Practice Test #1 Problem Solving
(196 Questions)

1. 409-!-item-!-187;#058&000306
A grocery store purchased crates of 40 oranges each for $5.00 per crate and then sold each orange for $0.20. What was the store's gross profit on each crate of oranges?

(A) $3.00
(B) $6.00
(C) $8.00
(D) $10.00
(E) $13.00

2. 455-!-item-!-187;#058&000316
The product P of two prime numbers is between 9 and 55. If one of the prime numbers is greater than 2 but less than 6 and the other is greater than 13 but less than 25, then P =

(A) 15
(B) 33
(C) 34
(D) 46
(E) 51

3. 664-!-item-!-187;#058&000504
A certain taxi company charges $3.10 for the first [?] of a mile plus $0.40 for each additional of a mile. What would this company charge for a taxi ride that was 8 miles long?

(A) $15.60
(B) $16.00
(C) $17.50
(D) $18.70
(E) $19.10

4. 765-!-item-!-187;#058&000550
In a stack of boards at a lumber yard, the 20th board counting from the top of the stack is immediately below the 16th board counting from the bottom of the stack. How many boards are in the stack?

(A) 38
(B) 36
(C) 35
(D) 34
(E) 32

5. 812-!-item-!-187;#058&000553
If $\left(\frac{1}{5}\right)^{m}\left(\frac{1}{4}\right)^{18} = \frac{1}{2(10)^{35}}$, then m =

(A) 17
(B) 18
(C) 34
(D) 35
(E) 36

6. 859-!-item-!-187;#058&000568

The value of $\frac{10^8 - 10^2}{10^7 - 10^3}$ is closest to which of the following?

(A) 1
(B) 10
(C) 10^2
(D) 10^3
(E) 10^4

7. 905-!-item-!-187;#058&000575
For every positive even integer n, the function h(n) is defined to be the product of all the even integers from 2 to n, inclusive. If p is the smallest prime factor of h(100) + 1, then p is

(A) between 2 and 10
(B) between 10 and 20
(C) between 20 and 30
(D) between 30 and 40
(E) greater than 40

8. 1221-!-item-!-187;#058&000650
A flower arrangement consists of 30 roses, each of which is either white or red. If a rose is to be selected at random from the flower arrangement, the probability that the rose selected will be white is twice the probability that it will be red. How many white roses are in the flower arrangement?

(A) 5
(B) 10
(C) 15
(D) 20
(E) 25

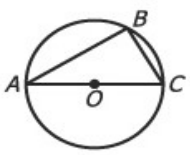
9. 1700-!-item-!-187;#058&001066
Last year the range of the annual salaries of the 100 employees at Company X was $30,000. If the annual salary of each of the 100 employees this year is 10 percent greater than it was last year, what is the range of the annual salaries of the 100 employees this year?

(A) $27,000
(B) $30,000
(C) $33,000
(D) $36,000
(E) $63,000

10. 1746-!-item-!-187;#058&002343
If a = 7 and b = -7, what is the value of 2a - 2b + b^2 ?

(A) - 49
(B) 21
(C) 49
(D) 63
(E) 77

11. 1799-!-item-!-187;#058&002415



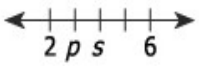
In the figure above, the radius of the circle with center O is 1 and BC = 1. What is the area of triangular region ABC ?

(A) √2/2
(B) √3/2
(C) 1
(D) √2
(E) √3

12. 1845-!-item-!-187;#058&002416
Last year a certain bond with a face value of $5,000 yielded 8 percent of its face value in interest. If that interest was approximately 6.5 percent of the bond's selling price, approximately what was the bond's selling price?

(A) $4,063
(B) $5,325
(C) $5,351
(D) $6,000
(E) $6,154

13. 1898-!-item-!-187;#058&002486



If m lies between the integers p and s on the number line shown, which of the following is a possible value for m ?

(A) √17
(B) √4
(C) 2.9
(D) 20/4
(E) 10/3

14. 1999-!-item-!-187;#058&002494

$$\frac{(8^2)(3^3)(2^4)}{96^2} =$$

(A) 3
(B) 6
(C) 9
(D) 12
(E) 18

15. 2160-!-item-!-187;#058&002594
At a speed of 50 miles per hour, a certain car uses 1 gallon of gasoline every 30 miles. If the car starts with a full 12 gallon tank of gasoline and travels for 5 hours at 50 miles per hour, the amount of gasoline used would be what fraction of a full tank?

(A) 3/25
(B) 11/36
(C) 7/12
(D) 2/3
(E) 25/36

16. 2206-!-item-!-187;#058&002619
When [?] of the garments in a shipment were inspected, 18 of the garments passed inspection and the remaining 2 garments failed. How many of the uninspected garments must pass inspection in order that 90

percent of the garments in the shipment pass?

(A) 10
(B) 9
(C) 8
(D) 7
(E) 5

17. 2311-!-item-!-187;#058&002635
In a certain board game, a stack of 48 cards, 8 of which represent shares of stock, are shuffled and then placed face down. If the first 2 cards selected do not represent shares of stock, what is the probability that the third card selected will represent a share of stock?

(A) 1/8
(B) 1/6
(C) 1/5
(D) 3/23
(E) 4/23

18. 2417-!-item-!-187;#058&002747
3 teaspoons = 1 tablespoon
4 tablespoons = 1/4 cup
According to the information above, how many teaspoons are equal to 3/8 cup?

(A) 3
(B) 4
(C) 9
(D) 12
(E) 18

19. 2463-!-item-!-187;#058&002761
For a finite sequence of nonzero numbers, the number of variations in sign is defined as the number of pairs of consecutive terms of the sequence for which the product of the two consecutive terms is negative. What is the number of variations in sign for the sequence 1, -3, 2, 5, -4, -6 ?

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

20. 2563-!-item-!-187;#058&002787
It takes Carlos 9 minutes to drive from home to work at an average rate of 22 miles per hour. How many minutes will it take Carlos to cycle from home to work along the same route at an average rate of 6 miles per hour?

(A) 26
(B) 33
(C) 36
(D) 44
(E) 48

21. 2609-!-item-!-187;#058&002849
If a = 1 and b = -2, then (2a^2 + b)(x + y) + (a + b)(x - y) =

(A) 0
(B) 2x
(C) y - x
(D) x - y

(E) x + y

22. 2710-!-item-!-187;#058&002886
The formula F = 9C/5 + 32 gives the relationship between the temperature in degrees Fahrenheit, F, and the temperature given in degrees Celsius, C. If the temperature is 85 degrees Fahrenheit, what is the temperature, to the nearest degree, in degrees Celsius?

(A) 18
(B) 23
(C) 29
(D) 47
(E) 51

23. 2976-!-item-!-187;#058&003069
[?]
For the 5 days shown in the graph, how many kilowatt-hours greater was the median daily electricity use than the average (arithmetic mean) daily electricity use?

(A) 1
(B) 2
(C) 3
(D) 4
(E) 5

24. 3022-!-item-!-187;#058&003084
In a certain game, the units of currency of three countries are the crown, the shield, and the pound, respectively. If 2 crowns equal 3 shields and 3 shields equal 4 pounds, how many crowns equal 18 pounds?

(A) 9
(B) 16
(C) 18
(D) 32
(E) 36

25. 3236-!-item-!-187;#058&003282
If $a > b > 0$, then $\sqrt{a^2 - b^2}$ =

- $a + b - \sqrt{2ab}$
- $a - b + \sqrt{2ab}$
- $\sqrt{(a - b)^2 - 2ab}$
- $(\sqrt{a + b})(\sqrt{a - b})$
- $(\sqrt{a} + \sqrt{b})(\sqrt{a} - \sqrt{b})$

26. 3282-!-item-!-187;#058&003293
There are 10 children in a company's day-care center, and a pair of children is to be selected to play a game. At most, how many different pairs are possible?

(A) 100
(B) 90
(C) 50
(D) 45
(E) 25

27. 3330-!-item-!-187;#058&003295
38, 69, 22, 73, 31, 47, 13, 82
Which of the following numbers is greater than three-fourths of the numbers but less than one-fourth of the numbers in the list above?

(A) 56
(B) 68
(C) 69
(D) 71
(E) 73

28. 3377-!-item-!-187;#058&003297
If xy = 1, what is the value of 2^[(x+y)^2] / 2^[(x-y)^2] ?

(A) 2
(B) 4
(C) 8
(D) 16
(E) 32

29. 3426-!-item-!-187;#058&003323

$$\frac{1 + 0.0001}{0.04 + 10}$$

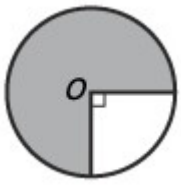
The value of the expression above is closest to which of the following?

(A) 0.0001
(B) 0.001
(C) 0.1
(D) 1
(E) 10

30. 3528-!-item-!-187;#058&003455
A furniture dealer purchased a desk for $150 and then set the selling price equal to the purchase price plus a markup that was
40 percent of the selling price. If the dealer sold the desk at the selling price, what was the amount of the dealer's gross profit from the purchase and the sale of the desk?

(A) $40
(B) $60
(C) $80
(D) $90
(E) $100

31. 4014-!-item-!-187;#058&003590



The circle shown has center O and radius 4. What is the area of the shaded region?

