

Tuesday, September 25, 2018

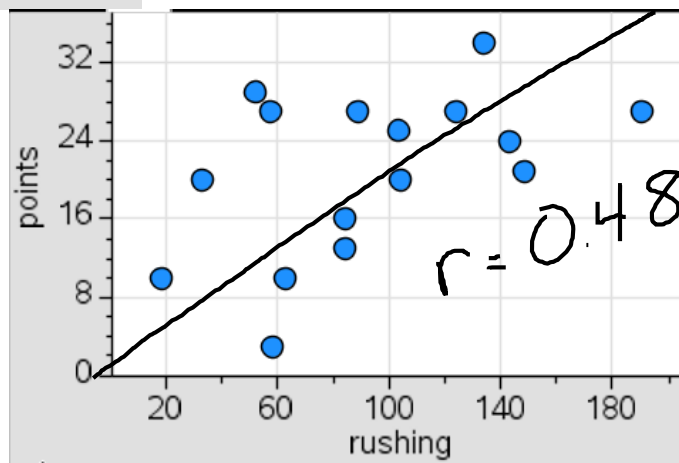
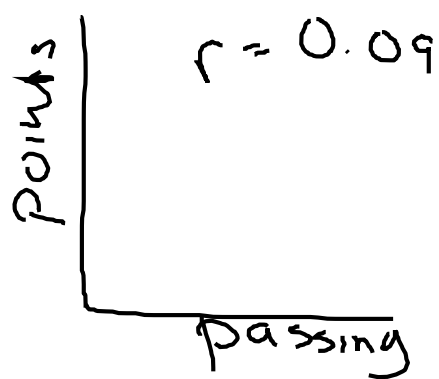
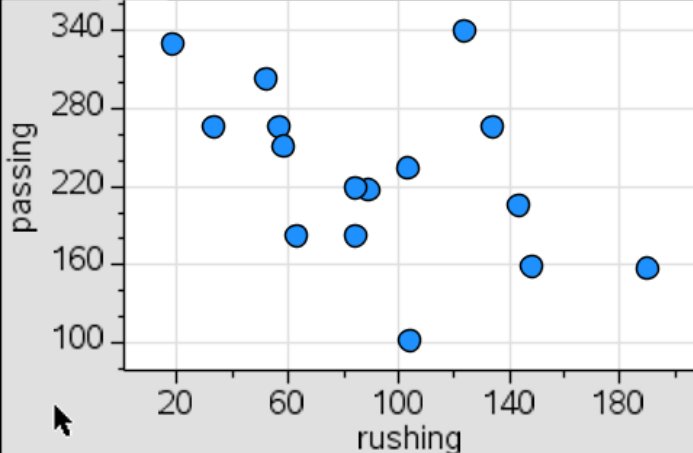
- Warm-up
 - Which set of statistics from the Bronco's 2016 Season are more closely correlated? Give statistical evidence for your reasoning.
- More with Linear Regression



Total Points	Passing Yards	Rushing Yards
21	159	148
34	266	134
29	303	52
27	218	89
16	183	84
13	220	84
27	157	190
27	267	57
20	266	33
25	234	103
27	340	124
20	102	104
10	330	18
3	251	58
10	183	63
24	206	143

Objectives

- **Content:** I will use linear regression to analyze the relationship between various statistics.
- **Language:** I will be clear in my written explanations of slope and y-intercept.
- **Social:** I will participate with the class in analyzing data.



