

## Forming and Solving Equations Past Paper Questions (MS)



Q1.

	Working	Answer	Mark	Notes
(a)		$4x + 1 = 19$	2	M1 for $x + x + 1 + 2x (= 19)$ A1 for $4x + 1 = 19$ following working
(b)		4.5	2	M1 for subtracting 1 from both sides or for dividing each term by 4 A1 for 4.5 or $4\frac{1}{2}$
(c)		14.5	2	M1 for $(4.5 + 1) + 2 \times 4.5$ or $19 - 4.5$ or $3 \times 4.5 + 1$ A1 for 14.5 or $14\frac{1}{2}$ or ft '4.5'

Q2.

PAPER: 5MB3F_01				
Question	Working	Answer	Mark	Notes
		6 or -6	3	M1 for $43 - 7 (=36)$ or $\sqrt{43}$ M1 for correct order of operations -7 then intention to square root A1 for 6 or -6 or both OR M1 for $x^2 - 7 = 43$ M1 for adding 7 to both sides A1 for 6 or -6 or both

Q3.

	Working	Answer	Mark	Notes
	$x + 2x + 15 = 63$ $3x = 48$	16	3	M1 for $x + 2x + 15 = 63$ M1 for attempt to subtract 15 from each side of their equation A1 cao <b>or</b> M1 for $63 - 15 (=48)$ M1 for $48 \div 3$ A1 cao <b>or</b> M2 for 16 and 32 seen (M1 for strategy for finding at least two pairs of marbles that meet the criteria $x, 2x$ ) A1 cao



Q4.

Question	Working	Answer	Mark	Notes
	$x + x + 4 + x - 2 = 26$ $3x + 2 = 26$ $3x = 24$ $x = 8$  OR $26 - 4 = 22$ $22 + 2 = 24$ $24 \div 3$	8	4	M1 $x + x + 4$ or $x + x - 2$ or $x + 4 + x - 2$ or "expression in $x$ " $x + x + 4 = 26$ or "expression in $x$ " $x - 2 = 26$ M1(dep) " $3$ " $x + "2" = 26$ M1 " $3$ " $x = 26 - "2"$ A1 cao OR M1 $26 - 4$ or $26 + 2$ M1 " $22$ " $+ 2$ or " $28$ " $- 4$ M1 " $24$ " $\div 3$ A1 cao OR M3 $6 + 8 + 12$ seen (M2 three ages that meet the criteria $x$ , $x + 4$ and $x - 2$ ) (M1 two trials of three ages added or a set of three ages that would add to 26 ) A1 cao

Q5.

Question	Working	Answer	Mark	Notes
		72	4	M1 for " $x$ " $+ 24$ or " $x$ " $- 24$ or for " $g$ " and $5$ " $g$ " M1 for forming an appropriate equation eg $x + 24 = 5(x - 24)$ or for $(5g - g) \div 2 = 24$ or $g = 12$ M1 for correct operations to isolate $x$ terms and non- $x$ terms in an equation of the form $ax + b = cx + d$ or $ax + b = c(x + d)$ or $x = 36$ or for $6 \times "12"$ oe A1 cao

Q6.

Question	Working	Answer	Mark	Notes
(a)	$x + 2x + x + 5$	$4x + 5 = 33$	3	M1 for sight of $2x$ oe or $x+5$ oe M1 for sight of $2x$ oe and $x+5$ oe A1 for $x + 2x + x + 5 = 33$ leading to $4x + 5 = 33$
(b)	$4x + 5 = 33$ $4x = 33 - 5$ $4x = 28$	7	2	M1 for an intent to subtract 5 from both sides or to divide each term by 4 or $33 - 5$ or 28 seen or $28/4$ A1 for 7



Q7.

5MB3F_01 November 2015				
Question	Working	Answer	Mark	Notes
		31	4	M1 for $x + (2x+7) + (3x-4) (=75)$ M1 for complete method to isolate $x$ condone one error or $(x =) 12$ M1 (dep on M2) for $2 \times "12" + 7 (=31)$ A1 cao OR M1 for $x + (2x+7) + (3x-4) (=75)$ M1 for $"6x + 3" + "18" = 75 + "18" (=93)$ M1 for $3(2x + 7) = 93$ or $"93" \div 3 (=31)$ A1 cao

Q8.

PAPER: 1MA0 2H				
Question	Working	Answer	Mark	Notes
		$5\frac{2}{3}$	4	M1 for $AB = 2x$ or $DC = 2x + 4$ or for $38 - 4$ M1(dep) for $x + "x" + "2x" + "2x + 4"$ or for $"38 - 4" \div 6$ M1 for $"6x + 4" = 38$ A1 for $5\frac{2}{3}$ oe NB: Accept answers in the range 5.6 to 5.7 if M3 scored. SC if M0 then B2 for answer in range 5.6 – 5.7

Q9.

Question	Working	Answer	Mark	Notes
		29	P1	for process of forming an expression for one area, e.g. $2.5 \times 4x, 7(2x - 3)$
			P1	for process of forming an equation, e.g. $10x = 7(2x - 3)$ or $10x = 14x - 21$
			P1	for complete process to solve the equation to find the value of $4x$ or the value of $x$
			A1	for $4x = 21$ or $x = 5.25$ oe
			B1	ft using found value of $x$ or $4x$ in perimeter of B: $4x + 8$



Q10.

PAPER: IMA0 1H				
Question	Working	Answer	Mark	Notes
		38	5	M1 $3x - 5 = 19 - x$ M1 for a correct operation to collect the $x$ terms or the number terms on one side of an equation of the form $ax + b = cx + d$ A1 for $x = 6$ M1 for substituting their value of $x$ in the three expressions and adding or substituting their value of $x$ after adding the three expressions A1 cao

Q11.

PAPER: IMA0 2F				
Question	Working	Answer	Mark	Notes
*	$1155 \div 15 = 77$ $x + 2x + x - 7 = 77$ $4x - 7 = 77$ $4x = 84$ $x = 21$  OR $15x + (15 \times 2x) + 15(x - 7) = 1155$  $60x - 105 = 1155$ $60x = 1260$ $x = 21$	Redlands 21 St Samuels 42 Francis Long 14	5	M1 for $2x$ or $x-7$ M1 for $1155 \div 15 (= 77)$ M1 (dep M2) for equation summing their three expressions to '77' A1 for 21,42 and 14 C1 for fully correct answer with correct labels  OR M1 an expression for the cost of the pupils from Redlands M1 for expression for the cost of the pupils from either St Samuels or Francis Long M1 (dep M2) for equation summing their three expressions to 1155 A1 for 21,42 and 14 C1 for fully correct answer with correct labels