考满分

留学考生的在线课堂

GRE 数学 170 难题

考满分教研组

说明

1.本文档的题目来源包括：OG、150、Barron、Magoosh 和猴哥难题中不超纲的题。
2.难题是一个检验能力的手段，如果做题时发现基础知识点欠缺，一定要再巩固一遍相关知识点。

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~搞懂多少题，考试多少分~

1. The total amount that Mary paid for a book was equal to the price of the book plus a sales tax that was 4 percent of the price of the book. Mary paid for the book with a $10 bill and received the correct change, which was less than $3.00. Which of the following statements must be true?ect change, which was less than $3.00. Which of the following statements must be true?

Indicate all such statements.

A. The price of the book was less than $9.50.

B. The price of the book was greater than $6.90.

C. The sales tax was less than $0.45.

2. Let S be the set of all positive integers n such that n2 is a multiple of both 24 and 108. Which of the following integers are divisors of every integer n in S ?

Indicate all such integers.

A. 12
B. 24
C. 36
D. 72

3. In a graduating class of 236 students, 142 took algebra and 121 took chemistry. What is thegreatest possible number of students that could have taken both algebra and chemistry?

4. What is the ratio of the number of people in group 2 with the ailment sneezing and itchy eyes to the total number of people in both groups with the ailment sneezing and itchy eyes?

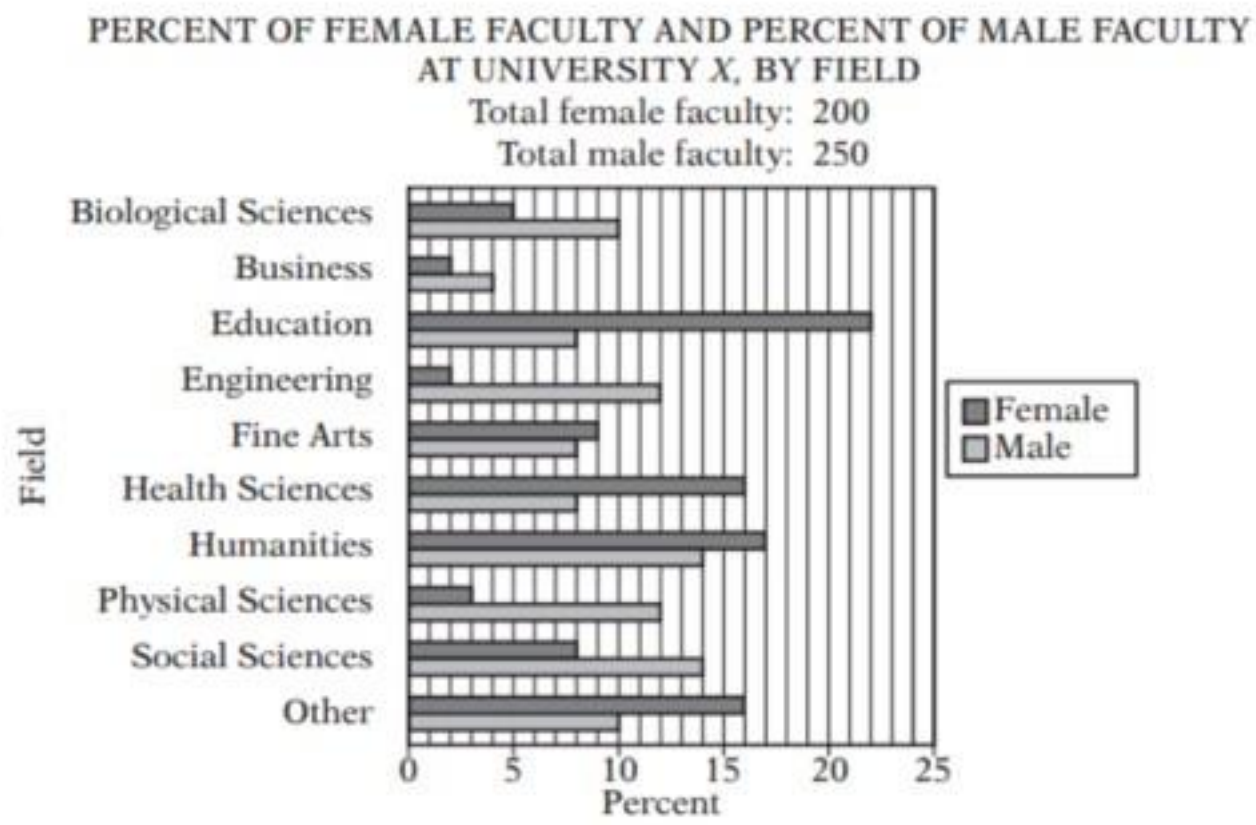
Give your answer as a fraction.

