



# Mark Scheme (Results)

Summer 2022

Pearson Edexcel International A Level  
in Statistics S2 (WST02/01)

Question	Scheme	Marks
1. (a)	4	B1 (1)
(b)	$P(X=2) = 3 \times 0.2 \times 0.8^2 \left[ = \frac{48}{125} = 0.384 \right]$ or $P(X=3) = 0.8^3 \left[ = \frac{64}{125} = 0.512 \right]$ $[X = ]$ 3 is the mode	M1 A1 (2)
(c)	$P(W_1 = 2) = \frac{e^{-4} 4^2}{2} [=0.1465]$ and $P(X_1 = 2) = 3 \times 0.2 \times 0.8^2 [= \frac{48}{125} = 0.384]$ $P(W_1 \text{ and } X_1 = 2) = \frac{e^{-4} 4^2}{2} \times (3 \times 0.2 \times 0.8^2) [= 0.1465 \times 0.384]$ $= 0.05626564\dots$ awrt <b>0.0563</b>	M1 M1 A1 (3)
(d)	$X_1 = 0 \text{ and } W_1 > 0, X_1 = 1 \text{ and } W_1 > 1, X_1 = 2 \text{ and } W_1 > 2, X_1 = 3 \text{ and } W_1 > 3$ $0.008 \times (1 - 0.0183) + 0.096 \times (1 - 0.0916) + 0.384 \times (1 - 0.2381) + 0.512 \times (1 - 0.4335)$ $= 0.677677\dots$ awrt <b>0.678</b>	M1 M1M1 A1 (4)
		<b>[10 marks]</b>
<b>Notes</b>		
(a)	B1 cao	
(b)	M1 valid attempt at either probability. A1 3 (M1 must be scored) NB answer only with no method is M0A0	
(c)	1 <sup>st</sup> M1 both $P(W_1 = 2)$ Allow (0.2381 – 0.0916) and $P(X_1 = 2)$ 2 <sup>nd</sup> M1 Poisson probability $\times$ binomial probability. If no working shown these probabilities must be correct A1 awrt 0.0563	
(d)	1 <sup>st</sup> M1 for listing at least 3 combinations. Implied by 2 <sup>nd</sup> M1. 2 <sup>nd</sup> M1 for sum of at least 3 correct products Condone consistent use of the tables for 3.5 or 4.5 rather than 4 3 <sup>rd</sup> M1 for a fully correct expression eg $0.008 \times (0.9817) + 0.096 \times (0.9084) + 0.384 \times (0.7619) + 0.512 \times (0.5665)$ condone 0.9816 and 0.7618 Allow figures to 3sf for method or awrt 0.00785 + awrt 0.0872 + awrt 0.293 + awrt 0.290 (allow 0.29) A1 awrt 0.678 <b>Alternative:</b> $W_1 = 1 \text{ and } X_1 = 0, W_1 = 2 \text{ and } X_1 < 2, W_1 = 3 \text{ and } X_1 < 3, W_1 \geq 4$ $0.0733 \times 0.008 + 0.1465 \times 0.104 + 0.1954 \times 0.488 + (1 - 0.4335)$ awrt 0.000586 + awrt 0.0152 + awrt 0.0954 + awrt 0.567	

Question	Scheme	Marks
2. (a)	$E(T) = \int_0^4 \frac{1}{192} t(t^3 - 48t + 128) dt$	M1
	$= \frac{1}{192} \left[ \frac{t^5}{5} - 16t^3 + 64t^2 \right]_0^4$ or $\left[ \frac{t^5}{960} - \frac{1}{12}t^3 + \frac{1}{3}t^2 \right]_0^4$ oe	dM1
	$= \frac{1}{192} \left( \frac{4^5}{5} - 16(4^3) + 64(4^2) - 0 \right) = \frac{16}{15} \text{ min} \rightarrow 1 \text{ minute } 4 \text{ seconds}$	A1
		(3)
(b)	$P(\text{call takes between 1 and 3 minutes}) = \int_1^3 \frac{1}{192} (t^3 - 48t + 128) dt$	
	mor $\left[ \frac{t^4}{768} - \frac{1}{8}t^2 + \frac{2}{3}t \right]_1^3$ oe	M1
	$= \frac{1}{192} \left( \left( \frac{3^4}{4} - 24(3^2) + 128(3) \right) - \left( \frac{1^4}{4} - 24(1^2) + 128(1) \right) \right) = \frac{7}{16} *$	dM1 A1*cso
		(3)
(c)	$C \sim B(256, \frac{7}{16}) \approx N(112, 63)$	M1 A1
	$P(C > 125) \approx P\left(Z > \frac{125.5 - 112}{\sqrt{63}}\right)$	M1M1
	$P(Z > 1.70) = 1 - 0.9554 = 0.0446$	A1
		(5)
	<b>Notes</b>	<b>[11 marks]</b>
(a)	1 <sup>st</sup> M1 for using $\int tf(t) dt$ ignore limits. $t^4 \rightarrow t^5$ or $t^2 \rightarrow t^3$ or $t \rightarrow t^2$ for at least one term, ignore coefficients. Implied by an answer of $\frac{16}{15}$ or 1 minute 4 seconds (allow 64) or awrt 1.067	
	2 <sup>nd</sup> dM1 dep on previous M1 fully correct integration with limit of 4 and 0 or 4 substituted (204.8) This mark is not implied by a correct answer	
	A1 the second M1 mark must be awarded 1 min 4 s (accept 64)	
	<b>NB</b> an answer of $\frac{16}{15}$ or 1 minute 4 seconds or 64 or awrt 1.067 with no working gains M1M0A0.	
