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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 wit using a calculator.

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

1. Illustrative figures are NOT necessarily drawn to sc
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. There are 42 tuna and 49 salmon in a fish tank. What is the ratio of tuna to salmon?

A. 1:6
B. 1:7
C. 6:7
D. 6:13
E. 7:6

2. The only solution to the equation $(x - 2)(x - 10) = c$ is $x = 6$. What is c ?

F. -16
G. -12
H. 16
J. 20
K. 24

3. Samantha, Larry, and Maria own shares of stock in the Plentiful Peanuts company. Samantha owns 50 shares, Larry owns 30 shares, and Maria owns 70 shares. Today, the value of 1 share of Plentiful Peanuts stock is \$4.05. What is the total value of Samantha's, Larry's, and Maria's shares of Plentiful Peanuts stock?

A. \$154.05
B. \$190.50
C. \$405.00
D. \$605.00
E. \$607.50

4. $5p^6 \cdot 3p^2$ is equivalent to:

F. $8p^4$
G. $8p^8$
H. $8p^{12}$
J. $15p^8$
K. $15p^{12}$

DO YOUR FIGURING HERE.

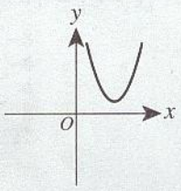
5. Simeon ordered graduation announcements from 'Nouncements & Notes. He was charged $35.00 for his announcements and was charged 8% of that amount for shipping. How much was Simeon charged for his announcements and shipping?

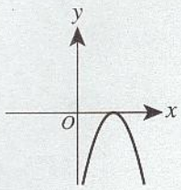
   A. $35.08
   B. $35.70
   C. $36.08
   D. $37.80
   E. $43.00

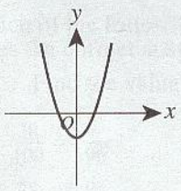
6. A jar contains only 11 red balls, 9 yellow balls, 5 green balls, and n white balls. Each ball is a solid color. What is the probability that a ball randomly chosen from the jar is yellow?

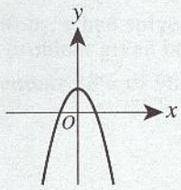
   F. $\frac{1}{9}$
   G. $\frac{1}{25}$
   H. $\frac{9}{25}$
   J. $\frac{9+n}{25+n}$
   K. $\frac{9}{25+n}$

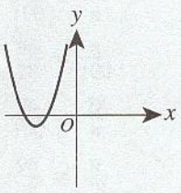
7. Each of the following (x,y) coordinate planes shows the graph of a quadratic function. Only one of the functions has no real zeros. Which one?

   A.
   

   D.
   

   B.
   

   E.
   

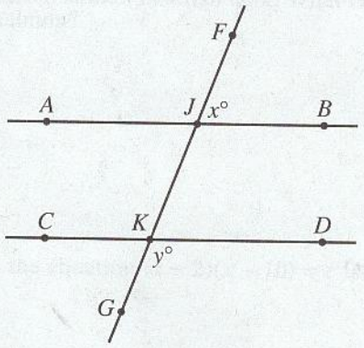
   C.
   

DO YOUR FIGURING HERE.

8. On a certain day in 2008, the population of the United States was estimated to be 303,488,509. Which of the following values is closest to this estimate?

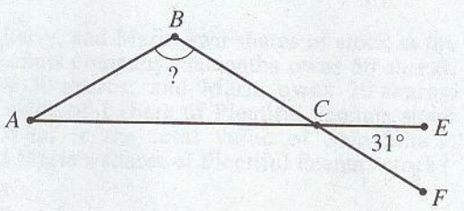
   F. 3.03×10^6
   G. 3.04×10^6
   H. 3.03×10^8
   J. 3.03×10^9
   K. 3.04×10^9

9. In the figure below, $\overleftrightarrow{AB}$ is parallel to $\overleftrightarrow{CD}$, and $\overleftrightarrow{FG}$ intersects $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ at J and K, respectively. Which of the following equations *must* be true?



