

S.ID.A.4: Normal Distributions 1

- 1 Suppose two sets of test scores have the same mean, but different standard deviations, σ_1 and σ_2 , with $\sigma_2 > \sigma_1$. Which statement best describes the variability of these data sets?
 - 1) Data set one has the greater variability.
 - 2) Data set two has the greater variability.
 - 3) The variability will be the same for each data set.
 - 4) No conclusion can be made regarding the variability of either set.

- 2 The heights of women in the United States are normally distributed with a mean of 64 inches and a standard deviation of 2.75 inches. The percent of women whose heights are between 64 and 69.5 inches, to the *nearest whole percent*, is
 - 1) 6
 - 2) 48
 - 3) 68
 - 4) 95

- 3 The scores on a collegiate mathematics readiness assessment are approximately normally distributed with a mean of 680 and a standard deviation of 120. Determine the percentage of scores between 690 and 900, to the *nearest percent*.

- 4 The heights of the members of a ski club are normally distributed. The average height is 64.7 inches with a standard deviation of 4.3 inches. Determine the percentage of club members, to the *nearest percent*, who are between 67 inches and 72 inches tall.

- 5 A population is normally distributed with a mean of 23 and a standard deviation of 1.2. The percentage of the population that falls below 21, to the *nearest hundredth*, is
 - 1) 0.05
 - 2) 4.78
 - 3) 8.29
 - 4) 91.30

- 6 The distribution of the diameters of ball bearings made under a given manufacturing process is normally distributed with a mean of 4 cm and a standard deviation of 0.2 cm. What proportion of the ball bearings will have a diameter less than 3.7 cm?
 - 1) 0.0668
 - 2) 0.4332
 - 3) 0.8664
 - 4) 0.9500

- 7 The mean intelligence quotient (IQ) score is 100, with a standard deviation of 15, and the scores are normally distributed. Given this information, the approximate percentage of the population with an IQ greater than 130 is closest to
 - 1) 2%
 - 2) 31%
 - 3) 48%
 - 4) 95%

S.ID.A.4: Normal Distributions 1

Answer Section

1 ANS: 2 REF: 011901aii

2 ANS: 2



$\bar{x} + 2\sigma$ represents approximately 48% of the data.

REF: 061609aii

3 ANS:



43

REF: 012328aii

4 ANS:



25

REF: 012429aii

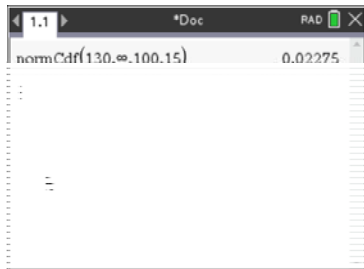
5 ANS: 2 REF: 082313aii

6 ANS: 1



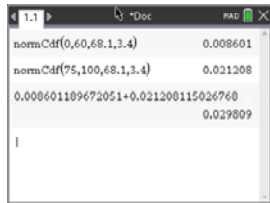
REF: 081711aii

7 ANS: 1



REF: 081919a

8 ANS: 4



REF: 062316a

9 ANS:



69

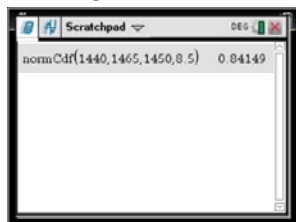
REF: 061726a

10 ANS:



REF: 082428a

11 ANS: 3



REF: 081604a

12 ANS: 2



REF: 061817aai

13 ANS:

$$\text{normcdf}(510, 540, 480, 24) = 0.0994 \quad z = \frac{510 - 480}{24} = 1.25 \quad 1.25 = \frac{x - 510}{20} \quad 2.5 = \frac{x - 510}{20} \quad 535 - 560$$

$$z = \frac{540 - 480}{24} = 2.5 \quad x = 535 \quad x = 560$$

REF: fall1516aai

14 ANS: 4

$$496 \pm 2(115)$$

REF: 011718aai

15 ANS: 1

REF: 062214aai

16 ANS: 3

$$440 \times 2.3\% \approx 10$$

REF: 011807aai

17 ANS: 4

$$49 \times 16.7\% \approx 8$$

REF: 062418aai

18 ANS: 1

$$84.1\% \times 750 \approx 631$$

REF: 011923aai

19 ANS: 4

$$400 \cdot .954 \approx 380$$

REF: 061918aai

20 ANS:

$$1200 \cdot 0.784 \approx 941$$

REF: 081828aai

21 ANS:

$$0.133696 \times 9256 \approx 1237$$

REF: 082230aai