

PRACTICE TEST B

60 minutes – 60 questions

Directions: Answer each question. Choose the correct answer from the 5 choices given. Do not spend too much time on any one problem. Solve as many as you can; then return to the unanswered questions in the time left. Unless otherwise indicated, all of the following should be assumed:

- All numbers used are real numbers.
 - The word *average* indicates the arithmetic mean.
 - Drawings that accompany problems are intended to provide information useful in solving the problems. Illustrative figures are not necessarily drawn to scale.
 - The word *line* indicates a straight line.
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DO YOUR FIGURING HERE.

1. In one city the taxicabs charge \$2.50 for the first mile and \$0.75 for each additional $\frac{1}{8}$ of a mile. What is the cost of a $3\frac{1}{4}$ mile trip?

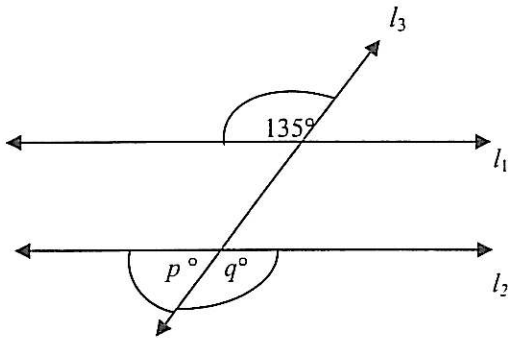
- A. \$13.50
 - B. \$14.50
 - C. \$16.00
 - D. \$18.00
 - E. \$26.00
-

2. $\left(\frac{1}{3}\right)^4 - \left(\frac{1}{3}\right)^3 = ?$

- F. $\frac{1}{3}$
- G. $\frac{1}{9}$
- H. $\frac{1}{81}$
- J. $-\frac{2}{81}$
- K. $-\frac{1}{3}$

3. In the figure $l_1 \parallel l_2$ and l_3 is a transversal.
What is the value of $q - p$?

DO YOUR FIGURING HERE.



- A. 0°
- B. 45°
- C. 55°
- D. 60°
- E. 90°

-
4. Six calculators cost \$ x . What is the cost of y less calculators?

- F. $\frac{6-x}{y}$
- G. $\frac{y-6}{x}$
- H. $\frac{x-6}{6y}$
- J. $\frac{x(6-y)}{6}$
- K. $6x(y-6)$

-
5. Jean bought a used car for \$2,800 plus 6% tax. How much more would she have paid for the car if the sales tax were 7% instead of 6%?

- A. \$ 28
- B. \$ 56
- C. \$168
- D. \$196
- E. \$336

DO YOUR FIGURING HERE.

6. If $\tan x = \frac{3}{4}$, what is the value of $\cos x + \sin x$?

F. $\frac{4}{3}$

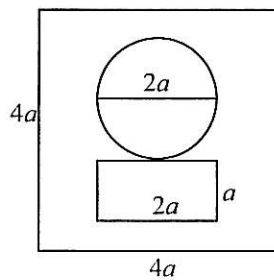
G. $\frac{9}{16}$

H. $\frac{7}{5}$

J. $\frac{25}{12}$

K. 1

7. A square sheet of metal with sides $4a$ has a circle of diameter $2a$ and a rectangle of length $2a$ and width a removed from it. What is the area of remaining metal?



- A. $4a - 4\pi a^2 - 2a^2$
B. $14a^2 - \pi a^2$
C. $14a^2 - 4\pi a^2$
D. $4a^2 + \pi a^2 - a$
E. $4a^2 - 2\pi a^2$
-
8. Which of the following equations has a graph that is a line perpendicular to the graph of $x + 2y = 6$?

F. $2x - y = 3$

G. $2x + y = -3$

H. $x - 2y = 3$

J. $y + x = 3$

K. $2y + x = -3$

DO YOUR FIGURING HERE.

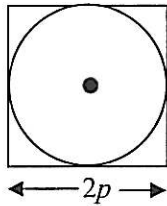
9. If $x = ut + \frac{1}{2}at^2$, what is t when $x = 16$,
 $u = 0$, and $a = 4$?

- A. $2\sqrt{2}$
 - B. $4\sqrt{2}$
 - C. $\sqrt{2}$
 - D. 2
 - E. 4
-

10. If 18% of the senior class of 200 students were absent from school, how many students were present?

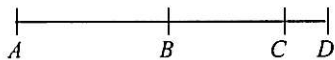
- F. 38
 - G. 120
 - H. 136
 - J. 164
 - K. 182
-

11. What is the area between the square and circle shown?



- A. $4p^2(1 - \pi)$
 - B. $p^2(4 - 2\pi)$
 - C. $4p^2(1 + \pi)$
 - D. $p^2(4 - \pi)$
 - E. $p^2(\pi - 4)$
-

12. The points A , B , C , and D divide the line segment AD in the ratio $4 : 3 : 1$, respectively, and $AB = 24$ cm. What is the length of BD ?



