285\,000 \div 1.1105\dots = \text{£}256\,628.90$	Dividing by 1.1105... 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	$(\sqrt{3} + 2\sqrt{27})^2 = (\sqrt{3} + 2\sqrt{27})(\sqrt{3} + 2\sqrt{27})$ $= 3 + 2\sqrt{3}\sqrt{27} + 2\sqrt{3}\sqrt{27} + 4 \times 27$ $= 3 + 2\sqrt{81} + 2\sqrt{81} + 108$ $= 111 + 2 \times 9 + 2 \times 9$ $= 111 + 18 + 18$ $= 147$	Correctly multiplying the contents of each set of brackets or simplifying $2\sqrt{27}$ to $3\sqrt{3}$ Realising that $\sqrt{3} \times \sqrt{27} = \sqrt{81} = 9$ or $(\sqrt{3} + 3\sqrt{3})^2 = (4\sqrt{3})^2 = 4\sqrt{3} \times 4\sqrt{3}$ Fully correct answer	1 1 1 1