

SECTION 2
Time—25 Minutes
16 Questions

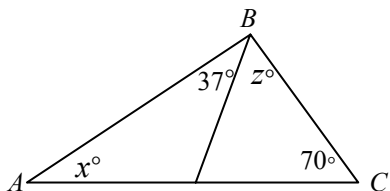
Directions: In this section solve each problem, using any available space on the page for scratchwork. Then indicate the best of the answer choices given.

Numbers: All numbers used are real numbers.

Figures: Figures that accompany problems in this section are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that its figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.

1. As a salesperson, Phyllis can choose one of two methods of annual payment: either an annual salary of \$35,000 with no commission or an annual salary of \$10,000 plus a 20 percent commission on her total annual sales. What must her total annual sales be to give her the same annual pay with either method?
(A) \$100,000
(B) \$120,000
(C) \$125,000
(D) \$130,000
(E) \$132,000
2. A restaurant buys fruits in cans containing $3\frac{1}{2}$ cups of fruit each. If the restaurant uses $\frac{1}{2}$ cup of the fruit in each serving of its fruit compote, what is the least number of cans needed to prepare 60 servings of the compote?
(A) 7
(B) 8
(C) 9
(D) 10
(E) 12
3. If $x > 3,000$, then the value of $\frac{x}{2x+1}$ is closest to
(A) $\frac{1}{6}$
(B) $\frac{1}{3}$
(C) $\frac{10}{21}$
(D) $\frac{1}{2}$
(E) $\frac{3}{2}$
4. Machine A produces 100 parts twice as fast as machine B does. Machine B produces 100 parts in 40 minutes. If each machine produces parts at a constant rate, how many parts does machine A produce in 6 minutes?
(A) 30
(B) 25
(C) 20
(D) 15
(E) 7.5
5. If 18 is 15 percent of 30 percent of a certain number, what is the number?
(A) 9
(B) 36
(C) 40
(D) 81
(E) 400
6. A necklace is made by stringing N individual beads together in the repeating pattern red bead, green bead, white bead, blue bead, and yellow bead. If the necklace design begins with a red bead and ends with a white bead, then N could equal
(A) 16
(B) 32
(C) 41
(D) 54
(E) 68
7. If $x = (0.08)^2$, $y = \frac{1}{(0.08)^2}$, and $z = (1 - 0.08)^2 - 1$, which of the following is true?
(A) $x = y = z$
(B) $y < z < x$
(C) $z < x < y$
(D) $y < x$ and $x = z$.
(E) $x < y$ and $x = z$.

GO ON TO THE NEXT PAGE.



8. In $\triangle ABC$ above, what is x in terms of z ?

(A) $z + 73$
 (B) $z - 73$
 (C) $70 - z$
 (D) $z - 70$
 (E) $73 - z$

9. In 1990 a total of x earthquakes occurred worldwide, some but not all of which occurred in Asia. If m of these earthquakes occurred in Asia, which of the following represents the ratio of the number of earthquakes that occurred in Asia to the number that did not occur in Asia?

(A) $\frac{x}{m}$
 (B) $\frac{m}{x}$
 (C) $\frac{m}{x-m}$
 (D) $\frac{x}{x-m}$
 (E) $1 - \frac{m}{x}$

10. If $\frac{x+y}{xy} = 1$, then $y =$

(A) $\frac{x}{x-1}$
 (B) $\frac{x}{x+1}$
 (C) $\frac{x-1}{x}$
 (D) $\frac{x+1}{x}$
 (E) x

11. If $\frac{1}{2}$ of the air in a tank is removed with each stroke of a vacuum pump, what fraction of the original amount of air has been removed after 4 strokes?

(A) $\frac{15}{16}$
 (B) $\frac{7}{8}$
 (C) $\frac{1}{4}$
 (D) $\frac{1}{8}$
 (E) $\frac{1}{16}$

12. Last year Department Store X had a sales total for December that was 4 times the average (arithmetic mean) of the monthly sales totals for January through November. The sales total for December was what fraction of the sales total for the year?

