STAT 217: Quiz 19
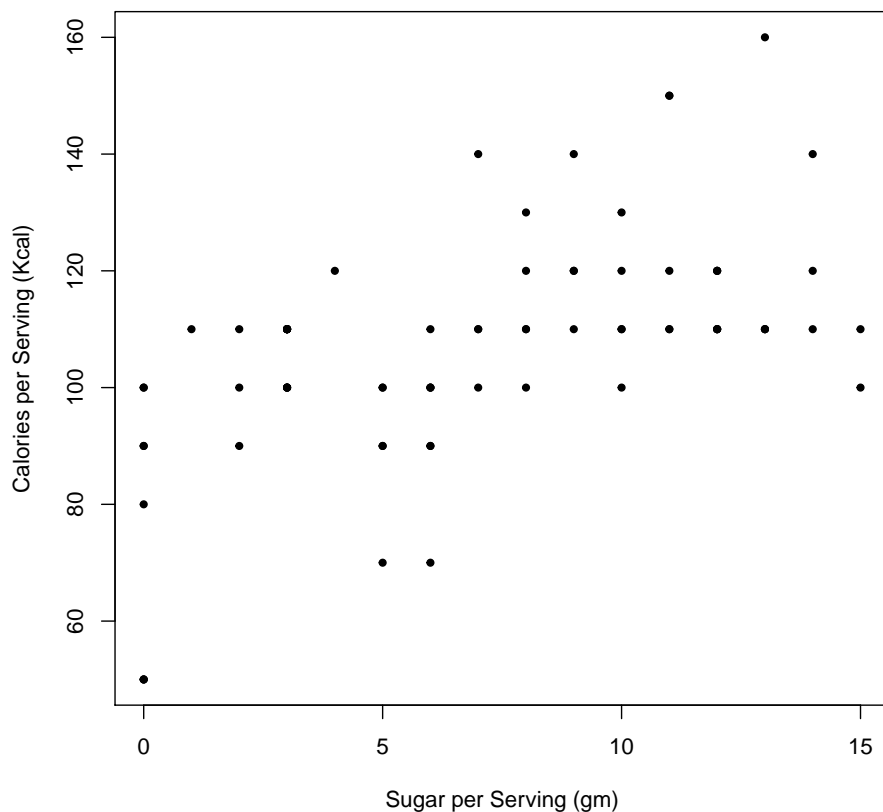

Calories per Serving (Kcal) vs Sugar per Serving (gm)

1. Draw in a best fit line on the scatterplot above.

2. Label the residual for the point $(5, 70)$ and the point $(13, 160)$. Estimate the value of each.

3. Draw a triangle at the estimated mean number of calories per serving when there are 10 grams of sugar per serving in the cereal.

4. Draw a rectangle at the fitted value for calories when sugar=7.

5. Draw a star at $\mu(\widehat{cal|sugar} = 3)$.

6. Write out your estimated regression equation. Replace x and y with cal and $sugar$.

Now let's have R estimate the regression line for us.

```
cereal.fit <- lm(calories~sugar, data = cereal)
summary(cereal.fit)
```

```
##
## Call:
## lm(formula = calories ~ sugar, data = cereal)
##
## Residuals:
##     Min     1Q Median     3Q    Max
## -39.65  -9.47   0.47  10.47  38.05
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)    89.65       3.45   26.00  < 2e-16 ***
## sugar           2.48       0.42    5.92  9.2e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 16.2 on 75 degrees of freedom
## Multiple R-squared:  0.318,Adjusted R-squared:  0.309
## F-statistic:   35 on 1 and 75 DF,  p-value: 9.17e-08
```

7. Write out R's estimated regression equation.

8. Interpret the slope estimate.

9. Interpret the y-intercept estimate.

10. What is the estimated mean number of calories per serving when there are 10 grams of sugar per serving in the cereal, according to R's model?

11. What is $\widehat{\mu(y|x=3)}$ according to R's model?