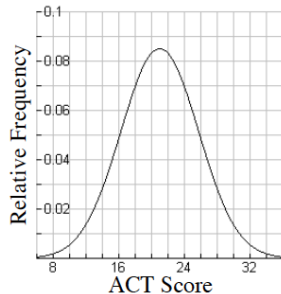


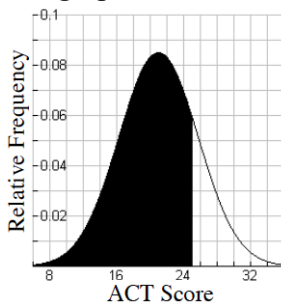
Lesson 4.3.3

4-82.

- a. $Y1 = \text{normalpdf}(X, 21, 4.7)$; See sketch below. A window with x from **6** to **36** with an interval of **2** and y from **0** to **0.1** with an interval of **0.01** works well.



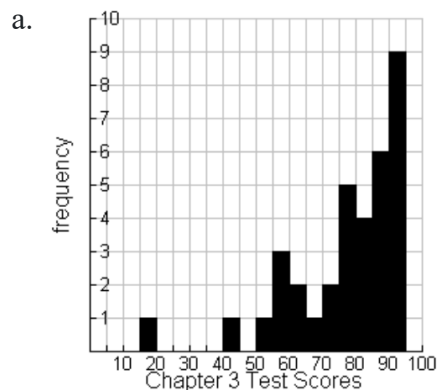
- b. See graph below. $\text{normalcdf}(-10^{99}, 25, 21, 4.7) \approx 0.8026 \approx 80\%$



- c. $\text{normalcdf}(-10^{99}, 25, 21, 4.7) \approx 0.1437$; 14th percentile

- d. Antoinette has scored the mean, so she is in the 50th percentile.

4-83.



- b. The model using a normal distribution is not a good idea because the data is not symmetric, single-peaked, and bell-shaped. A different model would represent the data better.

- c. Lateefa: $\frac{20}{35} = 57^{\text{th}}$ percentile; Farid: $\frac{29}{35} = 83^{\text{rd}}$ percentile

- d. **69; 90**

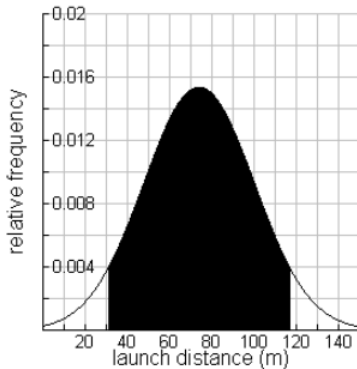
- e. (17, 69, 80, 90, 94); The first quartile is the same as the 25th percentile and the third quartile is the same as the 75th percentile. Note that this is not always the case, depending upon how a percentile is defined and how the five-number summary is calculated.

4-84.

- a. 10% of the sizes are above 7 mm, so 90% are below 7 mm. The 90th percentile is 7 mm.
- b. No; the data is not symmetric, single-peaked, and bell-shaped, so a model using a normal distribution may not fit the data as well as some other model.
- c. Somewhere between 6.5 and 6.75 mm. It is the median.

4-85.

- a. See graph in part (b).
- b. Answers will vary. See graph below. Using statistical computations, the boundaries are 31.23 and 116.77, but do not tell students this yet.



- c. Answers will vary. $\text{normalcdf}(31.23, 116.77, 74, 26) \approx 0.9000$ but students will not have these exact numbers yet.
- d. 1.6449 standard deviations is 42.7674 feet, so the middle 90% is from $74 - 42.7674 = 31.23$ ft to $74 + 42.7674 = 116.77$ ft.

4-86.

Rachna is in the 39th percentile, while Rakhi is in the 38th percentile. Rakhi has to wash the dishes.

4-87.

$\text{normalcdf}(-10^{99}, 2, 0, 1) = 97^{\text{th}}$ or 98^{th} percentile; about 2% of dancers scored higher than Isabella and Tony.