PERCENT OF THE 300 PEOPLE IN GROUP 1 AND THE 400 PEOPLE IN GROUP 2 WHO HAVE SELECTED AILMENTS

Respiratory Ailment	Percent of People in Group 1 Who Have Ailment	Percent of People in Group 2 Who Have Ailment
Allergic sensitivity to endotoxins	14%	21%
Asthma (allergic)	3%	4%
Asthma (nonallergic)	2%	3%
Hay fever	4%	10%
Sneezing and itchy eyes	8%	11%
Wheezing (allergic)	5%	6%
Wheezing (nonallergic)	2%	5%

5. For the biological sciences and health sciences faculty combined, 1/3 of the female and 2/9 of the male faculty members are tenured professors. What fraction of all the faculty members in those two fields combined are tenured professors?

Give your answer as a fraction.



6. In the xy-plane, line k is a line that does not pass through the origin.

Which of the following statements individually provide(s) sufficient additional information to determine whether the slope of line k is negative?

Indicate all such statements.

A. The x-intercept of line k is twice the y-intercept of line k.
B. The product of the x-intercept and the y-intercept of line k is positive.
C. Line k passes through the points (a, b) and (r, s), where (a-r)(b-s) < 0.

7. The company at which Mark is employed has 80 employees, each of whom has a different salary. Mark's salary of $43,700 is the second-highest salary in the first quartile of the 80 salaries. If the company were to hire 8 new employees at salaries that are less than the lowest of the 80 salaries, what would Mark's salary be with respect to the quartiles of the 88 salaries at the company, assuming no other changes in the salaries?

A. The fourth-highest salary in the first quartile
B. The highest salary in the first quartile
C. The second-lowest salary in the second quartile
D. The third-lowest salary in the second quartile

E. The fifth-lowest salary in the second quartile

8. What is the least positive integer that is not a factor of 25! and is not a prime number?
A. 26
B. 28
C. 36
D. 56
E. 58

9. P, Q, and R are three points in a plane, and R does not lie on line PQ. Which of the following is true about the set of all points in the plane that are the same distance from all three points?

A. It contains no points.
B. It contains one point.
C. It contains two points.
D. It is a line.
E. It is a circle.

10. A student made a conjecture that for any integer n, the integer 4n + 3 is a prime number. Which of the following values of n could be used to disprove the student's conjecture?

Indicate all such values.

