

VIII. DATA TABLES: Organizing Information (Day 7)

A. INTRODUCTION:

1. Experiments produce data that support or reject hypotheses.
 - a. The word data is just the scientific term for information.
 - b. Scientists usually collect data in the form of numbers because most of their activities require measurements.
2. Scientists not only have to use numbers. They must also use units to describe the numbers.
 - a. All numbers must be identified by the correct unit.
3. Recording data and measurements means writing down many numbers. But numbers must be organized to be meaningful.

B. DATA TABLES:

1. Data is organized in Data Tables.
 - a. A data table is a chart that organizes numbers in rows and columns.
 - b. Scientists use data tables to communicate their finding simply and clearly.
 - c. Table 1: Motor Vehicle Pollutant Emission per Vehicle-Mile Travel 1970-1981 (grams/mile)

Pollutant	1970	1974	1975	1976	1977	1978	1979	1980	1981
Carbon Monoxide	86.9	79.0	77.0	74.3	71.4	68.3	65.2	60.6	55.5
Hydro-carbons	12.1	9.9	9.4	8.9	8.4	7.9	7.3	6.6	5.8
Oxides of Nitrogen	4.7	4.7	4.6	4.4	4.1	3.9	3.8	3.6	3.4

NOTICE:

- d. Tables are numbered in the order in which they appear.
 - e. The TITLE tells what information is in the table.
 - f. The table often has a box rule drawn around it. The table is usually divided into rows and columns.
 - g. The rows and columns have HEADINGS, and sometimes subheadings, to explain their information.
 - h. The units used in the table are shown in either the headings or the title.
- ### C. CONSTRUCTING YOUR OWN TABLES:
1. The Five main parts of a Data Table: Number, Columns, Title, Rows, and Box.
 2. Tables are used by everyone every day.
- ### D. QUESTIONS:

1. Why do scientists collect data in numerical form?
2. What information is in Table 1 above?
3. Which pollutant shows the least change in Table 1?
4. What units are used to describe the numbers in this table 1?
5. What years are missing from the table 1?
6. When did the greatest reduction in carbon monoxide emission take place in table 1.

Table-2-: World Series Players Bonuses

Year	Winning Team	Bonus \$	Losing Team	Bonus \$
1961	Yankees	7,389	Reds	5,356
1962	Yankees	9,882	Giants	7,291
1963	Dodgers	12,794	Yankees	7,874
1964	Cardinals	8,622	Yankees	5,309
1965	Dodgers	10,297	Twins	6,634
1966	Orioles	11,683	Dodgers	8,189
1967	Cardinals	8,314	Red Sox	5,115
1968	Tigers	10,936	Cardinals	7,078
1969	Mets	18,338	Orioles	14,904
1970	Orioles	18,216	Reds	13,688
1971	Pirates	18,465	Orioles	13,905
1972	A's	20,705	Reds	15,080
1973	A's	24,617	Mets	14,950
1974	A's	22,219	Dodgers	15,704
1975	Reds	19,060	Red Sox	13,326
1976	Reds	26,366	Yankees	19,935
1977	Yankees	27,758	Dodgers	20,899
1978	Yankees	31,236	Dodgers	25,483
1979	Pirates	28,236	Orioles	22,113
1980	Phillies	34,693	Royals	32,211

[Use Table 2 above to answer the following questions]

7. In what year did the Orioles make the most money?
8. How many times were the Yankees in the playoffs?
9. What is noticeable about players' bonuses starting in 1969?

Table-3-: The Population of the United States

Year	1920	1930	1940	1950	1960	1970	1980
Population In Millions	106	123	132	151	179	203	226

Use Table 3 to answer the following questions.

10. Which DECADE, or ten-year period, had the greatest population growth?
11. People tend to have fewer children during economic depressions. By looking at the table 3, in which decade did a depression probably occur?
12. Construct a table with the data in the next paragraph. Look back through the chapter if you need help, but first see how many of the five parts of a table you can remember by yourself.