(A) 3π
(B) 4π
(C) 6π
(D) 8π
(E) 12π

32. 4438-!-item-!-187;#058&003962
At a certain university, the ratio of the number of teaching assistants to the number of students in any course must always be greater than 3:80. At this university, what is the maximum number of students possible in a course that has 5 teaching assistants?

(A) 130
(B) 131
(C) 132
(D) 133
(E) 134

33. 4484-!-item-!-187;#058&004004
If x^4 + y^4 = 100, then the greatest possible value of x is between

(A) 0 and 3
(B) 3 and 6
(C) 6 and 9
(D) 9 and 12
(E) 12 and 15

34. 4586-!-item-!-187;#058&004030
Of the following, which is least?

(A)
(B) (0.2)2
(C) 0.02
(D)
(E) 0.2

35. 4632-!-item-!-187;#058&004107
What is the sum of the different positive prime factors of 550 ?

(A) 10
(B) 11
(C) 15
(D) 16
(E) 18

36. 4841-!-item-!-187;#058&004235
In a certain deck of cards, each card has a positive integer written on it. In a multiplication game, a child draws a card and multiplies the integer on the card by the next larger integer. If each possible product is between 15 and 200, then the least and greatest integers on the cards could be

(A) 3 and 15
(B) 3 and 20
(C) 4 and 13
(D) 4 and 14
(E) 5 and 14

37. 5000-!-item-!-187;#058&004365

For every integer k from 1 to 10, inclusive, the kth term of a certain sequence is given by $(-1)^{k+1}\left(\frac{1}{2^k}\right)$.
If T is the sum of the first 10 terms in the sequence, then T is

(A) greater than 2
(B) between 1 and 2
(C) between 1/2 and 1
(D) between 1/4 and 1/2
(E) between 1/4

38. 5102-!-item-!-187;#058&004451
Three grades of milk are 1 percent, 2 percent, and 3 percent fat by volume. If x gallons of the 1 percent grade, y gallons of the 2 percent grade, and z gallons of the 3 percent grade are mixed to give x + y + z gallons of a 1.5 percent grade, what is x in terms of y and z ?

(A) y + 3z
(B) (y + z) /4
(C) 2y + 3z
(D) 3y + z
(E) 3y + 4.5z

39. 5583-!-item-!-187;#058&004668
A certain stock exchange designates each stock with a one-, two-, or three-letter code, where each letter is selected from the
26 letters of the alphabet. If the letters may be repeated and if the same letters used in a different order constitute a different code, how many different stocks is it possible to uniquely designate with these codes?

(A) 2,951
(B) 8,125
(C) 15,600
(D) 16,302
(E) 18,278

40. 5629-!-item-!-187;#058&004684
Six machines, each working at the same constant rate, together can complete a certain job in 12 days. How many additional machines, each working at the same constant rate, will be needed to complete the job in 8 days?

(A) 2
(B) 3
(C) 4
(D) 6
(E) 8

41. 5676-!-item-!-187;#058&004686
All of the stocks on the over-the-counter market are designated by either a 4-letter or a 5-letter code that is created by using the 26 letters of the alphabet. Which of the following gives the maximum number of different stocks that can be designated with these codes?

(A) 2(26^5)
(B) 26(26^4)
(C) 27(26^4)
(D) 26(26^5)
(E) 27(26^5)

42. 5722-!-item-!-187;#058&004704
Mark bought a set of 6 flower pots of different sizes at a total cost of $8.25. Each pot cost $0.25 more than the next one below it in size. What was the cost, in dollars, of the largest pot?

(A) $1.75

(B) $1.85
(C) $2.00
(D) $2.15
(E) $2.30

43. 5768-!-item-!-187;#058&004705
A committee of three people is to be chosen from four married couples. What is the number of different committees that can be chosen if two people who are married to each other cannot both serve on the committee?

(A) 16
(B) 24
(C) 26
(D) 30
(E) 32

44. 5871-!-item-!-187;#058&004763
A certain company employs 6 senior officers and 4 junior officers. If a committee is to be created that is made up of 3 senior officers and 1 junior officer, how many different committees are possible?

(A) 8
(B) 24
(C) 58
(D) 80
(E) 210

45. 5918-!-item-!-187;#058&004778
While working alone at their respective constant rates, computer X processes 240 files in 4 hours and computer Y processes 240 files in 8 hours. If all files processed by these computers are the same size, how long would it take the two computers, working at the same time and at their respective constant rates, to process a total of 240 files?

(A) 2 hr
(B) 2 hr 20 min
(C) 2 hr 40 min
(D) 6 hr
(E) 6 hr 20 min

46. 5966-!-item-!-187;#058&004795

If $x \neq 0$, then $\frac{\sqrt{x^2}}{x}$

(A) -1
(B) 0
(C) 1
(D) x
(E) |x| / x

47. 6013-!-item-!-187;#058&004836

$\sqrt{576,800}$ is between

(A) 300 and 400
(B) 400 and 500

(C) 500 and 600
(D) 600 and 700
(E) 700 and 800

48. 6225-!-item-!-187;#058&004914
A certain city with a population of 132,000 is to be divided into 11 voting districts, and no district is to have a population that is more than 10 percent greater than the population of any other district. What is the minimum possible population that the least populated district could have?

(A) 10,700
(B) 10,800
(C) 10,900
(D) 11,000
(E) 11,100

49. 6490-!-item-!-187;#058&005075
[?]

The table above shows the distribution of scores on a geography quiz given to a class of 25 students. Which of the following is closest to the average (arithmetic mean) quiz score for the class?

(A) 8.6
(B) 8.5
(C) 8.4
(D) 8.3
(E) 8.0

50. 6541-!-item-!-187;#058&005092
Which of the following is an integer?

I. $\frac{12!}{6!}$

II. $\frac{12!}{8!}$

III. $\frac{12!}{7!5!}$

(A) I only
(B) II only
(C) III only
(D) I and II only
(E) I, II, and III

51. 6587-!-item-!-187;#058&005111
Circular gears P and Q start rotating at the same time at constant speeds. Gear P makes 10 revolutions per minute, and gear Q makes 40 revolutions per minute. How many seconds after the gears start rotating will gear Q have made exactly 6 more revolutions than gear P ?

(A) 6
(B) 8
(C) 10
(D) 12
(E) 15

52. 6641-!-item-!-187;#058&005112
[?]

In the circle above, PQ is parallel to diameter OR, and OR has length 18. What is the length of minor arc PQ ?

(A)
(B)
(C)
(D)
(E)

53. 6687-!-item-!-187;#058&005122
Mary purchased 3 theater tickets with an average (arithmetic mean) price of $8. If Mary also purchases a fourth theater ticket with a price of $16, what is the average price of all 4 theater tickets?
(A) $4
(B) $6
(C) $8
(D) $10
(E) $12

54. 6787-!-item-!-187;#058&005232
An auction house charges a commission of 15 percent on the first $50,000 of the sale price of an item, plus 10 percent on the amount of the sale price in excess of $50,000. What was the sale price of a painting for which the auction house charged a total commission of $24,000 ?
(A) $115,000
(B) $160,000
(C) $215,000
(D) $240,000
(E) $365,000

55. 6892-!-item-!-187;#058&005291
Which of the following inequalities has a solution set that, when graphed on the number line, is a single line segment of finite length?

(A) $X^4 \geqq 1$
(B) $X^3 \leqq 27$
(C) $X^2 \geqq 16$
(D) $2 \leqq |X| \leqq 5$
(E) $2 \leqq 3X + 4 \leqq 6$

56. 6998-!-item-!-187;#058&005424
A small water pump would take 2 hours to fill an empty tank. A larger pump would take 1/2 hour to fill the same tank. How many hours would it take both pumps, working at their respective constant rates, to fill the empty tank if they began pumping at the same time?

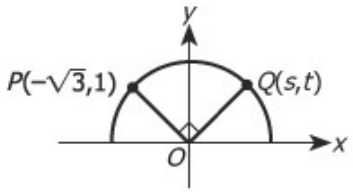
(A) 1/4
(B) 1/3
(C) 2/5
(D) 5/4
(E) 3/2

57. 7044-!-item-!-187;#058&005427
If n is a multiple of 5 and $n = \left(p^2\right)q$, where p and q are prime numbers, which of the following must rt be a multiple of 25 ?
(A) p^2

(B) q^2
(C) pq
(D) p^2q^2
(E) p^3q

58. 7090-!-item-!-187;#058&005463
In the graduating class of a certain college, 48 percent of the students are male and 52 percent are female. In this class 40 percent of the male and 20 percent of the female students are 25 years old or older. If one student in the graduating class is randomly selected, approximately what is the probability that he or she will be less than 25 years old?
(A) 0.90
(B) 0.70
(C) 0.45
(D) 0.30
(E) 0.25

59. 7143-!-item-!-187;#058&005466

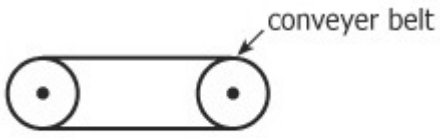


In the figure above, points P and Q lie on the circle with center O. What is the value of s ?

