

CHANGING SUBJECT OF A FORMULA

Pearson Edexcel - Tuesday 19 May 2020 - Paper 1 (Non-Calculator) Foundation Tier

1.

30	(a)	$q = \frac{p-7}{6}$	M1	for a correct first step, showing a method of subtraction of 7 from both sides or division of all terms by 6 eg $p-7 = 6q+7-7$ or $\frac{p}{6} = \frac{6q}{6} + \frac{7}{6}$ oe	Allow $1\frac{1}{6}$ for $\frac{7}{6}$ Award for answer without "q ="
			A1	for $q = \frac{p-7}{6}$ or $q = \frac{p}{6} - \frac{7}{6}$	
	(b)	m^6	B1	cao	

Pearson Edexcel - Tuesday 11 June 2019 - Paper 3 (Calculator) Foundation Tier

2.

19		$x = \frac{y-4}{2}$	M1	for correct first step to rearrange eg $y-4 = 2x+4-4$ or $\frac{y}{2} = \frac{2x+4}{2}$ or ambiguously shown eg $x = y-4 \div 2$ or answer given as $\frac{y-4}{2}$	May be seen in different equivalent forms but must be carried out, not just intention seen. Could be shown as a flow diagram but must have correct inverse operations
			A1	oe	

Pearson Edexcel - Tuesday 6 November 2018 - Paper 1 (Non-Calculator) Foundation Tier

3.

21	(a)	6 or -6	M1	for $12^2 + 2 \times -3 \times 18 (= 36)$	Terms may be partially evaluated.
			A1	for 6 or -6, accept ±6	Only one value is required for full marks
	(b)	$s = \frac{v^2 - u^2}{2a}$	M1	for subtracting u^2 from both sides or dividing all terms by $2a$ as the first step	Must see this step carried out, not just the intention shown
			A1	$s = \frac{v^2 - u^2}{2a}$ oe	

Pearson Edexcel - Tuesday 12 June 2018 - Paper 3 (Calculator) Foundation Tier

4.

28		$g = 2T^2 - 6$	M1	for $T^2 = \frac{g+6}{2}$ or $\sqrt{2} \times T = \sqrt{g+6}$	Can only award this mark if the first M mark has been awarded.
			M1	(dep) for $T^2 \times 2 = g + 6$ or $(\sqrt{2} \times T)^2 = g + 6$ oe	
			A1	for $g = 2T^2 - 6$ oe	

Pearson Edexcel – Specimen 2 - Paper 3 (Calculator) Foundation Tier

5.

24			$t = 3(y + 2a)$	M1	adding $2a$ to both sides or multiplying each term by 3
				A1	$t = 3(y + 2a)$ or $t = 3y + 6a$

Pearson Edexcel – Specimen 1 - Paper 2 (Calculator) Foundation Tier

6.

20		$t = \frac{w-11}{3}$	M1 for $3t = w - 11$ or $\frac{w}{3} = \frac{3t}{3} + \frac{11}{3}$ A1 for $t = \frac{w-11}{3}$ oe
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OCR Thursday 8 November 2018 – Morning (Non-Calculator) Foundation Tier

7.

9	(a)	$x = y + 2$	1	Condone $y + 2 = x$
	(b)	$d = \frac{C}{\pi}$ or $d = C \div \pi$	1	Condone $\frac{C}{\pi} = d$ or $C \div \pi = d$

Pearson Edexcel – Sample Papers - Paper 2 (Calculator) Foundation Tier

8.

21		$p=qr-sr$	M1 for multiplying all 3 terms by r or isolating p/r term A1 oe
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9.

17	(a)	$\frac{y+3}{7}$ or $\frac{-y-3}{-7}$ final answer	2	M1 for $y + 3 = 7x$ or $\frac{y}{7} = x - \frac{3}{7}$ Or for correct FT completion to answer after incorrect first step has been shown	For M1, accept the 'negative terms' versions
	(b) (i)	$x(x - y)$ final answer	1		Condone omission of final bracket Condone $[1]x([1]x - [1]y)$
	(ii)	$(x + 6)(x + 2)$ final answer	2	M1 for $(x + a)(x + b)$ where $ab = \pm 12$ or $a + b = \pm 8$ or for $x(x + 6) + 2(x + 6)$ seen or $x(x + 2) + 6(x + 2)$ seen	a, b integers For 2 marks, condone solutions after correct factors For 2 marks or M1, condone omission of final bracket

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10.

