For each statement, circle True or False. If False, explain why or make a small change to correct it.

1. **True or False:**
   
   If the correlation coefficient $r$ is equal to 0.99, it follows that a linear fit will be much better than a nonlinear fit.

2. **True or False:**
   
   The least squares regression line minimizes the sum of the residuals.

3. **True or False:**
   
   If the points in a scatter-plot of two quantitative variables lie exactly on the line $y = 3 - 2x$, then the correlation coefficient $r$ must be exactly 1.

4. **True or False:**
   
   If a plot of residuals versus fitted values shows a wedge pattern of small residuals for small fitted values and large residuals for large fitted values, this indicates a good fit that meets the model assumptions.

5. **True or False:**
   
   If the regression line for $y$ on $x$ is $\hat{y} = b_0 + b_1 x$, we can find the regression line for $x$ on $y$ simply by solving the previous equation for $x$.

Statements 6–10 refer to the following situation. The correlation coefficient of the adult heights (measured in inches) of father’s heights and son’s heights is 0.5.

For each statement, circle True or False. If False, explain why or make a small change to correct it.

6. **True or False:**
   
   The correlation coefficient would be 2.54 times as large if the heights had been measured in centimeters. (There are 2.54 cm per inch.)

7. **True or False:**
   
   Heights of fathers and heights of sons are positively associated.

8. **True or False:**
   
   If a father’s height is one standard deviation of the mean, we predict his son’s height to also be one standard deviation above the mean.

9. **True or False:**
   
   A nonlinear relationship will be better than a linear relationship because the linear relationship is fairly weak.

10. **True or False:**
    
    If the standard deviations of heights of fathers and of sons are each four inches, the slope of a regression line for predicting a son’s height from a father’s height will be 0.5.