GK-12 Lesson Plan

Teacher: Steven MacDonald
Period: Class: Lawrence High School Statistics Class
Date(s): 12/5/2013

SETTING THE STAGE	
Essential Question	How can data be re-expressed in order to make analysis more simple.
Content Objective(s) (Student-friendly)	Students investigate a dataset from the textbook and learn to perform a linear regression using R's tools.
Connection to previous or future lessons	Students use R, along with the statistical concepts introduced in previous classes.
Critical Thinking Questions	What are some of the reasons we may wish to re-express the data we are investigating.
Key Vocabulary	Linear Regression, .CSV file
Materials Needed/Safety	Computer, R Studio
ACTIVE INSTRUCTION	
Launch (Engage)	Students are introduced to different methods of viewing data (esp. log scale), and then asked to preform these transforms on provided datasets.
Investigation (Explore)	Students are asked to import a dataset from the textbook, and identify which of the transformations would best serve to linearize the data points.
TIME FOR REFLECTION	
Summarization (Explain & Extend)	Students use the solar system as a model to help them understand how to re-express the data in order to more easily perform statistical analysis.
Homework	None

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```
planets<-read.csv("planets.csv", header=TRUE)
planet <- planets$planet
position <-planets$position
distance <- planets$distance
yearlength <- planets$year

plot(yearlength,distance)

plot(log(distance),log(yearlength))
regression<-lm(log(yearlength)~log(distance))
abline(regression)
residual<-resid(regression)
R2<-cor(log(distance),log(yearlength))^2
#19
plot(position, distance)
plot((position),log(distance))
regression<-lm(log(distance)~position)
abline(regression)
cor(position, log(distance))^2
#20
position <- c(1,2,3,4,6,7,8,9,10)
plot(position,log(distance))
regression<-lm(log(distance)~position)
abline(regression)
cor(position, log(distance))^2
```