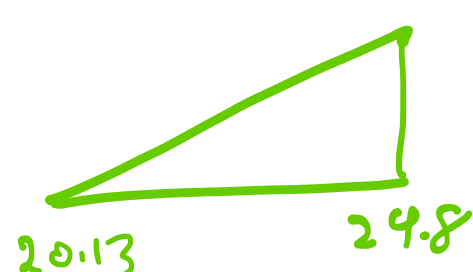
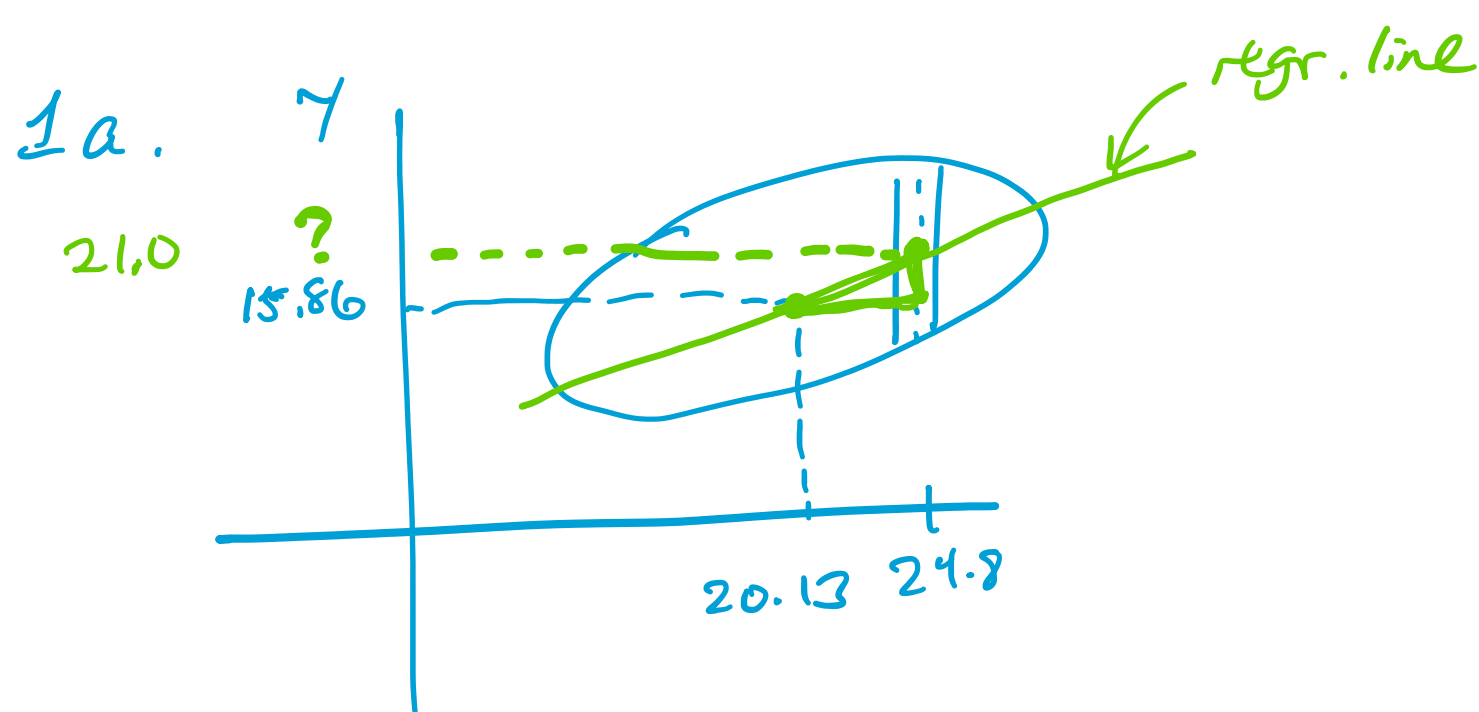


