

SPINOFF 9A

Descriptive Statistics for Shuttle Data

Each Shuttle flight generates large amounts of data. In this Spinoff, you will be asked to draw conclusions about mission duration, flight distance, altitude, and number of orbits based on the data in Table 9A. The information in Table 9A has been adapted from Space Shuttle: The History of Developing the National Space Transportation System by Dennis R. Jenkins.

Table 9A

col. 1 Flight #	col. 2 Launch Date	col. 3 Mission Duration (hrs:mins:secs)	col. 4 Mission Duration (hrs as decimal to nearest tenth)	col. 5 Flight Distance (miles)	col. 6 Flight Distance (in thousands of miles)	col. 7 Altitude (miles at apogee)	col. 8 No. of Orbits
1	4/12/81	54:20:32	54.4	1,074,567	1075	166	36
2	11/12/81	54:13:13	54.2	1,074,757	1075	157	36
3	3/22/82	192:04:45		3,334,904	3335	147	129
4	6/27/82	169:09:40		2,900,000		197	112
5	11/11/82	122:14:26		2,110,849		184	80
6	4/4/83	122:14:26		2,094,293		178	81
7	6/18/83	146:23:59		2,530,567		195	97
8	8/30/83	145:08:43		2,514,478		191	97
9	11/28/83	247:47:24		4,295,853		155	166
10	2/3/84	191:15:55		3,311,380		202	127
11	4/6/84	167:40:27		2,870,000		313	107
12	8/30/84	144:56:04		2,490,000		205	96
13	10/5/84	197:23:33		3,434,444		218	132
14	11/8/84	191:44:56		3,289,406		224	126
15	1/24/85	73:33:23		1,250,000		220	48
16	4/12/85	167:55:23		2,889,785		289	109
17	4/29/85	168:08:46		2,890,383		222	110
18	6/17/85	169:38:53		2,916,127		240	111
19	7/29/85	190:45:26		3,282,543		207	126
20	8/27/85	170:18:29		2,919,576		278	111

Exercises

1.
 - a) Complete column 4 by converting the mission duration times to hours rounded to one decimal place. Start the rounding process by converting the seconds to the nearest minute (0 or 1).
 - b) Calculate the mean and median of the times in column 4. What information do these statistics give you about the duration times?
 - c) Sketch a histogram of the duration times.
 - d) Identify the modal class from the histogram. What is its meaning in the context of mission duration times?

2.
 - a) Complete column 6 by rounding the flight distances to the nearest thousands of miles, and write your answer in units of 1000 miles.
 - b) Find the mean and median of the flight distances in column 6. What information do these statistics give you about the flight distances?
 - c) Sketch a histogram of the flight distances.
 - d) Identify the modal class from the histogram. What is its meaning in the context of flight distances?

3.
 - a) Explain the meaning of “altitude” as used in this Spinoff. This will require a definition of the term, apogee. Include a sketch in your answer.
 - b) Find the mean and median of the altitudes. What information do these statistics give you?
 - c) Sketch a histogram of the altitudes.
 - d) Identify the modal class from the histogram. What is its meaning in the context of altitudes?

4.
 - a) Make a scatterplot of the data with the number of orbits on the x-axis and the mission duration times on the y-axis.
 - b) Is there a pattern to the scatterplot? If so, is it linear? What does this tell you about the relationship between the mission duration times and the number of orbits?