(A) 1/2
(B) 1
(C) √2
(D) √3
(E) √2/2

60. 7189-!-item-!-187;#058&005472
Rates for having a manuscript typed at a certain typing service are $5 per page for the first time a page is typed and $3 per page each time a page is revised. If a certain manuscript has 100 pages, of which 40 were revised only once, 10 were revised twice, and the rest required no revisions, what was the total cost of having the manuscript typed?
(A) $430
(B) $620
(C) $650
(D) $680
(E) $770

61. 7409-!-item-!-187;#058&005546



Note: Figure not drawn to scale.

As shown in the figure above, a thin conveyor belt 15 feet long is drawn tightly around two circular wheels each 1 foot in diameter. What is the distance, in feet, between the centers of the two wheels?

(A) (15 -π) / 2
(B) 5π/4
(C) 15 - 2π
(D) 15 -π
(E) 2π

62. 7564-!-item-!-187;#058&005577
Alice's take-home pay last year was the same each month, and she saved the same fraction of her take-home pay each month. The total amount of money that she had saved at the end of the year was 3 times the amount of that portion of her monthly take-home pay that she did not save. If all the money that she saved last year was from her take-home pay, what fraction of her take-home pay did she save each month?

(A) 1/2
(B) 1/3
(C) 1/4
(D) 1/5
(E) 1/6

63. 7612-!-item-!-187;#058&005607
For which of the following functions is f(a + b) = f(a) + f(b) for all positive numbers a and b ?

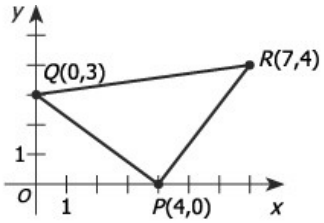
(A) f(x) = x 2
(B) f(x) = x + 1
(C) f(x) = √x
(D) f(x) = 2/x
(E) f(x) = -3x

64. 7659-!-item-!-187;#058&005610
If in a certain population, people are born at an average rate of 9 people every 2 seconds and people die at an average rate of 3 people every 2 seconds, by approximately how many people does the population increase in 1 day?
(A) 17,280
(B) 25,920
(C) 129,600
(D) 259,200
(E) 388,800

65. 7870-!-item-!-187;#058&005675
For how many integers n is $2^n = n^2$?
(A) None
(B) One
(C) Two
(D) Three
(E) More than three

66. 7916-!-item-!-187;#058&005701
The manager of a theater noted that for every 10 admission tickets sold, the theater sells 3 bags of popcorn at $2.25 each, 4 sodas at $1.50 each, and 2 candy bars at $1.00 each. To the nearest cent, what is the average (arithmetic mean) amount of these snack sales per ticket sold?
(A) $1.48
(B) $1.58
(C) $1.60
(D) $1.64
(E) $1.70

67. 7966-!-item-!-187;#058&005724



In the rectangular coordinate system above, the area of triangular region PQR is

(A) 12.5
(B) 14
(C) $10\sqrt{2}$
(D) 16
(E) 25

68. 8012-!-item-!-187;#058&005726
The number 75 can be written as the sum of the squares of 3 different positive integers. What is the sum of these 3 integers?
(A) 17
(B) 16
(C) 15
(D) 14
(E) 13

69. 8112-!-item-!-187;#058&005781
The number of stamps that Kaye and Alberto had were in the ratio 5 : 3, respectively. After Kaye gave Alberto 10 of her stamps, the ratio of the number Kaye had to the number Alberto had was 7 : 5. As a result of this gift, Kaye had how many more stamps than Alberto?
(A) 20
(B) 30
(C) 40
(D) 60
(E) 90

70. 8158-!-item-!-187;#058&005842
The perimeters of square region S and rectangular region R are equal. If the sides of R are in the ratio 2 : 3, what is the ratio of the area of region R to the area of region S ?
(A) 25 : 16
(B) 24 : 25
(C) 5 : 6
(D) 4 : 5
(E) 4 : 9

71. 8312-!-item-!-187;#058&005967
On July 1 of last year, the total number of employees at Company E was decreased by 10 percent. Without any change in the salaries of the remaining employees, the average (arithmetic mean) employee salary was 10 percent more after the decrease in number of employees than before the decrease. The total of the combined salaries of all of the employees at Company E after July 1 last year was what percent of that before July 1 last year?
(A) 90%
(B) 99%
(C) 100%
(D) 101%

(E) 110%

72. 8363-!-item-!-187;#058&005969
A thin piece of wire 40 meters long is cut into two pieces. One piece is used to form a circle with radius r, and the other is used to form a square. No wire is left over. Which of the following represents the total area, in square meters, of the circular and the square regions in terms of r ?

(A) πr^2
(B) $\pi r^2 + 10$
(C) $\pi r^2 + 1/4\pi^2 r^2$
(D) $\pi r^2 + (40 - 2\pi r)^2$
(E) $\pi r^2 + (10 - 1/2\pi r)^2$

73. 8845-!-item-!-187;#058&006119
A certain company has 18 equally qualified applicants for 4 open positions. How many different groups of 4 applicants can be chosen by the company to fill the positions if the order of selection does not matter?
(A) 18
(B) 72
(C) 180
(D) 1,260
(E) 3,060

74. 8893-!-item-!-187;#058&006120
40, 45, 45, 50, 50, 60, 70, 75, 95, 100
The scores on a certain history test are shown above. How many scores were greater than the median score but less than the mean score?
(A) None
(B) One
(C) Two
(D) Three
(E) Four

75. 8939-!-item-!-187;#058&006136
A certain law firm consists of 4 senior partners and 6 junior partners. How many different groups of 3 partners can be formed in which at least one member of the group is a senior partner? (Two groups are considered different if at least one group member is different.)
(A) 48
(B) 100
(C) 120
(D) 288
(E) 600

76. 8985-!-item-!-187;#058&006184
Susan drove at an average speed of 30 miles per hour for the first 30 miles of a trip and then at an average speed of 60 miles per hour for the remaining 30 miles of the trip. If she made no stops during the trip, what was Susan's average speed, in miles per hour, for the entire trip?
(A) 35
(B) 40
(C) 45
(D) 50
(E) 55

77. 9031-!-item-!-187;#058&006222
At a dinner party, 5 people are to be seated around a circular table. Two seating arrangements are

considered different only when the positions of the people are different relative to each other. What is the total number of different possible seating arrangements for the group?
(A) 5
(B) 10
(C) 24
(D) 32
(E) 120

78. 9077-!-item-!-187;#058&006227
From a bag containing 12 identical blue balls, y identical yellow balls, and no other balls, one ball will be removed at random. If the probability is less than 2/5 that the removed ball will be blue, what is the least number of yellow balls that must be in the bag?

(A) 17
(B) 18
(C) 19
(D) 20
(E) 21

79. 9123-!-item-!-187;#058&006238
A certain builder is selling five homes for the following prices: $157,000, $168,000, $195,000, $235,000, and $256,000. If the price of the most expensive home is increased $10,000, which of the following statements best describes the change in the mean and the median of the home prices?
(A) The mean and the median will remain unchanged.
(B) The mean will remain unchanged but the median will increase.
(C) The mean will increase but the median will remain unchanged.
(D) The mean and the median will increase by the same amount.
(E) The mean and the median will increase by different amounts.

80. 9169-!-item-!-187;#058&006279
If r and s are integers, and rs + r is odd, which of the following must be even?

(A) r
(B) s
(C) r + s
(D) rs - r
(E) $r^2 + s$

81. 9215-!-item-!-187;#058&006304
If each term in the sum a1 + a2 + . . . + an is either 7 or 77 and the sum equals 350, which of the following could be equal to n ?
(A) 38
(B) 39
(C) 40
(D) 41
(E) 42

82. 9378-!-item-!-187;#058&006496
An investment of d dollars at k percent simple annual interest yields $600 interest over a 2-year period. In terms of d, what dollar amount invested at the same rate will yield $2,400 interest over a 3-year period?

(A)
(B)
(C)
(D)
(E)

83. 9589-!-item-!-187;#058&006669

Score Interval	Number of Scores
50–59	2
60–69	10
70–79	16
80–89	27
90–99	18

The table above shows the distribution of test scores for a group of management trainees. Which score interval contains the median of the 73 scores?

(A) 60-69
(B) 70-79
(C) 80-89
(D) 90-99
(E) It cannot be determined from the information given.

84. 9689-!-item-!-187;#058&006710
If a quality control check is made by inspecting a sample of 2 lightbulbs from a box of 12 lightbulbs, how many different samples can be chosen?
(A) 6
(B) 24
(C) 36
(D) 66
(E) 72

85. 9735-!-item-!-187;#058&006716
At the end of the first quarter, the share price of a certain mutual fund was 20 percent higher than it was at the beginning of the year. At the end of the second quarter, the share price was 50 percent higher than it was at the beginning of the year. What was the percent increase in the share price from the end of the first quarter to the end of the second quarter?
(A) 20%
(B) 25%
(C) 30%
(D) 33%
(E) 40%

86. 9944-!-item-!-187;#058&006984
Which of the following is equal to x^{18} for all positive values of x ?
(A) $x^9 + x^9$
(B) $(x^2)^9$
(C) $(x^9)^9$
(D) $(x^3)^{15}$
(E) x+18

87. 9993-!-item-!-187;#058&007019

+	x	y	z
4	1	−5	m
e	7	n	10
f	2	−4	5

In the addition table shown above, what is the value of m + n ?

