

SECTION 5
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. On 3 sales John has received commissions of \$240, \$80, and \$110, and he has 1 additional sale pending. If John is to receive an average (arithmetic mean) commission of exactly \$150 on the 4 sales, then the 4th commission must be
 - (A) \$164
 - (B) \$170
 - (C) \$175
 - (D) \$182
 - (E) \$185
2. $\sqrt{463}$ is between
 - (A) 21 and 22
 - (B) 22 and 23
 - (C) 23 and 24
 - (D) 24 and 25
 - (E) 25 and 26
3. The annual budget of a certain college is to be shown on a circle graph. If the size of each sector of the graph is to be proportional to the amount of the budget it represents, how many degrees of the circle should be used to represent an item that is 15 percent of the budget?
 - (A) 15°
 - (B) 36°
 - (C) 54°
 - (D) 90°
 - (E) 150°
4. A company accountant estimates that airfares next year for business trips of a thousand miles or less will increase by 20 percent and airfares for all other business trips will increase by 10 percent. This year total airfares for business trips of a thousand miles or less were \$9,900 and airfares for all other business trips were \$13,000. According to the accountant's estimate, if the same business trips will be made next year as this year, how much will be spent for airfares next year?
 - (A) \$22,930
 - (B) \$26,180
 - (C) \$26,330
 - (D) \$26,490
 - (E) \$29,770
5. What is the value of $2x^2 - 2.4x - 1.7$ for $x = 0.7$?
 - (A) -0.72
 - (B) -1.42
 - (C) -1.98
 - (D) -2.40
 - (E) -2.89
6. If $x * y = xy - 2(x + y)$ for all integers x and y , then $2 * (-3) =$
 - (A) -16
 - (B) -11
 - (C) -4
 - (D) 4
 - (E) 16

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7. During a two week period, the price of an ounce of silver increased by 25 percent by the end of the first week and then decreased by 20 percent of this new price by then end of the second week. If the price of silver was x dollars per ounce at the beginning of the two-week period, what was the price, in dollars per ounce, by the end of the period?

(A) $0.8x$
 (B) $0.95x$
 (C) x
 (D) $1.05x$
 (E) $1.25x$

8. If a cube has a volume of 64, what is its total surface area?

(A) 16
 (B) 24
 (C) 48
 (D) 64
 (E) 96

Club	Number of Students
Chess	40
Drama	30
Math	25

9. The table above shows the number of students in three clubs at McAuliffe School. Although no student is in all three clubs, 10 students are in both chess and drama, 5 students are in both chess and math, and 6 students are in both drama and math. How many different students are in the three clubs?

(A) 68
 (B) 69
 (C) 74
 (D) 79
 (E) 84

10. If s , u , and v are positive integers and

$$2^s = 2^u + 2^v, \text{ which of the following must be true?}$$

- I. $s = u$
 II. $u \neq v$
 III. $s > v$

(A) None
 (B) I only
 (C) II only
 (D) III only
 (E) II and III

11. In a nationwide poll, N people were interviewed. If $\frac{1}{4}$ of them answered "yes" to question 1, and of those, $\frac{1}{3}$ answered "yes" to question 2, which of the following expressions represents the number of people interviewed who did not answer "yes" to both questions?

(A) $\frac{N}{7}$
 (B) $\frac{6N}{7}$
 (C) $\frac{5N}{12}$
 (D) $\frac{7N}{12}$
 (E) $\frac{11N}{12}$

12. In a certain pond, 50 fish were caught, tagged, and returned to the pond. A few days later, 50 fish were caught again, of which 2 were found to have been tagged. If the percent of tagged fish in the second catch approximates the percent of tagged fish in the pond, what is the approximate number of fish in the pond?

