MATHEMATICS TEST

60 Minutes—60 Questions

DIRECTIONS: Solve each problem, choose the correct answer, and then fill in the corresponding oval on your answer document.

Do not linger over problems that take too much time. Solve as many as you can; then return to the others in the time you have left for this test.

You are permitted to use a calculator on this test. You may use your calculator for any problems you choose, but some of the problems may best be done without using a calculator.

Note: Unless otherwise stated, all of the following should be assumed.

1. Illustrative figures are NOT necessarily drawn to scale.
2. Geometric figures lie in a plane.
3. The word *line* indicates a straight line.
4. The word *average* indicates arithmetic mean.

DO YOUR FIGURING HERE.

1. If $2x - 3 = 12$, then $x = ?$

   A. 2.0
   B. 4.5
   C. 7.5
   D. 9.0
   E. 15.0

2. Consider the following two logical statements.

   If the length of $\overline{AB}$ is 2, then the length of $\overline{BC}$ is 5.
   The length of $\overline{BC}$ is NOT 5.

   If these statements are both true, then it follows that the length of:

   F. $\overline{AB}$ is NOT 2.
   G. $\overline{AB}$ is 2.
   H. $\overline{AB}$ is 5.
   J. $\overline{BC}$ is 2.
   K. $\overline{BC}$ is NOT 2.

3. If the probability that it will rain tomorrow is 0.7, what is the probability that it will NOT rain tomorrow?

   A. 0.0
   B. 0.1
   C. 0.3
   D. 1.0
   E. 1.7

DO YOUR FIGURING HERE.

4 rio bought 1 compact disc for \$8.95 and 3 others for \$7.99 each. What was the average price per disc he paid for these 4 compact discs?

F. $\$8.95 + \frac{\$7.99}{3}$

G. $\frac{\$8.95}{4} + \frac{\$7.99}{3}$

H. $\frac{\$8.95 + \$7.99}{2}$

J. $\frac{\$8.95 + \$7.99}{4}$

K. $\frac{\$8.95 + 3(\$7.99)}{4}$

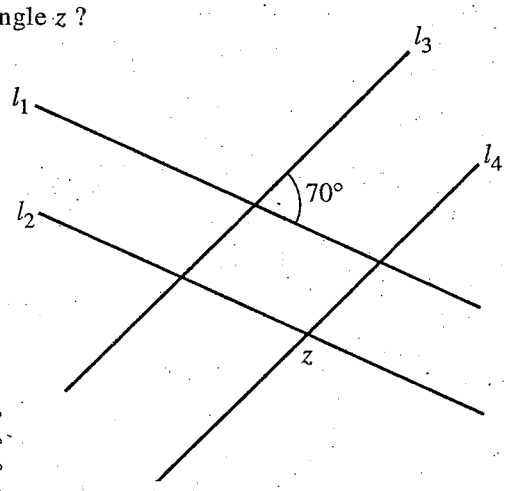
5. On Saturday Sid received his pay and spent $\frac{1}{2}$ of it. On Sunday he spent $\frac{1}{2}$ of the remaining money, and on Monday he spent $\frac{1}{2}$ of what remained from Sunday. If \$4 then remained, how much pay did he receive originally?

A. \$12
B. \$16
C. \$24
D. \$32
E. \$64

6. $N = -3a$ and $M = 2b - a$, then what is the value of $N + M$?

F. $-4a + 2b$
G. $-4a - 2b$
H. $-3a + 2b$
J. $-2a + 2b$
K. $-2a - 2b$

7. In the figure below, l_1 is parallel to l_2, l_3 is parallel to l_4, and the lines intersect as shown. What is the measure of angle z?



A. 110°
B. 120°
C. 130°
140°
. Cannot be determined from the given information

DO YOUR FIGURING HERE.

8. If $x = -4$, then $-x^2 - 5x + 3 = ?$

   F. 31
   G. 15
   H. 7
   J. −25
   K. −33

9. The average of 6 numbers is 4.5. If each of the numbers is decreased by 4, what is the average of the 6 new numbers?

   A. 0.0
   B. 0.5
   C. 4.5
   D. 5.0
   E. 9.0

10. The expression $7a + 7b$ is equivalent to which of the following?

    F. $7(a + b)$
    G. $14(a + b)$
    H. $7a + b$
    J. $7ab$
    K. $14ab$

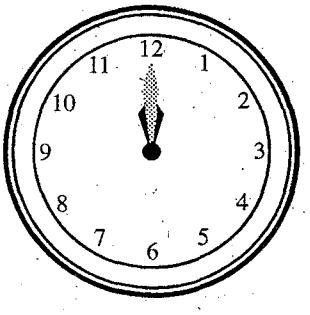
11. For each day on your newspaper route you receive $10.00 plus a fixed amount for each newspaper you deliver. Currently you are earning $18.00 per day for delivery of 80 newspapers. Today you are assigned to deliver 20 additional newspapers per day. What will be your new daily earnings?

