

ALGEBRA MARKING SCHEME FOUNDATION EDEXCEL

1.

(a)		$15p$	1	B1 cao
(b)		$36q$	1	B1 cao
(c)		3.75	1	B1 or $\frac{15}{4}$ or $3\frac{3}{4}$ oe
Total 3 marks				

2.

(a)		$4x - 3y$	2	B2 Accept $-3y + 4x$ (If not B2 then award B1 for $4x$ or $-3y$)
(b)	4×13 and $\pm 6 \times 7$ or 52 and ± 42		2	M1
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	10		A1 SC B1 for -50
(c)	$5p = 28 - 11$ or $11 - 28 = -5p$ or $5p = 17$ or $p + \frac{11}{5} = \frac{28}{5}$ or $(28 - 11) \div 5$ oe		2	M1
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	$\frac{17}{5}$		A1 oe e.g. 3.4 or $3\frac{2}{5}$
Total 6 marks				

3.

(a)	$m^2 - 8m + 5m - 40$		2	M1 for any 3 correct terms from 4 terms or for 4 out of 4 correct terms ignoring signs or for $m^2 - 3m \dots$ or for $\dots - 3m - 40$
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	$m^2 - 3m - 40$		A1
(b)	$9n - 12 = 5n + 6$ oe or $3n - 4 = \frac{5}{3}n + \frac{6}{3}$ oe		3	M1 for removal of fraction and multiplying out LHS or separating fraction (RHS) in an equation
	$9n - 5n = 12 + 6$ oe or $4n = 18$ or $-12 - 6 = 5n - 9n$ oe or $-4n = -18$ oe or $n = \frac{-18}{-4}$ or $3n - \frac{5}{3}n = \frac{6}{3} + 4$ oe			M1 ft (dep on 4 terms) correctly rearranging their 4 term equation for terms in n on one side of equation and number terms on the other
	<i>Working required</i>	$\frac{9}{2}$		A1 dep on M2 oe eg $\frac{18}{4}$ or 4.5 or $4\frac{1}{2}$
Total 5 marks				

4.

(a)		$5c$	1	B1
(b)		$-2w + 12y$	2	B2 oe (B1 for $-2w$ or $12y$)
(c)		3	2	B1 cao
		31		B1 cao
(d)	$7x + 35$		3	M1 a correct expansion of the bracket (need not be in an equation)
	$7x + 3x = 8 - 35$ oe eg $10x = 8 - 35$ or $10x = -27$ or $7x + 3x = -27$			M1 for isolating terms in x and number terms ft from an incorrect expansion in the form $7x + c$ or $x + 35$
	Working required	-2.7		A1 (dep on M1) oe
Total 8 marks				

5.

(a)	$2n$ or $n + 7$		2	M1 for $2n$ oe or $n + 7$ oe
	Correct answer scores full marks (unless from obvious incorrect working)	$4n + 7$		A1 oe eg $7 + 4n$
(b)		$T - "(4n + 7)"$	1	B1ft oe, ft $T -$ [their answer (a)]
Total 3 marks				

6.

(a)		e^5	1	B1
(b)		$3m$	1	B1
(c)		$6g^2$	1	B1
(d)		$a^2 + 8a$	1	B1
(e)		$5(3x + 4)$	1	B1
(f)		$T = 3d + 5h$	3	B3 Allow $T = d3 + h5$ or $T = d \times 3 + h \times 5$ (B2 for $3d + 5h$ or $T = 3d + xh$ or $T = yd + 5h$ or $T = 5d + 3h$) [where $x \neq 0$ and $y \neq 0$ and can be negative] (B1 for $3d + xh$ or $yd + 5h$ [where $x \neq 0$ and $y \neq 0$ and can be negative] or $5d + 3h$ or for $T =$ an incorrect expression in d and h eg $T = d + h$, $T = d \times h$ etc or $T = 3d (+ c)$ or $T = (k +) 5h$)
Total 8 marks				

7.