(A) 400
 (B) 625
 (C) 1,250
 (D) 2,500
 (E) 10,000

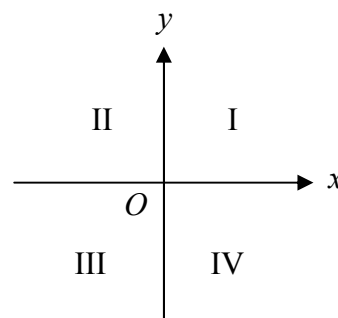
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13. The ratio of two quantities is 3 to 4. If each of the quantities is increased by 5, what is the ratio of these two new quantities?

- (A) $\frac{3}{4}$
(B) $\frac{8}{9}$
(C) $\frac{18}{19}$
(D) $\frac{23}{24}$
(E) It cannot be determined from the information given.

14. In 1986 the book value of a certain car was $\frac{2}{3}$ of the original price, and in 1988 its book value was $\frac{1}{2}$ of the original purchase price. By what percent did the book value for this car decrease from 1986 to 1988?

- (A) $16\frac{2}{3}\%$
(B) 25%
(C) $33\frac{1}{3}\%$
(D) 50%
(E) 75%



15. In the rectangular coordinate system shown above, which quadrant, if any, contains no point (x, y) that satisfies the inequality $2x - 3y \leq -6$?

- (A) None
(B) I
(C) II
(D) III
(E) IV

16. A hiker walked for two days. On the second day the hiker walked 2 hours longer and at an average speed 1 mile per hour faster than he walked on the first day. If during the two days he walked a total of 64 miles and spent a total of 18 hours walking, what was his average speed on the first day?

- (A) 2 mph
(B) 3 mph
(C) 4 mph
(D) 5 mph
(E) 6 mph

STOP

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SECTION 7

Time—25 Minutes

16 Questions

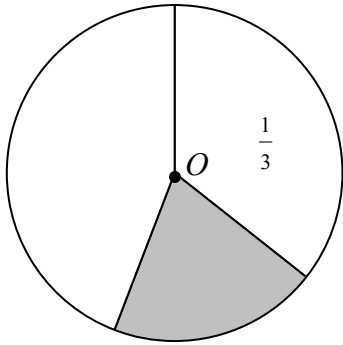
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1. If a printer can print 2 pages of text per second, then, at this rate, approximately how many minutes will it take to print 5,000 pages of text?

(A) 4
(B) 25
(C) 42
(D) 250
(E) 417



2. In the circular region with center O , shown above, the two unshaded sections comprise $\frac{3}{7}$ and $\frac{1}{3}$ of the area of the circular region. The shaded section comprises what fractional part of the area of the circular region?

(A) $\frac{3}{5}$
(B) $\frac{6}{7}$
(C) $\frac{2}{21}$
(D) $\frac{5}{21}$
(E) $\frac{16}{21}$

3. Envelopes can be purchased for \$1.50 per pack of 100, \$1.00 per pack of 50, or \$0.03 each. What is the greatest number of envelopes that can be purchased for \$7.30?

(A) 426
(B) 430
(C) 443
(D) 460
(E) 486

4. $\sqrt{16 + 16} =$

(A) $4\sqrt{2}$
(B) $8\sqrt{2}$
(C) $16\sqrt{2}$
(D) 8
(E) 16

5. An automobile's gasoline mileage varies, depending on the speed of the automobile, between 18.0 and 22.4 miles per gallon, inclusive. What is the maximum distance, in miles, that the automobile could be driven on 15 gallons of gasoline?