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More about

^ slope

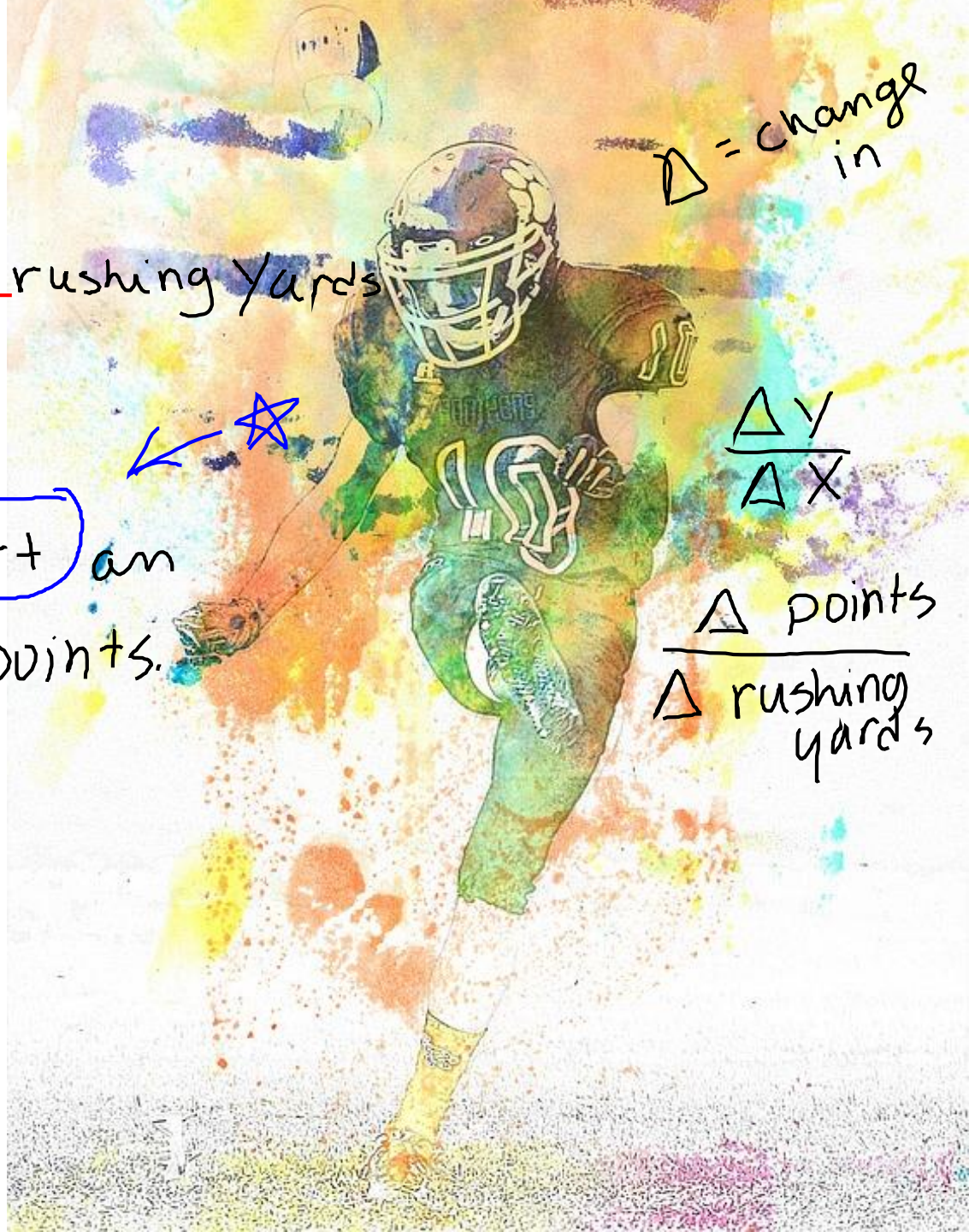
$$\text{points} = 3 + 2.71 \text{ rushing yards}$$

For every 1 yard rushing, we predict an increase of 2.71 points.

