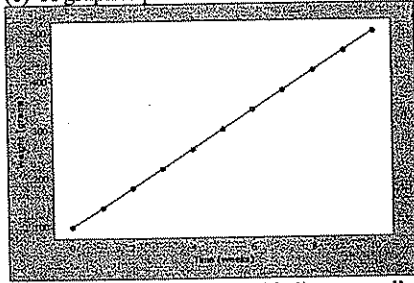


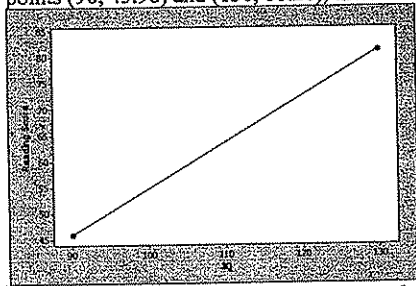
HW p. 204-205 #29-32

- 3.29 (a) For every one week increase in age, the rat will increase its weight by an average of 40 grams. (b) The y intercept provides an estimate for the birth weight (100 grams) of this male rat. (c) A graph is provided below.



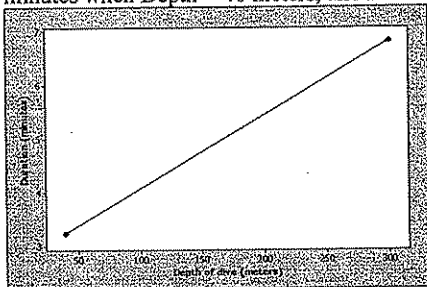
- (d) No, we should not use this line to predict the rat's weight at 104 weeks. This would be extrapolation. This regression line would predict a weight of 4260 grams (about 9.4 lbs) for a 2 year old rat! The regression equation is only reliable for times where data were collected.

- 3.30 (a) The slope is 0.882; this means that on the average, reading score increases by 0.882 for each one-point increase in IQ. (b) The predicted scores for $x = 90$ and $x = 130$ are $-33.4 + 0.882 \times 90 = 45.98$ and $-33.4 + 0.882 \times 130 = 81.26$. (c) This is most easily done by plotting the points (90, 45.98) and (130, 81.26), then drawing the line connecting them.



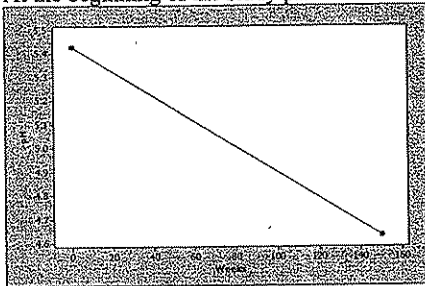
- (d) The intercept (-33.4) would correspond to the expected reading score for a child with an IQ of 0; neither that reading score nor that IQ has any meaningful interpretation.

- 3.31 (a) The slope is 0.0138 minutes per meter. On average, if the depth of the dive is increased by one meter, it adds 0.0138 minutes (about 0.83 seconds) to the time spent underwater. (b) When Depth = 200, the regression line estimates DiveDuration to be 5.45 minutes (5 minutes and 27 seconds). (c) To plot the line, compute DiveDuration = 3.242 minutes when Depth = 40 meters, and DiveDuration = 6.83 minutes when Depth = 300 meters.



- (d) The intercept suggests that a dive of no depth would last an average of 2.69 minutes; this obviously does not make any sense.

- 3.32 (a) The slope is -0.0053 ; this means that on the average for each additional week of study the pH decreased by 0.0053 units. Thus, the acidity of the precipitation increased over time. (b) To plot the line, compute pH at the beginning (weeks = 0) and end (weeks = 150) of the study. At the beginning of the study pH is 5.43 and at the end of the study pH is 4.635.



- (c) Yes, the y intercept provides an estimate for the pH level at the beginning of the study. (d) The regression line predicts the pH to be 4.635 at the end of this study.