

Q1. (2019)

8	$(3^{12} \div 3^5) 3^7$ or $(3^{12} \div 3^5) 2187$ or $(3^2 \times 3) 3^3$ or $(3^2 \times 3) 27$ or $3^{12} \div 3^5 \div 3^2 \div 3$ or $\frac{3^{12}}{3^5} \times \frac{1}{3^2 \times 3}$	M1	
	$3^7 \div 3^3$ or $3^7 \div 27$ or $3^{(12-5-2-1)}$ or $\frac{3^{12}}{3^8}$ or 3^4 or $2187 \div 27$	M1dep	oe in the form $3^n \div 3^{(n-4)}$
	81	A1	
	Additional Guidance		
	3^4 and 81 on the answer line in either order		M1M1A1
	81 in working and 3^4 on the answer line		M1M1A0

Q2. (2023)

Q	Answer	Mark	Comments
10	Alternative method 1 – algebra based on Sunita's age		
	5×3 or 15	M1	may be implied by their algebraic total of the three ages being divided by 3
	$x - 1$ or $2x$ or $4x - 1$	M1	oe expressions any letter throughout
	$x + \text{their } (x - 1) + \text{their } 2x = \text{their } 15$ or $4x - 1 = \text{their } 15$	M1dep	oe equation eg $\frac{x+x-1+2x}{3} = 5$ dep on M1M1
	$(x =) 4$	M1dep	correct solution to their equation if the solution has a decimal part allow truncation or rounding to the nearest whole number
	8	A1	
	Alternative method 2 – algebra based on Joel's age		
	5×3 or 15	M1	may be implied by their algebraic total of the three ages being divided by 3
	$\frac{y}{2}$ or $\frac{y}{2} - 1$ or $2y - 1$	M1	oe expressions any letter throughout $2y - 1$ must not come from $y + y - 1$
	$y + \text{their } \frac{y}{2} + \text{their } (\frac{y}{2} - 1) = \text{their } 15$	M1dep	oe equation eg $\frac{y+\frac{y}{2}+\frac{y}{2}-1}{3} = 5$ dep on M1M1
	$2y + \text{their } y + \text{their } (y - 2) = 2 \times \text{their } 15$ or $4y - 2 = 30$ or $2y - 1 = 15$	M1dep	their equation with no denominator
	8	A1	

10 cont	Alternative method 3 – trial and improvement		
	5 × 3 or 15	M1	may be implied by their total of the three ages being divided by 3
	Trial of three numbers which fit the criteria, with either their sum correctly evaluated or their sum divided by 3	M1	eg $2 + 1 + 4 = 7$ or $(2 + 1 + 4) \div 3$ condone missing brackets
	Second trial of three numbers which fit the criteria, with either their sum correctly evaluated or their sum divided by 3	M1dep	dep on previous M1 eg $3 + 2 + 6 = 11$ or $(3 + 2 + 6) \div 3$ condone missing brackets
	4, 3 and 8 selected as their final combination	M1dep	any order implies M4
	8	A1	
	Additional Guidance		
	Up to M4 may be awarded for correct work seen in multiple attempts even if not subsequently used		
	Correct expressions, but the sum of the three ages is equated to 5 eg $4x - 1 = 5$		M0M1M0M0A0
	In alt 1, the correct value of x or the correct age for Joel for their two terms for Beth and Joel, with one correct, implies the first 4 marks eg x and $x + 1$ and $2x$, with $x = 3.5$ or answer 7		M1M1M1M1A0
	In alt 2, the correct value of y for their two terms for Sunita and Beth, with one correct, implies the first 4 marks eg y and $\frac{y}{2}$ and $(\frac{y}{2} + 1)$, with $y = 7$ or answer 7		M1M1M1M1A0
	In alt 1 and alt 2, condone missing brackets in equations if not recovered for up to M1M1M1 eg $x + x - 1 + 2x \div 3 = 5$ not recovered		M1M1M1M0A0

Q3. (2024)

Q	Answer	Mark	Comments
14	Alternative method 1: elimination		
	at least one correct equation	M1	eg $4x + 3y = 4.7(0)$ or $5x + y = 4.5(0)$ or $15x + 3y = 13.5(0)$ or $9x + 4y = 9.2(0)$ may work in pounds or pence any letters
	correctly multiplies one or two correct equations to equate coefficients of x or y	M1dep	eg $4x + 3y = 4.7(0)$ and $15x + 3y = 13.5(0)$ or $20x + 15y = 23.5(0)$ and $20x + 4y = 18.(00)$
	correctly adds or subtracts correct equations to eliminate one variable	M1dep	eg $11x = 8.8(0)$ or $11y = 5.5(0)$ may be implied by one correct value of x or y with M2 scored
	chocolate bar £0.80 and packet of mints £0.50 or chocolate bar 80p and packet of mints 50p	A1	correct money notation condone £0.80p and £0.50p

14 cont	Alternative method 2: substitution	
	$4x + 3y = 4.7(0)$ or $5x + y = 4.5(0)$ or $15x + 3y = 13.5(0)$ or $9x + 4y = 9.2(0)$	M1 oe may work in pounds or pence any letters
	correctly makes x or y the subject of a correct equation	M1dep eg $x = \frac{4.7(0) - 3y}{4}$ or $x = \frac{4.5(0) - y}{5}$ or $y = \frac{4.7(0) - 4x}{3}$ or $y = 4.5(0) - 5x$
	correctly substitutes to eliminate a variable	M1dep eg $5 \left(\frac{4.7(0) - 3y}{4} \right) + y = 4.5(0)$ or $4 \left(\frac{4.5(0) - y}{5} \right) + 3y = 4.7(0)$ or $5x + \frac{4.7(0) - 4x}{3} = 4.5(0)$ or $4x + 3(4.5(0) - 5x) = 4.7(0)$ may be implied by one correct value of x or y with M2 scored
	chocolate bar £0.80 and packet of mints £0.50 or chocolate bar 80p and packet of mints 50p	A1 correct money notation condone £0.80p and £0.50p
	Additional Guidance	
	Up to M3 may be awarded for correct work with no answer or incorrect answer if this is seen amongst multiple attempts	
	Condone multiple letters in equations eg cb for x	
	Trial and improvement is 0, 3 (incorrect money notation) or 4 (fully correct)	
	Final answer chocolate bar £0.8 and packet of mints £0.5	M3A0
	Final answer chocolate bar 0.80p and packet of mints 0.50p	M3A0