## Current Classes

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12) a) Response Variable: debt per capita
   b) Correlation coefficient \( r = \sqrt{0.988} \)
       \( r = 0.994 \)
       Meaning of \( r \): There is a strong, positive linear association between debt per capita and debt year.
   c) Slope = \( \frac{1128}{1 \text{ year}} \)
       Meaning: For every year, the debt per capita is predicted to increase by $1128 on average.
   d) \( R^2 = 98.8\% \), of the variability in debt per capita is explained by the variability in debt year.
   e) No, the residual plot shows a pattern.
13\(a\) \[ \hat{\text{Score}} = 56 + 2.4 (\text{Hours}) \]
\[ b_1 = (1.8) \left( \frac{7.5}{2.5} \right) = 2.4 \]
\[ b_0 = 80 - 2.4 (10) = 56 \]

\(b\) \[ X = 15 \text{ hrs}, \]
\[ \hat{\text{Score}} = 56 + 2.4 (15) = 92 \text{ pts} \]

\[ r = 0.8 \]
\[ \bar{\text{hrs}} = 10 \text{ hrs} \]
\[ S_{\text{hrs}} = 2.5 \text{ hrs} \]
\[ \hat{y} \]
\[ \bar{\text{Score}} = 80 \text{ pts} \]
\[ S_{\text{Score}} = 7.5 \text{ pts} \]
**14) Answer:** 56th percentile

**Males:**

\[ Z_{60^{th}} = \text{invNorm}(0.6, 0, 1) \]

\[ Z_{60^{th}} = 0.25 \]

\[ (Z_y = r \cdot Z_x) \]

\[ r = 0.65 \]

\[ Z_{w+} = 0.16 \]

\[ P(Z < 0.16) = \text{normalcdf}(0.0, 1.16, 0, 1) \]

\[ = 0.56 \]

\[ \therefore 56^{th} \text{ percentile} \]
15) (a) \[ \hat{\log(Mass)} = 2.00143 - .000055(T) \]

(b) \[ \hat{\log(Mass)} = 2.00143 - .000055(7500) \]
\[ \log_{10}(Mass) = 1.58893 \]
\[ \text{Mass} = 10^{1.58893} \]
\[ \text{Mass} = 38.8 \text{ g. remaining} \]

(c) No, you need another model to predict time.
FR Ch 3 x 4 Test:

1. Model \rightarrow given
   (eq)
   resid. plot \rightarrow given
   
   appropriateness
   accuracy
   slope int.
   \( R^2 \) interp.
   graph reading

2. Like #14 on review

3. Like #15 \rightarrow linearly data