(A) -19
(B) 4
(C) 5
(D) 6
(E) 22

88. 10039-!-item-!-187;#058&007071
At a certain college there are twice as many English majors as history majors and three times as many English majors as mathematics majors. What is the ratio of the number of history majors to the number of mathematics majors?
(A) 6 to 1
(B) 3 to 2
(C) 2 to 3
(D) 1 to 5
(E) 1 to 6

89. 10086-!-item-!-187;#058&007098
A company has two types of machines, type R and type S. Operating at a constant rate, a machine of type R does a certain job in 36 hours and a machine of type S does the same job in 18 hours. If the company used the same number of each type of machine to do the job in 2 hours, how many machines of type R were used?
(A) 3
(B) 4
(C) 6
(D) 9
(E) 12

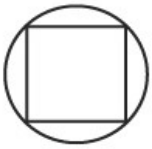
90. 10132-!-item-!-187;#058&007125
A circular jogging track forms the edge of a circular lake that has a diameter of 2 miles. Johanna walked once around the track at the average rate of 3 miles per hour. If t represents the number of hours it took Johanna to walk completely around the lake, which of the following is a correct statement?
(A) $0.5 < t < 0.75$
(B) $1.75 < t < 2.0$
(C) $2.0 < t < 2.5$
(D) $2.5 < t < 3.0$
(E) $3 < t < 3.5$

91. 10183-!-item-!-187;#058&007129
[?]
In the rectangular coordinate system above, the area of ??PQR is what fraction of the area of ??LMN ?
(A)
(B)
(C)
(D)
(E)

92. 10232-!-item-!-187;#058&007135

[?]
In the rectangular coordinate system above, for which of the shaded regions is the area 2 ?
(A) None
(B) Q only
(C) Q and R only
(D) P, Q, and R only
(E) P, Q, R, and S

93. 10285-!-item-!-187;#058&007154



In the figure above, a square is inscribed in a circle. If the area of the square region is 16, what is the area of the circular region?

(A) 2π
(B) 4π
(C) 6π
(D) 12π
(E) 16π

94. 10331-!-item-!-187;#058&007190
A company plans to assign identification numbers to its employees. Each number is to consist of four different digits from 0 to 9, inclusive, except that the first digit cannot be 0. How many different identification numbers are possible?
(A) 3,024
(B) 4,536
(C) 5,040
(D) 9,000
(E) 10,000

95. 10545-!-item-!-187;#058&007280
[?]
Which of the following statements can be inferred from the data above?
(A) I only
(B) II only
(C) I and III only
(D) II and III only
(E) I, II, and III

96. 10591-!-item-!-187;#058&007292
According to the directions on a can of frozen orange juice concentrate, 1 can of concentrate is to be mixed with 3 cans of water to make orange juice. How many 12-ounce cans of the concentrate are required to prepare 200 6-ounce servings of orange juice?
(A) 25
(B) 34
(C) 50
(D) 67
(E) 100

97. 10643-!-item-!-187;#058&007319

If $\frac{x}{y} = \frac{2}{3}$, then $\frac{x-y}{x} =$

(A) - 1/2
(B) - 1/3
(C) 1/3
(D) 1/2
(E) 5/2

98. 10689-!-item-!-187;#058&007329
If x is a negative integer, which of the following expressions has the LEAST value?

(A) x^2 -0.50

(B) x^2 - 0.51

(C) x^3 - 0.502

(D) x^3 - 0.511

(E) x^4 - 0.512

99. 10738-!-item-!-187;#058&007352
[?]

100. 10784-!-item-!-187;#058&007372
At a constant rate of flow, it takes 20 minutes to fill a swimming pool if a large hose is used and 30 minutes if a small hose is used. At these constant rates, how many minutes will it take to fill the pool when both hoses are used simultaneously?
(A) 10
(B) 12
(C) 15
(D) 25
(E) 50

101. 10830-!-item-!-187;#058&007415
If xy + z = x(y + z), which of the following must be true?
(A) x = 0 and z = 0
(B) x = 1 and y = 1
(C) y = 1 and z = 0
(D) x = 1 or y = 0
(E) x = 1 or z = 0

102. 10931-!-item-!-187;#058&007448
If -3 is 6 more than x, what is the value of [?]

(A) -9
(B) -6
(C) -3
(D) -1
(E) 1

103. 10978-!-item-!-187;#058&007477
A list of measurements in increasing order is 4, 5, 6, 8, 10, and x. If the median of these measurements is [?] times their arithmetic mean, what is the value of x ?

(A) 16
(B) 15

(C) 14
(D) 13
(E) 12

104. 11026-!-item-!-187;#058&007480
If the average (arithmetic mean) of the 4 numbers n + 2, 2n - 3, 4n + 1, and 7n + 4 is 15, what is the value of n ?
(A) 3.5
(B) 4
(C) 6.5
(D) 11
(E) 13

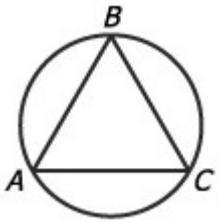
105. 11075-!-item-!-187;#058&007490
Two water pumps, working simultaneously at their respective constant rates, took exactly 4 hours to fill a certain swimming pool. If the constant rate of one pump was 1.5 times the constant rate of the other, how many hours would it have taken the faster pump to fill the pool if it had worked alone at its constant rate?

(A) 5
(B)
(C)
(D) 6
(E)

106. 11122-!-item-!-187;#058&007588
If a certain sample of data has a mean of 20.0 and a standard deviation of 3.0, which of the following values is more than
2.5 standard deviations from the mean?

(A) 12.0
(B) 13.5
(C) 17.0
(D) 23.5
(E) 26.5

107. 11225-!-item-!-187;#058&007613



In the figure above, equilateral triangle ABC is inscribed in the circle. If the length of arc ABC is 24, what is the approximate diameter of the circle?

(A) 5
(B) 8
(C) 11
(D) 15
(E) 19

108. 11272-!-item-!-187;#058&007635
In the arithmetic sequence t1, t2, t3, . . . , tn, . . . , t1 = 23 and tn = tn - 1 - 3 for each n > 1. What is the value of n when tn = -4 ?

(A) - 1
(B) 7
(C) 10
(D) 14
(E) 20

109. 11318-!-item-!-187;#058&007641
Last year, a certain public transportation system sold an average (arithmetic mean) of 41,000 tickets per day on weekdays (Monday through Friday) and an average of 18,000 tickets per day on Saturday and Sunday. Which of the following is closest to the total number of tickets sold last year?

(A) 1 million
(B) 1.25 million
(C) 10 million
(D) 12.5 million
(E) 125 million

110. 11364-!-item-!-187;#058&007646
The residents of Town X participated in a survey to determine the number of hours per week each resident spent watching television. The distribution of the results of the survey had a mean of 21 hours and a standard deviation of 6 hours. The number of hours that Pat, a resident of Town X, watched television last week was between 1 and 2 standard deviations below the mean. Which of the following could be the number of hours that Pat watched television last week?

(A) 30
(B) 20
(C) 18
(D) 12
(E) 6

111. 11411-!-item-!-187;#058&007682
If n is a positive integer less than 200 and [?] is an integer, then n has how many different positive prime factors?

(A) Two
(B) Three
(C) Five
(D) Six
(E) Eight

112. 11460-!-item-!-187;#058&007729

1	2	3	4	5	6	7
–2	–4	–6	–8	–10	–12	–14
3	6	9	12	15	18	21
–4	–8	–12	–16	–20	–24	–28
5	10	15	20	25	30	35
–6	–12	–18	–24	–30	–36	–42
7	14	21	28	35	42	49

What is the sum of the integers in the table above?

(A) 28
(B) 112
(C) 336

(D) 448
(E) 784

113. 11514-!-item-!-187;#058&007740
For all positive integers m, $|m| = 3m$ when m is odd and $|m| = 1/2\ m$ when m is even. Which of the following is equivalent to $|9| \times |6|$?

(A) 81
(B) 54
(C) 36
(D) 27
(E) 18

114. 11561-!-item-!-187;#058&007757
If $0 < x < 1$, what is the median of the values x, x^{-1}, x^2, $\sqrt{X}$, and x^3 ?

(A) x
(B) x^{-1}
(C) x^2
(D) $\sqrt{x}$
(E) x^3

115. 11608-!-item-!-187;#058&007787
A used-car dealer sold one car at a profit of 25 percent of the dealer's purchase price for that car and sold another car at a loss of 20 percent of the dealer's purchase price for that car. If the dealer sold each car for $20,000, what was the dealer's total profit or loss, in dollars, for the two transactions combined?

(A) $1,000 profit
(B) $2,000 profit
(C) $1,000 loss
(D) $2,000 loss
(E) $3,334 loss

116. 11659-!-item-!-187;#058&007807
A certain junior class has 1,000 students and a certain senior class has 800 students. Among these students, there are 60 sibling pairs, each consisting of 1 junior and 1 senior. If 1 student is to be selected at random from each class, what is the probability that the 2 students selected will be a sibling pair?