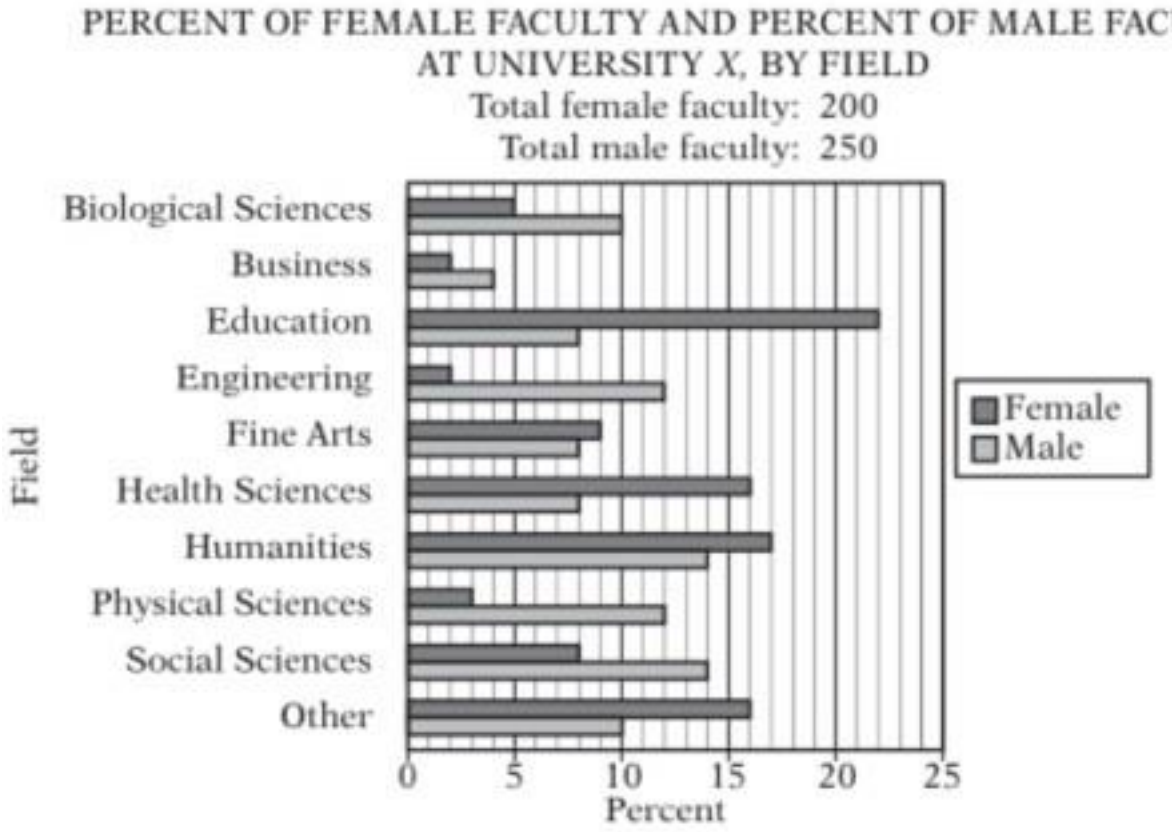
A. 1
B. 3
C. 4
D. 6
E. 7

11. By weight, liquid A makes up 8 percent of solution R and 18 percent of solution S. If 3 grams of solution R are mixed with 7 grams of solution S, then liquid A accounts for what percent of the weight of the resulting solution?

A. 10%
B. 13%
C. 15%
D. 19%
E. 26%

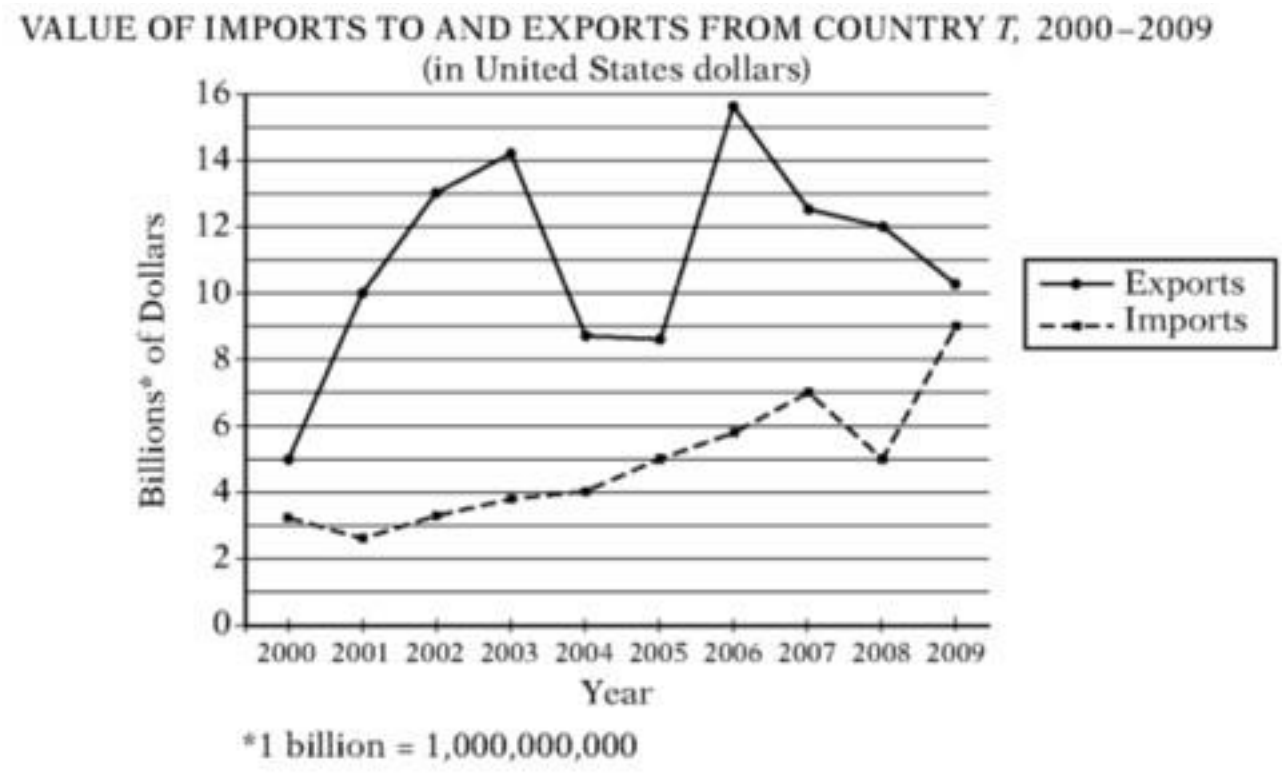
12. Approximately what percent of the faculty in humanities are male?

A. 35%
B. 38%
C. 41%
D. 45%
E. 51%



13. Which of the following is closest to the average (arithmetic mean) of the 9 changes in the value of imports between consecutive years from 2000 to 2009 ?