Δ = change in

$$\frac{\Delta Y}{\Delta X}$$

$$\frac{\Delta \text{ points}}{\Delta \text{ rushing yards}}$$

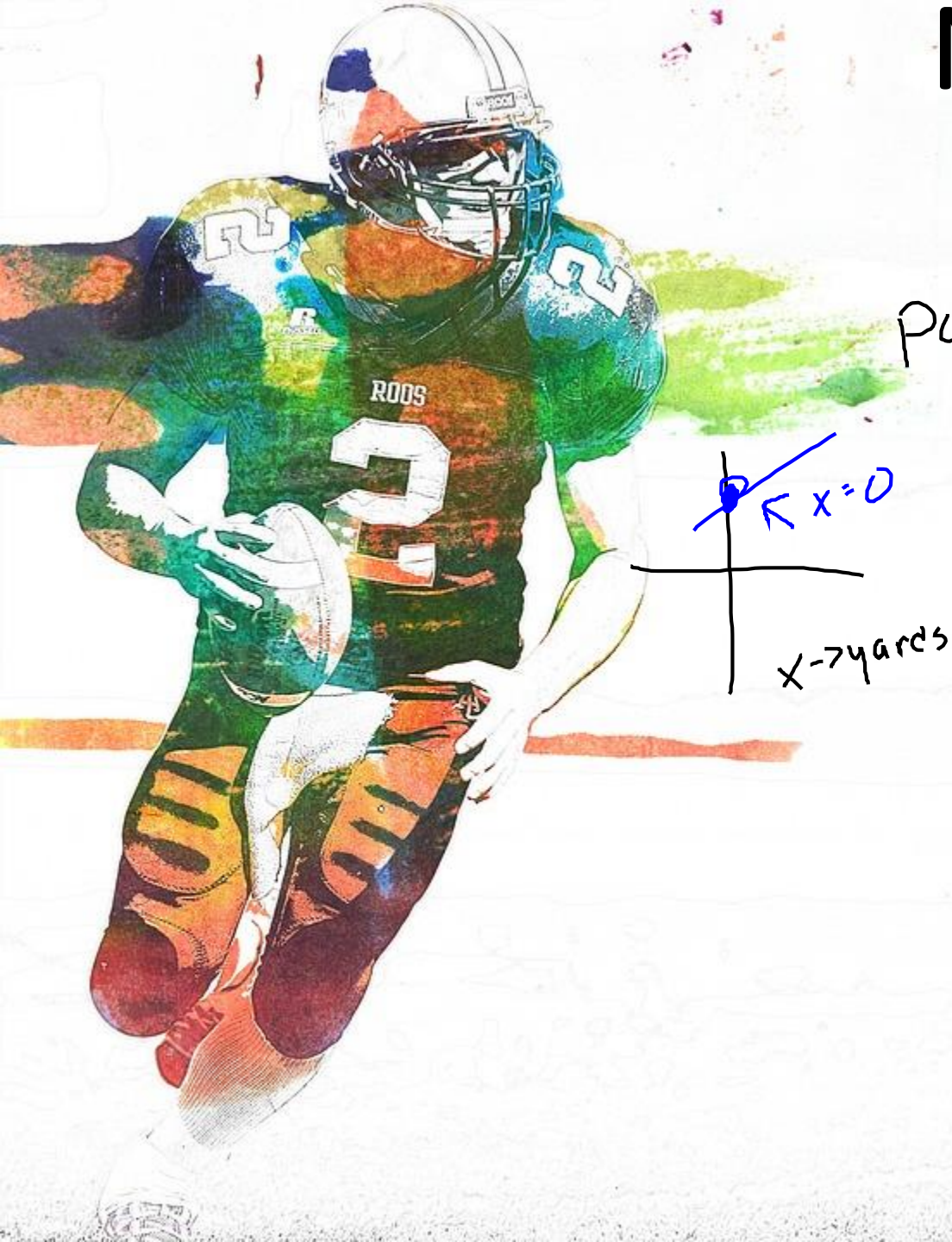


More about intercepts

$$\hat{\text{points}} = 3 + 2.71 \text{ rushing yards}$$

when we have
0 rushing yards,
we predict 3 points.

