## S.ID.A.4: Normal Distributions 2

1 On a standardized test, Cathy had a score of 74, which was exactly 1 standard deviation below the mean. If the standard deviation for the test is 6, what is the mean score for the test?

1) 68
2) 71
3) 77
4) 80

2 On a standardized test, a score of 82 falls exactly 1 standard deviation below the mean. If the standard deviation for the test is 4, what is the mean score for the test?

1) 78
2) 80
3) 84
4) 86

3 On a standardized test, Phyllis scored 84, exactly one standard deviation above the mean. If the standard deviation for the test is 6, what is the mean score for the test?

1) 72
2) 78
3) 84
4) 90

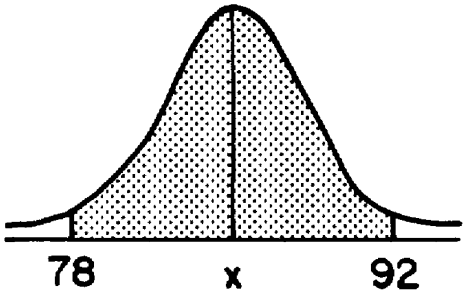
4 On a standardized test, a score of 86 falls exactly 1.5 standard deviations below the mean. If the standard deviation for the test is 2, what is the mean score for this test?

1) 84
2) 84.5
3) 87.5
4) 89

5 On a standardized examination, Laura received a score of 85, which was exactly 2 standard deviations above the mean. If the standard deviation for the examination is 4, what is the mean for this examination?

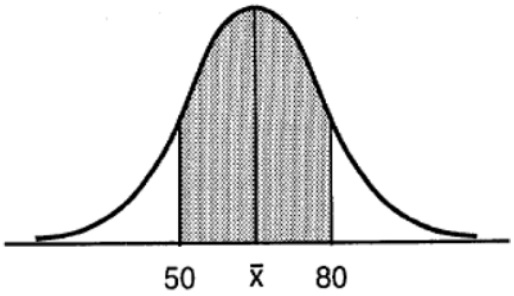
1) 93
2) 87
3) 83
4) 77

6 In the accompanying diagram, the shaded area represents approximately 95% of the scores on a standardized test. If these scores ranged from 78 to 92, which could be the standard deviation?




1) 3.5
2) 7.0
3) 14.0
4) 20.0

7 In the accompanying diagram, about 68% of the scores fall within the shaded area, which is symmetric about the mean, $\bar{x}$. The distribution is normal and the scores in the shaded area range from 50 to 80.




What is the standard deviation of the scores in this distribution?

1) $7\frac{1}{2}$
2) 15
3) 30
4) 65

8 The heights of the members of a high school class are normally distributed. If the mean height is 65 inches and a height of 72 inches represents the 84th percentile, what is the standard deviation for this distribution?

1) 7
2) 11
3) 12
4) 137

9 The heights of a group of girls are normally distributed with a mean of 66 inches. If 95% of the heights of these girls are between 63 and 69 inches, what is the standard deviation for this group?

1) 1
2) 1.5
3) 3
4) 6

10 In a normal distribution, $\bar{x} + 2\sigma = 80$ and $\bar{x} - 2\sigma = 40$ when $\bar{x}$ represents the mean and $\sigma$ represents the standard deviation. The standard deviation is

1) 10
2) 20
3) 30
4) 60

11 In a normal distribution, 68% of the scores fall between 72 and 86 and the mean is 79. What is the standard deviation?

12 In a certain school district, the ages of all new teachers hired during the last 5 years are normally distributed. Within this curve, 95.4% of the ages, centered about the mean, are between 24.6 and 37.4 years. Find the mean age and the standard deviation of the data.

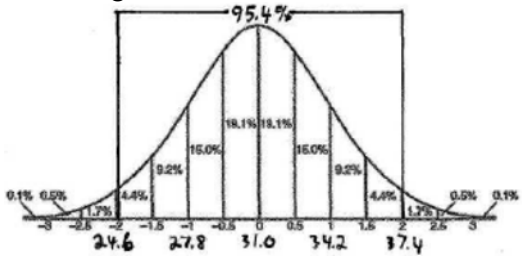
13 On a test that has a normal distribution of scores, a score of 57 falls one standard deviation below the mean, and a score of 81 is two standard deviations above the mean. Determine the mean score of this test.

## S.ID.A.4: Normal Distributions 2
## Answer Section

1 ANS: 4 REF: 068624siii
2 ANS: 4 REF: 089317siii
3 ANS: 2 REF: 069517siii
4 ANS: 4
If the standard deviation is 2, then 1.5 deviations equals 3 points. Since 86 is below the mean, add 3 to 86 to equal 89.

REF: 010604b
5 ANS: 4 REF: 089925siii
6 ANS: 1 REF: 069030siii
7 ANS: 2 REF: 069726siii
8 ANS: 1 REF: 080020siii
9 ANS: 2 REF: 010331siii
10 ANS: 1 REF: 018930siii
11 ANS:
7

REF: 019712siii
12 ANS:
31, 3.2. Since the group of teachers between 24.6 and 37.4 years old represents 95.4% of the population, this group is within 2 standard deviations of the mean. To find the mean, average 24.6 and 37.4, which equals 31. To find the standard deviation, find the range of the scores 37.4 - 24.6 = 12.8, and divide 12.8 by 4 (the # of standard deviations) which equals 3.2.




REF: 060324b
13 ANS:

$$\text{sd} = \frac{81 - 57}{3} = 8$$

$$57 + 8 = 65$$

$$81 - 2(8) = 65$$

REF: 011534a2