(b)	1 <sup>st</sup> M1 attempt to integrate $\int f(t) dt$ $t^n \rightarrow t^{n+1}$ for at least one term. Ignore limits. If they have integrated $f(t)$ in part (a) and used this in part (b) we will allow this mark.	
	2 <sup>nd</sup> M1 (dep on 1 <sup>st</sup> M1) for use of correct limits. Must see substitution into their expression. If integration correct allow $\frac{1}{192} \left( \left( \frac{81}{4} - 216 + 384 \right) - \left( \frac{1}{4} - 24 + 128 \right) \right)$ or $\frac{1}{192} \left( \frac{753}{4} - \frac{417}{4} \right)$ or $\frac{251}{256} - \frac{139}{256}$	
	1 <sup>st</sup> A1* cso $\frac{7}{16}$ [= 0.4375] fully correct solution (correct integration and substitution) . Answer is given so both method marks must be awarded.	
(c)	1 <sup>st</sup> M1 use or sight of Normal approximation with mean 112	
	1 <sup>st</sup> A1 correct mean and variance (condone $63^2$ if used $\sqrt{63}$ in the standardisation)	
	2 <sup>nd</sup> M1 standardising using their mean and variance. Allow use of 124.5, 125, 125.5, 126, 126.5 or on the numerator 12.5, 13, 13.5, 14, 14.5	
	3 <sup>rd</sup> M1 use of continuity correction $125 \pm 0.5$ Implied by numerator of 12.5 or 13.5	
	2 <sup>nd</sup> A1 awrt 0.0445/0.0446 [calc 0.0444865...] [Exact binomial gives 0.0448518... and gains no marks]	

Question	Scheme	Marks
3. (a)	$\frac{19}{24}$	B1
		(1)
(b)	$P( R  > 3.5) = \frac{-3.5 - (-5)}{19 - (-5)} + \frac{19 - 3.5}{19 - (-5)} = \frac{17}{24}$	M1, A1
		(2)
(c)		M1 A1
		(2)
(d)(i)	$P(R_1 > 10) = \frac{19 - 10}{19 - (-5)} \left[ = \frac{9}{24} = 0.375 \right]$	M1
	$[P(R > 10)]^3 = \left( \frac{9}{24} \right)^3 = \frac{27}{512}$	M1 A1
		(3)
(ii)	$1 - [P(R < 10)]^3 = \frac{387}{512}$	M1 A1
		(2)
	<b>Notes</b>	<b>[10 marks]</b>
(a)	B1 allow awrt 0.792	
(b)	M1 sum of two regions from uniform distribution or $1 - \frac{3.5 - (-3.5)}{19 - (-5)} \left[ = 1 - \frac{7}{24} \right]$ oe You may ft their denominator from (a) A1 allow awrt 0.708	
	<b>SC M1A0</b> for $P(-3.5 < R < 3.5) = \frac{7}{24}$ (awrt 0.292) <b>or</b> for finding $P(R > 3.5) = \frac{31}{48}$ (awrt 0.646) and $P(R < -3.5) = \frac{1}{16}$ (0.0625)	
(c)	M1 straight line with increasing gradient. Allow a horizontal line to the right of 19 and/or a horizontal line to the left of -5 A1 starting at (-5, 0) and finishing at (19, 1) Need to be clear labels for -5, 19 and 1. 0 may be labelled or implied by the x-axis	