# Regression Sample Solutions

Sunday, February 26, 2023

7:43 PM



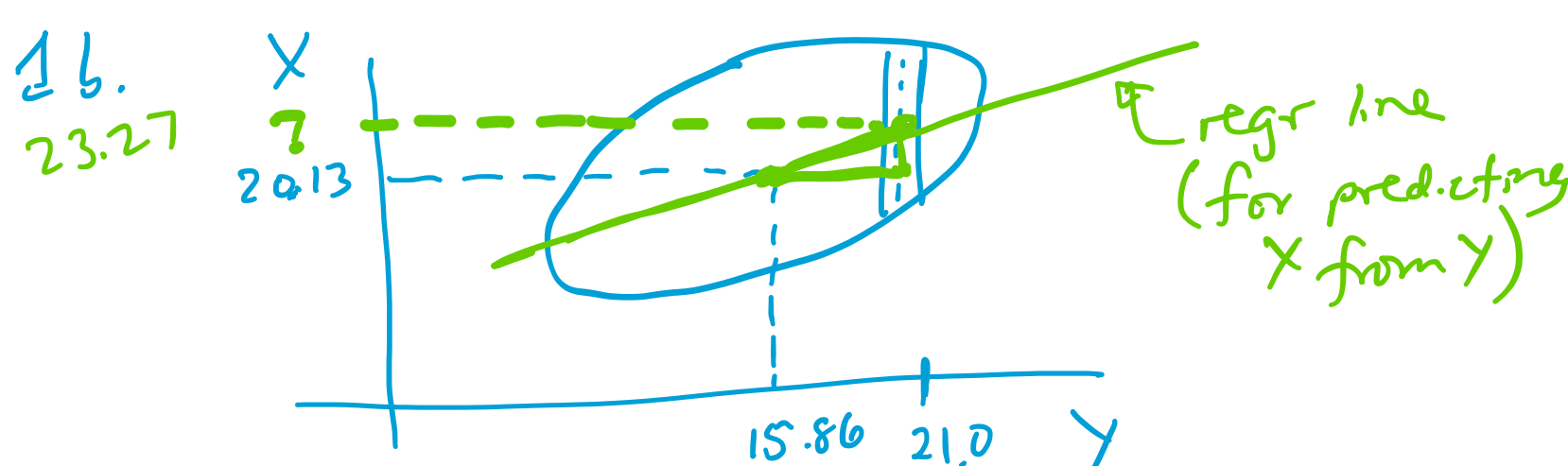
$$\text{run} = 24.8 - 20.13 = 4.67$$

$$\text{rise} = \text{slope} \cdot \text{run}$$

