

Q1. (2017)

16	1 : 4	B1	
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Q2. (2017)

19	Alternative method 1 (hits and misses)		
	A counter example using both ratios or using numbers of hits and misses for both players	B2	eg Katy could be 6 : 2 and Ben hit 5 eg Ben 10 hits and 2 misses and Katy 12 hits and 4 misses B1 for a correct number of hits and misses (not 3 and 1) or a correct equivalent ratio for Katy
	Alternative method 2 (hits and total throws or proportion of hits)		
	A counter example using total throws and number of hits for both players or using proportion of hits for both players	B2	eg Katy could have hit 6 out of 8, Ben hit 5 eg Katy could have $\frac{18}{24}$ and Ben $\frac{10}{12}$ B1 for a correct number of total throws and hits (not 3 out of 4) or a correct proportion of hits (not $\frac{3}{4}$) for Katy
	Additional Guidance		
	Must use the given ratios		
	(Ben) 5 : 1 (Katy) 6 : 2		B2
	15 : 3 and 15 : 5 (so the same hits)		B2
	(Katy) 6 : 2 or (Katy) 6 hits and 2 misses		B1
	List of equivalent ratios for (Ben and) Katy with no counter example chosen		B1
	15 : 3 and 9 : 3		B1
	Fractions of hits out of total throws or percentages or decimals or words		
	eg $\frac{5}{6}$ and $\frac{3}{4}$		B0
	eg $\frac{20}{24}$ and $\frac{18}{24}$		B1
	eg $\frac{5}{6}$ and $\frac{6}{8}$		B2
	Ben had (two) more throws – he had 6 and she had 4		B0

Q3. (2018)

20	2.5	B1	
	Additional Guidance		

Q4. (2019)

25	Alternative method 1		
	$(65\% =) \frac{13}{20}$ or $7 : 13$	M1	
	13	A1	must be selected as the answer
	Alternative method 2		
	$(100 - 35) \div 35 \times 7$ or $7 \div 35 \times 100 - 7$ or $20 - 7$	M1	oe eg $35 \div 7 = 5$ and $65 \div 5$
	13	A1	must be selected as the answer
	Alternative method 3		
	$\frac{35}{7} \times n = 100 - 35$ or $5n = 65$	M1	oe equation eg $\frac{7}{n} = \frac{35}{100 - 35}$ or $35n = 455$
	13	A1	must be selected as the answer
	Additional Guidance		
	35 : 65 with no other valid working	M0	
	Condone answer £13	M1A1	
	Answer 13% or $13n$	M1A0	
	$65\% = 0.65$	M0	
	Alt 2 $65 \div 35 = 1.9$ $1.9 \times 7 = 13.3$ (evidence of premature approximation) Answer 13	M1 A0	
	Alt 2 $65 \div 35 = 1.9$ $1.9 \times 7 = 13$ (assume full calculator value used)	M1 A1	

Q5. (2020)

Q	Answer	Mark	Comments
1	6 : 8	B1	

Q6. (2020)

Q	Answer	Mark	Comments
21	Alternative method 1		
	30×8 or 240	M1	
	440 – their 240 or 200	M1dep	implied by 10 (medium) and 5 (large) or numbers of sweets in medium and in large totalling 200
	$12m + 16l$ where m and l are integers with $m = 2l$ or $12 \times 2 + 16$ or 120 (sweets in medium) and 80 (sweets in large) or 10 medium or 5 large	M1	eg $12 \times 6 + 16 \times 3$ or $72 + 48$ with 6 (medium) and 3 (large) shown medium or large may be implied
	30 : 10 : 5	A1	oe ratio eg 6 : 2 : 1
	Alternative method 2		
	30×8 or 240	M1	
	440 – their 240 or 200	M1dep	implied by 10 (medium) and 5 (large) or numbers of sweets in medium and in large totalling 200
	$12 \times 2x + 16x = \text{their } 200$ or $x = 5$ or $12y + 16 \times \frac{1}{2}y = \text{their } 200$ or $y = 10$	M1dep	oe equation in terms of large bags any letter oe equation in terms of medium bags any letter
	30 : 10 : 5	A1	oe ratio eg 6 : 2 : 1
	Additional Guidance		
	Ignore incorrect simplification if 30 : 10 : 5 seen		
	Answer 240 : 120 : 80	M1M1M1A0	
	Award up to M3 even if working not subsequently used		

Q7. (2020)