(d) (i)	1 <sup>st</sup> M1 for $P(R > 10)$ eg $1 - \frac{10 - (-5)}{19 - (-5)}$ no need to simplify. Implied by 0.375 or $\frac{27}{512}$ You may use their denominator from (a) 2 <sup>nd</sup> M1 ["their $P(R > 10)$ "] <sup>3</sup> They may use their denominator from (a) otherwise ft their $P(R > 10)$ only if it is clearly labelled. A1 allow awrt 0.0527	
(ii)	M1 Use of $1 - p^3$ $0 < p < 1$ (none are greater than 10cm from origin) or $3p^2(1 - p) + 3p(1 - p)^2 + (1 - p)$ $0 < p < 1$ working needs to be shown A1 allow awrt 0.756	
	<b>SC M1A0</b> for finding the P (exactly 1 is > 10cm) = $\frac{225}{512} = (0.439\dots)$	

Question	Scheme	Marks
4. (a)	$[P(Y = 0) < 0.05]$	
	$(1 - 0.07)^n < 0.05$	M1
	$n \log(0.93) < \log(0.05)$	M1
	$n > 41.28 \dots \quad n = 42$	A1
		(3)
(b)	$H_0: p = 0.08 \quad H_1: p \neq 0.08$	B1
	$X \sim B(75, 0.08) \rightarrow \text{Po}(6)$	M1
	$P(X \leq 11) = 1 - P(X \geq 10)$	M1
	$= 1 - 0.9574 = 0.0426 [ > 0.025]$	A1
	Do not Reject $H_0$ or not significant or 11 does not lie in the CR	dM1
	There is not significant evidence to suggest that the <b>proportion</b> of pears weighing more than 180g has <b>changed</b>	A1
		(6)
		[9 marks]
<b>Notes</b>		
(a)	1 <sup>st</sup> M1 For $0.93^n$ or $0.93^{42}$ or $0.93^{41}$	
	2 <sup>nd</sup> M1 for $n \log(0.93) < \log(0.05)$ or $\log_{0.93} 0.05$ , $n$ Allow = or ,, condone > or ... or $0.93^{42} = 0.0474 \dots$ or $0.0475$ (min 4 dp) Implied by 41.28... or awrt 41.3	
	A1 42 cao <b>NB</b> An answer of 42 gains 3/3	
	<b>SC condone for M1 M0 A0</b> ( $[e^{-3} =] 0.04978 \dots$ (min 4dp) <b>and</b> $-0.07n = -3$ )	
(b)	B1 both hypotheses correct (may use $p$ or $\pi$ but do not allow $p(x)$ ) Allow 8% connected to $H_0$ and $H_1$ correctly	
	1 <sup>st</sup> M1 writing or using Poisson approximation with mean 6.	
	2 <sup>nd</sup> M1 for writing or using $1 - P(X \geq 10)$ or for a CR method (must give a CR) giving $P(X \geq 11) = 0.9799$ or $P(X \leq 12) = 0.0201$ Implied by awrt 0.0426 or correct CR	
	1 <sup>st</sup> A1 for 0.0426 or CR: $X \leq 12$ ignore lower CR. NB M1A1 for $P(X \geq 10) = 0.9574$ on its own	
	3 <sup>rd</sup> dM1 Independent of their hypotheses dependent on 2 <sup>nd</sup> M1 but A correct statement i.e. not significant/do not reject $H_0$ /Not in CR/reject $H_1$ Do not allow non-contextual conflicting statements.	