Q	Answer	Mark	Comments
28	Alternative method 1		
	$3c = d + 2$ or $3c - 2$	M1	
	$d = 3c - 2$ or $d = -2 + 3c$ or $3c - 2 = d$ or $-2 + 3c = d$	A1	
	Alternative method 2		
	$c - \frac{2}{3} = \frac{d}{3}$ or $3\left(c - \frac{2}{3}\right)$	M1	
	$d = 3\left(c - \frac{2}{3}\right)$	A1	
	Additional Guidance		
	Flow chart method, with incorrect final answer: $d \rightarrow +2 \rightarrow \div 3 \rightarrow c$ and $c \rightarrow \times 3 \rightarrow -2 \rightarrow d$		M1A0
Condone \times signs for M1 but not A1 Condone $c3$ for M1 but not A1			

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11.

27	Alternative method 1 – add 6 to both sides first		
	$x + 6 = 2y$ or $-x - 6 = -2y$ or $\frac{x+6}{2}$ or $\frac{x}{2} + 3$ or $\frac{1}{2}(x+6)$	M1	oe
	$y = \frac{x+6}{2}$ or $y = \frac{x}{2} + 3$ or $y = \frac{1}{2}(x+6)$	A1	allow order reversed do not allow further incorrect work eg attempts to divide only the 6 by 2 Condone $y = (x+6) \div 2$ for M1A1
	Alternative method 2 – divide both sides by 2 first		
	$\frac{x}{2} = y - \frac{6}{2}$ or $\frac{x}{2} = y - 3$ or $\frac{x+6}{2}$ or $\frac{x}{2} + 3$ or $\frac{1}{2}(x+6)$	M1	allow $\frac{2y}{2}$ for y
	$y = \frac{x+6}{2}$ or $y = \frac{x}{2} + 3$ or $y = \frac{1}{2}(x+6)$	A1	allow order reversed do not allow further incorrect work eg attempts to divide only the 6 by 2 Condone $y = (x+6) \div 2$ for M1A1
	Alternative method 3 – flow diagram		
	$y \rightarrow 2y \rightarrow 2y - 6$ $\leftarrow x + 6 \leftarrow x$	M1	allow $2 \times y$ or $y \times 2$ for $2y$ ignore any operations seen on arrows
	$y = \frac{x+6}{2}$ or $y = \frac{x}{2} + 3$ or $y = \frac{1}{2}(x+6)$	A1	allow order reversed do not allow further incorrect work eg attempts to divide only the 6 by 2 Condone $y = (x+6) \div 2$ for M1A1
	Additional Guidance		
Allow 0.5 for $\frac{1}{2}$ throughout			

AQA Tuesday 12 June 2018 – Morning (Calculator) Foundation Tier

12.

21	$f = \frac{e}{2}$	B1	
	Additional Guidance		

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13.

27a	Alternative method 1			
	$v - u = at$	$-at = u - v$	M1	
	$t = \frac{v-u}{a}$	$t = \frac{u-v}{-a}$	A1	oe
	Alternative method 2			
	$\frac{v}{a} = \frac{u}{a} + t$	M1		
	$t = \frac{v}{a} - \frac{u}{a}$	A1	oe	
	Additional Guidance			
	$t = (v - u) \div a$		M1A1	
	$v - u = at$ and $t = v - u \div a$		M1A0	
	$\frac{v-u}{a}$ or $\frac{u-v}{-a}$ or $\frac{v}{a} - \frac{u}{a}$		M1A0	
	$a = \frac{v-u}{t}$ with or without working		M1A0	
	$t = v - u \div a$		M0A0	
$t = \frac{v+u}{a}$		M0A0		

27b	(Speed) m/s or ms ⁻¹ (Acceleration) m/s ² or ms ⁻² or m/s/s	B2	B1 for one correct or two mutually consistent units eg km/h and km/h ² Accept mps for m/s and mps ² for m/s ²
	Additional Guidance		
	Allow units given in words eg metres per second metres per second squared or metres per second per second		
	m/s ⁻¹ (speed)		B0
m/s ⁻² (acceleration)		B0	

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14.

28	$y - 9 = \frac{x}{3}$ or $3y = x + 27$ or $3y - 27$ or $3(y - 9)$	M1	A correct first step in rearranging or the correct rearrangement without $x =$
	$x = 3y - 27$ or $x = 3(y - 9)$	A1	Accept $3y - 27 = x$ or $3(y - 9) = x$
	Additional Guidance		
	Accept $-27 + 3y$ for $3y - 27$ throughout		
	$x = 3y - 27$ in working with answer $3y - 27$		M1A1
	$x = (y - 9)3$ (unless recovers)		M1A0
	$x = y3 - 27$ (unless recovers)		M1A0
	Multiplication signs are acceptable for M1 but not A1		
	$x = 3 \times y - 27$		M1A0
$3 \times y = x + 3 \times 9$		M1	