(A)
(B)
(C)
(D)
(E)

117. 11706-!-item-!-187;#058&007820
A certain office supply store stocks 2 sizes of self-stick notepads, each in 4 colors: blue, green, yellow, or pink. The store packs the notepads in packages that contain either 3 notepads of the same size and the same color or 3 notepads of the same size and of
3 different colors. If the order in which the colors are packed is not considered, how many different packages of the types described above are possible?

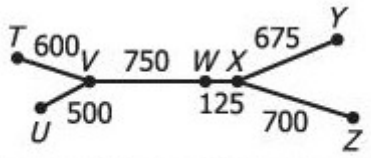
(A) 6
(B) 8
(C) 16
(D) 24
(E) 32

118. 12240-!-item-!-187;#058&008164

For a certain examination, a score of 58 was 2 standard deviations below the mean, and a score of 98 was 3 standard deviations above the mean. What was the mean score for the examination?

(A) 74
(B) 76
(C) 78
(D) 80
(E) 82

119. 12289-!-item-!-187;#058&008361



Note: Figure not drawn to scale.

The figure shows seven train stations and the distances, in miles, along the railways that connect these stations. Beginning at one of the stations, a train takes 25 hours to travel directly to station W at an average rate of 50 miles per hour. At which of the stations did the train begin?

(A) T
(B) U
(C) V
(D) Y
(E) Z

120. 12390-!-item-!-187;#058&008396

Which of the following is closest to the value of $\frac{999}{100 + \frac{1}{999}}$

(A) 10
(B) 1
(C) 0.1
(D) 0.01
(E) 0.001

121. 12439-!-item-!-187;#058&008408

7.51	8.22	7.86	8.36
8.09	7.83	8.30	8.01
7.73	8.25	7.96	8.53

A vending machine is designed to dispense 8 ounces of coffee into a cup. After a test that recorded the number of ounces of coffee in each of 1,000 cups dispensed by the vending machine, the 12 listed amounts, in ounces, were selected from the data. If the 1,000 recorded amounts have a mean of 8.1 ounces and a standard deviation of 0.3 ounce, how many of the 12 listed amounts are within 1.5 standard deviations of the mean?

(A) Four
(B) Six
(C) Nine

(D) Ten
(E) Eleven

122. 12485-!-item-!-187;#058&008472
Jill, who lives in City C, plans to visit 3 different cities, M, L, and S. She plans to visit each city exactly once and return to City C after the 3 visits. She can visit the cities in any order. In how many different orders can she visit the 3 cities?

(A) 3
(B) 6
(C) 8
(D) 9
(E) 12

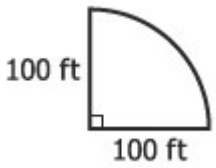
123. 12532-!-item-!-187;#058&008676
Of the following integers, which is the closest approximation to [?]

(A) 7
(B) 10
(C) 13
(D) 15
(E) 17

124. 12632-!-item-!-187;#058&008905
Of the 12 temporary employees in a certain company, 4 will be hired as permanent employees. If 5 of the 12 temporary employees are women, how many of the possible groups of 4 temporary employees consist of 3 women and 1 man?

(A) 22
(B) 35
(C) 56
(D) 70
(E) 105

125. 12681-!-item-!-187;#058&008922



The figure shown represents a piece of land that is in the shape of a quarter circle. If the land is enclosed by a fence, which of the following is closest to the length, in feet, of the fence?

(A) 278
(B) 341
(C) 357
(D) 400
(E) 441

126. 12727-!-item-!-187;#058&008936
Which of the following is equal to the value of 2^5+ 2^5 + 3^5 + 3^5 + 3^5 ?

(A) 5^6

(B) 13^5
(C) 2^6 + 3^6
(D) 2^7 + 3^8
(E) 4^5 + 9^5

127. 12774-!-item-!-187;#058&008957
The total cost of a vacation was divided equally among 3 people. If the total cost of the vacation had been divided equally among 4 people, the cost per person would have been $50 less. What was the total cost of the vacation?

(A) $200
(B) $300
(C) $400
(D) $500
(E) $600

128. 12878-!-item-!-187;#058&009011

Person	Number of Red Blood Cells (per cubic millimeter)
M	5,300,000
O	4,600,000
P	5,300,000
T	5,000,000
V	4,900,000

The table shows the number of red blood cells per cubic millimeter of blood for each of five people. What is the median number of red blood cells per cubic millimeter of blood for these people?

(A) 4,600,000
(B) 5,000,000
(C) 5,020,000
(D) 5,150,000
(E) 5,300,000

129. 12981-!-item-!-187;#058&009035

Month	Number of Days Worked
June	20
July	17
August	19

The table above shows the number of days worked by a certain sales representative in each of three months last year. If the number of sales calls that the representative made each month was proportional to the number of days worked in that month and if the representative made a total of 168 sales calls in the three months shown, how many sales calls did the representative make in August?

(A) 50
(B) 51
(C) 56
(D) 57
(E) 60

130. 13409-!-item-!-187;#058&009269
[?]

According to the table, the median acreage managed by the Federal Land Management agencies is how many million acres?

(A) 87
(B) 92
(C) 133
(D) 191
(E) 270

131. 13459-!-item-!-187;#058&009437
If the speed of x meters per second is equivalent to the speed of y kilometers per hour, what is y in terms of x ?

(1 kilometer = 1,000 meters)

(A) 5x/18
(B) 6x/5
(C) 18x/5
(D) 60x
(E) 3,600,000x

132. 13505-!-item-!-187;#058&009469
If d is the standard deviation of x, y, and z, what is the standard deviation of x + 5, y + 5, and z + 5 ?

(A) d
(B) 3d
(C) 15d
(D) d + 5
(E) d + 15

133. 13554-!-item-!-187;#058&009480

Amount earned per day	$96	$84	$80	$70	$48
Number of Days	4	7	4	3	2

A student worked for 20 days. For each of the amounts shown in the first row of the table, the second row gives the number of days that the student earned that amount. What is the median amount of money that the student earned per day for the 20 days?

(A) $96
(B) $84
(C) $80
(D) $70
(E) $48

134. 13655-!-item-!-187;#058&009647
A 4-person task force is to be formed from the 4 men and 3 women who work in Company G's human resources department. If there are to be 2 men and 2 women on this task force, how many different task forces can be formed?

(A) 14
(B) 18
(C) 35
(D) 56
(E) 144

135. 13701-!-item-!-187;#058&009670
For each of her sales, a saleswoman receives a commission equal to 20 percent of the first $500 of the total amount of the sale, plus 30 percent of the total amount of the sale in excess of $500. If the total amount of one of her sales was $800, the saleswoman's commission was approximately what percent of the total amount of the sale?

(A) 22%
(B) 24%
(C) 25%
(D) 27%
(E) 28%

136. 13806-!-item-!-187;#058&009738
If $10,000 is invested at x percent simple annual interest for n years, which of the following represents the total amount of interest, in dollars, that will be earned by this investment in the n years?

(A)
(B)
(C)
(D)
(E)

137. 13906-!-item-!-187;#058&009755
If a equals the sum of the even integers from 2 to 20, inclusive, and b equals the sum of the odd integers from 1 to 19, inclusive, what is the value of a - b ?

(A) 1
(B) 10
(C) 19
(D) 20
(E) 21

138. 14007-!-item-!-187;#058&009795
The cost to park a car in a certain parking garage is $8.00 for up to 2 hours of parking and $1.75 for each hour in excess of 2 hours. What is the average (arithmetic mean) cost per hour to park a car in the parking garage for 9 hours?

(A) $1.09
(B) $1.67
(C) $2.25
(D) $2.37
(E) $2.50

139. 14108-!-item-!-187;#058&009811
A set of 15 different integers has a median of 25 and a range of 25. What is the greatest possible integer that could be in this set?

(A) 32
(B) 37
(C) 40
(D) 43
(E) 50

140. 14208-!-item-!-187;#058&009862
If x and y are integers and 3^(x - 4) = 3^(y + 2), what is y in terms of x ?

(A) x - 6
(B) x - 5
(C) x - 2
(D) x + 2
(E) x + 6

141. 14419-!-item-!-187;#058&009981
If (5^21)(4^11) = 2(10^n) what is the value of n ?

(A) 11
(B) 21
(C) 22
(D) 23
(E) 32

142. 14580-!-item-!-187;#058&010013
The rate of a certain chemical reaction is directly proportional to the square of the concentration of chemical A present and inversely proportional to the concentration of chemical B present. If the concentration of chemical B is increased by 100 percent, which of the following is closest to the percent change in the concentration of chemical A required to keep the reaction rate unchanged?

(A) 100% decrease
(B) 50% decrease
(C) 40% decrease
(D) 40% increase
(E) 50% increase

143. 14954-!-item-!-187;#058&010212
In a survey of students, each student selected from a list of 12 songs the 2 songs that the student liked best. If each song was selected 4 times, how many students were surveyed?

(A) 96
(B) 48
(C) 32
(D) 24
(E) 18

144. 15002-!-item-!-187;#058&010239
If m = [?], w = [?], and m + w + c = 1, which of the following gives the values of m, w, and c in increasing order?

