**World Agriculture Production**

Measuring and tracking world agriculture production is very sophisticated. Since researchers on food production need data to analyze, global agriculture production is measured using a global index\*. The index we explore in this activity uses world agriculture production in 1961 as its base. The data below are from the Food and Agricultural Organization Symposium on Agriculture, Trade and Food Security, Geneva, 1999 and can found at www.fao.org.

\*“An index relates the value of a variable to a base level so that it produces numbers that are easy to understand and compare. Indices are used to report on a wide variety of variables, including prices and wages, ultraviolet levels in sunlight, and even the readability of textbooks,” from *Mathematics of Data Management* published by McGraw-Hill Ryerson.

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| **Year** | **Years since 1961** | **Index (1961 = 100)** |
| 1961 | 0 | 100 |
| 1963 | 2 | 105 |
| 1965 | 4 | 111 |
| 1967 | 6 | 120 |
| 1969 | 8 | 125 |
| 1971 | 10 | 130 |
| 1973 | 12 | 138 |
| 1975 | 14 | 143 |
| 1977 | 16 | 150 |
| 1979 | 18 | 158 |
| 1981 | 20 | 163 |
| 1983 | 22 | 169 |
| 1985 | 24 | 180 |
| 1987 | 26 | 186 |
| 1989 | 28 | 195 |
| 1991 | 30 | 200 |
| 1993 | 32 | 205 |
| 1995 | 34 | 215 |
| 1997 | 36 | 227 |

1. Enter the data in your calculator and make a scatter plot. Explain why a linear model is a good choice for these data.
2. Use your calculator to find the linear regression equation and the correlation coefficient.

Regression Equation:

Correlation Coefficient: *r* =

1. Describe the strength and direction of the linear correlation.
2. Write the slope of the regression line. Explain what it means in this situation.
3. Write the *y*-intercept of the regression line. Explain what it means in this situation.
4. Use the equation of the regression line to predict the Agriculture Production Index for 2005.
5. Use the equation of the regression line to predict the Agriculture Production Index for 2055.
6. Is your prediction for 2055 an interpolation or an extrapolation?