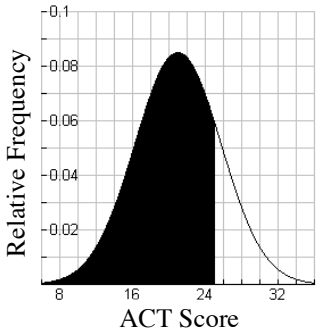
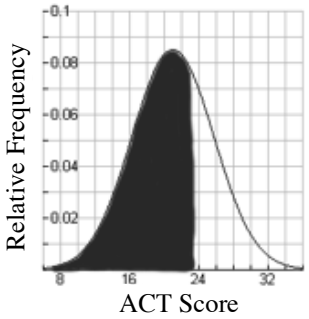
Lesson 5.2.1

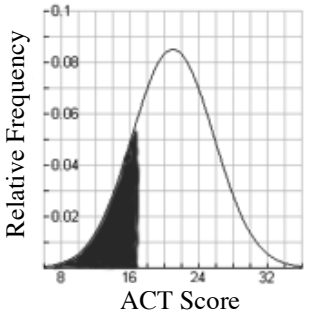
5-25. a. See graph below. $P(X < 25)$ = normalcdf(–10^99, 25, 21, 4.7) = 0.8026 ≈ 80%



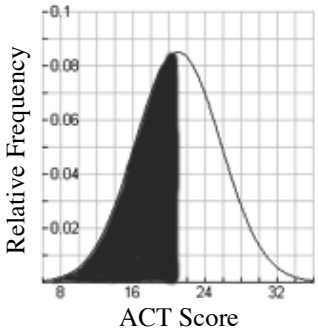
b. See graph below. invNorm(0.67, 21, 4.7) ≈ 23 points; $P(X < 23) \approx 0.67$



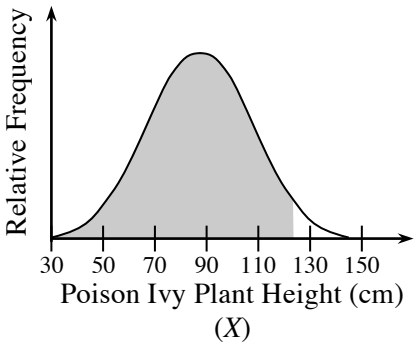
c. See graph below. invNorm(0.26, 21, 4.7) ≈ 18 points; $P(X < 18) \approx 0.26$



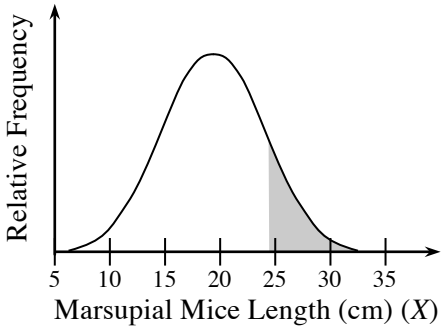
d. See graph below. Leonard scored in the 50th percentile, so he is at the mean of 21 points.

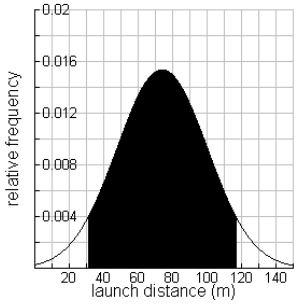


5-26. a. See graph at right. If using a standard normal probability table, z = 1.88,
$X = 87.96 + 1.88 \cdot 18.98 = 123.64$ cm or
X = invNorm(0.97, 87.96, 18.98) = 123.658 cm.



b. See graph below. If using a standard normal probability table, z = 1.18,
$X = 19.43 + 1.18 \cdot 4.3 = 24.504$ cm or
X = invNorm(0.88, 19.43, 14.3) = 24.482 cm



5-27. a. 

b. Answers will vary. See graph above. The boundaries are around 31.2 and 116.8.

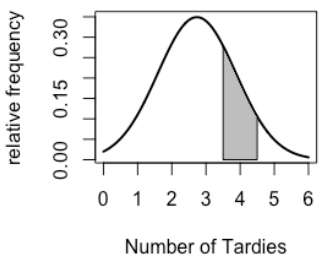
c. Answers will vary. normalcdf(31.23, 116.77, 74, 26) = 0.9000

5-28. Rachna's z-score = $\frac{66.74-74}{26}$ = –0.279, while Rakhi's z-score = $\frac{28.17-30}{6}$ = –0.305. Rakhi had to wash the dishes.

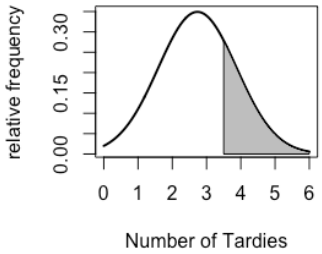
5-29. normalcdf(–10^99, 2, 0, 1) = 97th or 98th percentile; about 2% of dancers scored higher than Isabella and Tony.

5-30. a. It seems reasonable the distribution is relatively bell shaped, unimodal, and symmetric.

b. mean = 2.7333 students, SD = 1.1427 students

c. 

d. See graph above. 19.0%

e. 

$P(X > 4)$ = normalcdf(3.5, 10^99, 2.7333, 1.1427) = 0.2511. 0.2511(180) ≈ 45 days

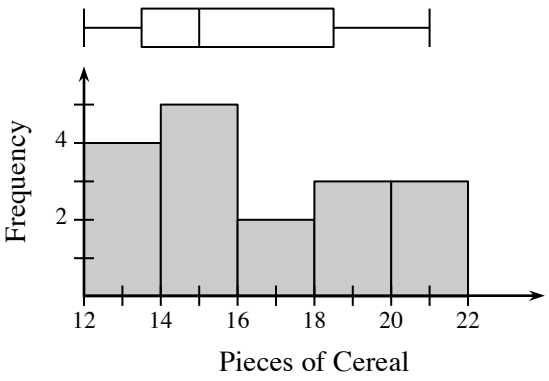
5-31. a. $P(220 < X < 240)$ = normalcdf(220, 240, 230, 7) ≈ 0.847

b. (3)(3)(3) = 27 ft^3, so 27 cubic feet per cubic yard. (9)(27) = 243 cubic feet; $P(X > 243)$ = normalcdf(243, 10^99, 230, 7) ≈ 0.032

c. $P(X < 235)$ = normalcdf(–10^99, 235, 230, 7) ≈ 0.762 or the 76^{th} percentile

d. $P(X < 220)$ = normalcdf(–10^99, 220, 230, 7) ≈ 0.077

5-32. See graph at right. The data appears to be skewed to the right, centered about a median of 15 pieces, with an IQR of 5 pieces.



5-33. a. 14.89 question or 24.8% correct

b. 10%

c. Mr. Knowlsen's claims are reflected in the simulation of pure guessing.

d. It seems as though there is no skill or knowledge associated with higher scores, so he should instead try to improve his grade with homework or extra credit.