A. $260 million
B. $320 million
C. $400 million
D. $480 million
E. $640 million



14. A random variable Y is normally distributed with a mean of 200 and a standard deviation of 10.

Quantity A: The probability of the event that the value of Y is greater than 220
Quantity B: 1/6

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

15. (1-x)/(x-1)=1/x

Quantity A: x
Quantity B: -1/2

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

16. In a quality-control test, 50 boxes-each containing 30 machine parts-were examined for defective parts. The number of defective parts was recorded for each box, and the average (arithmetic mean) of the 50 recorded numbers of defective parts per box was 1.12. Only one error was made in recording the 50 numbers: "1" defective part in a certain box was incorrectly recorded as “10".

Quantity A: The actual average number of defective parts per box
Quantity B: 0.94

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

17. The random variable X is normally distributed. The values 650 and 850 are at the 60th and 90th percentiles of the distribution of X, respectively.

Quantity A: The value at the 75th percentile of the distribution of X
Quantity B: 750

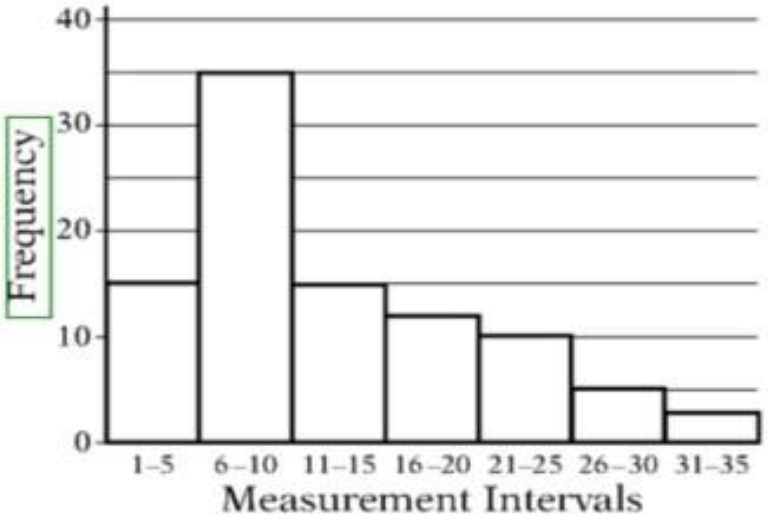
A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

18. x is an integer greater than 1.

Quantity A: 3^{x+1}
Quantity B: 4^{x}

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

19. In the course of an experiment, 95 measurements were recorded, and all of the measurements were integers. The 95 measurements were then grouped into 7 measurement intervals. The graph above shows the frequency distribution of the 95 measurements by measurement interval.



Quantity A: The average (arithmetic mean) of the 95 measurements
Quantity B: The median of the 95 measurements

A. Quantity A is greater.

B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

20. $x^y > 0$, $xy^2 < 0$

Quantity A: x
Quantity B: y

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

21. r, s, and t are three consecutive odd integers such that r < s < t.

Quantity A: r + s + 1
Quantity B: s + t – 1

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

22. n is a positive integer, x = 7n + 2, and y = 6n + 3

Quantity A: the ones digit of x+y
Quantity B: 5

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

23.

Quantity A: x^2+1
Quantity B: 2x-1

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

24. List K consists of the numbers -10, -5, 0, 5, and 10. Which of the following lists of numbers have the same range as the numbers in list K ? Indicate <u>all</u> such lists.

A. -15, -1, 0, 1, 15
B. -7, -4, -2, 1, 13
C. 0, 1, 2, 5, 8, 10
D. 2, 3, 5, 15, 19, 22
E. 4, 5, 6, 24

25. If $a < b < 0$, which of the following numbers must be positive?

Indicate all such numbers.

A. a-b
B. a^2-b^2
C. ab
D. a^2b
E. a^2+ab^2

26. Eight points are equally spaced on a circle. If 4 of the 8 points are to be chosen at random, what is the probability that a quadrilateral having the 4 points chosen as vertices will be a square?

A. 1/70
B. 1/35
C. 1/7
D. 1/4
E. 1/2

27. The range of the heights of the female students in a certain class is 13.2 inches, and the range of the heights of the male students in the class is 15.4 inches.

Which of the following statements individually provide(s) sufficient additional information to determine the range of the heights of all the students in the class?