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

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

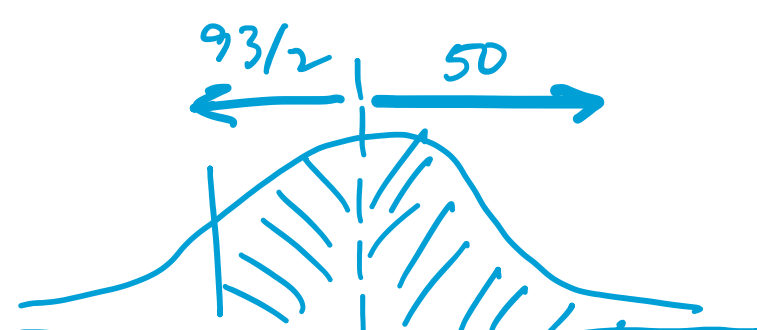
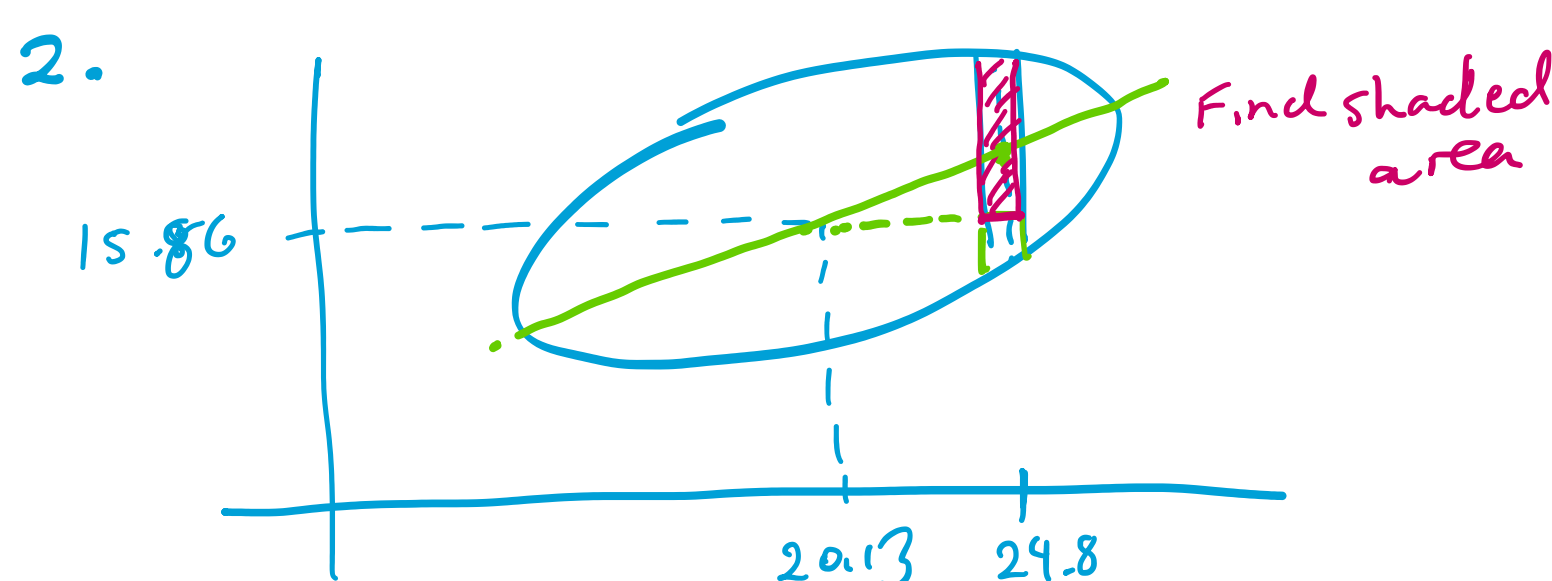
$$Y_{\text{est}} = 15.86 + 5.14 = \boxed{21.0}$$



