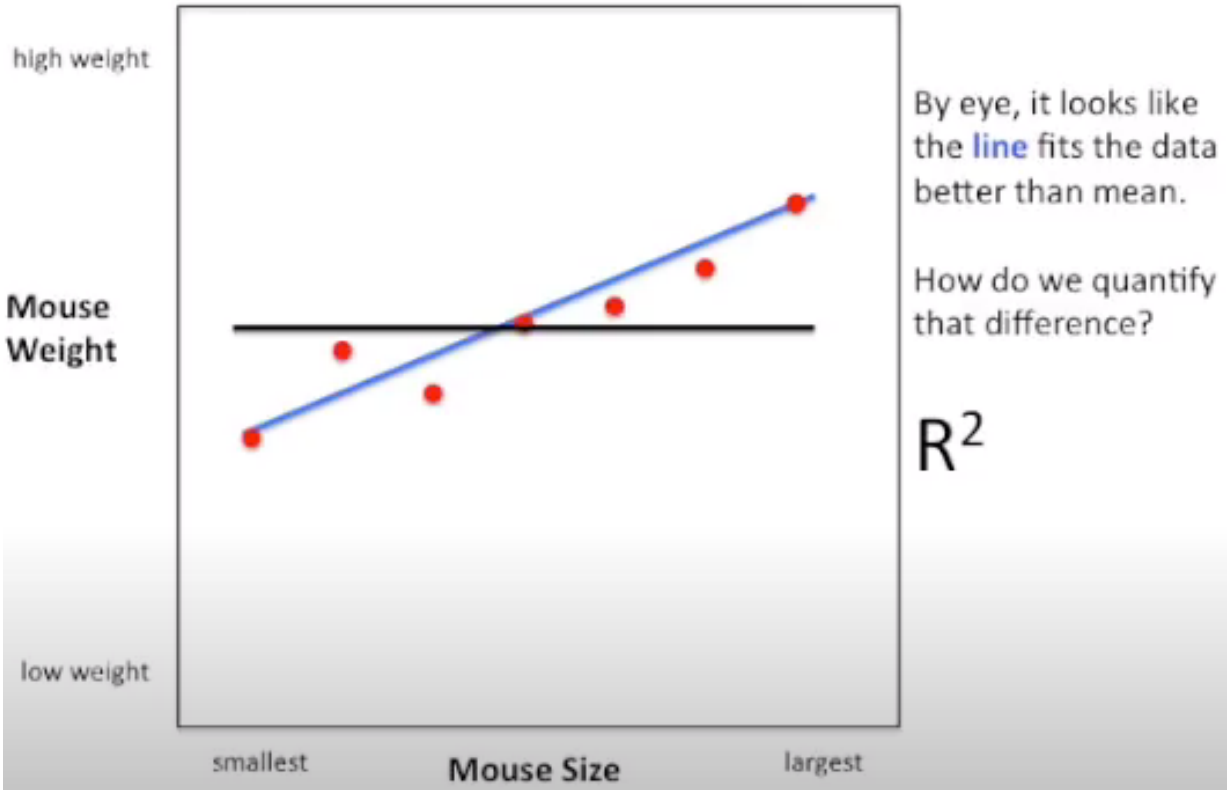
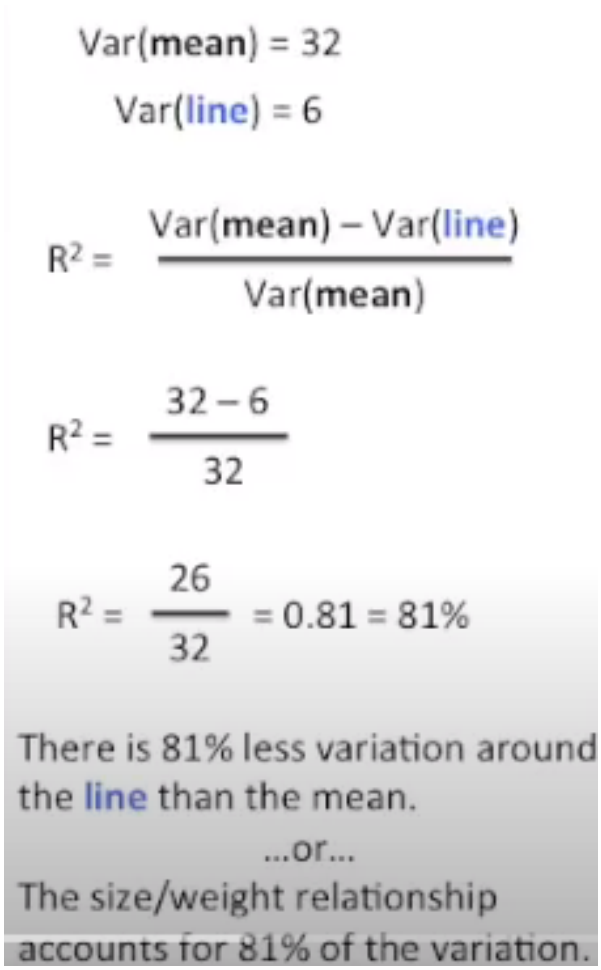
Rsquared
by Statquest

