College of Admission Tests
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Sample Questions

Problem Solving

Directions:

Solve the problem and indicate the best of the answer choices given.

Numbers: All numbers used are real numbers.

Figures: A figure accompanying a problem solving question is intended to provide information useful in solving the problem. Figures are drawn as accurately as possible. Exceptions will be clearly noted. Lines shown as straight are straight, and lines that appear jagged are also straight. The positions of points, angles, regions, etc., exist in the order shown, and angle measures are greater than zero. All figures lie in a plane unless otherwise indicated.

1. If Majid was 32 years old 8 years ago, how old was he x years ago?

    A. $x - 40$

    B. $x - 24$

    C. $40 - x$

    D. $24 - x$

    E $24 + x$

2. Running at the same constant rate, 6 identical machines can produce a total of 270 bottles per minute. At this rate, how many bottles could 10 such machines produce in 4 minutes?

    A. 648

    B. 1800

    C. 2700

    D. 10800

    E   64800

3. Three business partners, Q, R, and S, agree to divide their total profit for a certain year in the ratios 2 : 5: 8, respectively. If Q's share was $4,000, what was the total profit of the business partners for the year?

    A. $26,000

    B. $30,000

    C. $52,000

    D. $60,000

Problem Solving

E $300,000

4.   A restaurant meal cost $35.50 and there was no tax. If the tip was more than 10 percent but less than 15 percent of the cost of the meal, then the total amount paid must have beet between

   A. $40 and $42

   B. $39 and $41

   C. $38 and $40

   D. $37 and $39

   E $36 and #37

5.   Harriet wants to put up fencing around three sides of her rectangular yard and leave a side of 20 feet unfenced. If the yard has an area of 680 square feet, how many feet of fencing does she need?

   A.   34

   B.   40

   C.   68

   D.   88

   E   102

6.   Increasing the original price of an article by 15 percent and then increasing the new price by 15 percent is equivalent to increasing the original price by

   A.   32.25%

   B.   31.00%

   C.   30.25

   D.   30.00%

   E   22.50%

7.   If k is an integer and 0.0010101 x 10^{k} is greater than 1,000, what is the least possible value of k?

Problem Solving

A.   2

B.   3

C.   4

D.   5

E   6

8.   If $(b-x)\left(4+\frac{2}{b}\right)=0$ and $b \neq 3$, then $b =$

A.   -8

B.   -2

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

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

E   2

9.   In a weight-lifting competition, the total weight of Joe's two lifts was 750 pounds. If twice the weight of his first lift was 300 pounds more than the weight of his second lift, what was the weight, in pounds, of his <u>first</u> lift?

A.   225

B.   275

C.   325

D.   350

E   400

10.   One hour after Yolanda started walking from *X* to *Y*, a distance of 45 miles; Bob started walking along the same road from *Y* to *X*. If Yolanda's walking rate was 3 miles per hour and Bob's was 4 miles per hour, how many miles had Bob walked when they met?

A.   24

Problem Solving

B.   23

C.   22

D.   21

E   19.5

11.   The average (arithmetic mean) of 6 numbers is 8.5. When one number is discarded, the average of the remaining numbers becomes 7.3. What is the discarded number?

A.   7.5

B.   14.5

C.   10.0

D.   12.4

E   15.0

12.   One inlet pipe fills an empty tank in 5 hours. A second inlet pipe fills the same tank in 3 hours. Both pipes are used together, how long will it take to fill $\frac{2}{3}$ of the tank?

A. $\frac{8}{15} hr$

B. $\frac{3}{4} hr$

C. $\frac{5}{4} hr$

D. $\frac{15}{8} hr$

E $\frac{8}{3} hr$

13.   During the first week of September, a shoe retailer sold 10 pairs of a certain style of oxfords at $35.00 a pair; if, during the second week of September, 15 pairs were sold at the sale price of $27.50 a pair, by what

Problem Solving

amount did the revenue from weekly sales of these oxfords increase during the second week?

A. $62.50

B. $112.50

C. $175.00

D. $25.50

E $37.50

14. The number $2-0.5$ is how many times the number $1-0.5$?

A. 2

B. 2.5

C. 3

D. 3.5

E 4

15. A club collected exactly $599 from its members. If each member contributed at least $12, what is the greatest number of members the club could have?

A. 43

B. 44

C. 49

D. 50

E 51

16. A union contract specifies a 6 percent salary increase plus a $450 bonus for each employee. For a certain employee, this is equivalent to an 8 percent salary increase. What was this employee's salary before the new contract?

A. $21,500

B. $22,500

Problem Solving

    C. $23,500

    D. $24,300

    E $25,000

17. If the length and width of a rectangular garden plot were each increased by 20 percent, what would be the percent increase in the area of the plot?

    A.   20 %

    B.   24 %

    C.   36 %

    D.   40 %

    E   44 %

18. The population of a bacteria culture doubles every 2 minutes. Approximately how many minutes will it take for the population to grow from 1,000 to 500,000 bacteria?

    A.   10

    B.   12

    C.   14

    D.   16

    E   18

19. When 10 is divided by the positive integer n, the remainder is $n-4$. Which of the following could be the value of n?

    A.   3

    B.   4

    C.   7

    D.   8

    E   12

Problem Solving

20. Marion rented a car for $18.00 plus $0.10 per mile driven. Craig rented a car for $25.00 plus $0.05 per mile driven. If each drove d miles and each was charged exactly the same amount for the rental, then d equals

   A.   100

   B.   120

   C.   135

   D.   140

   E   150

ANSWERS

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