★
importance

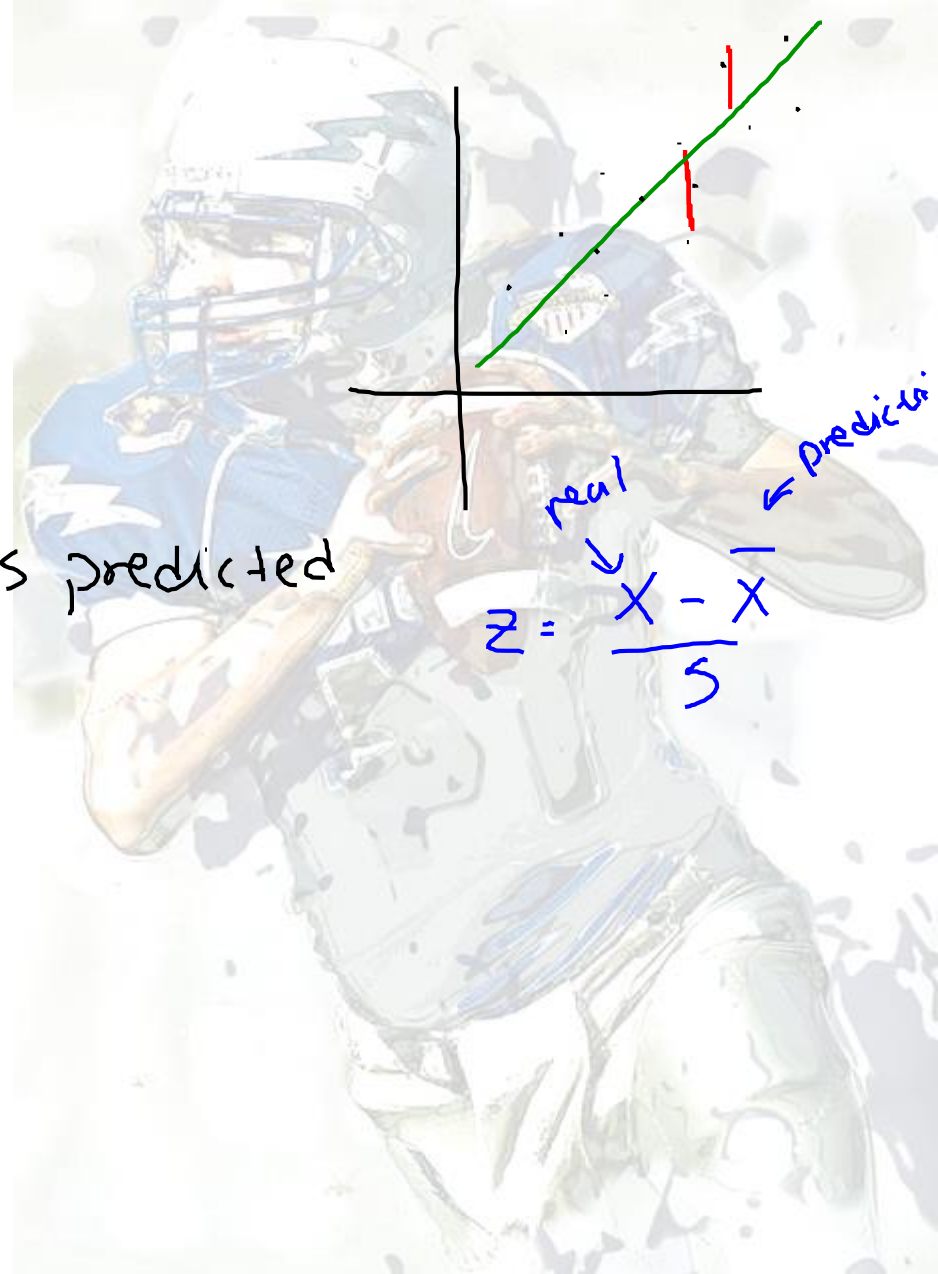


Residuals...

toutsie pop file

difference between the
actual value and its predicted

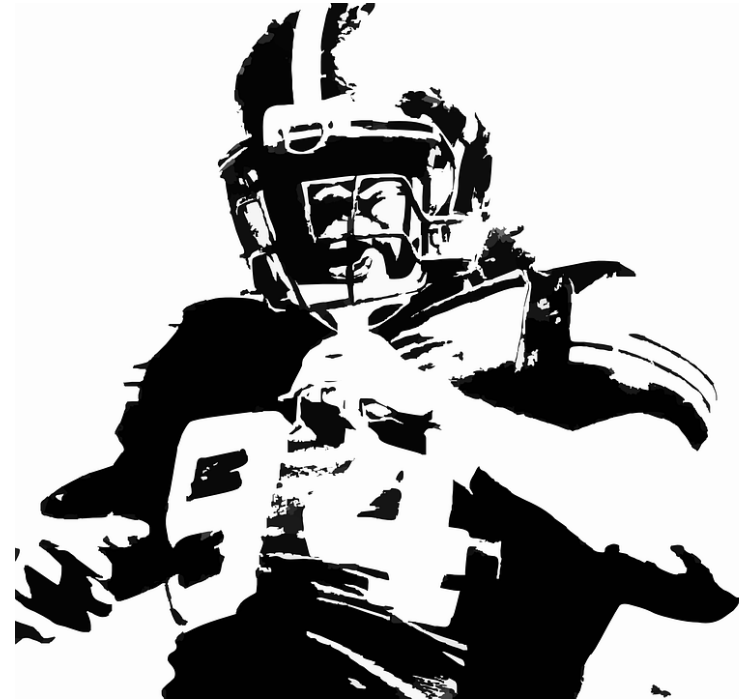
real - predicted



Using linear regression to make predictions

20 cm

$$\begin{aligned}\hat{\text{tootsie}} &= -4.757 + 1.179 \text{ handspan} \\ \hat{\text{tootsie}} &= -4.757 + 1.179(20) \\ &= 18.82\end{aligned}$$



Caution about predictions

Extrapolation

Predict well beyond
the scope of data



Look at your football data from this week

- Compare projected points to actual points for this week
 - What is the line of regression?
 - Interpret Slope
 - Interpret y-intercept?
 - Who has the biggest residual?

Homework