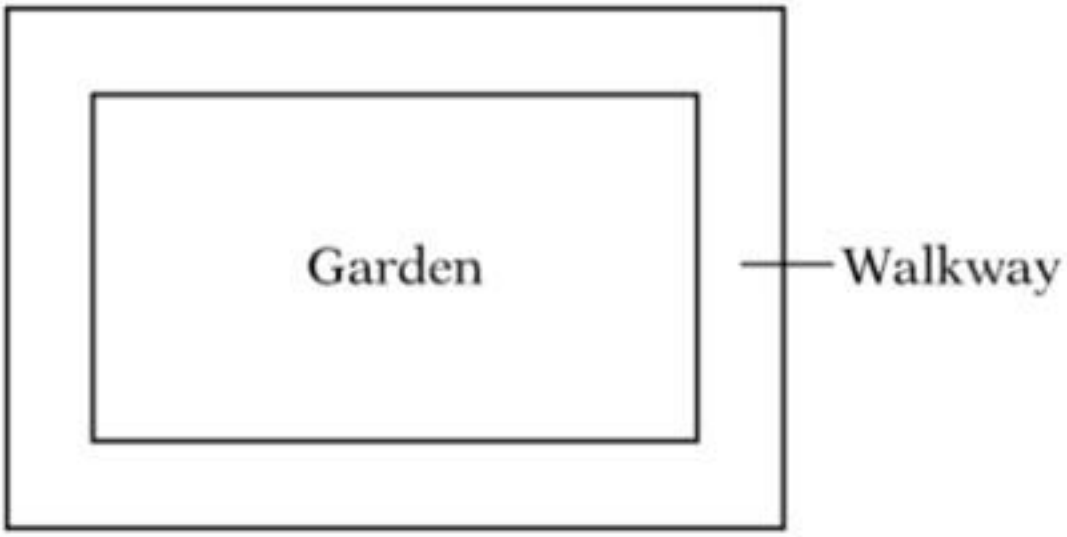
Indicate all such statements.

A. The tallest male student in the class is 5.8 inches taller than the tallest female student in theclass.
B. The median height of the male students in the class is 1.1 inches greater than the median heightof the female students in the class.
C. The average (arithmetic mean) height of the male students in the class is 4.6 inches greaterthan the average height of the female students in the class.

28. Of the 20 lightbulbs in a box, 2 are defective. An inspector will select 2 lightbulbs simultaneously and at random from the box. What is the probability that neither of the lightbulbs selected will be defective?

Give your answer as a fraction.

29. The figure above represents a rectangular garden with a walkway around it. The garden is 18 feet long and 12 feet wide. The walkway is uniformly 3 feet wide, and its edges meet at right angles. What is the area of the walkway?



30. Line k lies in the xy-plane. The x-intercept of line k is -4, and line k passes through the midpoint of the line segment whose endpoints are (2, 9) and (2, 0). What is the slope of line k ?

Give your answer as a fraction.

31. The table above shows the frequency distribution of the values of a variable Y. What is the mean of the distribution?

Give your answer to the nearest 0.01.

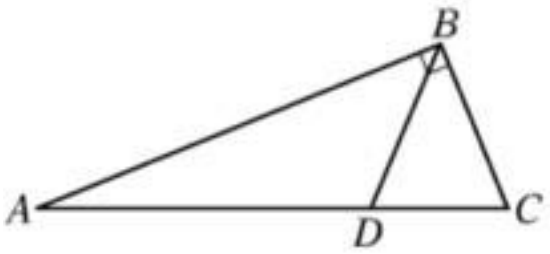
Y	Frequency
$\frac{1}{2}$	2
$\frac{3}{4}$	7
$\frac{5}{4}$	8
$\frac{3}{2}$	8
$\frac{7}{4}$	9

32. If $1/[(2^{11})\cdot(5^{17})]$ is expressed as a terminating decimal, how many nonzero digits will the decimal have?

A. One
B. Two
C. Four
D. Six
E. Eleven

33. Which of the following statements individually provide(s) sufficient additional information to determine the area of triangle ABC above?

Indicate all such statements.



The length of AB is $10\sqrt{3}$.

A. DBC is an equilateral triangle.
B. ABD is an isosceles triangle.
C. The length of BC is equal to the length of AD.
D. The length of BC is 10.
E. The length of AD is 10.

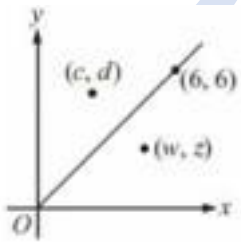
34. During an experiment, the pressure of a fixed mass of gas increased from 40 pounds per square inch (psi) to 50 psi. Throughout the experiment, the pressure, P psi, and the volume, V cubic inches, of the gas varied in such a way that the value of the product PV was constant.

Quantity A: the volume of the gas when the pressure was 40 psi

Quantity B: 1.2 times the volume of the gas when the pressure was 50 psi

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

35.



Quantity A: w+d
Quantity B: c+z

A. Quantity A is greater.

B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

36. In the xy-plane, one of the vertices of square S is the point (2, 2). The diagonals of S intersect at the point (6, 6).

