

1. On a standardized test, the distribution of scores is normal, the mean of the scores is 75, and the standard deviation is 5.8. If a student scored 83, the student's score ranks

- (1) below the 75th percentile
- (2) between the 84th percentile and the 97th percentile
- (3) above the 97th percentile
- (4) between the 75th percentile and the 84th percentile.

2. In parallelogram $ABCD$, diagonals \overline{AC} and \overline{DB} intersect at E . Which statement is *always* true?

- (1) Triangle AED is isosceles.
- (2) Triangle ABD is a right triangle.
- (3) Triangle AEB is congruent to triangle AED .
- (4) Triangle ABC is congruent to triangle CDA .

1. _____

2. _____

3. The availability of leaded gasoline in New York State is decreasing, as shown in the accompanying table.

Year	1984	1988	1992	1996	2000
Gallons Available (in thousands)	150	124	104	76	50

Determine a linear relationship for x (years) versus y (gallons available), based on the data given. The data should be entered using the year and gallons available (in thousands), such as (1984, 150).

If this relationship continues, determine the number of gallons of leaded gasoline available in New York State in the year 2005.

If this relationship continues, during what year will leaded gasoline first become unavailable in New York State?

3. _____

4. Which equation defines a function whose inverse is *not* a function?

- (1) $y = |x|$
- (2) $y = -x$
- (3) $y = 3x + 2$
- (4) $y = 2^x$

5. The probability of guessing the correct answer on a true-false question is $\frac{1}{2}$. If Mary guesses the answers to five true-false questions, what is the probability that she will get exactly four correct answers?

4. _____

5. _____

6. Find the fifth term in the expansion of $(a + bi)^7$.

6.

7. The breaking strength, y , in tons, of steel cable with diameter d , in inches, is given in the table below.

d (in)	0.50	0.75	1.00	1.25	1.50	1.75
y (tons)	9.85	21.80	38.30	59.20	84.40	114.00

On the accompanying grid, make a scatter plot of these data. Write the exponential regression equation, expressing the regression coefficients to the *nearest tenth*.

