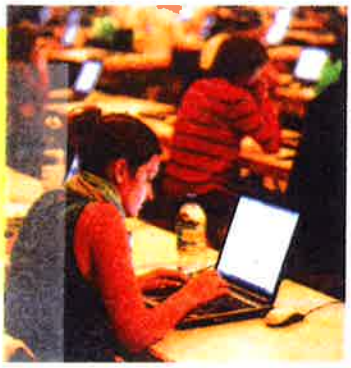
Stat 202 Homework #1



EXAMPLE

1.3 Data for students in a statistics class. Figure 1.2 shows part of a data set for students enrolled in an introductory statistics class. Each row gives the data on one student. The values for the different variables are in the columns. This data set has eight variables. ID is an identifier for each student. Exam1, Exam2, Homework, Final, and Project give the points earned, out of a total of 100 possible, for each of these course requirements. Final grades are based on a possible 200 points for each exam and the final, 300 points for Homework, and 100 points for Project. TotalPoints is the variable that gives the composite score. It is computed by adding 2 times Exam1, Exam2, and Final, 3 times Homework plus 1 times Project. Grade is the grade earned in the course. This instructor used cut-offs of 900, 800, 700, etc. for the letter grades.

Microsoft Excel

	A	B	C	D	E	F	G	H
1	ID	Exam1	Exam2	Homework	Final	Project	TotalPoints	Grade
2	101	89	94	88	87	95	899	B
3	102	78	84	90	89	94	866	B
4	103	71	80	75	79	95	780	C
5	104	95	98	97	96	93	962	A
6	105	79	88	85	88	96	861	B

FIGURE 1.2 Spreadsheet for Example 1.3.

1. **Who?** What **cases** do the data describe? **How many** cases appear in the data?
2. **What?** How many **variables** do the data contain? What are the **exact definitions** of these variables? In what **unit of measurement** is each variable recorded?
3. **Why? What purpose** do the data have? Do we hope to answer some specific questions? Do we want to draw conclusions about cases other than the ones we actually have data for? Are the variables that are recorded suitable for the intended purpose?

USE YOUR KNOWLEDGE

1.2 Who, what, and why for the statistics class data. Answer the who, what, and why questions for the statistics class data set.

1.3 Read the spreadsheet. Refer to Figure 1.2. Give the values of the variables Exam1, Exam2, and Final for the student with ID equal to 105.

USE YOUR KNOWLEDGE

1.5 Apartment rentals. A data set lists apartments available for students to rent. Information provided includes the monthly rent, whether or not cable is included free of charge, whether or not pets are allowed, the number of bedrooms, and the distance to the campus. Describe the cases in the data set, give the number of variables, and specify whether each variable is categorical or quantitative.

Chapter 1 Solutions

1.1. Most students will prefer to work in seconds, to avoid having to work with decimals or fractions.

1.2. **Who?** The individuals in the data set are students in a statistics class. **What?** There are eight variables: ID (a label, with no units); Exam1, Exam2, Homework, Final, and Project (in units in "points," scaled from 0 to 100); TotalPoints (in points, computed from the other scores, on a scale of 0 to 900); and Grade (A, B, C, D, and E). **Why?** The primary purpose of the data is to assign grades to the students in this class, and (presumably) the variables are appropriate for this purpose. (The data might also be useful for other purposes.)

1.3. Exam1 = 79, Exam2 = 88, Final = 88.

1.4. For this student, TotalPoints $= 2 \cdot 86 + 2 \cdot 82 + 3 \cdot 77 + 2 \cdot 90 + 80 = 827$, so the grade is B.

1.5. The cases are apartments. There are five variables: rent (quantitative), cable (categorical), pets (categorical), bedrooms (quantitative), distance to campus (quantitative).