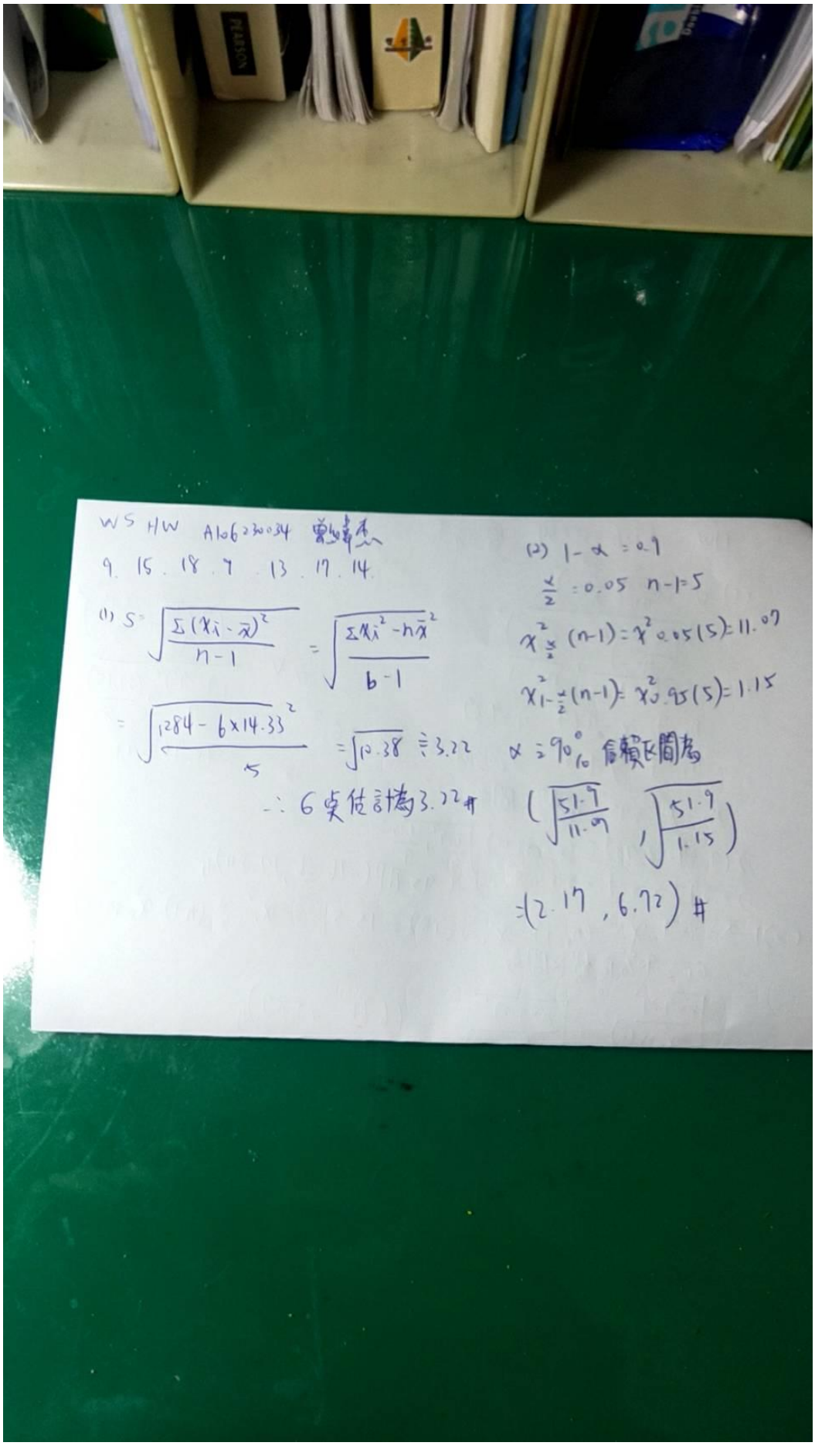

WS HW A106230034 數專乙

9. 15. 18. 7. 13. 17. 14.

(1) $S=\sqrt{\frac{\Sigma(x_i-\bar{x})^2}{n-1}}=\sqrt{\frac{\Sigma x_i^2-n\bar{x}^2}{n-1}}$

$=\sqrt{\frac{1284-6\times14.33^2}{5}}=\sqrt{10.38}\fallingdotseq3.22$

∴ 6 支估計為 3.22 #

(2) $1-\alpha=0.9$

$\frac{\alpha}{2}=0.05$ $n-1=5$

$\chi^2_{\frac{\alpha}{2}}(n-1)=\chi^2_{0.05}(5)=11.07$

$\chi^2_{1-\frac{\alpha}{2}}(n-1)=\chi^2_{0.95}(5)=1.15$

$\alpha=90\%$ 信賴區間為

$\left(\sqrt{\frac{51.9}{11.07}},\sqrt{\frac{51.9}{1.15}}\right)$

$=(2.17, 6.72)$ #

20. HW A106230054 曾靖泰

(1) $V=\dfrac{\left(\frac{s_1^2}{n_1}+\frac{s_2^2}{n_2}\right)^2}{\frac{\left(\frac{s_1^2}{n_1}\right)^2}{n_1-1}+\frac{\left(\frac{s_2^2}{n_2}\right)^2}{n_2-1}}$ $\Rightarrow V=\dfrac{\left(\frac{9.27^2}{9}+\frac{21.15^2}{9}\right)^2}{\frac{(9.27^2)^2}{9}+\frac{(21.15)^2}{8}}$

$n_1=9\ \bar{x}=7.67\ s_1=9.27$

$n_2=9\ \bar{y}=6.78\ s_2=21.15\ \because \sigma_1^2 \neq \sigma_2^2$ $=10.96 \doteq 11$

$\mu_1-\mu_2$ 之95%信賴區間為

$\Rightarrow (7.67-6.78)\pm t_{0.025}(11)\sqrt{\frac{9.27^2}{9}+\frac{21.15^2}{9}}$

$\Rightarrow 0.89\pm 2.201\times 7.7 = 0.89\pm 16.95$ 即 $(-16.06, 17.84)$ #

(2) $1-\alpha=0.9\ \chi^2_{\frac{\alpha}{2}}(n_1-1)=\chi^2_{0.05}(8)=15.5$ $\chi^2_{1-\frac{\alpha}{2}}(n-1)=\chi^2_{0.95}(8)=2.73$

σ_1 之90%信賴區間為

$\left(\sqrt{\frac{8\times 9.27^2}{\chi^2_{0.05}(8)}}, \sqrt{\frac{8\times 9.27^2}{\chi^2_{0.95}(8)}}\right)=(6.66, 25.87)$ #

(3) $F_{\frac{\alpha}{2}}(n_1-1, n_2-1)=F_{0.05}(8,8)=3.44$

$F_{1-\frac{\alpha}{2}}(n_1-1, n_2-1)=F_{0.95}(8,8)=\dfrac{1}{F_{0.05}(8,8)}=0.29$

$\therefore \dfrac{\sigma_1^2}{\sigma_2^2}$ 之90%信賴區間為

$\Rightarrow \left(\dfrac{9.27^2}{21.15^2}\times\dfrac{1}{3.44}, \dfrac{9.27^2}{21.15^2}\times\dfrac{1}{0.29}\right)$

$=(0.06, 0.66)$ #