	2 <sup>nd</sup> A1 For a correct contextual statement. Need proportion oe and changed oe Allow the farmers <b>belief</b> (oe) is not supported (bold words) Do not accept contradicting statements. No hypotheses is A0	
	<b>NB</b> Award d M1A1 for a correct contextual statement on its own	
	SC1: Use of one-tailed test may score B0M1M1A1M1A0 for rejecting $H_0$	
	SC2: Use of Binomial throughout max (3/6) B1M0M1A0dM1A0	
	SC3: normal approximation prob = 0.0277 (maximum 3 out of 6) B1 M0 M1 for writing or using $1 - P(X \geq 10.5)$ allow < implied by awrt 0.027/0.028 A0 dM1A0	

Question	Scheme	Marks
5. (a)	$X \sim \text{Po}(7.5)$	B1
(i)	$P(X = 10) [= 0.8622 - 0.7764 = \frac{e^{-7.5}(7.5)^{10}}{10!}] = 0.0858\dots$ awrt <b>0.0858</b>	B1
(ii)	$P(6 \leq X \leq 11) = P(X \leq 11) - P(X \leq 5) [= 0.9208 - 0.2414]$	M1
	$= 0.6794$ awrt <b>0.679</b>	A1
		(4)
(b)	$Y =$ number of samples that contain 0 particles	
	$Y \sim B(12, p)$ or $B(12, e^{-0.15m})$ or $B(12, e^{-\lambda})$	M1
	$[P(Y \leq 2) =] 1 - P(Y \leq 1) = 0.1184$	M1
	$P(Y \leq 1) = 0.8816 \rightarrow$ from tables $[p =] 0.05$	A1
	$S =$ number of particles per $m$ millilitres	
	$S \sim \text{Po}(0.15m)$	M1
	$P(S = 0) = 0.05$ or $e^{-0.15m} = "0.05"$	M1
	$-0.15m = \ln(0.05) \rightarrow m = 19.9715\dots$ awrt <b>20.0</b>	A1
		(6)
		<b>[10 marks]</b>
<b>Notes</b>		
(a)	1 <sup>st</sup> B1 writing or using $\text{Po}(7.5)$ May be implied by a correct probability	
(i)	2 <sup>nd</sup> B1 awrt 0.0858 [calc = 0.0858303...]	
(ii)	M1 writing or using $P(X \leq 11) - P(X \leq 5)$	
	A1 awrt 0.0679 [calc = 0.06793222...]	
(b)	1 <sup>st</sup> M1 writing or using $B(12, p)$ Allow Binomial with $n = 12$ or $B(12, \dots)$ May be implied by 0.05	
	2 <sup>nd</sup> M1 for $1 - P(Y \leq 1) = 0.1184$ (or better) or $P(Y \leq 1) = 0.8816$ oe eg $(1 - p)^{12} + 12p(1 - p)^{11} = 0.8816$ Implied by 0.05	
	1 <sup>st</sup> A1 0.05(seen)	
	3 <sup>rd</sup> M1 writing or using $\text{Po}(0.15m)$ May be implied by $e^{-0.15m}$	
	4 <sup>th</sup> M1 ft their $p$ ( $0 < p < 1$ ) for an equation of the form $e^{-0.15m} = "0.05"$ (allow $e^{-\lambda} = "0.05"$ ) Allow $0.15m = 3$	
	2 <sup>nd</sup> A1 Allow 20 or awrt 20.0 Allow trial and error to solve their equation	

Question	Scheme	Marks
<b>6. (a)</b>	$\int_0^2 0.1x \, dx + \int_2^4 kx(8-x) \, dx = \frac{31}{45}$	M1
	$\left[ \frac{0.1x^2}{2} \right]_0^2 + k \left[ 4x^2 - \frac{x^3}{3} \right]_2^4 = \frac{31}{45}$	M1
	$0.2 + k \left( 64 - \frac{64}{3} - \left( 16 - \frac{8}{3} \right) \right) = \frac{31}{45} \rightarrow k = \frac{1}{60}$	dM1 A1
		(4)
<b>(b)(i)</b>	$a = \left[ \left( 1 - \frac{31}{45} \right) \div 2 = \right] \frac{7}{45}$	B1
	<b>(ii)</b> $P(0 \leq X \leq 5.5) = \frac{31}{45} + a \times 1.5 = \frac{83}{90}$	M1 A1
		(3)
<b>(c)</b>	$\int_0^x 0.1t \, dt = \frac{0.1x^2}{2}$	B1
	$\int_0^2 0.1t \, dt + \int_2^x \frac{1}{60} t(8-t) \, dt, \quad \frac{31}{45} + \int_4^x \frac{7}{45} t \, dt$	M1, M1
	$[F(x)] = \begin{cases} 0 & x < 0 \\ 0.05x^2 & 0 \leq x < 2 \\ \frac{1}{60} \left( 4x^2 - \frac{x^3}{3} - \frac{4}{3} \right) & 2 \leq x < 4 \\ \frac{7}{45}x + \frac{1}{15} & 4 \leq x < 6 \\ 1 & x \geq 6 \end{cases}$	B1 A1 A1
