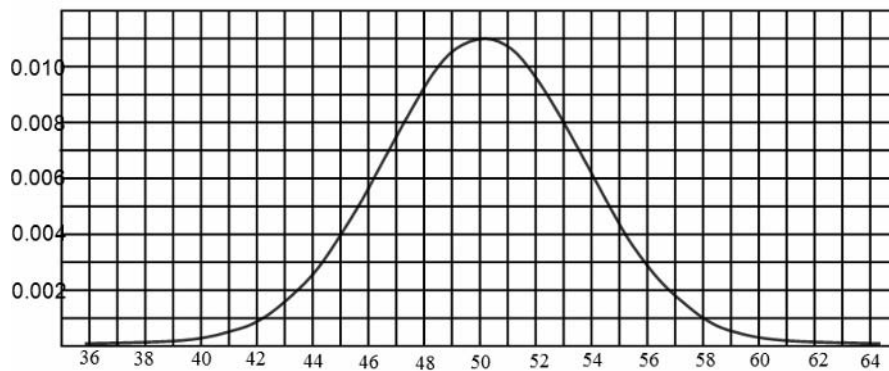


LESSON
2-3

Practice A

Fitting to a Normal Distribution

1. In a plant shop, the heights of a number of young plants is normally distributed with a mean of 50 millimeters (mm) and a standard deviation of 4 mm. Use the graph to estimate the probability that a plant chosen at random by a customer will be less than 54 mm tall.



Scores on a test are normally distributed with a mean of 80 and a standard deviation of 5. Use the table below to find each probability.

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

2. A randomly selected student scored below 80. _____
3. A randomly selected student scored above 90. _____
4. A randomly selected student scored below 75. _____
5. A randomly selected student scored between 75 and 85. _____
6. The wait times, in minutes, of 10 customers standing in line at a grocery store are given below. If the mean wait time is 7 minutes, do the data appear to be normally distributed? Explain.

16	15	10	7	5
5	4	3	3	2

2-3 FITTING TO A NORMAL DISTRIBUTION

Practice A

- 0.84
- 0.5
- 0.02
- 0.16
- 0.68
- No, 7 of the 10 wait times are below the mean.

Practice B

- 0.16
- 0.93
- 0.16
- 0.09
- 0.19
- No, 14 of the 20 people have ages below the mean.

Practice C

- 0.67
- 0.02
- 0.02
- 0.34
- 0.82
- The mean of the data is 2.2 ft. So, half the data points fall below the mean: 5% of the data are between 2 and 3 standard deviations below the mean, 15% of the data are between 1 and 2 standard deviations below the mean, and 30% of the data are between 0 and 1 standard deviations below the mean. Half the data points fall above the mean: 5% of the data are between 2 and 3 standard deviations above the mean, 15% of the data are between 1 and 2 standard deviations above the mean, and 30% of the data are between 0 and 1 standard deviations above the mean. Based on these percentages, the data appear to be roughly normally distributed.

Review for Mastery

- 0.84
- Yes; see the table below. The projected number of data values below each z -value is close to the actual number. The data appears to be normally distributed.

z	Area below z	x	Values below x	
			Projected	Actual
-2	0.02	0.34	1	0
-1	0.16	0.42	4	3
0	0.5	0.5	12	11
1	0.84	0.58	20	18
2	0.98	0.66	24	22

Challenge

- The graph would be shifted to the right 1 unit.
- The graph would be expanded horizontally by a factor of 10.
- The graph would be shifted to the right 1 unit and expanded horizontally by a factor of 10.

Problem Solving

- 0.84
 - 0.93
 - 0.02
 - 0.99
 - 0.68
 - 0.62
- B
- J

Reading Strategies

- 83; 7
- 64; 11

2-4 ANALYZING DECISIONS

Practice A

- 5
- 3