Olympic Long Jumps

The modern Olympic Games, a modified revival of the ancient Greek Olympian Games, were inaugurated in 1896. Since then, the Games have been held nearly every four years at various sites around the world, and have become a major international athletic competition.

Based on the gold medal distances shown, write a report about the men's long jump. In your report be sure to:

- ☐ include appropriate graphical and numerical analyses;
- ☐ discuss the trend in long jump performances, based on an appropriate linear model;
- ☐ explain the decisions you made in creating your model, with some historical analysis of gaps in the data and departures from the trend;
- ☐ predict the distance that will win the gold medal in the men's long jump in the 2008 Games in Beijing, with comments on your faith in that prediction.

YEAR	DISTANCE (inches)
1896	249.75
1900	282.875
1904	289
1908	294.5
1912	299.25
1920	281.5
1924	293.125
1928	304.75
1932	300.75
1936	317.3125
1948	308
1952	298
1956	308.25
1960	319.75
1964	317.75
1968	350.5
1972	324.5
1976	328.5
1980	336.25
1984	336.25
1988	343.25
1992	342.5
1996	334.65
2000	336.6
2004	338.2

	Components	Comments
Think	**Creates a good linear model:** o uses a subset of the data, perhaps avoiding years following wars, using only recent jumps, and/or eliminating outliers o justifies modeling decisions, (including historical observations)	
Show	**Visual: The scatterplot…** o has correct explanatory/response o is accurate and clearly labeled o shows the regression line **Numerical: The analysis…** o has correct *r*-squared o has correct slope and *y*-intercept o uses the proper notation	
Tell	**Interprets the Model:** o evaluates the model w/residuals o describes trend in distances o interprets the slope in context o distinguishes model from reality Makes a Prediction for 2008: o makes correct prediction from model o expresses caution based on *r*-sq o expresses caution about extrapolation	

Components are scored as **E**ssentially correct, **P**artially correct, or **I**ncorrect

1: **The Model**:

E – Creates a good model; makes sound and well-supported decisions
P – Model is somewhat flawed, or decisions are not supported
I – Uses the data for all the Olympics

2: **Graphs and Statistics:** correct scatterplot, numerical values, equation, and notation

E – Each category has all 3 requirements correct
P – Each category has at least 2 of the requirements correct
I – Too many errors in graph, statistics, or notation

3: **Interpretation of Model:** discusses residuals, trend, and slope (in context of model)

E – All 4 requirements P – 2 or 3 requirements I – None or 1

4: **Prediction:** makes correct prediction with proper caution

E – All 3 requirements P – 2 requirements I – None or 1

Scoring

- E's count 1 point, P's are 1/2
- AP score = sum of 4 components; rounding based on quality of partially correct work
- Grade: A = 4, B = 3, etc., +/- based on rounding. (3.5 rounded to 3 is a B+)

Name _____ ***AP Score*** ____ ***Grade*** ____