

$$a = \frac{(\sum y_i)(\sum x_i^2) - (\sum x_i)(\sum x_i y_i)}{n \sum x_i^2 - (\sum x_i)^2}$$

6) $y_i = \beta_0 + \beta_1 x_i$
 $\beta_0 + \beta_1 \bar{x} = \bar{y} - \beta_1 \bar{x} + \beta_1 \bar{x} = \bar{y}$
 $\therefore (x_i, y_i) = (\bar{x}, \bar{y})$

7) a) Let $x = \text{players}$ $y = \text{game time}$
 $\bar{x} = 7.7778$ $\bar{y} = 407.5556$ $r = .9012$
 $S_{xx} = (1.3017)^2$ $S_{yy} = (68.4235)^2$
 $\hat{y} = mx + b$
 $m = r \frac{S_{yy}}{S_{xx}} = .9012 \frac{(68.4235)^2}{(1.3017)^2} = 47.3713$
 $b = \bar{y} - m\bar{x} = 407.5556 - 47.3713 \times 7.7778 = 39.1109$
 $\hat{y} = 47.3713x + 39.1109$

b) $x = 9$
 $\hat{y} = 39.1109 + 47.3713 \cdot 9 = 465.4528 \text{ seconds}$

8) $\bar{x} = 2002$ $\bar{y} = 356.1429$ $r = -.2352$
 $S_x = 6.4662$ $S_y = 271.2320$
 $\hat{y} = mx + b$
 $m = r \frac{S_y}{S_x} = -.2352 \times \frac{271.2320}{6.4662} = -9.8437$
 $b = 356.1429 + (9.8437 \times 2002) = 20063.14$
 $\hat{y} = 20063.14 - (9.8437 \times 2002) = 178.9563$
 thousand dollars