(a)		c^3	1	B1
(b)		$36de$	1	B1 oe
(c)		28	1	B1
(d)	$2g = 6 + 3$ or $2g = 9$ or $g - \frac{3}{2} = \frac{6}{2}$ oe or $(6 + 3) \div 2$ or $9 \div 2$		2	M1
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	4.5		A1 oe eg $\frac{9}{2}$ or $4\frac{1}{2}$ or 4,5
(e)		$x^2 - 4x$	1	B1 or $-4x + x^2$
(f)	e.g. $4 \times (-3)^2 + 2$ or $4(-3)^2 + 2$ or $4 \times 9 + 2$ or $4(9) + 2$ or $4 \times -3 \times -3 + 2$ or $4(-3 \times -3) + 2$		2	M1 for substituting values for y and w
	<i>Working not required, so correct answer scores full marks (unless from obvious incorrect working)</i>	38		A1
Total 8 marks				

8.

(a)	eg $2f = 12f - 51$ or $\frac{f}{3} = \frac{4}{2}f - \frac{17}{2}$ or $\frac{f}{3} = 2f - \frac{17}{2}$ or $0.3f = 2f - 8.5$ or $f = 6f - \frac{51}{2}$ or $f = 6f - 25.5$ or $17 = 4f - \frac{2}{3}f$ or $17 = 4f - 0.6f$ or $17 = 4f - 0.7f$ or $\frac{2}{3}f - 4f = -17$ or $0.6f - 4f = -17$ or $0.7f - 4f = -17$		3	M1 for a correct first step – multiplying both sides by 3 correctly and expanding to find $2f = 12f - 51$ or $2f = -51 + 12f$ or writing the RHS as 2 terms each over 2 (Allow decimals to 1dp or better – rounded or truncated)
	eg $-10f = -51$ or $10f = 51$ or $\frac{5f}{3} = \frac{17}{2}$ or $5f = \frac{51}{2}$ or $17 = \frac{10f}{3}$ or $3.3f = 17$ or $-\frac{10f}{3} = -17$ or $-3.3f = -17$			M1 for a correct 2 term equation in the form $af = b$ fit the following equations only $2f = 12f - 17$ oe $2f = 4f - 51$ oe $6f = 12f - 51$ oe (Allow decimals to 1dp or better – rounded or truncated)
	<i>Working required</i>	$\frac{51}{10}$		A1 (dep on at least M1) oe

9.

(a)		$4p$	1	B1
(b)		$12e + 4f$	2	B2 B1 for $12e$ or $4f$
(c)		6	1	B1 cao
(d)	$4y = 43 - 7$ oe or $\frac{4y}{4} + \frac{7}{4} = \frac{43}{4}$ oe or $(43 - 7) \div 4$		2	M1 for a correct first step to solve the equation or a complete calculation for finding the value of y
	Correct answer scores full marks (unless from obvious incorrect working)	9		A1
Total 6 marks				

10.

(a)		$12ac$	1	B1
(b)		$5d - 2e$	2	B2 for $5d - 2e$ oe (B1 for $5d$ or $-2e$)
(c)	$4x = 23 + 7$ or $4x = 30$ oe or $x - \frac{7}{4} = \frac{23}{4}$ or $(23 + 7) \div 4$ or $30 \div 4$		2	M1 for a correct first step or a correct calculation for x
	Correct answer scores full marks (unless from obvious incorrect working)	7.5		A1 oe eg $\frac{15}{2}, 7\frac{1}{2}, \frac{30}{4}$
Total 5 marks				

11.

(a)		$4x^2 - 20x$	1	B1 or $-20x + 4x^2$
(b)	$(y \pm 5)(y \pm 4)$ or $(5 \pm y)(4 \pm y)$ or $y(y - 4) - 5(y - 4)$ or $y(y - 5) - 4(y - 5)$		2	M1 for $(y \pm 5)(y \pm 4)$ or $(5 \pm y)(4 \pm y)$ or for $(y + a)(y + b)$ where $ab = 20$ or $a + b = -9$
	Correct answer scores full marks (unless from obvious incorrect working)	$(y - 5)(y - 4)$		A1 oe Allow any letter for y Accept $(5 - y)(4 - y)$
Total 3 marks				

12.

(a)		$3x - x^2$	1	B1
(b)		$6(2a - 3b)$	2	B2 If not B2, then B1 for $3(4a - 6b)$ or $2(6a - 9b)$ or 6(expression with one error)
(c)		$T = 8h + 20j$	3	B3 for $T = 8h + 20j$ oe eg $T = 4(2h + 5j)$ oe [accept $T = 8 \times h + 20 \times j$] (B2 for $8h + 20j$ or $T = 8h + aj$ or $T = bh + 20j$ or $T = 20h + 8j$ or a correct equation with letters such as S and L eg $T = 8S + 20L$) (B1 for $8h + aj$ or $bh + 20j$ or $20h + 8j$ or for $T =$ an incorrect expression in h and j)
Total 6 marks				

13.