(A) $\frac{1}{4}$
 (B) $\frac{4}{15}$
 (C) $\frac{1}{3}$
 (D) $\frac{4}{11}$
 (E) $\frac{4}{5}$

13. How many integers n are there such that $1 < 5n + 5 < 25$?

(A) Five
 (B) Four
 (C) Three
 (D) Two
 (E) One

14. If the two-digit integers M and N are positive and have the same digits, but in reverse order, which of the following CANNOT be the sum of M and N ?

(A) 181
 (B) 165
 (C) 121
 (D) 99
 (E) 44

GO ON TO THE NEXT PAGE.

15. Working alone, printers X , Y , and Z can do a certain printing job, consisting of a large number of pages, in 12, 15, and 18 hours, respectively. What is the ratio of the time it takes printer X to do the job, working alone at its rate, to the time it takes printers Y and Z to do the job, working together at their individual rates?
- (A) $\frac{4}{11}$
(B) $\frac{1}{2}$
(C) $\frac{15}{22}$
(D) $\frac{22}{15}$
(E) $\frac{11}{4}$
16. In 1985 a company sold a brand of shoes to retailers for a fixed price per pair. In 1986 the number of pairs of the shoes that the company sold to retailers decreased by 20 percent, while the price per pair increased by 20 percent. If the company's revenue from the sale of the shoes in 1986 was \$3.0 million, what was the approximate revenue from the sale of the shoes in 1985?
- (A) \$2.4 million
(B) \$2.9 million
(C) \$3.0 million
(D) \$3.1 million
(E) \$3.6 million

STOP

IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK ON THIS SECTION ONLY.

DO NOT TURN TO ANY OTHER SECTION IN THE TEST.

SECTION 7

Time—25 Minutes

16 Questions

Directions: In this section solve each problem, using any available space on the page for scratchwork. Then indicate the best of the answer choices given.

Numbers: All numbers used are real numbers.

Figures: Figures that accompany problems in this section are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that its figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.

1. $\frac{(3)(0.072)}{0.54} =$

- (A) 0.04
- (B) 0.3
- (C) 0.4
- (D) 0.8
- (E) 4.0

2. A car dealer sold x used cars and y new cars during May. If the number of used cars sold was 10 greater than the number of new cars sold, which of the following expresses this relationship?

- (A) $x > 10y$
- (B) $x > y + 10$
- (C) $x > y - 10$
- (D) $x = y + 10$
- (E) $x = y - 10$

3. What is the maximum number of $1\frac{1}{4}$ -foot pieces of wire that can be cut from a wire that is 24 feet long?

- (A) 11
- (B) 18
- (C) 19
- (D) 20
- (E) 30

4. If each of the two lines ℓ_1 and ℓ_2 is parallel to line ℓ_3 , which of the following must be true?

- (A) Lines ℓ_1 , ℓ_2 , and ℓ_3 lie in the same plane.
- (B) Lines ℓ_1 , ℓ_2 , ℓ_3 lie in different planes.
- (C) Line ℓ_1 is parallel to line ℓ_2 .
- (D) Line ℓ_1 is the same line as ℓ_2 .
- (E) Line ℓ_1 is the same line as ℓ_3 .

$$\frac{61.24 \times (0.998)^2}{\sqrt{403}} =$$

5. The expression above is approximately equal to

- (A) 1
- (B) 3
- (C) 4
- (D) 5
- (E) 6

6. Car X and car Y traveled the same 80-mile route. If car X took 2 hours and car Y traveled at an average speed that was 50 percent faster than the average speed of car X , how many hours did it take car Y to travel the route?

- (A) $\frac{2}{3}$
- (B) 1
- (C) $1\frac{1}{3}$
- (D) $1\frac{3}{5}$
- (E) 3

7. If the numbers $\frac{17}{24}$, $\frac{1}{2}$, $\frac{3}{8}$, $\frac{3}{4}$, and $\frac{9}{16}$ were ordered from greatest to least, the middle number of the resulting sequence would be

- (A) $\frac{17}{24}$
- (B) $\frac{1}{2}$
- (C) $\frac{3}{8}$
- (D) $\frac{3}{4}$
- (E) $\frac{9}{16}$