Quantity A: the area of S
Quantity B: 64

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

37.
Quantity A: the number of two-digit positive integers for which the units digit is not equal to the tens digit
Quantity B:80

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

38. In a probability experiment, G and H are independent events. The probability that G will occur is r, and the probability that H will occur is s, where both r and s are greater than 0.

Quantity A:the probability that either G will occur or H will occur,but not both
Quantity B:r+s-r×s

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

39. S = {1, 4, 7, 10} T = {2, 3, 5, 8, 13} x is a number in set S, and y is a number in set T.

Quantity A:The number of different possible values of the product xy
Quantity B:20

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

40. $m=10^{32}+2$, when m is divided by 11, the remainder is r.

Quantity A:r
Quantity B:3

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

41. List X: 2, 5, s, t　　List Y: 2, 5, t.
The average (arithmetic mean) of the numbers in list X is equal to the average of the numbers in list Y.

Quantity A:s
Quantity B:0

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

42.

RESULTS OF A USED-CAR AUCTION

	Small Cars	Large Cars
Number of cars offered	32	23
Number of cars sold	16	20
Projected sales total for cars offered (in thousands)	$70	$150
Actual sales total (in thousands)	$41	$120

For the large cars sold at an auction that is summarized in the table above, what was the average sale price per car?

43. $N=824^x$ where x is a positive integer

Quantity A:the number of possible values the units digit of N
Quantity B:4

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

44. r and t are consecutive integers and $p=r^2+t$

Quantity A:$(-1)^p$
Quantity B:-1

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

45. 1, –3, 4, 1, –3, 4, 1, –3, 4,..

In the sequence above, the first 3 terms repeat without end. What is the sum of the terms of the sequence from the 150th term to the 154th term?

46. A manufacturing company has plants in three locations: Indonesia, Mexico, and Pakistan. Thecompany has 6,000 employees, and each of the employees works at only one of the plants. If 3/8 of the employees work at the plant in Indonesia and if twice as many employees work at the plant in Mexico as work at the plant in Pakistan, how many employees work at the plant in Mexico?

47. In a single line of people waiting to purchase tickets for a movie, there are currently 10 peoplebehind Shandra. If 3 of the people who are currently in line ahead of Shandra purchase tickets and leave the line, and no one else leaves the line, there will be 8 people ahead of Shandra in line. How many people are in the line currently?

48. When the decimal point of a certain positive decimal number is moved six places to the right,the resulting number is 9 times the reciprocal of the original number. What is the original number?

49. From 2011 to 2012, Jack's annual salary increased by 10 percent and Arnie's annual salarydecreased by 5 percent. If their annual salaries were equal in 2012, then Arnie's annual salary in 2011 was what percent greater than Jack's annual salary in 2011 ?

Give your answer to the nearest 0.1 percent.

50. If $|z|\leq 1$, which of the following statements must be true?

Indicate all such statements.

A. $z^2\leq 1$
B. $z^2\leq z$
C. $z^3\leq z$

51. Each of the following linear equations defines y as a function of x for all integers x from 1 to 100. For which of the following equations is the standard deviation of the y-values corresponding to all the x-values the greatest?

A. y=x/3
B. y=x/2+40
C. y=x
D. y=2x+50
E. y=3x-20

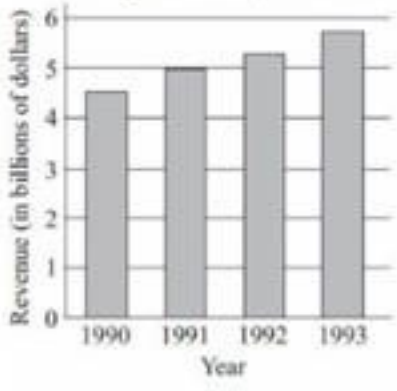
52. For a certain distribution, the measurement 12.1 is 1.5 standard deviations below the mean, and the measurement 17.5 is 3.0 standard deviations above the mean. What is the mean of the distribution?

A. 13.8
B. 13.9
C. 14
D. 14.1
E. 14.2

53-56 题基于下图

SELECTED DATA FOR GREETING CARD SALES

Annual Revenue from All Greeting Card Sales, 1990–1993



Number of Greeting Cards Sold for Ten Occasions in 1993

Occasion	Number of Cards
Christmas	2.4 billion
Valentine's Day	900 million
Easter	158 million
Mother's Day	155 million
Father's Day	102 million
Graduation	81 million
Thanksgiving	42 million
Halloween	32 million
St. Patrick's Day	18 million
Jewish New Year	12 million
Total	3.9 billion

Note: 1 billion = 1,000,000,000

53. In 1993 the average (arithmetic mean) price per card for all greeting cards sold was $1.25. For which of the following occasions was the number of cards sold in 1993 less than the total number of cards sold that year for occasions other than the ten occasions shown?