- F. 12 cm
- G. 14 cm
- H. 18 cm
- J. 19 cm
- K. 24 cm

DO YOUR FIGURING HERE.

13. $\frac{2a-3}{2} - \frac{5a+3}{5} = ?$

- A. -21
 - B. -9
 - C. $-\frac{21}{10}$
 - D. $-\frac{9}{10}$
 - E. $\frac{9}{10}$
-

14. A plumber charges \$35 flat fee plus \$25 per hour. If his bill was \$147.50, how long did the job take?

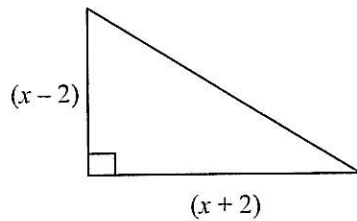
- F. $1\frac{1}{2}$
 - G. $1\frac{3}{4}$
 - H. $2\frac{1}{4}$
 - J. $3\frac{1}{2}$
 - K. $4\frac{1}{2}$
-

15. If $a = 1$, what is the value of $[(a+3)^2 - (a-3)^2]^2$?

- A. 10
- B. 12
- C. 24
- D. 120
- E. 144

DO YOUR FIGURING HERE.

16. If the area of the triangle is 8, what is the value of x ?



- F. $5\sqrt{2}$
G. $2\sqrt{5}$
H. $4\sqrt{3}$
J. $2\sqrt{3}$
K. $3\sqrt{2}$

17. $2\sqrt{24} - 2\sqrt{2} \times \sqrt{3} = ?$

- A. 0
B. $3\sqrt{24}$
C. -6
D. $2\sqrt{6}$
E. $4\sqrt{6}$

-
18. Vijay saves 20% on a \$125 bowling ball but must pay 6% sales tax. What is the total he must pay?

- F. \$ 94.00
G. \$100.00
H. \$106.00
J. \$107.50
K. \$205.00

-
19. The average (mean) temperature for five days was 2° . If the temperatures for the first four days were -10° , 30° , 0° and -5° , what was the temperature on the fifth day?

- A. -10°
B. -5°
C. 0°
D. 5°
E. 20°

DO YOUR FIGURING HERE.

20. $\frac{2}{17} \div \frac{-4}{34} \div \frac{-1}{2} = ?$

F. 2

G. $\frac{1}{2}$

H. 0

J. $-\frac{1}{2}$

K. -2

21. If $(x + 2)^2 = (2^2)^3$ and $x > 0$, what is the value of x ?

A. 2

B. 3

C. 4

D. 6

E. -10

22. Solve $x^2 + 3x + 2 = 0$.

F. $\{-2, -3\}$

G. $\{-2, 3\}$

H. $\{-1, -2\}$

J. $\{-1, 2\}$

K. $\{1, 2\}$

23. If the endpoints of the diameter of a circle in the x - y plane have coordinates $\left(-\sqrt{2}, \sqrt{\frac{3}{2}}\right)$ and $\left(\sqrt{2}, -\sqrt{\frac{3}{2}}\right)$, what are the coordinates of the center?

A. $(2\sqrt{2}, -\sqrt{3})$

B. $\left(2, -\frac{3}{4}\right)$

C. $(0, 0)$

D. $(\sqrt{3}, -\sqrt{3})$

E. $\left(-2, -\frac{3}{4}\right)$

DO YOUR FIGURING HERE.

24. What is the equation of the line, in standard form, connecting points (2, -3) and (4, 4)?

- F. $7x - 2y - 26 = 0$
 - G. $7x + y - 13 = 0$
 - H. $7x - 2y - 20 = 0$
 - J. $2x - 2y - 7 = 0$
 - K. $3x - y + 10 = 0$
-

25. If quadrilateral $ABCD$ is a parallelogram with an area of 180 square units and a base of 20 units, what is its height?

- A. 9
 - B. 5
 - C. 4
 - D. $3\frac{1}{2}$
 - E. $1\frac{1}{4}$
-

26. $0.25 \div \left(\frac{1}{4} \div \frac{25}{100}\right) = ?$

- F. $\frac{1}{16}$
 - G. $\frac{1}{4}$
 - H. 1
 - J. 4
 - K. 16
-

27. If $x + y = 4$ and $2x - y = 5$, what is the value of $x + 2y$?

- A. 1
- B. 2
- C. 4
- D. 5
- E. 6

DO YOUR FIGURING HERE.

28. If $5x + 3y = 23$ and x and y are positive integers, which of the following can be equal to y ?

F. 3
G. 4
H. 5
J. 6
K. 7

29. Which equation could be used to find the unknown, if $\frac{1}{2}$ less than $\frac{3}{5}$ of a number is the same as the number?

