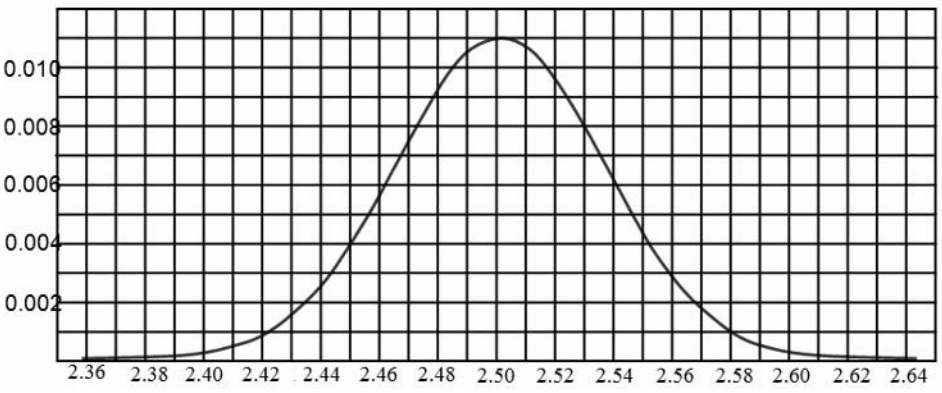
Name _____ Date _____ Class_____

LESSON 2-3

Practice C

Fitting to a Normal Distribution

1. The stride lengths, in feet, in a group of adult males are normally distributed with a mean of 2.5 ft and a standard deviation of 0.04 ft. Use the graph to estimate the probability that the stride length of a randomly selected adult male is between 2.42 ft and 2.52 ft.



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Scores on a test are normally distributed with a mean of 81.2 and a standard deviation of 3.6. 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 74. _____

3. A randomly selected student scored above 88.4. _____

4. A randomly selected student scored between 81.2 and 84.8. _____

5. A randomly selected student scored between 77.6 and 88.4. _____

6. The stride lengths, in feet, in a group of adult females are given below. If standard deviation in the stride lengths is 0.02 ft, do the data appear to be normally distributed? Explain.

1.78	1.85	1.87	1.96	2.02
2.04	2.05	2.05	2.17	2.19
2.23	2.25	2.26	2.28	2.35
2.38	2.41	2.43	2.55	2.68

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2-3 FITTING TO A NORMAL DISTRIBUTION

Practice A

1. 0.84
2. 0.5
3. 0.02
4. 0.16
5. 0.68
6. No, 7 of the 10 wait times are below the mean.

Practice B

1. 0.16
2. 0.93
3. 0.16
4. 0.09
5. 0.19
6. No, 14 of the 20 people have ages below the mean.

Practice C

1. 0.67
2. 0.02
3. 0.02
4. 0.34
5. 0.82
6. 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

1. 0.84
2. 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

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

Problem Solving

1. a. 0.84
   b. 0.93
   c. 0.02
   d. 0.99
   e. 0.68
   f. 0.62
2. B
3. J

Reading Strategies

1. 83; 7
2. 64; 11

2-4 ANALYZING DECISIONS

Practice A

1. 5
2. 3