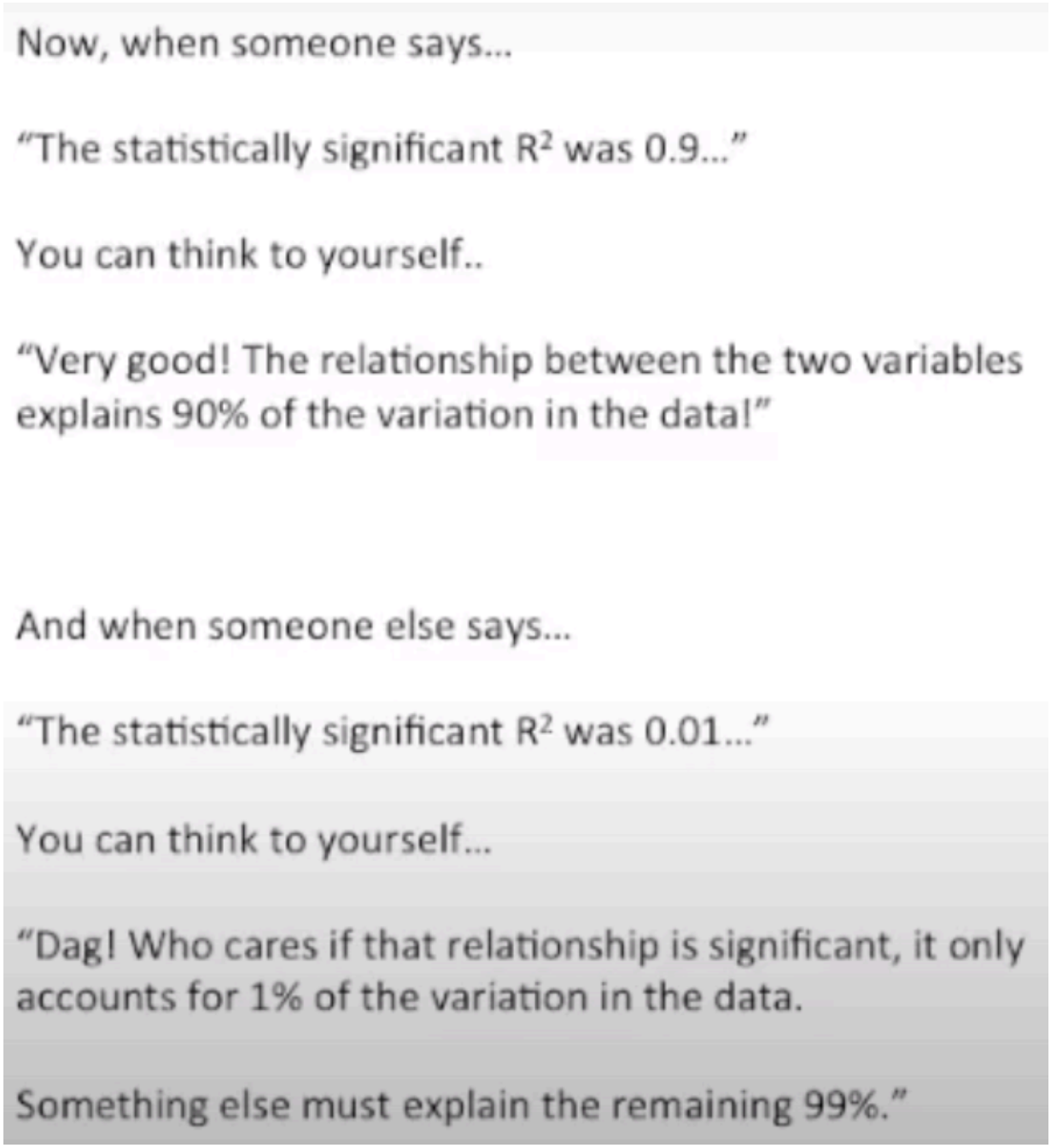
why?
R = 0.7 is twice as good as R = 0.5
Rsquared = 0.7 is what it looks like 1.4 times as good as Rsquared = 0.5
variation of the data = Sum(weight for mouse i - mean)^2
points are squared so that points below the mean don't cancel points above the mean



**key thing here is reorganizing the data
instead of using Mouse ID we switched x axis to Mouse Size
this doesn't change any of the data so the mean stays the same
but now we are better able to fit the line of best fit
R^2 = (Var(mean) - Var(line)) / Var(mean)
Var(mean) = sum of differences between the points and the mean
Var(line) = sum of differences between the points and the line
R^2 range is from 0 to 1 because the variation around the line will never be greater than the variation around the mean
and it will never be less than 0
division within the equation makes R^2 a percentage
example



Means that 81% of the variation in the data is explained by the size/weight relationship



Conceptualizing
Statistically significant R is 0.9
that means R^2 is 0.9x0.9 which is .81 or 81%
that means the relationship between those two variables accounts for 81% of the variation in the data
or
R is 0.5 > R^2 is only 25% accountability of the variation

*remember R^2 does not indicate direction