Problem 1

Part A

$$\widehat{\text{Weight}} = 13.7244 \cdot \widehat{\text{Snout}} - 8.4761.$$

Part B

$$13.7244 \cdot (36) - 8.4761 = 485.6 \text{ lbs.}$$

Part C

The intercept doesn't have a meaningful interpretation since an alligator can not have a snout with no length.

Part D

A unit increase in snout length will cause the response of the Weight to increase by 13.7244 pounds.

Part E

A 3 unit increase in snout length will cause the response of the Weight to increase by 41.1732 pounds.

Part F

Since p is small, there is sufficient evidence to reject the null hypothesis. That is, there is sufficient evidence that the length of an alligators snout has an explanatory effect on its weight.

Part G

The R^2 is 0.9808. Since it is close to 1, it means that there is a strong linear corellation between the length of an alligators snout and its weight.

Part H

The estimated variance σ^2 is 0.532.

Problem 2

Part A

There is a positive association between height of athlete and length of jump.

Part B

A linear regression seems appropriate based on the scatterplot as there appears to be roughly a constant rate of change between height and distance, implying a linear relationship.

Part C

0.7 could be a possible value since the linear relationship is fairly evident but not perfect, and there is a positive relationship between the height and distance implying a positive corellation coefficient.

Part D

The predicted length of the jump for an athlete who is 72 inches tall is 82.27 inches.

Part E

The 1.0534 represents the increase in inches of an athletes jump for every inch increase of their height.

Part F

The intercept has no useful interpretation as there can not exist and athlete with a height of 0 inches.

Part G

The intercept will not change as no matter what units are used for the explanatory variable, the intercept is when the explanatory variable is 0, which does not change under unit conversions.