A. $\frac{1}{2} - \frac{3}{5}x = \frac{1}{2}$

B. $\frac{1}{2} - \frac{3}{5}x = x$

C. $x - \frac{1}{2} = \frac{3}{5}x$

D. $\frac{3}{5}x - \frac{1}{2} = x$

E. $\frac{1}{2} - x = \frac{3}{5}x$

30. If x^* means $4(x - 2)^2$, what is the value of $(3^*)^*$?

F. 8
G. 12
H. 16
J. 36
K. None of the above

31. What is the vertex of the parabola $y = (x + 3)^2 - 6$?

A. (3, 6)
B. (-3, 6)
C. (3, -6)
D. (-3, -6)
E. None of the above

DO YOUR FIGURING HERE.

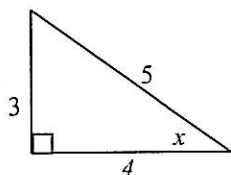
32. What is the slope of the line connecting the points (2, -2) and (3, -2)?

- F. undefined
 - G. 1
 - H. 0
 - J. -1
 - K. -4
-

33. Which of the following is not equal to the other four?

- A. 1.1×10
 - B. 110%
 - C. $\sqrt{1.21}$
 - D. $\frac{11}{10}$
 - E. $1 + \frac{1}{10}$
-

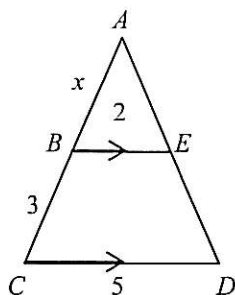
34. According to the diagram, which of the following statements is true?



- F. $\sin x = \frac{5}{3}$
- G. $\cos x = \frac{3}{5}$
- H. $\tan x = \frac{5}{4}$
- J. $\cos x = \frac{4}{5}$
- K. $\sin x = \frac{4}{5}$

DO YOUR FIGURING HERE.

35. If $\triangle ABE$ is similar to $\triangle ACD$, what is the value of AB ?



- A. $7\frac{1}{2}$
 B. 3
 C. 2
 D. $1\frac{1}{2}$
 E. -2
-
36. What is the probability of selecting a letter M or T, if the letters M, A, T, H, E, M, A, T, I, C, and S are drawn randomly from a bag?
- F. $\frac{4}{11}$
 G. $\frac{3}{11}$
 H. $\frac{2}{11}$
 J. $\frac{1}{11}$
 K. 0
-
37. A salesman is paid \$150/week plus $x\%$ commission on all sales. If he had $\$s$ in sales, what was the amount of his paycheck (p)?

- A. $p = 150 + \frac{xs}{10}$
 B. $p = 150 + s$
 C. $p = 150 + 0.01xs$
 D. $p = 150 + xs$
 E. $p = 150 + 100xs$

DO YOUR FIGURING HERE.

38. If $2 + \frac{x}{(x-2)} = 4$, what is the value of

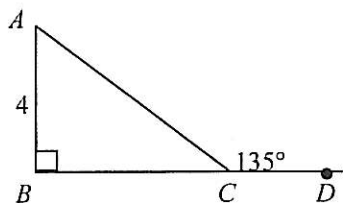
$-|x|$?

- F. -4
- G. -2
- H. 0
- J. 2
- K. 4

39. Which of the following lines is parallel to $2y = 3x - 1$?

- A. $y = \frac{1}{3}x - 1$
- B. $2y = x - 3$
- C. $4y = 6x + 8$
- D. $y = 3x + 4$
- E. $3y = 2x - 3$

40. Given $\triangle ABC$ with $AB = 4$ and $m \angle ACD = 135^\circ$, what is the value of AC ?



- F. 4
- G. $4\sqrt{2}$
- H. $3\sqrt{2}$
- J. 8
- K. 5

41. If the diameter of a bicycle wheel is 50 centimeters, how many revolutions will the wheel make to cover a distance of 100π meters?

- A. 12
- B. 20
- C. 120
- D. 200
- E. 1200

DO YOUR FIGURING HERE.

42. If $x^* = x + 2$, what is the value of $(3^* + 5^*)^*$?

- F. 8
 - G. 10
 - H. 12
 - J. 14
 - K. None of the above
-

43. If $\frac{15k}{3kx+16} = 1$ and $x = 4$, what is the value of k ?

- A. 2
 - B. 3
 - C. 4
 - D. 8
 - E. $\frac{16}{3}$
-

44. $-7 - 3 \times 2(-5) + 6 - 21 \div 3 = ?$

- F. 99
 - G. 95
 - H. 33
 - J. 25
 - K. 22
-

45. Simplify $\frac{3y}{10} + \frac{7y-2}{5}$.

- A. $\frac{17y-4}{10}$
- B. $\frac{10y-2}{15}$
- C. $\frac{4y-2}{10}$
- D. $\frac{85y-2}{50}$
- E. $\frac{10y-2}{5}$

DO YOUR FIGURING HERE.

