

Question Number	Scheme	Marks
3. (a)	<p>[<math>W =</math> weight of a package delivered to factory <math>W \sim N(18, 5.4^2)</math>]</p> $P(W < 18) = P\left(Z < \frac{10-18}{5.4}\right) \text{ or } P(Z < -1.481\dots)$ $= 1 - 0.9306 \quad (\text{calc: } 0.069239\dots)$ $= 0.0694 \quad \underline{\underline{0.0692, 0.0694}}$	<p>M1</p> <p>M1</p> <p>A1</p> <p>(3)</p>
(b)	<p>[<math>P(W &gt; j) = 0.15</math> implies] <math>\frac{j-18}{5.4} = 1.0364</math></p> $j = 23.596\dots \text{ awrt } \underline{\underline{23.6}}$	<p>M1B1</p> <p>A1</p> <p>(3)</p>
(c)	<p>[<math>P(W &gt; 18   W &lt; "23.59\dots") =</math>]</p> $\frac{P(18 < W < "23.6")}{P(W < "23.6")}$ $= \frac{0.5 - 0.15}{0.85} \text{ or } \frac{0.85 - 0.5}{0.85}; = \frac{0.35}{0.85}$ $= \frac{35}{85} = \frac{7}{17} \text{ or allow awrt } \underline{\underline{0.412}}$	<p>M1</p> <p>M1;A1</p> <p>A1</p> <p>(4)</p>
(d)	$0.85^2 \times 0.15^2 \times 6$ $= 0.0975375$ <p style="text-align: right;">awrt <u><u>0.0975</u></u></p>	<p>M1dM1</p> <p>A1</p> <p>(3)</p>
<b>[13 marks]</b>		

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5.(a)	$[P(H < 18) =] P\left(Z < \frac{18-22}{10}\right) = P(Z < -0.4)$ $= 1 - 0.6554$ $= 0.3446 \text{ or awrt } \underline{\underline{0.345}}$	<p>M1</p> <p>dM1</p> <p>A1</p> <p>(3)</p>
(b)	$P(H > 50) = P(Z > 2.8) = 1 - 0.9974 = 0.0026$ $P(H > 39) = P(Z > 1.7) = 1 - 0.9554 = 0.0446$ $P(H > 50   H > 39) = \frac{P(H > 50)}{P(H > 39)} \text{ or } \frac{0.0026}{0.0446}$ $= \underline{\underline{0.057 \sim 0.0585}}$	<p>M1</p> <p>A1</p> <p>A1</p> <p>M1</p> <p>A1</p> <p>(5)</p>
(c)	$\frac{18 - \mu}{\sigma} = -0.8416 \quad \frac{28 - \mu}{\sigma} = 1$ <p>Solving:</p> $10 = 1.8416\sigma$ $\sigma = \text{awrt } \underline{\underline{5.43}}$ $\mu = \text{awrt } \underline{\underline{22.57}}$	<p>M1B1A1</p> <p>M1</p> <p>A1</p> <p>A1</p> <p>(6)</p>
<b>[14 marks]</b>		