Indicate all such occasions.

A. Christmas
B. Valentine's Day
C. Easter
D. Mother's Day
E. Father's Day
F. Graduation
G. Thanksgiving
H. Halloween

54. Approximately what was the percent increase in the annual revenue from all greeting card sales from 1990 to 1993?

A. 50%
B. 45%
C. 39%
D. 28%
E. 20%

55. In 1993 the number of Valentine's Day cards sold was approximately how many times the number of Thanksgiving cards sold?

A. 20
B. 30
C. 40
D. 50
E. 60

56. In 1993 a card company that sold 40 percent of the Mother's Day cards that year priced its cards for that occasion between $1.00 and $8.00 each. If the revenue from sales of the company's Mother's Day cards in 1993 was r million dollars, which of the following indicates all possible values of r?

A. $155 < r < 1{,}240$
B. $93 < r < 496$
C. $93 < r < 326$
F. $62 < r < 744$
D. $62 < r < 496$

57. Of the students in a school, 20 percent are in the science club and 30 percent are in the band. If 25 percent of the students in the school are in the band but are not in the science club, what percent of the students who are in the science club are not in the band?

A. 5%
B. 20%
C. 25%
D. 60%
E. 75%

58. The greatest of the 21 positive integers in a certain list is 16. The median of the 21 integers is 10. What is the least possible average (arithmetic mean) of the 21 integers?

A. 4
B. 5
C. 6
D. 7
E. 8

59. If j and k are even integers and j < k, which of the following equals the number of even integers that are greater than j and less than k?

A. (k-j-2)/2
B. (k-j-1)/2
C. (k-j)/2
D. k-j
E. k-j-1

60. Based on the information given, which of the following statements must be true?

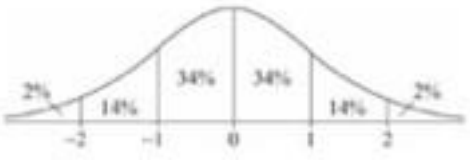
Indicate all such statements.

ANNUAL PERCENT CHANGE IN DOLLAR AMOUNT OF SALES AT FIVE RETAIL STORES FROM 2006 TO 2008

Store	Percent Change from 2006 to 2007	Percent Change from 2007 to 2008
P	10	−10
Q	−20	9
R	5	12
S	−7	−15
T	17	−8

A. For 2008 the dollar amount of sales at Store R was greater than that at each of the other fourstores.
B. The dollar amount of sales at Store S for 2008 was 22 percent less than that for 2006.
C. The dollar amount of sales at Store R for 2008 was more than 17 percent greater than that for 2006

61. The figure above shows the standard normal distribution, with mean 0 and standard deviation 1, including approximate percents of the distribution corresponding to the six regions shown. The random variable Y is normally distributed with a mean of 470, and the value Y = 340 is at the 15th percentile of the distribution. Of the following, which is the best estimate of the standard deviation of the distribution?



A. 125
B. 135
C. 145
D. 155
E. 165

62. In a certain medical group, Dr. Schwartz schedules appointments to begin 30 minutes apart, Dr. Ramirez schedules appointments to begin 25 minutes apart, and Dr. Wu schedules appointments to

begin 50 minutes apart. All three doctors schedule their first appointments to begin at 8:00 in the morning, which are followed by their successive appointments throughout the day without breaks. Other than at 8:00 in the morning, at what times before 1:30 in the afternoon do all three doctors schedule their appointments to begin at the same time?

Indicate all such times

A. 9:30 in the morning
B. 10:30 in the morning
C. 11:30 in the morning
D. 12:00 noon
E. 1:00 in the afternoon

63. In the xy-plane, triangular region R is bounded by the lines x = 0, y = 0, and 4x + 3y = 60. Which of the following points lie inside region R ?

Indicate all such points

A. (2, 18)
B. (5, 12)
C. (10, 7)
D. (12, 3)
E. (15, 2)

64. A flat, rectangular flower bed with an area of 2,400 square feet is bordered by a fence on three sides and by a walkway on the fourth side. If the entire length of the fence is 140 feet, which of the following could be the length, in feet, of one of the sides of the flower bed?

Indicate all such lengths

A. 20
B. 30
C. 40
D. 60
E. 80

65. Set A has 50 members and set B has 53 members. At least 2 of the members in set A are not in set B. Which of the following could be the number of members in set B that are not in set A ? Indicate all such numbers.

A. 53
B. 5
C. 13
D. 25
E. 50

66. The distribution of the numbers of hours that students at a certain college studied for final exams has a mean of 12 hours and a standard deviation of 3 hours. Which of the following

numbers of hours are within 2 standard deviations of the mean of the distribution? Indicate all such numbers

A. 2
B. 5
C. 10
D. 14
E. 16

67. In a certain sequence of numbers, each term after the first term is found by multiplying the preceding term by 2 and then subtracting 3 from the product. If the 4th term in the sequence is 19, which of the following numbers are in the sequence?

