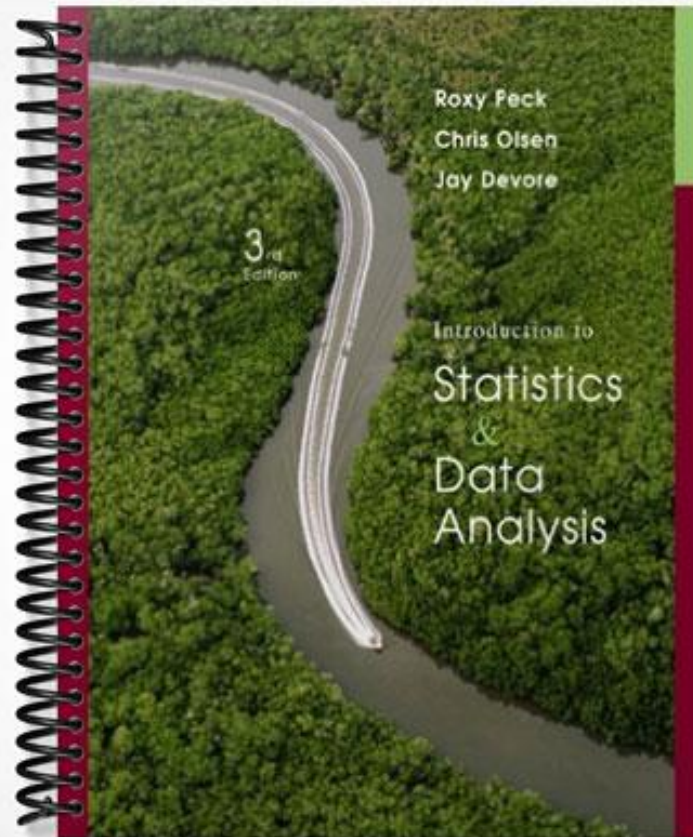


SOLUTIONS MANUAL



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3rd
Edition

Introduction to
Statistics
&
Data
Analysis

Activities—Notes for the Instructor

Activity 1.1 Head Sizes—Understanding Variability

In this activity, students should be able to see the difference between variability due to “measurement error” and person-to-person variability. In this activity, person-to-person variability will likely be larger than variability introduced by having different people taking measurements.

In Step 9, students should speculate that the scheme proposed would result in more variability since the measurements will reflect both person-to-person variability and variability introduced by having different people doing the measuring.

Activity 1.2 Estimating Sizes

Actual sizes for the ten shapes are

1	2	3	4	5	6	7	8	9	10
44	20	16	40	41	47	66	14	48	33

Don’t give the students very much time to estimate the sizes, and be sure to remind them not to draw on the figure. This activity introduces the idea of deviations (here estimated – actual) and leads students to consider the sum of squared deviations as a measure of overall error.

Activity 1.4 Egg Variability

This activity asks students to consider the issue of measurement error and to think about variability.

Activity 1.5 Big Feet, Little Feet

This activity examines variability and asks students to informally compare two groups on the basis of variability and center.

Activity 2.1 Designing a Sampling Plan

It is often very difficult or impractical to select a simple random sample from a population. In particular, selecting a simple random sample of students from a large school could prove difficult because it is unlikely that a student could get access to a reasonable sampling frame. This activity asks students to consider how they might select a sample that, while not necessarily a simple random sample, might still be considered as representative of the students at the school. Encourage students to consider the need to vary location, day of the week, time of day, etc., and to think about how they will decide which students in a proposed location will actually be asked to participate.

Activity 2.2 An Experiment to Test for the Stroop Effect

Students generally find this to be an interesting experiment. Two reasonable designs are

1. Assign volunteer subjects at random to one of the two experimental conditions (text or colored rectangles)
2. Have all subjects process both the text and the rectangle lists. For this design, it is important that the order of the two experimental conditions be determined at random for each subject.

Have the class talk about the difference between these two designs and note that although it takes different forms in the two designs, randomization is critical in both designs.

This activity also provides a good forum for talking about extraneous variables and how the proposed design(s) address them.

Activity 2.5 Cluster Sampling

This activity is fairly straightforward and introduces students to cluster sampling. The last step explores the idea of sampling variability, an important concept in Chapter 8. It is worth spending some time with the class discussing the responses to this step.

Activity 2.6 Speed Sorting

In this activity, students design and carry out an experiment and then informally look for differences among the three treatments/experimental conditions. It also asks students to articulate why random assignment of subjects to treatments is important.