(A) c, m, w
(B) c, w, m
(C) m, w, c
(D) w, c, m
(E) w, m, c

145. 15048-!-item-!-187;#058&010243
Each of 10 machines works at the same constant rate doing a certain job. The amount of time needed by the 10 machines, working together, to complete the job is 16 hours. How many hours would be needed if only 8 of the machines, working together, were used to complete the job?

(A) 18
(B) 20
(C) 22
(D) 24
(E) 26

146. 15203-!-item-!-187;#058&010262
Machine A, working alone at its constant rate, manufactures 280 bolts per hour, and machine B, working alone at its constant rate, manufactures 220 bolts per hour. How many hours will it take for machines A and B, working together at their respective constant rates, to manufacture 1,000 bolts?

(A) 1
(B) 1.3
(C) 1.5
(D) 1.8
(E) 2

147. 15249-!-item-!-187;#058&010285
A long-distance telephone company charges a monthly fee of $4.95 plus $0.07 per minute for long-distance telephone calls. If a person's long-distance telephone calls for a certain month totaled 320 minutes, what was the total amount that the telephone company charged the person for that month?

(A) $22.90
(B) $24.06
(C) $25.87
(D) $26.67
(E) $27.35

148. 15563-!-item-!-187;#058&010376
[?]

(A) 28
(B) 27
(C) 26
(D) 25
(E) 24

149. 15609-!-item-!-187;#058&010412
A certain library assesses fines for overdue books as follows. On the first day that a book is overdue, the total fine is $0.10. For each additional day that the book is overdue, the total fine is either increased by $0.30 or doubled, whichever results in the lesser amount. What is the total fine for a book on the fourth day it is overdue?

(A) $0.60
(B) $0.70
(C) $0.80
(D) $0.90
(E) $1.00

150. 15710-!-item-!-187;#058&010468
If $M = \sqrt{4} + \sqrt[3]{4} + \sqrt[4]{4}$, then the value of M is

(A) less than 3
(B) equal to 3
(C) between 3 and 4
(D) equal to 4
(E) greater than 4

151. 15756-!-item-!-187;#058&010486
A lawyer charges her clients $200 for the first hour of her time and $150 for each additional hour. If the lawyer charged her new client $1,550 for a certain number of hours of her time, how much was the average (arithmetic mean) charge per hour?

(A) $155
(B) $160
(C) $164
(D) $172
(E) $185

152. 15857-!-item-!-187;#058&010522
Company C has a machine that, working alone at its constant rate, processes 100 units of a certain product in 5 hours. If Company C plans to buy a new machine that will process this product at a constant rate and if the two machines, working together at their respective constant rates, are to process 100 units of this product in 2 hours, what should be the constant rate, in units per hour, of the new machine?

(A) 50
(B) 45
(C) 30
(D) 25
(E) 20

153. 15903-!-item-!-187;#058&010559
A boat traveled upstream a distance of 90 miles at an average speed of (v - 3) miles per hour and then traveled the same distance downstream at an average speed of (v + 3) miles per hour. If the trip upstream took half an hour longer than the trip downstream, how many hours did it take the boat to travel downstream?

(A) 2.5
(B) 2.4
(C) 2.3
(D) 2.2
(E) 2.1

154. 16003-!-item-!-187;#058&010661
If n is a positive integer and the product of all the integers from 1 to n, inclusive, is a multiple of 990, what is the least possible value of n ?

(A) 10
(B) 11
(C) 12
(D) 13
(E) 14

155. 16103-!-item-!-187;#058&010667
If 2^x - 2^(x - 2) = 3(2^13), what is the value of x ?

(A) 9
(B) 11
(C) 13
(D) 15
(E) 17

156. 16149-!-item-!-187;#058&010698
If a, b, c, and d are consecutive even integers and $a < b < c < d$, then $a + b$ is how much less than $c + d$?

(A) 2
(B) 4
(C) 6
(D) 8
(E) 10

157. 16358-!-item-!-187;#058&010761
To furnish a room in a model home, an interior decorator is to select 2 chairs and 2 tables from a collection of chairs and tables in a warehouse that are all different from each other. If there are 5 chairs in the warehouse and if 150 different combinations are possible, how many tables are in the warehouse?

(A) 6
(B) 8
(C) 10
(D) 15
(E) 30

158. 16572-!-item-!-187;#058&010847
The perimeter of a certain isosceles right triangle is$16+16\sqrt{2}$. What is the length of the hypotenuse of the triangle?

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

159. 16781-!-item-!-187;#058&010906
At a repair shop, the total cost of a repair consists of the charge for parts and a charge of $22.00 per hour for labor. If the total cost of a certain repair at the shop was $249.75 and the charge for parts was $150.75, then the labor charge was for how many hours of labor?

(A) 4.5
(B) 5
(C) 5.5
(D) 6.5
(E) 9

160. 16827-!-item-!-187;#058&010940
Committee X has 4 members, committee Y has 5 members, and these committees have no members in common. If a task force is to be formed consisting of one member of X and one member of Y, how many different task forces are possible?

(A) 6
(B) 9
(C) 10

(D) 20
(E) 36

161. 16873-!-item-!-187;#058&010944
Which of the following must be equal to (x^6)(x^4) ?

(A) x^10
(B) x^12
(C) x^20
(D) x^24
(E) x^48

162. 17030-!-item-!-187;#058&010961
If n and y are positive integers and $450y = n^3$, which of the following must be an integer?

I. $\frac{y}{3 \times 2^2 \times 5}$

II. $\frac{y}{3^2 \times 2 \times 5}$

III. $\frac{y}{3 \times 2 \times 5^2}$

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

163. 17076-!-item-!-187;#058&010995
In 1990 the budgets for projects Q and V were $660,000 and $780,000, respectively. In each of the next 10 years, the budget for Q was increased by $30,000 and the budget for V was decreased by $10,000. In which year was the budget for Q equal to the budget for V ?

(A) 1992
(B) 1993
(C) 1994
(D) 1995
(E) 1996

164. 17177-!-item-!-187;#058&011044
A certain scholarship committee awarded scholarships in the amounts of $1,250, $2,500, and $4,000. The committee awarded twice as many $2,500 scholarships as $4,000 scholarships, and it awarded three times as many $1,250 scholarships as $2,500 scholarships. If a total of $37,500 was awarded in $1,250 scholarships, how many $4,000 scholarships were awarded?

(A) 5
(B) 6
(C) 9
(D) 10
(E) 15

165. 17227-!-item-!-187;#058&011060
If [?], which of the following statements could be true?

[?]

(A) I only
(B) I and II only
(C) I and III only
(D) II and III only
(E) I, II, and III

166. 17437-!-item-!-187;#058&011130
The architects of a certain type of building estimate construction costs to be $2.0 million per floor for each of the first 5 floors, $2.5 million per floor for each of the next 3 floors, and $3.5 million per floor for any additional floors. What would the architects estimate the construction costs to be for a building of this type with 10 floors?
(A) $23.0 million
(B) $23.5 million
(C) $24.0 million
(D) $24.5 million
(E) $25.0 million

167. 17541-!-item-!-187;#058&011147
If x is positive, which of the following could be the correct ordering of 2^x, and x^2 ?

[?]

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

168. 17696-!-item-!-187;#058&011204
For which of the following functions f is f (x) = f (1 - x) for all x ?

(A) f (x) = 1 - x
(B) f (x) = 1 - x^2
(C) f (x) = x^2 - (1 - x)^2
(D) f (x) = (x^2)(1 - x)^2

$$f(x) = \frac{x}{1-x}$$

(E)

169. 17796-!-item-!-187;#058&011312
The total price of a basic computer and a printer was $2,500. If the same printer had been purchased with an enhanced computer whose price was $500 more than the price of the basic computer, then the price of the printer would have been [?] of that total. What was the price of the basic computer?

(A) $1,500
(B) $1,600
(C) $1,750
(D) $1,900
(E) $2,000

170. 18117-!-item-!-187;#058&011424
Of the 13 employees in a certain department, 1 has an annual salary of $38,000, 2 have an annual salary of $45,000 each, 2 have an annual salary of $42,500 each, 3 have an annual salary of $40,000 each, and 5 have an annual salary of $48,500 each. What is the median annual salary for the 13 employees?

(A) $38,000
(B) $40,000
(C) $42,500
(D) $45,000
(E) $48,500

171. 18163-!-item-!-187;#058&011426
Julia purchased a car on an installment plan. She made a down payment of $2,550 and then made n monthly payments of $155 each. If Julia paid a total of $9,060 for the car, how many monthly payments did she make?

(A) 30
(B) 36
(C) 42
(D) 48
(E) 54

172. 18209-!-item-!-187;#058&011433
A metal company's old machine makes bolts at a constant rate of 100 bolts per hour. The company's new machine makes bolts at a constant rate of 150 bolts per hour. If both machines start at the same time and continue making bolts simultaneously, how many minutes will it take the two machines to make a total of 300 bolts?

(A) 36
(B) 72
(C) 120
(D) 144
(E) 180

173. 18259-!-item-!-187;#058&011463
In a certain state, gasoline stations compute the price per gallon p, in dollars, charged at the pump by adding a 4 percent sales tax to the dealer's price per gallon d, in dollars, and then adding a gasoline tax of $0.18 per gallon. Which of the following gives the dealer's price per gallon d in terms of the price per gallon p charged at the pump?

