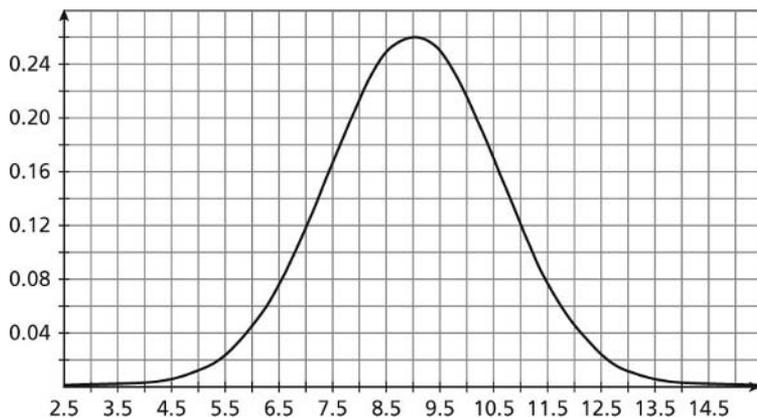Name _____ Date _____ Class_____

Practice B
Fitting to a Normal Distribution

1. At a shoe factory, the number of various shoe sizes produced is normally distributed with a mean of size 9 and a standard deviation of 1.5 sizes. Use the graph to estimate the probability that the shoe size will be larger than size 10.5 if a supervisor chooses a shoe at random.

_____

Scores on a test are normally distributed with a mean of 78 and a standard deviation of 8. 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 90.   _____

3. A randomly selected student scored above 86.   _____

4. A randomly selected student scored between 86 and 90.   _____

5. A randomly selected student scored between 74 and 78.   _____

6. The ages of 20 people who sing in the choir are given below. If the mean of all the ages of the people in the choir is 40 years and the standard deviation is 12 years, does the data appear to be normally distributed? Explain.

25	37	32	38	51
62	52	54	29	35
39	58	30	28	34
34	36	37	64	25

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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

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