ONLINE EXAM - 3

1 Ans $r = \frac{51.75 - 51.29}{550 - 500} = \frac{0.5}{5} = 0.1$

2 Ans $P(z < 0.90) = 0.6915$
$P(z < 1.79) = 0.9999$

3 Ans Mean = 0
Standard deviation = 1

z score = $\frac{2 - 0}{1} = 1.37$

4 Ans $\bar{x} = 100$
$\sigma = 15$

$z = \frac{120 - 100}{15}$

$z = \frac{20}{15} = \frac{4}{3}$

$z = 1.33$
$P(z < 1.33) = 0.9082$
$z = \frac{85 - 100}{15}$
$= -\frac{15}{15} = -1$

$z = -1$
$P(z < -1) = 0.1587$

Area of shaded region = 0.7499

P.T.O

5. Ans

$\mu = 100$
$\sigma = 15$

$p = 0.99$
$q = 1 - 0.99 = 0.01$

z score $= -2.32$

$z = \frac{x - 100}{15}$

$-2.32 \times 15 + 100 = x$

6. Ans

$p = 70\% = 0.7$
$q = 1 - 0.7$
$= 0.3$

$n = 1201$
$np = 840.7$
$nq = 360.3$

$\mu = 840.7$
$\sigma = \sqrt{1201 \times 0.7 \times 0.3}$
$= 15.88112$

z score $= \frac{871.5 - 840.7}{15.88112}$

$= 1.94$

$P(z < 872) = 0.97381$

$P(z \geq 872) = 1 - 0.97381$

7. Ans Doing it in my mind & using my brain calculator.
0.106 & 0.027

8.4 $\alpha = 1 - 0.98 = 0.02$

$\frac{\alpha}{2} = 0.01$

From critical value table $= 2.3263$

$z_{\frac{\alpha}{2}} = 2.33$

9.4 $n = 109$

$df = 109 - 1 = 108$

$\bar{x} = 98.10\ ^\circ F$

$s = 0.63\ ^\circ F$

Confidence level $= 80\% = 0.8$

α level $= 1 - 0.8$

$= 0.2$

80% confidence level is given by :

$$\frac{s\sqrt{df}}{\sqrt{\chi^2_{\alpha/2}}} < \sigma < \frac{s\sqrt{df}}{\sqrt{\chi^2_{1-\frac{\alpha}{2}}}}$$

$\frac{\alpha}{2} = 0.1$

$1 - \frac{\alpha}{2} = 0.9$

$\chi^2_{0.1\times(108)} = 127.211$

$\chi^2_{0.9\times(108)} = 89.645$

Date: / /

$0.63\sqrt{108} < \sigma < 0.63\sqrt{168}$

$\sqrt{127.21}$ $\sqrt{84.645}$

$0.98 < \sigma < 0.69$