Name: _____

S.ID.A.4: Normal Distributions 3b

1 In a New York City high school, a survey revealed the mean amount of cola consumed each week was 12 bottles and the standard deviation was 2.8 bottles. Assuming the survey represents a normal distribution, how many bottles of cola per week will approximately 68.2% of the students drink?

2 The amount of juice dispensed from a machine is normally distributed with a mean of 10.50 ounces and a standard deviation of 0.75 ounce. Which interval represents the amount of juice dispensed about 68.2% of the time?

3 On a standardized test, the mean is 76 and the standard deviation is 4. Between which two scores will approximately 68% of the scores fall?

4 In a certain high school, a survey revealed the mean amount of bottled water consumed by students each day was 153 bottles with a standard deviation of 22 bottles. Assuming the survey represented a normal distribution, what is the range of the number of bottled waters that approximately 68.2% of the students drink?

5 A survey of high school girls found that the mean number of text messages sent per day by the girls was 62, with a standard deviation of 12. If a normal distribution is assumed, which interval represents the number of texts sent by 68.2% of the girls?

6 In 2013, approximately 1.6 million students took the Critical Reading portion of the SAT exam. The mean score, the modal score, and the standard deviation were calculated to be 496, 430, and 115, respectively. Which interval reflects 95% of the Critical Reading scores?

7 The mean of a normally distributed set of data is 56, and the standard deviation is 5. In which interval do approximately 95.4% of all cases lie?

8 The heights of the girls in the eleventh grade are normally distributed with a mean of 66 inches and a standard deviation of 2.5 inches. In which interval do approximately 95% of the heights fall?

9 The mean of a normally distributed set of data is 52 and the standard deviation is 4. Approximately 95% of all the cases will lie between which measures?

10 On a standardized test with a normal distribution of scores, the mean score is 82 and the standard deviation is 6. Which interval contains 95% of the scores?

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11 A standardized test with a normal distribution of scores has a mean score of 43 and a standard deviation of 6.3. Which range would contain the score of a student in the 90th percentile?
1) 30.4 – 36.7
2) 36.7 – 43.0
3) 43.0 – 49.3
4) 49.3 – 55.6

12 On a standardized test with a normal distribution, the mean is 20 and the standard deviation is 2.6. In which interval would the greatest number of scores occur?
1) 12.2 – 14.8
2) 17.4 – 20.0
3) 22.6 – 25.2
4) 27.8 – 30.4

13 A set of test scores is normally distributed with a mean of 80 and a standard deviation of 8. Between what two scores should 68 percent of the scores fall?

14 A set of test scores is distributed normally with a mean of 70 and a standard deviation of 6. Between which two scores could 68% of the scores lie?

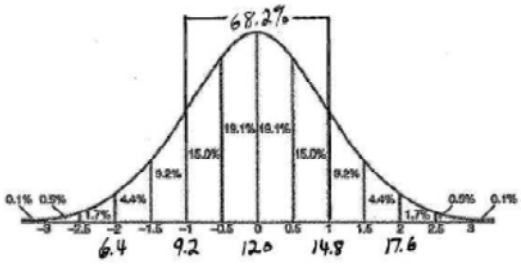
15 A set of boys' heights is distributed normally with a mean of 58 inches and a standard deviation of 2 inches. Express, in inches, between which two heights should 95% of the heights fall.

16 A survey of the soda drinking habits of the population in a high school revealed the mean number of cans of soda consumed per person per week to be 20 with a standard deviation of 3.5. If a normal distribution is assumed, find an interval that the total number of cans per week approximately 95% of the population of this school will drink. Explain why you selected that interval.

17 Mrs. Ramírez is a real estate broker. Last month, the sale prices of homes in her area approximated a normal distribution with a mean of $150,000 and a standard deviation of $25,000. A house had a sale price of $175,000. What is the percentile rank of its sale price, to the *nearest whole number*? Explain what that percentile means. Mrs. Ramírez told a customer that most of the houses sold last month had selling prices between $125,000 and $175,000. Explain why she is correct.