{In 1972, the United States imported 811 million barrels of oil. In 1973, 1,184 million barrels came in. In 1974, the number was 1,296 million. There were 1,498 million barrels in 1975, 1,983 million in 1976, 2,414 million in 1977, 2,320 million in 1978, and 2,332 million barrels in 1979.}

13. Look at your table above to decide which year had the greatest single increase.
14. Judging from the number of barrels imported from year to year, when did conservation practices begin to have an effect?

[Refer to table 3 for questions #15-19]

15. What was the period of the statement in Table 3?
16. How many checks were written in Table 3?
17. How much money was deposited in Table 3?
18. What is the beginning and ending balance in Table 3?
19. Was there any interest paid? How much?

Table 3: Checking Account Statement

EASTERN SAVINGS BANK

SUNNYVALE 12-74
1200 SOUTHVALE AVE.
SUNNYVALE, CA. 95088
288/632-8464

DR WILLIAM S. BURNE
MRS WILLIAM S. BURNE
18 1432 RIVERSIDE
36 SUNNYVALE CA 95088
7

ACCOUNT NUMBER
5275-450412-1
DATE
09/08/83
PAGE
1

CHECKING STATEMENT SUMMARY.....

PREVIOUS STATEMENT 8-06-83, BALANCE OF...	367.69
2 DEPOSITS AND OTHER CREDITS TOTALING	1,203.50
CONSISTING OF 1 DEPOSIT ITEMS	
7 CHECKS AND OTHER DEBITS TOTALING...	396.68
SERVICE CHARGE AMOUNT	.00
CURRENT BALANCE AS OF STATEMENT DATE.....	1,174.51

CHECKING ACCOUNT TRANSACTIONS.....

DATE	AMOUNT	TRANSACTION DESCRIPTION
08/26	1,200.00+	DEPOSIT CHECK
09/08	3.50+	NOW INTEREST CREDIT

DATE..	CHECK NO.....	AMOUNT	DATE..	CHECK NO.....	AMOUNT
09/01	150	35.00	08/27	154	170.38
08/16	151	13.90	09/02	155	50.24
08/23	152	15.75	09/07	156	50.59
08/23	153	60.82			

DAILY BALANCE SUMMARY.....

DATE.....	BALANCE	DATE.....	BALANCE	DATE.....	BALANCE
08/16	353.79	08/27	1,306.84	09/07	1,170.01
08/23	277.22	09/01	1,271.84	09/08	1,174.51
08/26	1,477.22	09/02	1,221.60		

*** FOR CHECKING CONVENIENCE...INTEREST-EARNING CHECKING, ***
 *** WELCOME CHECK, MASTERCARD/VISA ***

E. ACTIVITY: Measuring Bounces (Materials: Set of balls and a meter stick)

1. Drop the balls onto the floor. Notice that each ball bounces to a different height.
If you were asked to choose the ball that would bounce the highest, which would you choose: What is your hypothesis about which ball would bounce the highest?

2. Work in pairs. One person hold the meter stick and drop the ball. The other person should read how high the ball bounces and catch it.
3. Before you begin, you must decide on the procedure of the experiment. To keep this experiment controlled, all balls must be dropped from the same height. To allow for errors, each ball should be dropped several times.
4. All of your data will go in a table. Draw a table. Remember the five important parts of a table. The table should be numbered. The title tells what the information in the table is all about. The data is boxed in rows and columns.
5. Remember to have enough rows and columns to record all the trails of each ball. Include space to record the height from which they are dropped. The columns and rows need heading to identify them.
6. Don't forget the units you will use to measure the heights of the bounces. Finally, include a column to show the average height each ball bounced.
7. Which unit did you use to measure height---meters, centimeters, or millimeters?
8. Do the experiment. Enter your data in the table.
9. Find the average height bounced for each ball and enter it in the table. If you don't remember how to average, do it this way. Add up all the bounce heights for one ball. Divide that number by the number of trials.
10. Run your eye down the column that shows the average height each ball bounced. Which ball bounced highest? Prove it with your data.

