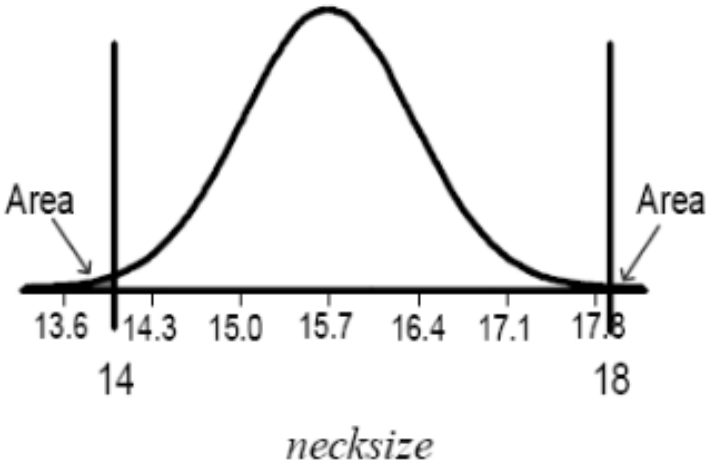
Solution

Part (a):

$$
\begin{aligned}
&P(necksize < 14 \ \ or \ \ necksize \geq 18) \\
&= P(necksize < 14) + P(necksize \geq 18) \\
&= P\left(z < \frac{14 - 15.7}{0.7}\right) + P\left(z \geq \frac{18 - 15.7}{0.7}\right) \\
&= P(z < -2.429) + P(z \geq 3.286) \\
&= 0.00758 + 0.00051 \\
&= 0.00809
\end{aligned}
$$



Part (b):

$$
\begin{aligned}
&P(15 \le necksize < 16) \\
&= P\left(\frac{15-15.7}{0.7} \le z < \frac{16-15.7}{0.7}\right) \\
&= P(-1.000 \le z < 0.429) \\
&= 0.50723
\end{aligned}
$$

Part (c):

X = number of customers who request size M

X is binomial with $n = 12$ customers and $p = 0.5072$

$$P(X = 4) = {}_{12}C_4(0.5072)^4(0.4928)^8 = 495(0.06618)(0.00348) = 0.1139$$