Reading

- BPS Chapter 12, 13.1

Exercises

BPS - Check your skills Chapter 12 # 22-31. Chapter 13 # 17-19. You do not need to turn these in.

BPS Chapter 12 # 34, 37, 39, 45, 47, 48. Chapter 13 # 27, 28, 30.

1. (a) Use R to simulate rolling one six-sided die. Replicate this simulation 10,000 times.
   Make a probability histogram of the result.
   Compute $\bar{x}$ and s for the data.
   Draw a normal curve on your histogram with the command `curve(dnorm(x,`μ`,`σ`),add=TRUE)`, where you can use $\bar{x}$ and s as approximations for μ and σ.
   Report $\bar{x}$, s and print the plot. Does the normal curve approximate this data well?
   (b) Repeat part (a) except this time each simulation should compute the sum of two dice.
   (c) Repeat part (a) except this time each simulation should compute the sum of three dice.
   (d) Do you detect a pattern in the values for $\bar{x}$?
   (e) Do you detect a pattern in the values for s? (Hint: instead of standard deviation s, look at the variance s^2)
   (f) With more dice, the data become more normal. What theorem predicts this behavior?
2. (a) Steph Curry is a 91% free throw shooter. Suppose he takes 10 free throws in a game. Let X be the random variable which is the number of free throws he makes (out of 10). Use R to simulate Steph's game and compute X. Replicate this simulation 10,000 times.
   Make a probability histogram of the result.
   Compute $\bar{x}$ and s for the data.
   Draw a normal curve on your histogram with the command `curve(dnorm(x,`μ`,`σ`),add=TRUE)`, where you can use $\bar{x}$ and s as approximations for μ and σ.
   Report $\bar{x}$, s and print the plot. Does the normal curve approximate this data well?
   (b) Repeat part (a) except use Dwight Howard, who is a 48% free throw shooter.