Mark scheme UNIT 20

This test is divided into non-calculator (20 minutes) and calculator (30 minutes) sections which can be delivered separately.

The following marks are awarded for each question.

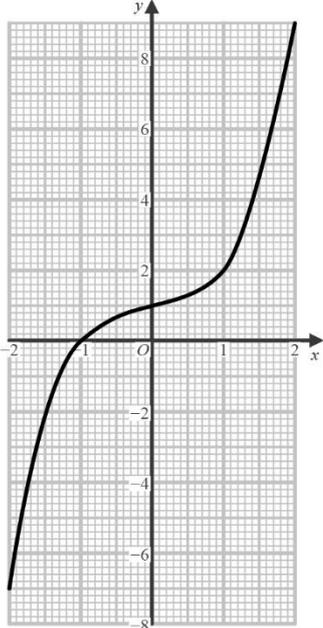| B	Unconditional accuracy mark
M	Method mark – the correct method must be shown but there may be an arithmetic error; the sight of the value given in brackets implies the award of the method mark
A	Accuracy mark – unless the question specifies that working **must** be shown then the sight of the correct answer implies the award of full marks (unless the answer clearly comes from incorrect working)
C	Communication mark
P	Process mark to show correct process for problem solving. Any other process of a similar standard to achieve an accurate result is acceptable to achieve this mark
FT	Incorrect values may be **followed through** from one step to the next **provided** that the correct method is seen in each step and the only errors are arithmetic. This is shown in mark schemes by putting a number in inverted commas
OE	Or equivalent answer mark

Non-Calculator			
Q	**Answer**	**Mark**	**Comment**
1	$x = \dfrac{y-5}{2}$	M1	for subtracting 5 from both sides or dividing all terms by 2, e.g. $y - 5 = 2x$ or $\dfrac{y}{2} = x + \dfrac{5}{2}$
		A1	$x = \dfrac{y-5}{2}$ or $x = \dfrac{5-y}{-2}$
3	C	B1	

5a	$a = \dfrac{10 - b^2}{2}$	M1	for squaring both sides, e.g. $b^2 = 10 - 2a$
		M1	for isolating the term in a, e.g. $-2a = b^2 - 10$ or $2a = 10 - b^2$
		A1	$a = \dfrac{10 - b^2}{2}$ OE
5b	$a = \dfrac{y - 3}{4x}$	M1	for multiplying both sides by a or $4a$, e.g. $ax = \dfrac{y - 3}{4}$ or $4ax = y - 3$
		A1	$a = \dfrac{y - 3}{4x}$
7	$3x - 3k = 2x + 6$	P1	for a process to start a chain of reasoning accept $3x - k = 2x + 6$
	$3x - 2x = 6 + 3k$ OE	P1	for a process to isolate terms in x FT from incorrect expansion of brackets
	For a convincing explanation from $x = 6 + 3k$	C1	e.g. $x = 3(2 + k)$ is always a multiple of 3

🖩 **Calculator**			
9a	2, 0, −2	B2	B1 for one or two correct
9b		M1	at least four points plotted correctly from their table
		A1	correct graph
9c	$x = 2.7$	A1	allow 2.6 to 2.8

11a	0, 1, 9		B2	B1 for one or two correct
11b			M1	at least four points plotted correctly from their table
			A1	correct graph
13	$t = 30x + 5y$ or $t = 5(6x + y)$		M1	for adding $6x$ to both sides or for multiplying all terms by 5, e.g. $y + 6x = \dfrac{t}{5}$ or $5y = t - 30x$ or $t = 5(6x + y)$
			A1	$t = 30x + 5y$

15a	For process to acquire correct perimeter, e.g. $6(2a - b) + 4b$ OE	P1		4
	For completion of process, e.g. $P = 12a - 6b + 4b$ $P = 12a - 2b$	C1		
15b	For process to start argument, e.g. $P = 2(6a - b)$	C1	C2 for $12a$ and $2b$ are even numbers so the difference between them must be an even number	
	For complete argument, e.g. $P = 2(6a - b)$ is an even number	C1		

Mark scheme UNIT 20

Non-Calculator

Question	Topic	Step	Mark
1	Change the subject of a formula	8th	2
3	Identify graph showing inverse proportion	9th	1
5a	Change the subject of a formula	9th	3
5b	Change the subject of a formula	9th	2
7	Proof using expanding brackets and rearranging an equation	8th	3

Calculator

Question	Topic	Step	Mark
9a	Completing a table of values using substitution	9th	2
9b	Plotting a cubic graph from a table	9th	2
9c	Using a graph to find solutions to a cubic equation	9th	1
11a	Completing a table of values using substitution	8th	2
11b	Plotting a cubic graph from a table	8th	2
13	Change the subject of a formula	8th	2
15a	Proof using perimeter	8th	2
15b	Proof using factorising an expression	8th	2