

**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.

1. A restaurant occupying the top floor of a skyscraper rotates as diners enjoy the view. Ling and Sarah notice that they began their meal at 7:00 P.M. looking due north. At 7:45 P.M. they had rotated  $180^\circ$  to a view that was due south. At this rate, how many degrees will the restaurant rotate in 1 hour?

- A.  $90^\circ$
- B.  $180^\circ$
- C.  $240^\circ$
- D.  $270^\circ$
- E.  $400^\circ$

2. If 12 vases cost \$18.00, what is the cost of 1 vase?

- F. \$0.67
- G. \$1.05
- H. \$1.33
- J. \$1.50
- K. \$1.60

3. Your friend shows you a scale drawing of her apartment. The drawing of the apartment is a rectangle 4 inches by 6 inches. Your friend wants to know the length of the shorter side of the apartment. If she knows that the length of the longer side of the apartment is 30 feet, how many feet long is the shorter side of her apartment?

- A. 9
- B. 20
- C. 24
- D. 30
- E. 45

4. A company earned a profit of \$8.0 million each year for 3 consecutive years. For each of the next 2 years the company earned a profit of \$9.0 million. For this 5-year period, what was the company's average yearly profit, in millions of dollars?

- F. 8.2
- G. 8.25
- H. 8.4
- J. 8.5
- K. 8.6

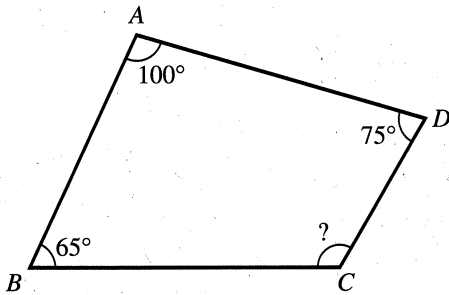
**DO YOUR FIGURING HERE.****GO ON TO THE NEXT PAGE.**



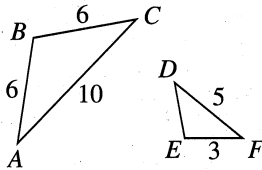
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5. A company rents moving vans for a rental fee of \$25.00 per day with an additional charge of \$0.30 per mile that the van is driven. Which of the following expressions represents the cost, in dollars, of renting a van for 1 day and driving it  $m$  miles?
- A.  $0.30m + 25$
  - B.  $25m + 30$
  - C.  $30m + 25$
  - D.  $25.30m$
  - E.  $55m$

6. The figure below shows quadrilateral  $ABCD$ . What is the measure of  $\angle C$ ?



- F.  $120^\circ$
  - G.  $115^\circ$
  - H.  $105^\circ$
  - J.  $100^\circ$
  - K.  $80^\circ$
7. In the figure below,  $\triangle ABC$  and  $\triangle DEF$  are similar triangles with the given side lengths in meters. What is the perimeter, in meters, of  $\triangle DEF$ ?



- A. 3
  - B. 8
  - C. 11
  - D. 12
  - E. 13
8. The relationship between temperature in degrees Fahrenheit,  $F$ , and temperature in degrees Celsius,  $C$ , is expressed by the formula  $F = \frac{9}{5}C + 32$ . Calvin reads a temperature of  $38^\circ$  on a Celsius thermometer. To the nearest degree, what is the equivalent temperature on a Fahrenheit thermometer?
- F.  $36^\circ$
  - G.  $53^\circ$
  - H.  $68^\circ$
  - J.  $70^\circ$
  - K.  $100^\circ$

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9. Nick needs to order 500 pens from his supplier. The catalog shows that these pens come in cases of 24 boxes with 10 pens in each box. Nick knows that he may NOT order partial cases. What is the fewest number of cases he should order?

A. 2  
B. 3  
C. 18  
D. 21  
E. 50

10. When  $a + b = 6$ , what is the value of

$$2(a + b) + \frac{a + b}{6} + (a + b)^2 - 2?$$

F. 23  
G. 37  
H. 38  
J. 43  
K. 47

11. The cost of a hamburger and a soft drink together is \$2.10. The cost of 2 hamburgers and a soft drink together is \$3.50. What is the cost of a soft drink?

A. \$0.50  
B. \$0.55  
C. \$0.70  
D. \$1.05  
E. \$1.40

12. If  $12x = -8(10 - x)$ , then  $x = ?$

F. 20  
G. 8  
H.  $7\frac{3}{11}$   
J.  $6\frac{2}{13}$   
K. -20

13. Shannon is planning to tile a rectangular kitchen countertop that is 24 inches wide and 64 inches long. She determined that 1 tile will be needed for each 4-inch-by-4-inch region. What is the minimum number of tiles that will be needed to completely cover the countertop to its edges?

A. 44  
B. 88  
C. 96  
D. 176  
E. 384

14. Which of the following lists gives 2 of the 3 interior angle measurements of a triangle for which the 3rd angle measurement would be equal to 1 of the 2 given measurements?

F.  $20^\circ$ ,  $40^\circ$   
G.  $30^\circ$ ,  $60^\circ$   
H.  $40^\circ$ ,  $100^\circ$   
J.  $45^\circ$ ,  $120^\circ$   
K.  $50^\circ$ ,  $60^\circ$

DO YOUR FIGURING HERE.

GO ON TO THE NEXT PAGE.