Technology Project

Use STATDISK, Minitab, Excel, StatCrunch, or a TI-83/84 Plus calculator, or any other software package or calculator capable of generating equally likely random digits between 0 and 9 inclusive. Generate 5000 digits and record the results in the accompanying table. Use a 0.05 significance level to test the claim that the sample digits come from a population with a uniform distribution (so that all digits are equally likely). Does the random number generator appear to be working as it should?

Digit	0	1	2	3	4	5	6	7	8	9
Frequency										

from data TO DECISION

Critical Thinking: Was Allstate wrong?

The Allstate insurance company once issued a press release listing revised zodiac signs along with the corresponding numbers of accidents, as shown in the first and last columns in the table below.

In the original press release, Allstate included comments such as one stating that Virgos are worried and shy, and they were involved in 211,650 accidents, making them the worst offenders. Allstate quickly issued another press release saying that the original press release was meant to be a joke.

Zodiac Sign	Dates	Length (days)	Accidents
Capricorn	Jan. 18 – Feb. 15	29	128,005
Aquarius	Feb. 16 – March 11	24	106,878
Pisces	March 12 – April 16	36	172,030
Aries	April 17 – May 13	27	112,402
Taurus	May 14 – June 19	37	177,503
Gemini	June 20 – July 20	31	136,904
Cancer	July 21 – Aug. 9	20	101,539
Leo	Aug. 10 – Sept. 15	37	179,657
Virgo	Sept. 16 – Oct. 30	45	211,650
Libra	Oct. 31 – Nov. 22	23	110,592
Scorpio	Nov. 23 – Nov. 28	6	26,833
Ophiuchus	Nov. 29 – Dec. 17	19	83,234
Sagittarius	Dec. 18 – Jan. 17	31	154,477

Analyzing the Results

The original Allstate press release did not include the lengths (days) of the different zodiac signs. The preceding table lists those lengths in the third column. A reasonable explanation for the different numbers of accidents is that they should be proportional to the lengths of the zodiac signs. For example, people are born under the Capricorn sign on 29 days out of the 365 days in the year, so they should have 29/365 of the total number of accidents. Use the methods of this chapter to determine whether this appears to explain the results in the table. Write a brief report of your findings.