GO ON TO THE NEXT PAGE

8. If a 10 percent deposit that has been paid toward the purchase of a certain product is \$110, how much more remains to be paid?
- (A) \$880
(B) \$990
(C) \$1,000
(D) \$1,100
(E) \$1,210
9. Kim purchased n items from a catalog for \$8 each. Postage and handling charges consisted of \$3 for the first item and \$1 for each additional item. Which of the following gives the total dollar amount for Kim's purchase, including postage and handling, in terms of n ?
- (A) $8n + 2$
(B) $8n + 4$
(C) $9n + 2$
(D) $9n + 3$
(E) $9n + 4$
10. $(\sqrt{7} + \sqrt{7})^2 =$
- (A) 98
(B) 49
(C) 28
(D) 21
(E) 14
11. If the average (arithmetic mean) of the four numbers K , $2K + 3$, $3K - 5$ and $5K + 1$ is 63, what is the value of K ?
- (A) 11
(B) $15\frac{3}{4}$
(C) 22
(D) 23
(E) $25\frac{3}{10}$
12. A rabbit on a controlled diet is fed daily 300 grams of a mixture of two foods, food X and food Y . Food X contains 10 percent protein, and food Y contains 15 percent protein. If the rabbit's diet provides exactly 38 grams of protein daily, how many grams of food X are in the mixture?
- (A) 100
(B) 140
(C) 150
(D) 160
(E) 200
13. A company that ships boxes to a total of 12 distribution centers uses color coding to identify each center. If either a single color or a pair of two different colors is chosen to represent each center and if each center is uniquely represented by that choice of one or two colors, what is the minimum number of colors needed for the coding? (Assume that the order of the colors in a pair does not matter.)
- (A) 4
(B) 5
(C) 6
(D) 12
(E) 24
14. If $x + y = a$ and $x - y = b$, then $2xy =$
- (A) $\frac{a^2 - b^2}{2}$
(B) $\frac{b^2 - a^2}{2}$
(C) $\frac{a - b}{2}$
(D) $\frac{ab}{2}$
(E) $\frac{a^2 + b^2}{2}$
15. A rectangular circuit board is designed to have width w inches, perimeter p inches, and area k square inches. Which of the following equations must be true?
- (A) $w^2 + pw + k = 0$
(B) $w^2 - pw + 2k = 0$
(C) $2w^2 + pw + 2k = 0$
(D) $2w^2 - pw - 2k = 0$
(E) $2w^2 - pw + 2k = 0$
16. On a certain road 10 percent of the motorists exceed the posted speed limit and receive speeding tickets, but 20 percent of the motorists who exceed the posted speed limit do not receive speeding tickets. What percent of the motorists on the road exceed the posted speed limit?
- (A) $10\frac{1}{2}\%$
(B) $12\frac{1}{2}\%$
(C) 15%
(D) 22%
(E) 30%

STOP

IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK ON THIS SECTION ONLY.

DO NOT TURN TO ANY OTHER SECTION IN THE TEST

ANSWER KEY – Test Code 25

Section 1	Section 2	Section 4	Section 5	Section 6	Section 7
1. B	1. C	1. A	1. D	1. E	1. C
2. D	2. C	2. B	2. D	2. C	2. D
3. B	3. D	3. D	3. D	3. A	3. C
4. A	4. A	4. B	4. C	4. B	4. C
5. C	5. E	5. C	5. E	5. A	5. B
6. D	6. E	6. C	6. B	6. B	6. C
7. E	7. C	7. D	7. E	7. E	7. E
8. A	8. E	8. E	8. A	8. B	8. B
9. E	9. C	9. B	9. D	9. A	9. C
10. C	10. A	10. C	10. E	10. E	10. C
11. A	11. A	11. E	11. C	11. C	11. D
12. B	12. B	12. D	12. A	12. B	12. B
13. D	13. B	13. A	13. C	13. D	13. B
14. Not Scored	14. A	14. C	14. E	14. D	14. A
15. B	15. D	15. E	15. A	15. A	15. E
16. A	16. D	16. A	16. D	16. B	16. B
17. E		17. C	17. C		
18. E		18. B	18. A		
19. A		19. B	19. D		
20. B		20. E	20. B		
21. C		21. A			
22. E		22. A			
		23. C			