		(6)
<b>Notes</b>		<b>[13 marks]</b>
<b>(a)</b>	1 <sup>st</sup> M1 sum of two integrals = 31/45 (ignore limits) It may be equated to 31/45 later in their working. Condone missing dx	
	2 <sup>nd</sup> M1 attempt at integration $x \rightarrow x^2$ or $x^2 \rightarrow x^3$ for at least one	
	3 <sup>rd</sup> dM1 dep on 1 <sup>st</sup> M1 being awarded for use of correct limits	
	A1 $k = \frac{1}{60}$ cao Allow 0.016 or equivalent exact value $k = \frac{1}{60}$ with no working gains 4/4 $k = \frac{1}{60}$ from $0.2 = 2k(8-2)$ gains M0M0M0A0	
<b>(b)(i)</b>	B1 $a = \frac{7}{45}$ cao allow 0.15 or equivalent exact value	
	<b>(ii)</b>	M1 ft "their value of a" for $\frac{31}{45} + 1.5 \times "a"$ or $1 - 0.5 \times "a"$
A1 $\frac{83}{90}$ cao Allow 0.92 or equivalent exact value		
<b>(c)</b>	1 <sup>st</sup> B1 a correct integration of 2 <sup>nd</sup> line of pdf if have + C must get C = 0	
	1 <sup>st</sup> M1 a correct method to find 3 <sup>rd</sup> line of cdf Condone incorrect integration (allow k)	
	Allow $0.2 + \int_2^x \frac{1}{60} t(8-t) \, dt$ or $\int \frac{1}{60} t(8-t) \, dt + C$ and $F(2) = 0.2$	
	2 <sup>nd</sup> M1 a correct method to find 4 <sup>th</sup> line of cdf Condone incorrect integration (allow a)	
	Allow $\int \frac{7}{45} t \, dt + C$ and $F(6) = 1$ but do <b>not</b> allow their $F(4) + \int_4^x \frac{7}{45} t \, dt$	
	<b>For the next 3 marks limits condone &lt; for „ and „ for &lt; and ...for &gt;</b>	
	2 <sup>nd</sup> B1 1 <sup>st</sup> and 5 <sup>th</sup> lines correct with correct limits. Allow 1 range to be otherwise for the limits, Must have consistent use of letter throughout for this mark	
1 <sup>st</sup> A1 3 <sup>rd</sup> line correct with correct limits Allow equivalent un-simplified expressions		
2 <sup>nd</sup> A1 4 <sup>th</sup> line correct with correct limits Allow equivalent un-simplified expressions		

Question	Scheme	Marks									
7. (a)	$Y \sim B(20, p)$ $p = P(\text{sample contains counter with a 9 on it})$ $p = \left(1 - \frac{9}{10} \times \frac{8}{9} \times \frac{7}{8}\right)$ oe or $\left(\frac{1}{10} \times \frac{9}{9} \times \frac{8}{8} \times 3\right)$ oe or $\left(\frac{6}{10} \times \frac{5}{9} \times \frac{1}{8} \times 3 + \frac{6}{10} \times \frac{3}{9} \times \frac{1}{8} \times 6 + \frac{3}{10} \times \frac{2}{9} \times \frac{1}{8} \times 3\right)$ oe $\left[ = \frac{3}{10} \right]$	M1A1									
(i)	$E(Y) = 20 \times \frac{3}{10} [= 6]$	B1									
(ii)	$\text{Var}(Y) = 20 \times \frac{3}{10} \times (1 - \frac{3}{10}) = 4.2$	M1A1									
		(5)									
(b)	(7,7,7) (7,7,8), [(7,8,7), (8,7,7)] (7,7,9), [(7,9,7), (9,7,7)]	B2									
		(2)									
(c)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;"><math>m</math></th> <th style="width: 45%;">7</th> <th style="width: 40%;">8</th> </tr> </thead> <tbody> <tr> <td><math>P(M = m)</math></td> <td><math>\frac{6}{10} \times \frac{5}{9} \times \frac{4}{8} + 3 \times \frac{6}{10} \times \frac{5}{9} \times \frac{3}{8} + 3 \times \frac{6}{10} \times \frac{5}{9} \times \frac{1}{8}</math></td> <td><math>1 - P(M = 1)</math></td> </tr> <tr> <td></td> <td><math>= \frac{2}{3}</math></td> <td><math>= \frac{1}{3}</math></td> </tr> </tbody> </table>	$m$	7	8	$P(M = m)$	$\frac{6}{10} \times \frac{5}{9} \times \frac{4}{8} + 3 \times \frac{6}{10} \times \frac{5}{9} \times \frac{3}{8} + 3 \times \frac{6}{10} \times \frac{5}{9} \times \frac{1}{8}$	$1 - P(M = 1)$		$= \frac{2}{3}$	$= \frac{1}{3}$	B1 M1 M1