(A) 336
(B) 320
(C) 303
(D) 284
(E) 270

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6. $\frac{(0.3)^5}{(0.3)^3} =$
- (A) 0.001
(B) 0.01
(C) 0.09
(D) 0.9
(E) 1.0
7. In a horticultural experiment, 200 seeds were planted in plot I and 300 were planted in plot II. If 57 percent of the seeds in plot I germinated and 42 percent of the seeds in plot II germinated, what percent of the total number of planted seeds germinated?
- (A) 45.5%
(B) 46.5%
(C) 48.0%
(D) 49.5%
(E) 51.0%
8. The organizers of a fair projected a 25 percent increase in attendance this year over that of last year, but attendance this year actually decreased by 20 percent. What percent of the projected attendance was the actual attendance?
- (A) 45%
(B) 56%
(C) 64%
(D) 75%
(E) 80%
9. An optometrist charges \$150 per pair for soft contact lenses and \$85 per pair for hard contact lenses. Last week she sold 5 more pairs of soft lenses than hard lenses. If her total sales for pairs of contact lenses last week were \$1,690, what was the total number of pairs of contact lenses that she sold?
- (A) 11
(B) 13
(C) 15
(D) 17
(E) 19
10. What is the ratio of $\frac{3}{4}$ to the product $4\left(\frac{3}{4}\right)$?
- (A) $\frac{1}{4}$
(B) $\frac{1}{3}$
(C) $\frac{4}{9}$
(D) $\frac{9}{4}$
(E) 4
11. The cost to rent a small bus for a trip is x dollars, which is to be shared equally among the people taking the trip. If 10 people take the trip rather than 16, how many more dollars, in terms of x , will it cost per person?
- (A) $\frac{x}{6}$
(B) $\frac{x}{10}$
(C) $\frac{x}{16}$
(D) $\frac{3x}{40}$
(E) $\frac{3x}{80}$
12. If x is an integer and $y = 3x + 2$, which of the following CANNOT be a divisor of y ?
- (A) 4
(B) 5
(C) 6
(D) 7
(E) 8

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13. The size of a television screen is given as the length of the screen's diagonal. If the screens were flat, then the area of a square 21-inch screen would be how many square inches greater than the area of a square 19-inch screen?
- (A) 2
(B) 4
(C) 16
(D) 38
(E) 40
14. If the average (arithmetic mean) of x and y is 60 and the average (arithmetic mean) of y and z is 80, what is the value of $z - x$?
- (A) 70
(B) 40
(C) 20
(D) 10
(E) It cannot be determined from the information given.
15. If 3 and 8 are the lengths of two sides of a triangular region, which of the following can be the length of the third side?
- I. 5
II. 8
III. 11
- (A) II only
(B) III only
(C) I and II only
(D) II and III only
(E) I, II, and III
16. One night a certain motel rented $\frac{3}{4}$ of its rooms, including $\frac{2}{3}$ of its air-conditioned rooms. If $\frac{3}{5}$ of its rooms were air-conditioned, what percent of the rooms that were not rented were air-conditioned?
- (A) 20%
(B) $33\frac{1}{3}\%$
(C) 35%
(D) 40%
(E) 80%

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ANSWER KEY

Section 1	Section 3	Section 4	Section 5	Section 6	Section 7
1. B	1. E	1. C	1. B	1. C	1. C
2. B	2. C	2. E	2. A	2. E	2. D
3. E	3. B	3. A	3. C	3. E	3. D
4. C	4. D	4. D	4. B	4. D	4. A
5. D	5. A	5. C	5. D	5. B	5. A
6. A	6. C	6. A	6. C	6. D	6. C
7. B	7. B	7. D	7. C	7. C	7. C
8. A	8. E	8. B	8. E	8. A	8. C
9. E	9. D	9. C	9. C	9. A	9. B
10. C	10. E	10. D	10. D	10. C	10. A
11. E	11. D	11. A	11. E	11. B	11. E
12. D	12. B	12. A	12. C	12. A	12. C
13. D	13. D	13. D	13. E	13. E	13. E
14. D	14. C	14. C	14. B	14. A	14. B
15. C	15. C	15. E	15. E	15. E	15. A
16. C	16. D	16. B	16. B	16. D	16. E
	17. A	17. C		17. C	
	18. E	18. D		18. D	
	19. A	19. C		19. B	
	20. B	20. B		20. C	
		21. B		21. B	
		22. B		22. B	
		23. E			