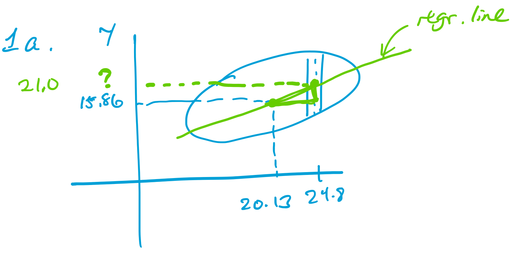
Regression Sample Solutions

Sunday, February 26, 2023 7:43 PM

1a.



run = $24.8 - 20.13 = 4.67$

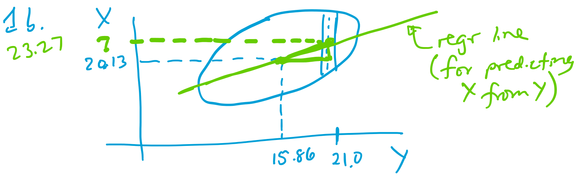
rise = slope · run

$= r \cdot \frac{SD(Y)}{SD(X)} \cdot run$

$= .82 \cdot \frac{4.90}{3.65} \cdot 4.67 \approx 5.14$

$Y_{est} = 15.86 + 5.14 = \boxed{21.0}$

1b.

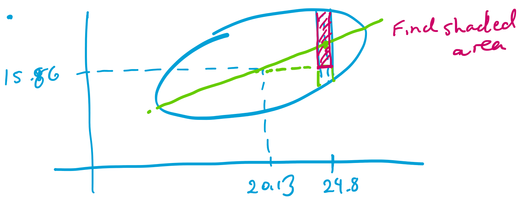


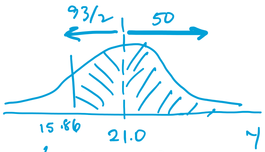
rise = slope · run $= .82\left(\frac{3.65}{4.90}\right) \cdot 5.14 \simeq 3.14$

run = $21.0 - 15.86 = 5.14$

$Y_{est} = 20.13 + 3.14 \simeq \boxed{23.27}$

3.

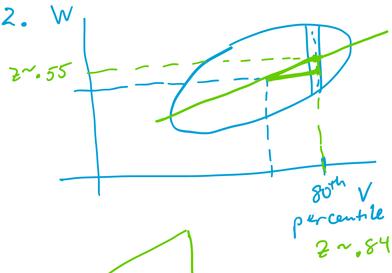




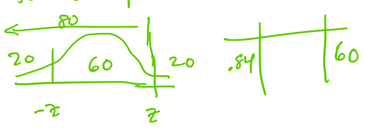
$z = \frac{15.86 - 21.0}{\sqrt{1 - .82^2} \cdot 4.90} \simeq -1.83$

Area $\simeq 50 + 93/2 \simeq \boxed{97\%}$

2. W



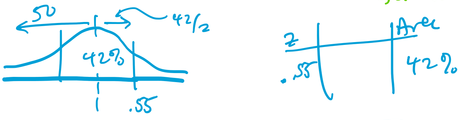
z for 80th percentile ~ .84



run = .84 (standard units for V)

rise = r · run

$= (.65)(.84) \simeq .55$ (standard units for W)



percentile $\simeq 50 + 42/2 = \boxed{71\%}$