$m$	7	8									
$P(M = m)$	$\frac{6}{10} \times \frac{5}{9} \times \frac{4}{8} + 3 \times \frac{6}{10} \times \frac{5}{9} \times \frac{3}{8} + 3 \times \frac{6}{10} \times \frac{5}{9} \times \frac{1}{8}$	$1 - P(M = 1)$									
	$= \frac{2}{3}$	$= \frac{1}{3}$									
		A1 A1									
		(5)									
	<b>Notes</b>	<b>[Total 12]</b>									
(a)	1 <sup>st</sup> M1 For all methods condone missing $\times 3$ and /or $\times 6$ Allow $\frac{{}^1C_1 {}^9C_2}{{}^{10}C_3}$ oe <i>Condone with replacement - condone missing <math>\times 3</math> and /or <math>\times 6</math></i> $1 - \left(\frac{9}{10}\right)^3$ or $\left(\frac{6}{10}\right)^2 \times \frac{1}{10} \times 3 + \frac{6}{10} \times \frac{3}{10} \times \frac{1}{10} \times 6 + \left(\frac{3}{10}\right)^2 \times \frac{1}{10} \times 3 + \dots [= 0.271]$										
	1 <sup>st</sup> A1 A fully correct expression without replacement or 0.3 NB $E(Y) = 6$ implies the 1 <sup>st</sup> M1 1 <sup>st</sup> A1										
(i)	B1 for $20 \times$ probability – no need to calculate										
and (ii)	2 <sup>nd</sup> M1 Use of $np(1 - p)$ or $np\left(1 - \frac{np}{20}\right)$										
	2 <sup>nd</sup> A1 variance = 4.2										
(b)	B1B1 all 3 correct (with none incorrect – ignore arrangements of the correct numbers) (B1B0 any one correct and no incorrect or 2 or 3 correct and only one incorrect) These can be awarded in part (c) provided that they are clearly identified as having a median of 7 More than one incorrect is B0B0										
(c)	B1 for identifying that the only possible medians are 7 and 8. Allow 9 if it has a probability of 0 1 <sup>st</sup> M1 correct expression for $P(M = 7)$ Implied by $2/3$ or $P(M = 8)$ Implied by $1/3$ $P(M = 8) = \frac{3}{10} \times \frac{2}{9} \times \frac{1}{8} + 3 \times \frac{6}{10} \times \frac{3}{9} \times \frac{2}{8} + 3 \times \frac{3}{10} \times \frac{2}{9} \times \frac{1}{8} + 6 \times \frac{6}{10} \times \frac{3}{9} \times \frac{1}{8}$ <i>Condone with replacement</i> $P(M = 7) = \left(\frac{6}{10}\right)^3 + 3 \times \left(\frac{6}{10}\right)^2 \times \frac{3}{10} + 3 \times \left(\frac{6}{10}\right)^2 \times \frac{1}{10} \left[ = \frac{81}{125} = 0.648 \right]$ or $P(M = 8) = \left(\frac{3}{10}\right)^3 + 3 \times \frac{6}{10} \times \left(\frac{3}{10}\right)^2 + 3 \times \left(\frac{3}{10}\right)^2 \times \frac{1}{10} + 6 \times \frac{6}{10} \times \frac{3}{10} \times \frac{1}{10} \left[ = \frac{81}{250} = 0.324 \right]$										
	2 <sup>nd</sup> M1 Total of the 2 probabilities for 7 and 8 = 1 or a correct expression without replacement for both $P(M = 7)$ and $P(M = 8)$ condone with replacement										
	1 <sup>st</sup> A1 $P(M = 7) = \frac{2}{3}$ oe 2 <sup>nd</sup> A1 $P(M = 8) = \frac{1}{3}$ oe										