(a)		$3(2y-9)$	1	B1 accept $3(-9+2y)$
(b)		p^2-2p	1	B1 accept $-2p+p^2$
(c)	$46=5 \times 17+4r$ oe or $46=85+4r$ oe oe or $46-5 \times 17(=4r)$ oe or $46-85(=4r)$ oe or $r=\frac{T-5g}{4}$		3	M1
	$(r=)\frac{46-85}{4}$ oe or $(r=)\frac{46-5 \times 17}{4}$ oe			M1
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	-9.75		A1 oe eg $\frac{-39}{4}$
(d)	$25 \pm \dots\dots$ or $\dots\dots - 12$ or $(-5)^2 - 4 \times 3$ or $(-5)^2 - 4(3)$ or $-5 \times -5 - 4 \times 3$ or $-5 \times -5 - 4(3)$		2	M1 for either 25 or -12 in the correct place or the correct substitution shown with brackets around -5
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	13		A1 (M0A0 for -37 without any working)
(e)	$x^2+5x-7x-35$		2	M1 for any 3 correct terms or for 4 out of 4 correct terms ignoring signs or for $x^2-2x \dots$ or for $\dots -2x-35$
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	$x^2-2x-35$		A1 oe Ignore solutions/roots if correct expansion seen
				Total 9 marks

14.

(a)		$45cd$	1	B1 oe Allow $45dc$, $c45d$, $d45c$, $cd45$ or $dc45$ Allow upper case letters
(b)		$-2p + 8n$	2	B2 oe eg. $8n - 2p$ If not B2 then award B1 for $-2p$ or $8n$
(c)	8×9 and $(-6 \times 5$ oe or 72 and ± 30 oe		2	M1
		42		A1 SCB1 for -14
(d)	$5m = 17 + 6$ or $5m = 23$ or $m - \frac{6}{5} = \frac{17}{5}$ or $m - 1.2 = 3.4$ or $-17 - 6 = -5m$ or $-23 = -5m$ or $(17 + 6) \div 5$ oe		2	M1 for a correct first step or a calculation for m
	$4 - 3$	$\frac{23}{5}$		A1 oe eg. 4.6 Allow 4,6
				Total 7 marks

15.

(a)		$6p(2q-3)$	2	B2 If not B2 then award B1 for any correct partial factorisation with 2 factors taken out ($2p$ or $3p$ or $6(2 \times 3)$) outside of the bracket $2p(6q-9)$ or $3p(4q-6)$ or $6(2pq-3p)$ or allow $6p$ and one error inside the bracket eg $6p(2q-a)$ or $6p(b-3)$ oe eg $6p(2q+3)$		
(b)	$y + (3y + 7) + (2y - 5) (= 6y + 2)$ oe or $56 - 7 + 5 (= 54)$		4	M1	M2 for $y + (3y + 7) + (2y - 5) = 56$ oe or $6y = 54$ oe	M3 for $(56 - 7 + 5) \div 6 (= 9)$ or $54 \div 6 (= 9)$
	$y + (3y + 7) + (2y - 5) = 56$ or “ $6y + 2 = 56$ oe eg $6y = 54$			M1		
	$(y =) \frac{56-2}{6} (= 9)$ oe				M1 for a correct method to find the value of y or the correct value of y	
		13		A1 (or for 9 (gold), 34 (silver) and 13 (zinc) seen) dep on sight of $(y =) 9$ SCB2 for 16.6 (17 if rounded 16.6 seen) (if no other marks awarded) SCB1 for $5y + 2 = 56$ oe (if no other marks awarded)		
				Total 6 marks		

16.

(a)		$x^2 + 3x$	1	B1
(b)		$2(4p + 5)$	1	B1
(c)	eg $y + f = eh$ or $\frac{y}{h} = \frac{eh}{h} - \frac{f}{h}$		2	M1 an equation that is one step from the answer
		$e = \frac{y+f}{h}$		A1 oe eg $e = \frac{y}{h} + \frac{f}{h}$ oe must see $e = \dots$ in working if not on answer line SCB1 for $\frac{y+f}{h}$ or $e = \frac{y-f}{h}$ or $e = y + f \div h$
(d)		8, 9, 10	2	B2 (B1 for two correct values with none incorrect or three correct values and one incorrect value or two correct values and one incorrect value)
Total 6 marks				

17.

