Section 6.1 IRA Guide

Introduction

Screen 1: This problem is based on your knowledge of discrete variables and continuous variables. If you need a refresher, go back to Section 1.1.

Screen 2: This problem is based on frequency distributions (and relative frequency distributions) from Section 2.2.

Screen 3: This problem asks you to compute the mean, median, and mode. This was covered in Section 3.1.

Screen 4: This problem asks you to compute the mean, median, range, and standard deviation for two sets of data. This was covered in Sections 3.1 and 3.2.

Screen 5: I removed this problem, so the screen should be blank.

Screen 6: I removed this problem, so the screen should be blank.

Screen 7: List of objectives

Objective 1: Distinguish between Discrete and Continuous Random Variables

Screen 1: Definition of a random variable.

Screen 2: Difference between discrete (whole # only) and continuous variables. Watch the In Other Words video.

Screen 3: Example 1 goes over discrete vs. continuous, as well as how to determine possible values of X. Be sure to watch the video solution.

Screen 4: This problem is based on Example 1 on the previous screen.

Screen 5: Just a note that we focus on discrete variables in this chapter.

Objective 2: Identify Discrete Probability Distributions

Screen 1: Explanation of a probability distribution for a random variable.

Screen 2: Example 2 is a video example that goes over the notation we use when working with a probability distribution for a discrete variable.

Screen 3: Lists the rules for a discrete probability distribution, which is very similar to probability models from Chapter 5. Watch the In Other Words video.

Screen 4: Example 3 goes over how to determine whether a distribution is indeed a discrete probability distribution. Watch the by hand video.

Screen 5: This problem is based on Example 3 on the previous screen.

Objective 3: Graph Discrete Probability Distributions

Screen 1: Notes on the concept of using a graph for a discrete probability distribution. By the way, this can (& should) be done with StatCrunch.

Screen 2: Example 4 goes over how to graph a discrete probability distribution by hand. This can be done with StatCrunch.
Enter your values of x in the first column, and the values of P(x) in the next column.

- Stat > Calculators > Custom
- Values: Column containing x. Weights: Column containing P(x)
- Compute

Screen 3: This problem is based on Example 4 on the previous screen. Try doing it the StatCrunch way.

Screen 4: A quick reminder about the shape of a distribution.

Objective 4: Compute and Interpret the Mean of a Discrete Random Variable

Screen 1: Video that shows the development of the formula for the mean of a probability distribution. Since we will be using StatCrunch for this calculation, you can skip over this.

Screen 2: Formula for the mean – again, you can skip over this.

Screen 3: Example 5 shows how to find the mean of a probability distribution. **WATCH THE STATCRUNCH VIDEO FOR THIS – DO NOT DO THIS BY HAND.**

Screen 4: This video shows how to interpret the mean of a probability distribution. In general, the more often you repeat a probability experiment the closer the sample mean (x-bar) will approach the mean of the distribution (mu). This is the law of large numbers in action.

Screen 5: Example 6 covers the interpretation of the mean. Be sure to watch the video to help with the problem on the next screen.

Screen 6: This problem is based on Examples 5 & 6. You will have to compute the mean (use StatCrunch) and then interpret the mean.

Objective 5: Interpret the Mean of a Discrete Random Variable as an Expected Value

Screen 1: This explains the term “Expected Value” for a probability distribution, which is just another name for the mean. Watch the In Other Words video.

Screen 2: Example 7 goes over how to compute expected value. Watch the video solution. You can use the StatCrunch procedure for finding the mean of a probability distribution (see my notes for Objective 3, screen 2).

Screen 3: This problem is based on Example 7, as well as some old material on probability models. For parts a-c, just add the probabilities listed for the given number of live births (x). In part d, to find the expected value using StatCrunch type the values of x in one column and the values of P(x) in the next column. Create a Custom Calculator in StatCrunch to find the mean or expected value.

Objective 6: Compute the Standard Deviation of a Discrete Random Variable

Screen 1: Formula for standard deviation of a discrete random variable. We will use StatCrunch for this, so need to know or use the formula.

Screen 2: Example 8 goes over the calculation of the standard deviation of a random variable. **WATCH THE STATCRUNCH VIDEO SOLUTION FOR THIS. IF YOU DO THIS BY HAND (USING THE FORMULA) YOU ARE JUST MAKING YOUR LIFE HARDER!**

Screen 3: This problem asks you to compute standard deviation as in Example 8. **USE STATCRUNCH!!!**

Screen 4: A reminder that variance is simply equal to the standard deviation squared. If you are asked for variance, compute standard deviation first and then square the result.

Screen 5: End of Section