(A) d = p - 0.22
(B) d = P/ 1.22
(C) d = (P/1.04) – 0.18
(D) d = (P - 0.18)/1.04
(E) d = (P-0.04)/1.18

174. 18305-!-item-!-187;#058&011469
The main ingredient in a certain prescription drug capsule costs $500.00 per kilogram. If each capsule contains 600 milligrams of the ingredient, what is the cost of the ingredient in a capsule? (1 kilogram = 10^6 milligrams)

(A) $0.30
(B) $0.83

(C) $1.20
(D) $3.00
(E) $3.33

175. 18356-!-item-!-187;#058&011490
Before being simplified, the instructions for computing income tax in Country R were to add 2 percent of one's annual income to the average (arithmetic mean) of 100 units of Country R's currency and 1 percent of one's annual income. Which of the following represents the simplified formula for computing the income tax, in Country R's currency, for a person in that country whose annual income is I ?

(A)
(B)
(C)
(D)
(E)

176. 18407-!-item-!-187;#058&011575
If the operation ⊛ is defined for all integers a and b by a⊛ b = a + b - ab which of the following statements must be true for all integers a, b, and c ?

I. $a \circledast b = b \circledast a$

II. $a \circledast 0 = a$

III. $(a \circledast b) \circledast c = a \circledast (b \circledast c)$

(A) I only
(B) II only
(C) I and II only
(D) I and III only
(E) I, II, and III

177. 18457-!-item-!-187;#058&011601
When a certain tree was first planted, it was 4 feet tall, and the height of the tree increased by a constant amount each year for the next 6 years. At the end of the 6th year, the tree was 1/5 taller than it was at the end of the 4th year. By how many feet did the height of the tree increase each year?

(A) 3/10
(B) 2/5
(C) 1/2
(D) 2/3
(E) 6/5

178. 18885-!-item-!-187;#058&011972
Adam and Beth each drove from Smallville to Crown City by different routes. Adam drove an an average speed of 40 miles per hour and completed the trip in 30 minutes. Beth's route was 5 miles longer, and it took her 20 minutes more than Adam to complete the trip. How many miles per hour was Beth's average speed on this trip?

(A) 24
(B) 30
(C) 48
(D) 54
(E) 75

179. 19312-!-item-!-187;#058&012220
If two sides of a triangle have lengths 2 and 5, which of the following could be the perimeter of the triangle?

I. 9
II. 15
III. 19

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

180. 19628-!-item-!-187;#058&012404
List K consists of 12 consecutive integers. If -4 is the least integer in list K, what is the range of the positive integers in list K ?

(A) 5
(B) 6
(C) 7
(D) 11
(E) 12

181. 19782-!-item-!-187;#058&012457
Three boxes of supplies have an average (arithmetic mean) weight of 7 kilograms and a median weight of 9 kilograms. What is the maximum possible weight, in kilograms, of the lightest box?

(A) 1
(B) 2
(C) 3
(D) 4
(E) 5

182. 19831-!-item-!-187;#058&012571

Stock	Number of Shares
V	68
W	112
X	56
Y	94
Z	45

The table shows the number of shares of each of the 5 stocks owned by Mr. Sami. If Mr. Sami was to sell 20 shares of Stock X and buy 24 shares of Stock Y, what would be the increase in the range of the numbers of shares of the 5 stocks owned by Mr. Sami?

(A) 4
(B) 6
(C) 9
(D) 15
(E) 20

183. 19877-!-item-!-187;#058&012576
A certain company charges $6 per package to ship packages weighing less than 2 pounds each. For a package weighing 2 pounds or more, the company charges an initial fee of $6 plus $2 per pound. If the company charged $38 to ship a certain package, which of the following was the weight of the package, in pounds?

(A) 16
(B) 17
(C) 19
(D) 20
(E) 22

184. 19923-!-item-!-187;#058&012581
A certain kennel will house 24 dogs for 7 days. Each dog requires 10 ounces of dog food per day. If the kennel purchases dog food in cases of 30 cans each and if each can holds 8 ounces of dog food, how many cases will the kennel need to feed all of the dogs for 7 days?

(A) 5
(B) 6
(C) 7
(D) 8
(E) 9

185. 20023-!-item-!-187;#058&012617
Each year Mark works 40 hours per week for 50 weeks. Last year Mark was paid a total of $20,000. If this year his hourly pay rate is raised by $0.50, what is the total amount that Mark will be paid this year?

(A) $30,000
(B) $25,000
(C) $22,500
(D) $21,000
(E) $20,020

186. 20069-!-item-!-187;#058&012630
A retailer sold an appliance for $80. If the retailer's gross profit on the appliance was 25 percent of the retailer's cost for the appliance, how many dollars was the retailer's gross profit?

(A) $10
(B) $16
(C) $20
(D) $24
(E) $25

187. 20334-!-item-!-187;#058&012770
If $0 < r < 1 < s < 2$, which of the following must be less than 1 ?

I. r/s
II. rs
III. s - r

(A) I only
(B) II only
(C) III only
(D) I and II
(E) I and III

188. 20383-!-item-!-187;#058&012808
Last month 15 homes were sold in Town X. The average (arithmetic mean) sale price of the homes was $150,000 and the median sale price was $130,000. Which of the following statements must be true?

[?]

(A) I only
(B) II only
(C) III only
(D) I and II
(E) I and III

189. 20537-!-item-!-187;#058&012835
A certain company sold 800 units of its product for $8 each and 1,000 units of its product for $5 each. If the company's cost of producing each unit of its product was $6, what was the company's profit or loss on the 1,800 units of its product?

(A) $1,600 loss
(B) $600 loss
(C) No profit or loss
(D) $600 profit
(E) $1,600 profit

190. 20588-!-item-!-187;#058&012892
Pumps A, B, and C operate at their respective constant rates. Pumps A and B, operating simultaneously, can fill a certain tank in [?] hours; pumps A and C, operating simultaneously, can fill the tank in hours; and pumps B and C, operating simultaneously, can fill the tank in 2 hours. How many hours does it take pumps A, B, and C, operating simultaneously, to fill the tank?

(A) 1/3
(B) 1/2
(C) 2/3
(D) 5/6
(E) 1

191. 20635-!-item-!-187;#058&013039
Which of the following equations is NOT equivalent to $4x^2 = y^2 - 9$?

(A) $4x^2 + 9 = y^2$
(B) $4x^2 - y^2 = -9$
(C) $4x^2= (y + 3)(y - 3)$
(D) $2x = y - 3$
(E) $x^2 = \frac{y^2 - 9}{4}$

192. 20681-!-item-!-187;#058&013102
On a certain day, Tim invested $1,000 at 10 percent annual interest, compounded annually, and Lana invested $2,000 at 5 percent annual interest, compounded annually. The total amount of interest earned by Tim's investment in the first 2 years was how much greater than the total amount of interest earned by Lana's investment in the first 2 years?

(A) $5
(B) $15
(C) $50
(D) $100
(E) $105

193. 20944-!-item-!-187;#058&013354
A basket contains 5 apples, of which 1 is spoiled and the rest are good. If Henry is to select 2 apples from the basket simultaneously and at random, what is the probability that the 2 apples selected will include the spoiled apple?

(A) 1/5
(B) 3/10
(C) 2/5
(D) 1/2
(E) 3/5

194. 20990-!-item-!-187;#058&013496
A certain state levies a 4 percent tax on the nightly rates of hotel rooms. A certain hotel in this state also charges a $2.00 nightly fee per room, which is not subject to tax. If the total charge for a room for one night was $74.80, what was the nightly rate of the room?

(A) $68.00
(B) $69.00
(C) $70.00
(D) $71.00
(E) $72.00

195. 21037-!-item-!-187;#058&013502
Peter and Tom shared the driving on a certain trip. If Peter and Tom both drove for the same amount of time, but Peter only drove [?] of the total distance, what was the ratio of Peter's average speed to Tom's average speed?

(A) 1 : 5
(B) 2 : 5
(C) 1 : 2
(D) 3 : 5
(E) 2 : 3

196. 21193-!-item-!-187;#058&013590
At what simple annual interest rate must $2,500 be invested if it is to earn $225 in interest in one year?