Q	Answer	Mark	Comments
27	40 (women) and 44 (men) and No or 40 : 44 and No or 84 and No or 8 (women leave) and 2 (men arrive) and No	B2	oe B1 40 (women) and 44 (men) or 40 : 44 or 84 or 8 (women leave) and 2 (men arrive)
	Additional Guidance		
	NB 84 from incorrect working eg $41 + 43 = 84$		B0
	For B1 the values may be seen among others eg1 20 : 22 30 : 33 40 : 44 50 : 55 eg2 21, 42, 63, 84, 105, ... eg3 10, 20, 30, 40, 50, ... and 11, 22, 33, 44, 55, ... eg4 $\frac{44}{84}$ (implies 84)		B1
	For B2 the value(s) must be chosen by eg circling or a list stopping at that point and No must be indicated		

Q8. (2021)

Q	Answer	Mark	Comments
17	7.35×4 or 29.4(0)	M1	oe
	$7.35 \div 3$ or [2.42, 2.45]	M1	oe implied by 14.54 allow 0.33 or better
	their 29.4(0) – (16.99 – their 2.45)	M1dep	oe dep on M1M1
	14.86	A1	
	Additional Guidance		
	Up to M2 may be awarded for correct work, with no or incorrect answer, even if this is seen amongst multiple attempts		
	The first two marks may be seen in either order		
	Do not allow use of 0.3		

Q9. (2022)

Q	Answer	Mark	Comments
24	y is 125% of x	B1	

Q10. (2022)

Q	Answer	Mark	Comments
26	80 × 0.9 or 72 or 25 × 1.2 or 30 or 80 × 0.1 and 25 × 0.2 or 8 and 5 or -8 and 5	M1	oe eg 80 × (1 – 0.1) or 25 + 25 × 0.2 or 25 + 5 implied by 102 or 3 or -3
	No and correct valid amount(s)	A1	eg no and 105 and 102 or no and 3 or no and -3 or no and 8 and 5 or no and -8 and 5
	Additional Guidance		
	If neither box is ticked, No may be implied eg neither box is ticked and Ellie paid 3 less		M1A1
	Working and values may be seen by the table		
	No and 105 with M1 not seen		M0A0
	No and 8 with M1 not seen		M0A0
	No and 5 with M1 not seen		M0A0
	Condone No and 8 and 5 with arithmetic error(s) seen eg 72 so 8 less 30 so 5 more 105 and 103 No (arithmetic error in calculating Ellie's total)		M1A1
	Do not condone No and 8 and 5 with process error(s) seen eg 80 – 8 = 72 25 – 5 = 20 (process error, should be 25 + 5) 105 and 92 No		M1A0

Q11. (2023)

Q	Answer	Mark	Comments
5(b)	Alternative method 1 Comparing the cost of 24 bottles		
	2.5 × 0.1 or 0.25 or 1 – 0.1 or 0.9	M1	oe eg 2.5 ÷ 10 discount or multiplier for shop X implied by 2.5 × 6 × 0.1 or 1.5 or 2.25
	(2.5 – their 0.25) × 6 or 2.5 × their 0.9 × 6 or 2.25 × 6 or 13.5	M1dep	oe eg 15 × 0.9 or 15 – 1.5 shop X
	7 × 2 or 14	M1	oe shop Z
	X with 13.5 and 14 seen	A1	oe
	Alternative method 2 Comparing the cost of 1 bottle		
	2.5 × 0.1 or 0.25 or 1 – 0.1 or 0.9	M1	oe eg 2.5 ÷ 10 discount or multiplier for shop X implied by 2.5 ÷ 4 × 0.1 or 0.06(25) or 2.25
	(2.5 – their 0.25) ÷ 4 or 2.5 × their 0.9 ÷ 4 or 2.25 ÷ 4 or 0.56(25) or 0.563	M1dep	oe eg 0.62(5) × 0.9 or 0.62(5) – 0.06(25) shop X
	7 ÷ 12 or 0.58(3...)	M1	oe shop Z
	X with 0.56(25) or 0.563 and 0.58(3...) seen	A1	oe
	Alternative method 3 Comparing the cost of 12 bottles		
	2.5 × 0.1 or 0.25 or 1 – 0.1 or 0.9	M1	oe eg 2.5 ÷ 10 discount or multiplier for shop X implied by 2.5 × 3 × 0.1 or 0.75 or 2.25
	(2.5 – their 0.25) × 3 or 2.5 × their 0.9 × 3 or 2.25 × 3	M1dep	oe eg 7.5 × their 0.9 or 7.5 – 0.75 shop X
	X with 6.75 (and 7) seen	A2	A1 6.75 oe