    A. $10.00
    B. $18.20
    C. $19.00
    D. $20.00
    E. $22.50

12. If $\frac{5}{x} \geq \frac{1}{3}$, what is the largest possible value for x?

    F. $\frac{1}{2}$
    G. 2
    H. 3
    J. 8
    K. 15

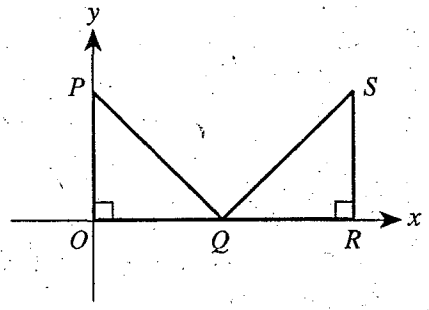
13. What is the number of degrees the *hour* hand of a clock moves in 10 hours?



    A. 100°
    B. 120°
    C. 150°
    D. 220°
    E. 300°

DO YOUR FIGURING HERE.

14. In the standard (x,y) coordinate plane below, $\triangle POQ$ and $\triangle SRQ$ are isosceles right triangles with equal areas. Points O, P, Q, and R are located on the axes as shown. Which of the following could be the coordinates of point S ?



F. (0,14)
G. (7, 0)
H. (7,14)
J. (14, 0)
K. (14, 7)

15. Which of the following equations has both $x = 2$ and $x = -3$ as solutions?

A. $(x - 2)(x + 3) = 0$
B. $(x + 2)(x + 3) = 0$
C. $(x - 2)(-x + 3) = 0$
D. $(x + 2)(x - 3) = 0$
E. $x - 2 = x + 3$

16. A theater has m rows of seats with $(n + p)$ seats in each row. Which of the following is an expression for the number of seats in the entire theater?

F. $(m \cdot n) + p$
G. $(m \cdot n) + (m \cdot p)$
H. $n + (m \cdot p)$
J. $m \cdot n \cdot p$
K. $m + n + p$

17. If 40% of x equals 80, then x = ?

A. 2
B. 32
C. 200
D. 2,000
E. 3,200

18. The cost of electricity at the local utility company is 10 cents per kilowatt-hour for the first 100 kilowatt-hours used in a month and 7 cents per kilowatt-hour for each additional kilowatt-hour used. What is the cost for 500 kilowatt-hours used in 1 month?

F. $28.00
G. $35.00
H. $38.00
J. $50.00
K. $85.00

DO YOUR FIGURING HERE.

19. You are standing in line at the cash register to pay for a bracelet priced at \$15.99. A sales tax of 8% of the \$15.99 will be added (rounded to the nearest cent) to the price of the bracelet. You have 20 one-dollar bills, but how much will you need in coins if you want to have exact change ready?

A. 7¢
B. 8¢
C. 19¢
D. 27¢
E. 63¢

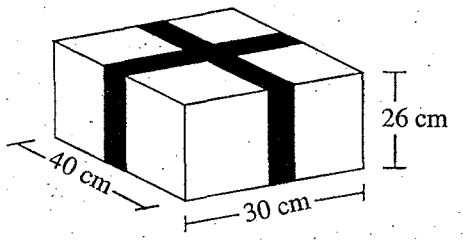
20. For which nonnegative value of x is the expression $\frac{1}{9-x^2}$ undefined?

F. 81
G. 18
H. 9
J. 3
K. 0

21. What is the correct ordering of π, $\frac{7}{2}$, and 3 from least to greatest?

A. $3 < \pi < \frac{7}{2}$
B. $3 < \frac{7}{2} < \pi$
C. $\pi < 3 < \frac{7}{2}$
D. $\frac{7}{2} < 3 < \pi$
E. $\frac{7}{2} < \pi < 3$

22. Two strips of tape are to be used to wrap a box, as shown below. Both strips must go completely around the box. What is the minimum length of tape, in centimeters (cm), required to wrap the box?



F. 102
G. 112
H. 144
J. 204
K. 244