(A) 6%
(B) 7%
(C) 8%
(D) 9%
(E) 10%

Practice Test 1 Problem Solving Keys:

1. A 409-!-item-!-187;#058&000306
2. E 455-!-item-!-187;#058&000316
3. D 664-!-item-!-187;#058&000504
4. D 765-!-item-!-187;#058&000550
5. D 812-!-item-!-187;#058&000553

6. B 859-!-item-!-187;#058&000568
7. E 905-!-item-!-187;#058&000575
8. D 1221-!-item-!-187;#058&000650
9. C 1700-!-item-!-187;#058&001066
10. E 1746-!-item-!-187;#058&002343

11. B 1799-!-item-!-187;#058&002415
12. E 1845-!-item-!-187;#058&002416
13. E 1898-!-item-!-187;#058&002486
14. A 1999-!-item-!-187;#058&002494
15. E 2160-!-item-!-187;#058&002594

16. B 2206-!-item-!-187;#058&002619
17. E 2311-!-item-!-187;#058&002635
18. E 2417-!-item-!-187;#058&002747
19. C 2463-!-item-!-187;#058&002761
20. B 2563-!-item-!-187;#058&002787

21. C 2609-!-item-!-187;#058&002849
22. C 2710-!-item-!-187;#058&002886
23. A 2976-!-item-!-187;#058&003069
24. A 3022-!-item-!-187;#058&003084
25. D 3236-!-item-!-187;#058&003282

26. D 3282-!-item-!-187;#058&003293
27. D 3330-!-item-!-187;#058&003295
28. D 3377-!-item-!-187;#058&003297
29. C 3426-!-item-!-187;#058&003323
30. E 3528-!-item-!-187;#058&003455

31. E 4014-!-item-!-187;#058&003590
32. D 4438-!-item-!-187;#058&003962
33. B 4484-!-item-!-187;#058&004004
34. C 4586-!-item-!-187;#058&004030
35. E 4632-!-item-!-187;#058&004107

36. C 4841-!-item-!-187;#058&004235
37. D 5000-!-item-!-187;#058&004365
38. A 5102-!-item-!-187;#058&004451
39. E 5583-!-item-!-187;#058&004668
40. B 5629-!-item-!-187;#058&004684

41. C 5676-!-item-!-187;#058&004686
42. C 5722-!-item-!-187;#058&004704
43. E 5768-!-item-!-187;#058&004705
44. D 5871-!-item-!-187;#058&004763
45. C 5918-!-item-!-187;#058&004778

46. E 5966-!-item-!-187;#058&004795
47. E 6013-!-item-!-187;#058&004836
48. D 6225-!-item-!-187;#058&004914

49. D 6490-!-item-!-187;#058&005075
50. E 6541-!-item-!-187;#058&005092

51. D 6587-!-item-!-187;#058&005111
52. A 6641-!-item-!-187;#058&005112
53. D 6687-!-item-!-187;#058&005122
54. C 6787-!-item-!-187;#058&005232
55. E 6892-!-item-!-187;#058&005291

56. C 6998-!-item-!-187;#058&005424
57. D 7044-!-item-!-187;#058&005427
58. B 7090-!-item-!-187;#058&005463
59. B 7143-!-item-!-187;#058&005466
60. D 7189-!-item-!-187;#058&005472

61. A 7409-!-item-!-187;#058&005546
62. D 7564-!-item-!-187;#058&005577
63. E 7612-!-item-!-187;#058&005607
64. D 7659-!-item-!-187;#058&005610
65. C 7870-!-item-!-187;#058&005675

66. A 7916-!-item-!-187;#058&005701
67. A 7966-!-item-!-187;#058&005724
68. E 8012-!-item-!-187;#058&005726
69. C 8112-!-item-!-187;#058&005781
70. B 8158-!-item-!-187;#058&005842

71. B 8312-!-item-!-187;#058&005967
72. E 8363-!-item-!-187;#058&005969
73. E 8845-!-item-!-187;#058&006119
74. B 8893-!-item-!-187;#058&006120
75. B 8939-!-item-!-187;#058&006136

76. B 8985-!-item-!-187;#058&006184
77. C 9031-!-item-!-187;#058&006222
78. C 9077-!-item-!-187;#058&006227
79. C 9123-!-item-!-187;#058&006238
80. B 9169-!-item-!-187;#058&006279

81. C 9215-!-item-!-187;#058&006304
82. E 9378-!-item-!-187;#058&006496
83. C 9589-!-item-!-187;#058&006669
84. D 9689-!-item-!-187;#058&006710
85. B 9735-!-item-!-187;#058&006716

86. B 9944-!-item-!-187;#058&006984
87. C 9993-!-item-!-187;#058&007019
88. B 10039-!-item-!-187;#058&007071
89. C 10086-!-item-!-187;#058&007098
90. C 10132-!-item-!-187;#058&007125

91. A 10183-!-item-!-187;#058&007129
92. D 10232-!-item-!-187;#058&007135
93. C 10285-!-item-!-187;#058&007154
94. B 10331-!-item-!-187;#058&007190
95. C 10545-!-item-!-187;#058&007280

96. A 10591-!-item-!-187;#058&007292
97. A 10643-!-item-!-187;#058&007319

98. D 10689-!-item-!-187;#058&007329
99. D 10738-!-item-!-187;#058&007352
100. B 10784-!-item-!-187;#058&007372

101. E 10830-!-item-!-187;#058&007415
102. C 10931-!-item-!-187;#058&007448
103. A 10978-!-item-!-187;#058&007477
104. B 11026-!-item-!-187;#058&007480
105. E 11075-!-item-!-187;#058&007490

106. A 11122-!-item-!-187;#058&007588
107. C 11225-!-item-!-187;#058&007613
108. C 11272-!-item-!-187;#058&007635
109. D 11318-!-item-!-187;#058&007641
110. D 11364-!-item-!-187;#058&007646

111. B 11411-!-item-!-187;#058&007682
112. B 11460-!-item-!-187;#058&007729
113. D 11514-!-item-!-187;#058&007740
114. A 11561-!-item-!-187;#058&007757
115. C 11608-!-item-!-187;#058&007787

116. A 11659-!-item-!-187;#058&007807
117. C 11706-!-item-!-187;#058&007820
118. A 12240-!-item-!-187;#058&008164
119. B 12289-!-item-!-187;#058&008361
120. A 12390-!-item-!-187;#058&008396

121. E 12439-!-item-!-187;#058&008408
122. B 12485-!-item-!-187;#058&008472
123. C 12532-!-item-!-187;#058&008676
124. D 12632-!-item-!-187;#058&008905
125. C 12681-!-item-!-187;#058&008922

126. C 12727-!-item-!-187;#058&008936
127. E 12774-!-item-!-187;#058&008957
128. B 12878-!-item-!-187;#058&009011
129. D 12981-!-item-!-187;#058&009035
130. B 13409-!-item-!-187;#058&009269

131. C 13459-!-item-!-187;#058&009437
132. A 13505-!-item-!-187;#058&009469
133. B 13554-!-item-!-187;#058&009480
134. B 13655-!-item-!-187;#058&009647
135. B 13701-!-item-!-187;#058&009670

136. C 13806-!-item-!-187;#058&009738
137. B 13906-!-item-!-187;#058&009755
138. C 14007-!-item-!-187;#058&009795
139. D 14108-!-item-!-187;#058&009811
140. A 14208-!-item-!-187;#058&009862

141. B 14419-!-item-!-187;#058&009981
142. D 14580-!-item-!-187;#058&010013
143. D 14954-!-item-!-187;#058&010212
144. A 15002-!-item-!-187;#058&010239
145. B 15048-!-item-!-187;#058&010243

146. E 15203-!-item-!-187;#058&010262

147. E 15249-!-item-!-187;#058&010285
148. A 15563-!-item-!-187;#058&010376
149. B 15609-!-item-!-187;#058&010412
150. E 15710-!-item-!-187;#058&010468

151. A 15756-!-item-!-187;#058&010486
152. C 15857-!-item-!-187;#058&010522
153. A 15903-!-item-!-187;#058&010559
154. B 16003-!-item-!-187;#058&010661
155. D 16103-!-item-!-187;#058&010667

156. D 16149-!-item-!-187;#058&010698
157. A 16358-!-item-!-187;#058&010761
158. B 16572-!-item-!-187;#058&010847
159. A 16781-!-item-!-187;#058&010906
160. D 16827-!-item-!-187;#058&010940

161. A 16873-!-item-!-187;#058&010944
162. B 17030-!-item-!-187;#058&010961
163. B 17076-!-item-!-187;#058&010995
164. A 17177-!-item-!-187;#058&011044
165. E 17227-!-item-!-187;#058&011060

166. D 17437-!-item-!-187;#058&011130
167. D 17541-!-item-!-187;#058&011147
168. D 17696-!-item-!-187;#058&011204
169. D 17796-!-item-!-187;#058&011312
170. D 18117-!-item-!-187;#058&011424

171. C 18163-!-item-!-187;#058&011426
172. B 18209-!-item-!-187;#058&011433
173. D 18259-!-item-!-187;#058&011463
174. A 18305-!-item-!-187;#058&011469
175. C 18356-!-item-!-187;#058&011490

176. E 18407-!-item-!-187;#058&011575
177. D 18457-!-item-!-187;#058&011601
178. B 18885-!-item-!-187;#058&011972
179. A 19312-!-item-!-187;#058&012220
180. B 19628-!-item-!-187;#058&012404

181. C 19782-!-item-!-187;#058&012457
182. D 19831-!-item-!-187;#058&012571
183. A 19877-!-item-!-187;#058&012576
184. C 19923-!-item-!-187;#058&012581
185. D 20023-!-item-!-187;#058&012617

186. B 20069-!-item-!-187;#058&012630
187. A 20334-!-item-!-187;#058&012770
188. A 20383-!-item-!-187;#058&012808
189. D 20537-!-item-!-187;#058&012835
190. E 20588-!-item-!-187;#058&012892

191. D 20635-!-item-!-187;#058&013039
192. A 20681-!-item-!-187;#058&013102
193. C 20944-!-item-!-187;#058&013354
194. C 20990-!-item-!-187;#058&013496
195. E 21037-!-item-!-187;#058&013502

196. D 21193-!-item-!-187;#058&013590