

## GK-12 Lesson Plan

**Teacher:** Steven MacDonald

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

**Date(s):** 12/11/2013

<b>SETTING THE STAGE</b>	
<u>Essential Question</u>	How can loops be used along with random number generation to create a simulation of real life events?
<u>Content Objective(s)</u> (Student-friendly)	Review of the concepts of random number generation, decision statements, and boolean operators.
<u>Connection to previous or future lessons</u>	The dice roll simulation from earlier in the year is reintroduced, this time in conjunction with earlier lessons in decision statements, boolean logic, and loops.
<u>Critical Thinking Questions</u>	
<u>Key Vocabulary</u>	Sample, loop, for, AND, OR, if, else if, else
<u>Materials Needed/Safety</u>	
<b>ACTIVE INSTRUCTION</b>	
Launch (Engage)	Students are asked how they would proceed to create a simulation of a game based off some arbitrary rules.
Investigation (Explore)	Students are given concrete rules for a simulation involving dice rolls and an arbitrary scoring system (Roll 2 dice n times, get a point each time the result $\geq 7$ ). Once the students complete the main loop of the program, they are asked to create a series of outputs based on the final score the player received.
<b>TIME FOR REFLECTION</b>	
Summarization (Explain & Extend)	This lesson ties together many of the earlier computing concepts that the students had used in isolation. This simple piece of code forms the basis for upcoming projects.
Homework	None

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```
n <- 10
```

```
score <- 0
```

```
for (i in 1:n){
```

```
  roll <- sample(1:6,1)+sample(1:6,1)
```

```
  if (roll >= 7){
```

```
    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)
```