   A. $x = \frac{1}{2}y$
   B. $x = y$
   C. $x + y = 90$
   D. $x + y = 180$
   E. $x + y = 360$

10. In the figure below, $\overline{AB}$ is congruent to $\overline{BC}$, and $\overline{AE}$ intersects $\overline{BF}$ at C. What is the measure of $\angle B$?



   F. 28°
   G. 31°
   H. 62°
   J. 118°
   K. 149°

11. The expression $\dfrac{7+\frac{1}{5}}{1+\frac{1}{10}}$ is equal to:

   A. $3\frac{3}{11}$
   B. 4
   C. $4\frac{1}{2}$
   D. $6\frac{6}{11}$
   E. 9

DO YOUR FIGURING HERE.

12. Consider all products xy such that x is divisible by 6 and y is divisible by 10. Which of the following whole numbers is NOT a factor of each product xy ?

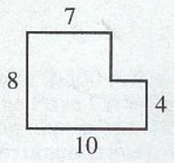
F. 2
G. 6
H. 8
J. 30
K. 60

13. Kaya rented a boat from a marina for a fee of $50, plus $3 for every gallon of gas she used. When she returned the boat, Kaya was given a bill of $98. She had kept track of her gas usage and thought that the bill was in error—specifically, that the bill was $21 more than it should have been. If Kaya was correct, how many gallons of gas did Kaya use during her rental?

A. 2
B. 7
C. 9
D. 16
E. 23

14. In the figure shown below, all angles are right angles, and the side lengths given are in meters. What is the area, in square meters, of the figure?

F. 12
G. 52
H. 68
J. 80
K. 96



15. $|6-4| - |3-9| = ?$

A. −8
B. −4
C. 4
D. 8
E. 22

16. Which of the following proportions, when solved for n, gives the correct answer to the problem given below?

Find the value of n that equals 28% of 96.

F. $\frac{28}{100} = \frac{n}{96}$

G. $\frac{28}{100} = \frac{96}{n}$

H. $\frac{96}{28} = \frac{n}{100}$

J. $\frac{96}{100} = \frac{28}{n}$

K. $\frac{96}{n} = \frac{n}{28}$

DO YOUR FIGURING HERE.

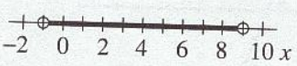
17. In the standard (x,y) coordinate plane, the point $(2,-6)$ is the midpoint of the line segment with endpoints $(8,-8)$ and:

A. $(-4,-20)$
B. $(-4,-4)$
C. $(3,-1)$
D. $(4,4)$
E. $(5,-7)$

18. The function g is defined by $g(x) = 2x^2 - 3x$. What is the value of $g(-3)$?

F. -27
G. -21
H. -9
J. 21
K. 27

19. The graph below is that of the solution set to one of the following statements. Which one?



A. $x < 9$ and $x > -1$
B. $x < 9$ or $x > -1$
C. $x > 9$ and $x < -1$
D. $x > 9$ or $x < -1$
E. $x \neq 9$ and $x \neq -1$

20. The inequality $5(x + 2) > 6(x - 5)$ is equivalent to which of the following inequalities?

F. $x < -20$
G. $x < -3$
H. $x < 7$
J. $x < 37$
K. $x < 40$

21. A right triangle has legs of length 3 cm and 5 cm. The length of the hypotenuse, in centimeters, is between:

A. 2 and 3
B. 3 and 5
C. 5 and 6
D. 6 and 7
E. 7 and 9

22. Each side of a square is 5 cm long. One vertex of the square is at (2,3) on a square coordinate grid marked in centimeter units. Which of the following points on the grid could be another vertex of the square?

F. $(7,3)$
G. $(6,1)$
H. $(3,1)$
J. $(1,-1)$
K. $(-5,3)$

GO ON TO THE NEXT PAGE.