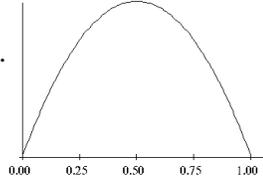
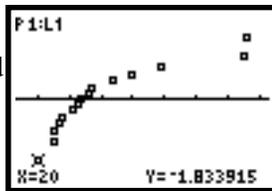


1. For the density curve shown, which statement is true?
 (a) The density curve is symmetric.
 (b) The density curve is skewed right.
 (c) The density curve is skewed left.
 (d) The density curve is Normal.
 (e) None of the above is correct.



2. For the density curve shown in Question 1, which statement is true?
 (a) The mean is greater than the median.
 (b) The mean is less than the median.
 (c) The mean and median are equal.
 (d) The mean could be either greater than or less than the median.
 (e) None of the above is correct.
3. Suppose that 16-ounce bags of chocolate chip cookies are produced with weights that follow a Normal distribution with mean weight 16.1 ounces and standard deviation 0.1 ounce. The percent of bags that will contain between 16.0 and 16.1 ounces is about
 (a) 10
 (b) 16
 (c) 34
 (d) 68
 (e) none of the above
4. This is a continuation of Question 3. Approximately what percent of the bags will likely be underweight (that is, less than 16 ounces)?
 (a) 10
 (b) 16
 (c) 32
 (d) 64
 (e) none of the above

5. The plot shown at the right is a Normal probability plot for a set of data. The data value is plotted on the x axis, and the standardized value is plotted on the y axis. Which statement is true for these data?
 (a) The data are clearly Normally distributed.
 (b) The data are approximately Normally distributed.
 (c) The data are clearly skewed
 (e) There is insufficient information to determine the shape of the distribution.



6. Which of the following is (are) a true statement?
 I. The area under a Normal curve is always 1, regardless of the mean and standard deviation.
 II. The mean is always equal to the median for any Normal distribution.
 III. The interquartile range for any Normal curve extends from $\mu - 1\sigma$ to $\mu + 1\sigma$.
 (a) I and II
 (b) I and III
 (c) II and III
 (d) I, II, and III
 (e) None of the above gives the correct set of true statements.
7. Which of the following is NOT CORRECT about a standard Normal distribution?
 (a) The proportion of scores that satisfy $0 < Z < 1.5$ is 0.4332.
 (b) The proportion of scores that satisfy $Z < -1.0$ is 0.1587.
 (c) The proportion of scores that satisfy $Z > 2.0$ is 0.0228.
 (d) The proportion of scores that satisfy $Z < 1.5$ is 0.9332.
 (e) The proportion of scores that satisfy $Z > -2.5$ is 0.4938.
8. In some courses (but certainly not in an intro stats course!), students are graded on a “Normal curve.” For example, students within ± 0.5 standard deviations of the mean receive a C; between 0.5 and 1.0 standard deviations above the mean receive a C+; between 1.0 and 1.5 standard deviations above the mean receive a B; between 1.5 and 2.0 standard deviations above the mean receive a B+, etc. The class average on an exam was 60 with a standard deviation of 10. The bounds for a B grade and the percent of students who will receive a B grade if the marks are actually Normally distributed are
 (a) (65, 75), 24.17%
 (b) (70, 75), 18.38%
 (c) (70, 75), 9.19%
 (d) (65, 75), 12.08%
 (e) (70, 75), 6.68%

Part 2: Free Response

Answer completely, but be concise. Show your thought process clearly.

9. Scores on the Wechsler Adult Intelligence Scale for the 20 to 34 age group are approximately Normally distributed with mean 110 and standard deviation 25. Scores for the 60 to 64 age group are approximately Normally distributed with mean 90 and standard deviation 25.

Sarah, who is 30, scores 135 on this test. Sarah's mother, who is 60, also takes the test and scores 120. Who scored higher relative to her age group, Sarah or her mother? Use raw data, percentiles, and z -scores to help answer this question.

10. A study recorded the amount of oil recovered from the 64 wells in an oil field. Here are descriptive statistics for that set of data from Minitab.

Descriptive Statistics: Oilprod

Variable	N	Mean	Median	TrMean	StDev	SE Mean
Oilprod	64	48.25	37.80	43.50	40.24	5.03

Variable	Minimum	Maximum	Q1	Q3
Oilprod	2.00	204.90	21.40	60.75

Does the amount of oil recovered from all wells in this field seem to follow a Normal distribution? Give appropriate statistical evidence to support your answer.

11. When Tiger Woods is on the driving range, the distance that golf balls travel when he hits them with a driver follows a Normal distribution with mean 310 yards and standard deviation 8 yards.

- (a) Sketch the distribution of Tiger Woods's drive distances. Label the points one, two, and three standard deviations from the mean.
- (b) What proportion of Tiger's drives travel between 300 and 325 yards? Shade the appropriate area under the curve you drew in (a). Then show your work.
- (c) Find the 33rd percentile of Tiger's drive distance distribution. Show your method.