8-7 Fitting to a Normal Distribution

Going Deeper

Essential question: *How do you find percents of data and probabilities of events associated with normal distributions?*

COMMON CORE Standards for Mathematical Content

CC.9-12.S.ID.4 Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, … and tables to estimate areas under the normal curve.*

Day 2

The lengths of the 20 snakes at a zoo, in inches, are shown in the table. The mean is 34.1 inches and the standard deviation is 10.5 inches. Does the data appear to be normally distributed?

43	41	37	16	39
22	15	40	45	38
39	39	38	43	37
38	12	39	18	43

z	−2.5	−2	−1.5	−1	−0.5	0	0.5	1	1.5	2	2.5
Area	0.01	0.02	0.07	0.16	0.31	0.5	0.69	0.84	0.93	0.98	0.99

Z	Area Below z	X	Values Below z	
			Proj.	Act.
-2	0.02	13.1	0	1
-1	0.16	23.6	3	5
0	0.5	34.1	10	5
1	0.84	44.6	17	19
2	0.98	55.1	20	20

No, the data does not appear to be normally distributed. There are only 5 values below the mean.

A random sample of salaries at a company is shown. If the mean is $37,000 and the standard deviation is $16,000, does the data appear to be normally distributed?

Salaries (thousands $)					
61	33	29	28	32	43
29	35	34	22	64	35
32	25	28	29	25	84

Z	Area Below z	X	Values Below z	
			Proj.	Act.
-2	0.02	5	0	0
-1	0.16	21	3	0
0	0.5	37	9	14
1	0.84	53	15	15
2	0.98	69	18	17

No, the data does not appear to be normally distributed. 14 out of 18 values fall below the mean.