3. (a)	lower quartile = 116 upper quartile = 125 "125" + 1.5 × ("125" – "116") or "125" + 1.5 × (9) Outlier is greater than 138.5, so $c = 9$*	B1 M1 A1*cso (3)
(b)	$\bar{x} = \frac{-96}{24}[= -4]$ $\bar{d} = '\bar{x}' + 125$ $\sum d = 125 \times 24 - 96[= 2904]$ $\bar{d} = \frac{"2904"}{24}$ $\bar{d} = 121$	M1 M1 A1 (3)
(c)	$[\sigma_x = \sigma_d] = \sqrt{\frac{1306}{24}}$ $[\sigma_d] = 7.3767...$ awrt **7.38**	M1 A1 (2)
(d)	$[\mathrm{P}(D > 118 \mid X < 0)] = \frac{\mathrm{P}(118 < D < 125)}{\mathrm{P}(D < 125)}$ or $\frac{\mathrm{P}(-7 < X < 0)}{\mathrm{P}(X < 0)}$ or $\frac{5/24}{14/24}$ $= \frac{5}{14}$	M1 A1 (2) [**10**]

	Notes
(a)	B1 both values correct. Both values must be seen either in the calculation or separately. They are not implied by the IQR = 9 M1 use of $Q_3 + 1.5 \times$ IQR with their values. May be implied by 138.5 if B1 awarded A1*cso for **138.5** and conclusion ***c* = 9** (do not accept $c = 139$) with no errors. Answer is given so working must be shown.
(b)	1st M1 for correct expression for $\bar{x}$ 2nd M1 use of $\bar{d} = '\bar{x}' + 125$ A1 121 1st M1 for correct expression for $\sum d$ 2nd M1 use of "$\sum d$" ÷ 24 must be clear it is their sum NB condone no labelling or incorrect labelling throughout part(b)
(c)	M1 correct expression $\sqrt{\frac{1306}{24}}$ A1 awrt 7.38 final answer
(d)	M1 correct probability statement (allow a probability of $\frac{k}{14}$ where $0 < k < 14$ to score M1) A1 allow awrt 0.357