(a)	$2x + 5 = 6(2x - 5)$ or $2x + 5 = 12x - 30$ or $\frac{2}{6}x + \frac{5}{6} = 2x - 5$ oe (allow $0.33x + 0.83 = 2x - 5$)		3	M1 For multiplying both sides by 6 or separating values in fraction correctly in an equation. (decimals 2 dp or better)
	$2x - 12x = -30 - 5$ or $-10x = -35$ or $5 + 30 = 12x - 2x$ or $35 = 10x$ oe or $\frac{5}{6} + 5 = 2x - \frac{1}{3}x$ oe or $1\frac{2}{3}x = 5\frac{5}{6}$ oe			M1ft For a method to collect the terms in x on one side and the number terms on the other side. ft from incorrect expansion dep on a number term and a term in x on both sides.
	Working required	3.5		A1 dep on M1 oe eg $\frac{7}{2}$ or $3\frac{1}{2}$

18.

(a)		$45pk$	1	B1 accept $45kp$
(b)		$11e - 5f$	2	B2 for $11e - 5f$ (B1 for $11e$ or $-5f$)
(c)	$2d = 16 - 7$ or $2d = 9$ or $d + \frac{7}{2} = \frac{16}{2}$ oe or $(16 - 7) \div 2$ or $9 \div 2$		2	M1
	Correct answer scores full marks (unless from obvious incorrect working)	4.5		A1 accept $\frac{9}{2}$ or $4\frac{1}{2}$
Total 5 marks				

19.

(a)	$18 - - 3 \times 5$ or $18 - - 15$ or $18 + 15$		2	M1
	Correct answer scores full marks (unless from obvious incorrect working)	33		A1
(b)	$d - 10 = 3x$ oe or $-3x = -d + 10$ or $\frac{d}{3} = x + \frac{10}{3}$ oe or $\frac{d-10}{3}$ oe		2	M1
	Correct answer scores full marks (unless from obvious incorrect working)	$x = \frac{d-10}{3}$		A1 accept $x = \frac{d}{3} - \frac{10}{3}$ oe or $x = \frac{-d+10}{-3}$ oe (must see $x = \dots$ on answer line or in working)
Total 4 marks				

20.

	$6-12x$ or $2-4x = \frac{5}{3} - \frac{8}{3}x$		3	M1 for expansion of bracket on the LHS or dividing the RHS by 3 with two terms
	$6-5=12x-8x$ or $1=4x$ or $-12x+8x=5-6$ oe or $-4x=-1$ or $\frac{8}{3}x-4x=\frac{5}{3}-2$ oe or $2-\frac{5}{3}=-\frac{8}{3}x+4x$ oe			M1 ft (dep on 4 terms) for terms in x on one side of equation; number terms on the other
	<i>Working required</i>	$\frac{1}{4}$		A1 oe dep on M1 awarded
				Total 3 marks

21.

(a)		$9y$	1	B1
(b)		$12p^2$	1	B1
(c)		6	1	B1
(d)		-1	1	B1
(e)		$6c+2d$	2	B2 for $6c+2d$ or $2d+6c$ (B1 for $6c$ or $2d$)
				Total 6 marks

22.

(a)		c^5	1	B1
(b)		7	1	B1
(c)		18	1	B1 Look in body of script if nothing on answer line
(d)		$10+15h$	1	B1
(e)		$g(g+7)$	1	B1
				Total 5 marks

23.

(a)		$10x-x^2$	1	B1 oe eg $-x^2+10x$
(b)		$3(2y+9)$	1	B1
(c)	eg $h-4=\frac{m}{2}$ or $2h=m+8$		2	M1 for a correct first step
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	$m=2(h-4)$		A1 oe eg $m=2h-8$ SC award M1 for $m=2h-4$ or $m=h-8$
(d)	eg $7g-2g+3=-5$ or $5g+3=-5$ or $7g=2g-5-3$ or $7g=2g-8$		3	M1 for correctly collecting the terms in g on one side or the numbers on one side
	eg $7g-2g=-5-3$ or $5g=-8$			M1 for a correct rearrangement with terms in g on one side and numbers on the other. Award of this mark implies the first M1
	<i>Working required</i>	$-\frac{8}{5}$		A1 (dep on M1) oe eg $-1\frac{3}{5}$ or -1.6
				Total 7 marks

