

GK-12 Lesson Plan

Teacher: Steven MacDonald

Period: **Class:** Lawrence High School Statistics Class

Date(s): 11/21/2013

SETTING THE STAGE	
<u>Essential Question</u>	Why should we assign parameter constants as variables?
<u>Content Objective(s)</u> (Student-friendly)	In an extension of the previous lesson, show how variables representing a single constant can be used throughout the code to easily modify simulation parameters.
<u>Connection to previous or future lessons</u>	This lesson uses the code from lesson 9, which will be modified by students to create a new simulation.
<u>Critical Thinking Questions</u>	
<u>Key Vocabulary</u>	Sample, loop, for, AND, OR, if, else if, else
<u>Materials Needed/Safety</u>	Computer, Rstudio
ACTIVE INSTRUCTION	
Launch (Engage)	Students are asked to open their previous lesson's code, and asked how to modify it to allow a user selected number of dice rolls per trial.
Investigation (Explore)	After a short discussion about the above question, students are asked to modify their code to allow a variable amount of dice rolls in their game. Any place where the number of dice rolls may be called must be called using the same variable.
TIME FOR REFLECTION	
Summarization (Explain & Extend)	Students learn to declare simulation parameters as variables, rather than simply using integer values. This allows their simulations much more flexibility than is normally afforded.
Homework	None

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```
n <- 10
m <- 4
score <- 0
rolls <- matrix(nrow=n, ncol=m)
for (i in 1:n){
  rolls[i,] <- sample(1:6, m, replace=T)
  if (sum(rolls[i,]) >= 3*m){
    score <- score + 1
  }
}
if (score == n){
  print("You got a perfect score!")
} else if (score >= n*.8){
  print("Good job!")
} else if (score >= n*.5) {
  print("At least you got half!")
} else if (score >= n*.1){
  print("Keep trying!")
} else {
  print("You didn't win once!")
}
cat("Your score was", score)
```