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

$$\text{run} = 21.0 - 15.86 = 5.14$$

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

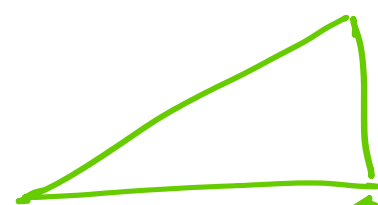
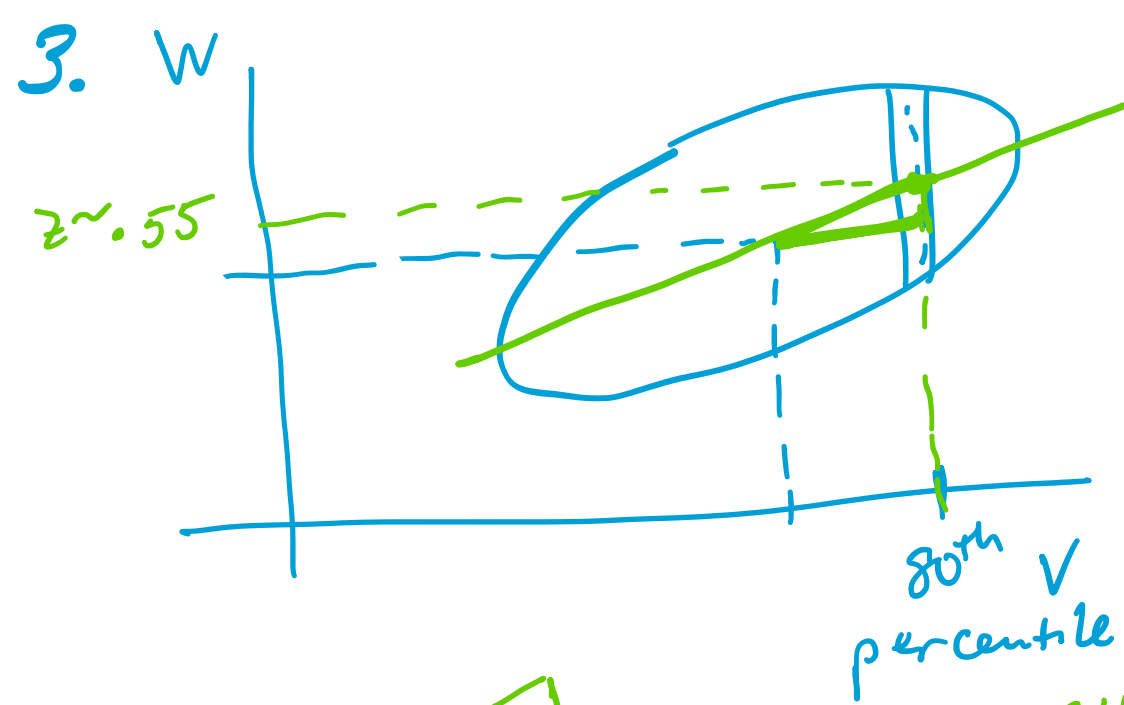


Y data in thin vert. strip

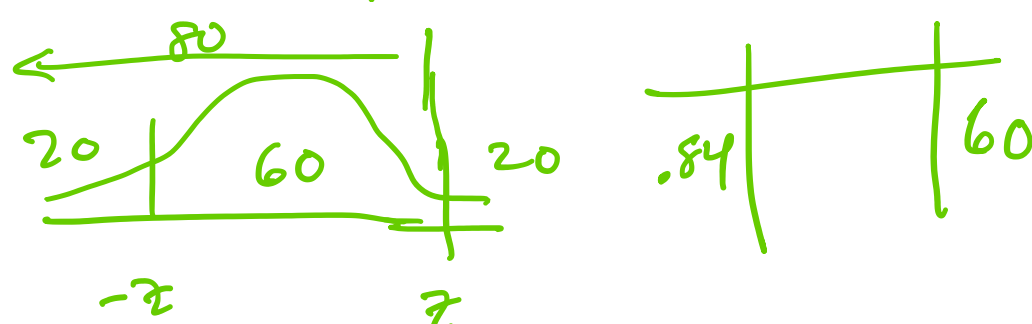
$$z = \frac{15.86 - 21.0}{\sqrt{1 - .82^2} \cdot 4.90} \approx -1.83$$

z	Area
1.83	93%

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



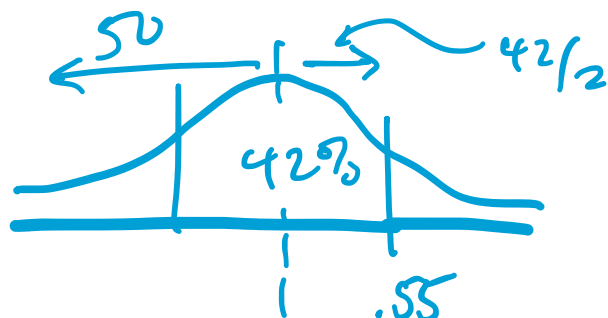
$$z \text{ for } 80^{\text{th}} \text{ percentile} \sim .84$$



$$\text{run} = .84 \text{ (standard units for V)}$$

$$\text{rise} = r \cdot \text{run}$$

$$= (.65)(.84) \approx .55 \text{ (standard units for W)}$$



z	Area
.55	42%

$$\text{Percentile} \approx 50 + 42/2 = \boxed{71\%}$$