46. Which of the following is equivalent to

$$\frac{\cos x}{\sin x} + \frac{\sin x}{\cos x} ?$$

F. $\frac{\cos x + \sin x}{\sin x \cos x}$

G. $\frac{1}{\sin x \cos x}$

H. $\tan x + \cos^2 x$

J. $\sin x \cos x$

K. $2 \sin x \cos x$

47. $(-2, -3)$ is a solution to which inequality?

A. $2y \geq 3x + 1$

B. $-2y \leq -x + 3$

C. $\frac{x}{2} \geq 4 - y$

D. $y - 2 \geq (x - 3)$

E. $x - y < 0$

48. What is the distance between the points $(-3, 4)$ and $(9, 9)$?

F. 5

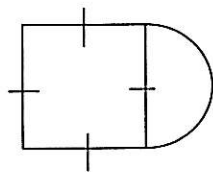
G. $5\sqrt{2}$

H. 12

J. 13

K. 17

49. If the area of the semicircular region is 8π , what is the perimeter of the shape?



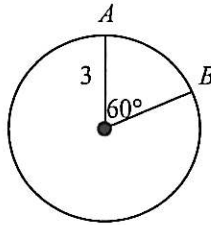
- A. $16 + 8\pi$
- B. $24 + 4\pi$
- C. $12 + 8\pi$
- D. $24 + 4\pi^2$
- E. $16 + 4\pi^2$

DO YOUR FIGURING HERE.

50. If $f(x) = x^2 - 5$ and $g(x) = 5x$, what is the value of $f(g(3)) - g(f(3))$?

- F. 400
- G. 240
- H. 200
- J. 40
- K. 0

51. What is the length of arc AB ?



- A. π
- B. 2π
- C. 2.5π
- D. 3π
- E. 6π

52. If two sides of a triangle are 6 cm and 8 cm, which of these could be the third side?

- F. 1
- G. 2
- H. 7
- J. 14
- K. 15

53. If $x = 4$ is a solution of the equation $x^2 + kx - 24 = 0$, what is the value of k ?

- A. -6
- B. -2
- C. 2
- D. 4
- E. 6

DO YOUR FIGURING HERE.

54. Which of the following is not a solution for $|5 - 2x| \geq 3$?

- F. -2
 - G. -1
 - H. 0
 - J. 2
 - K. 5
-

55. Which of the following forms an identity

with $\frac{\tan x}{\sec x}$?

- A. $\sin x$
 - B. $\frac{\sin x}{\cos^2 x}$
 - C. $\frac{\sin^2 x}{\cos x}$
 - D. $\cot x$
 - E. $\frac{1}{\sin x}$
-

56. $\frac{7}{2 - \sqrt{3}} = ?$

- F. $14 + 7\sqrt{3}$
 - G. $-7\sqrt{3}$
 - H. $21\sqrt{3}$
 - J. $\frac{14 - 7\sqrt{3}}{-5}$
 - K. $14\sqrt{3} - 5$
-

57. The roots of $2x^2 + 13x + 18 = 0$ are which of the following?

- I. rational
- II. irrational
- III. imaginary

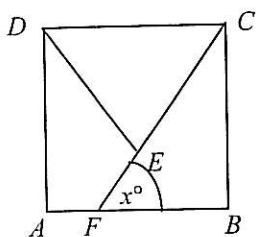
- A. I only
- B. II only
- C. I and II only
- D. II and III only
- E. I, II, and III

DO YOUR FIGURING HERE.

58. $8^{\frac{2}{3}} \cdot 2^{-1} = ?$

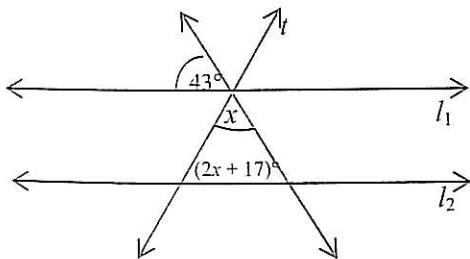
- F. $\frac{1}{16}$
- G. $\frac{1}{2}$
- H. 2
- J. 4
- K. 16

59. If $ABCD$ is a square and CDE is an equilateral triangle, what is the value of x ?



- A. 30°
- B. 40°
- C. 45°
- D. 50°
- E. 60°

60. In the figure below, $l_1 \parallel l_2$ and t is a transversal. What is the value of x ?



- F. 40°
- G. 42.5°
- H. 43°
- J. 46.5°
- K. 60°

END OF PRACTICE TEST B