S.ID.A.4: Normal Distributions 3b
Answer Section

1 ANS:
9.2 to 14.8
68.2% of the population of a normal distribution will be within 1 standard deviation of the mean, and will drink



9.2-14.8 bottles of cola per week.

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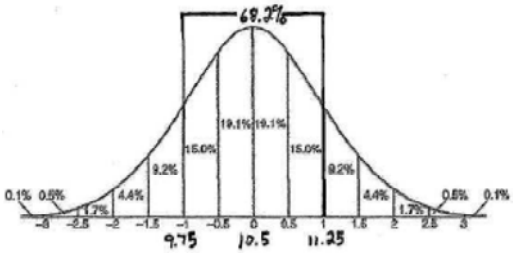
2 ANS:
9.75–11.25
68.2% of the population of a normal distribution will be within 1 standard deviation of the mean. Therefore the



relevant range is 9.75-11.25.

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3 ANS:
72 and 80

REF: 068426siii

4 ANS:
131 – 175
$\bar{x} \pm \sigma$

153 ± 22

131 – 175

REF: 011307a2

5 ANS:
50–74
$\bar{x} \pm \sigma$

62 ± 12

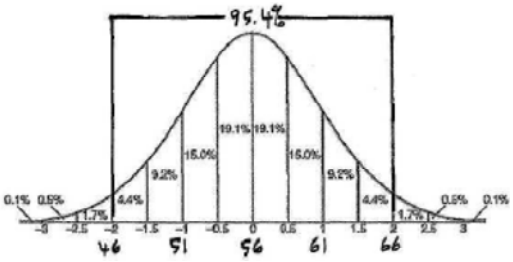
50 – 74

REF: 011706a2

6 ANS:
496 ± 230
$496 \pm 2(115)$

REF: 011718aii

7 ANS:
46–66
95.4% of the population of a normal distribution will be within 2 standard deviations of the mean. Therefore the relevant range is 46-66.



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8 ANS:
61 – 71 inches

REF: 010426siii

9 ANS:
44 and 60

REF: 089035siii

10 ANS:
70 – 94

REF: 089831siii

11 ANS: 4 REF: 019930siii

12 ANS: 2 REF: 088721siii

13 ANS:
72-88

REF: 088610siii

14 ANS:
64-76

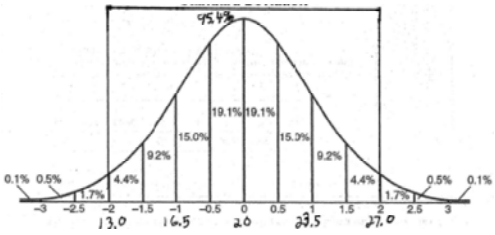
REF: 089402siii

15 ANS:
54 – 62

REF: 089606siii

16 ANS:

95% of the population of a normal distribution will be within 2 standard deviations of the mean. Therefore the relevant range is 13-27.



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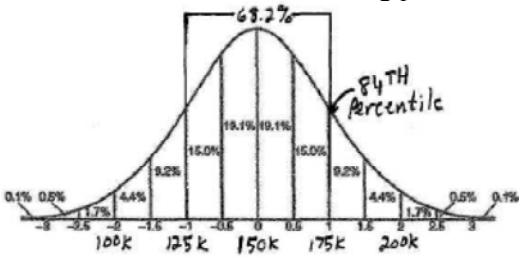
17 ANS:

84. A sales price of $175,000 is 1 standard deviation greater than the mean, and has a 84th percentile rank. This means that 84% of the homes in Ms. Ramírez' area sold for $175,000 or less and that 16% sold for more than $175,000. Selling prices between $125,000 and $175,000 represent a range within 1 standard of the mean of $150,000, or 68.2% of the selling prices. Since 68.2% > 50%, Ms. Ramírez is correct.



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