Question 5(b) continues on the next page

5(b) cont	Additional Guidance															
	Up to 3 marks may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts															
	Use the scheme that favours the student eg 0.56 and 0.58 followed by 13.44 and 13.92 and X (mark by Alt 2)	M3A1														
	Ignore incorrect money notation eg 13.5 or 14.0															
	All schemes can be oe in pence and allow work in a mix of pounds or pence for up to 3 marks															
	Condone eg answer 13.5 with 14 seen	M3A1														
	For 0.1×2.5 , accept $10\% \times 2.5$ but do not accept 10% of 2.5 unless recovered															
	Allow variations eg Shop X £15, Shop Z £14, Shop X is £1 more but the discount is £1.50 Shop X cheaper	M1 M1M1 A1														
	Where the student compares eg 2, 3, 4, 6, 48 or 96 bottles apply the principles of Alt 2 – some relevant figures given below (after offer)															
<table><tr><th>Shop</th><th>Cost of 2</th><th>Cost of 3</th><th>Cost of 4</th><th>Cost of 6</th></tr><tr><td>X</td><td>1.12(5) or 1.13</td><td>1.68(75) or 1.69</td><td>2.25</td><td>3.37(5) or 3.38</td></tr><tr><td>Z</td><td>1.16(6...) or 1.17</td><td>1.75</td><td>2.33(3...)</td><td>3.5</td></tr></table>	Shop	Cost of 2	Cost of 3	Cost of 4	Cost of 6	X	1.12(5) or 1.13	1.68(75) or 1.69	2.25	3.37(5) or 3.38	Z	1.16(6...) or 1.17	1.75	2.33(3...)	3.5	
Shop	Cost of 2	Cost of 3	Cost of 4	Cost of 6												
X	1.12(5) or 1.13	1.68(75) or 1.69	2.25	3.37(5) or 3.38												
Z	1.16(6...) or 1.17	1.75	2.33(3...)	3.5												

Q12. (2023)

Q	Answer	Mark	Comments
10(b)	$\frac{4}{7}$	B1	oe fraction
	Additional Guidance		
	Conversion to decimal or percentage		B0

Q13. (2023)

Q	Answer	Mark	Comments
12	Ticks Both of them and gives valid reason for Kai eg references both values being divided (or multiplied) by 3 and gives valid reason for Jo eg references both values being divided (or multiplied) by 6	B2	oe valid reason eg1 $9 \div 3 \times 2 = 6$ and $9 \div 1.5 \times 1 = 6$ or eg2 $9 \div 6 = 1.5$ and $3 \div 2 = 1.5$ and $1.5 \div 1 = 1.5$ B1 ticks Kai only and gives valid reason for Kai or ticks Jo only and gives valid reason for Jo or ticks Both of them and gives valid reason for Jo or Kai
	Additional Guidance		
	Ticks Both of them and gives correct reason for Kai or Jo and refs both values being divided (or multiplied) by 2 (to link Jo and Kai)		B2
	Accept a build-up method to imply multiplying by 3 or by 6 eg all three of 3 : 2 and 6 : 4 and 9 : 6 or all six of 1.5 : 1 and 3 : 2 and 4.5 : 3 and 6 : 4 and 7.5 : 5 and 9 : 6		
	Condone eg $3 : 2 \times 3 = 9 : 6$ to imply both values are multiplied by 3		
	If evaluating $6 \div 9 = 0.66$ and $2 \div 3 = 0.66$ and $1 \div 1.5 = 0.66$, accept 0.66(...) or 0.67		
	3 is a factor of 9 and 2 is a factor of 6 (with no reference to $\times 3$)		B0
	$9 : 6 = 3 : 2$ or $\frac{9}{6} = \frac{3}{2}$ (not evaluated to 1.5 or shown $\div 3$)		B0
	9 : 6 simplifies to 3 : 2 and 1.5 : 1 (with no reference to $\div 3$ or $\div 6$)		B0
	3 : 2 and 1.5 : 1 are both equivalent to 9 : 6 (with no reference to $\times 3$ or $\times 6$)		B0

Q14. (2024)

Q	Answer	Mark	Comments
12	3 5 6 7 9	B3	B2 last digit square and middle digit even with three of the following constraints met: <ul style="list-style-type: none"> • only one square • only one even • no repeats • ascending order or 9 7 6 5 3 B1 last digit square with no other squares or middle digit even with no other evens or 3 5 6 7 9 unordered, not scoring B2
	Additional Guidance		
	Mark the answer line		
	1 3 6 7 9 (two squares is only error)		B2
	3 5 6 7 1 (order is only error)		B2
	3 3 6 7 9 (repeat is only error)		B2
	0 3 6 7 9 (two even numbers)		B2
	3 3 2 3 9 (order wrong and repeats but middle digit is only even and/or last digit is only square)		B1
	3 3 2 3 4 (order wrong and two evens but last digit is only square)		B1
	1 3 4 5 7 (middle digit is only even)		B1
	2 2 5 6 4 (last digit is only square)		B1
	2 3 4 5 6		B0
	1 3 4 8 9		B0
	Must have 5 single digits		