Indicate all such numbers.

A. 5
B. 8
C. 11
D. 16
E. 35

68. For a certain probability experiment, the probability that event A will occur is 1/2 and the probability that event B will occur is 1/3. Which of the following values could be the probability that the event A∪B (that is, the event A or B, or both) will occur?

Indicate all such values.

A. 1/3
B. 1/2
C. 3/4

69. In a factory, machine A operates on a cycle of 20 hours of work followed by 4 hours of rest, and machine B operates on a cycle of 40 hours of work followed by 8 hours of rest. Last week, the two machines began their respective cycles at 12 noon on Monday and continued until 12 noon on the following Saturday. On which days during that time period was there a time when both machines were at rest?

Indicate all such days.

A. Monday
B. Tuesday
C. Wednesday
D. Thursday
E. Friday

70.

Quantity A:The number of primes that are divisible by 9

Quantity B:The number of primes that are divisible by 19

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

71. n is an even integer.

Quantity A:The number of prime factors of n

Quantity B:The number of prime factors of n/2

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

72. In the xy-plane, line k has slope 2 and passes through the point (3, r).

Quantity A　r

Quantity B　3

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

73.

Quantity A:The number of 3-digit integers all of whose digits are even

Quantity B:The number of 3-digit integers all of whose digits are odd

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

74. a and b are primes. a+b=12

Quantity A:b

Quantity B:8

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

75. A and B are independent events, and the probability that both events occur is 1/2. Which of the following could be the probability that event A occurs?

Indicate all such probabilities.

A. 0
B. 1/4
C. 1/2
D. 3/4
E. 1

76. If a, b, x, and y are positive integers, and$13^a \times 13^b = (13^x)^y = 13^{13}$, what is the average (arithmetic mean) of a, b, x, and y?

77. A rectangle is drawn in a standard xy-coordinate plane. If the sides of the rectangle are notparallel to the axes, what is the product of the slope of the four sides?

A. -1
B. 0
C. 1
D. 2
E. It cannot be determined from the information given.

78. In a certain state, each license plate consists of either three digits (between 0 and 9, inclusive) followed by two letters or three letters followed by two digits. For example, 055-XY, 123-PP, and AAA-70 are all acceptable plates. How many different license plates can the state issue?

79. A positive integer is a palindrome if it reads exactly the same from right to left as it does fromleft to right. For example, 5 and 66 and 373 are all palindromes. How many palindromes are there between 1 and 1,000, inclusive?

80. Line l passes through points in both quadrants II and III. Which of the following statements are true?

Indicate all such statements.

A. Line l cannot pass through the origin.
B. Line l cannot pass through any point in quadrant I.
C. Line l cannot pass through any point in quadrant IV.
D. The slope of line l cannot be 0.
E. The slope of line l cannot be positive.

F. The slope of line l cannot be negative.

81. Consider the following list of numbers that represent the number of text messages that Geraldine received on 10 consecutive days: 10, 9, 1, 3, 7, 7, 8, 3, 4, 3. Which of the following statements concerning this set of data are true?

Indicate all such lengths.

A. The median is less than the average (arithmetic mean).
B. The median is less than the mode.
C. The mode is less than the average.
D. The average of the median and the mode is between 4 and 4.5.

82. If c and d are odd positive integers, which of the following could be odd?

Indicate all such expressions.

A. c^d
B. c_{d+1}
C. $(c+1)^{d+1}$
D. $(c+d)^{c+d}$
E. c^d/d^c

83. Last year Leo bought two paintings. This year he sold them for $2,000 each. On one, he made a 25% profit, and on the other he had a 25% loss. What was his net loss or profit?

A. He broke even.
B. He lost less than $100.
C. He lost more than $100.
D. He earned less than $100.
E. He earned more than $100.

84. The system of equations has how many solutions?
3x-6y=9
2y-x-3=0

A. None
B. Exactly 1
C. Exactly 2
D. Exactly 3
E. Infinitely many

85. If A is the initial amount put into an account, R is the annual percentage of interest written as a decimal, and the interest compounds annually, then which of the following would be an expression, in terms of A and R, for the interest accrued in three years?

A. $A(R)^3$

B. $A(R+R^3)$
C. $A(3R+3R^2+R^3)$
D. $3A(R)^3$
E. $3A(R+R^2+R^3)$

86. What is the sum of all possible solutions of the equation $|x+4|^2-10|x+4|=24$?

A. -16
B. -14
C.-12
D. -8
E. -6

87. What is the sum of all possible solutions to the equation below?

$$\sqrt{2x^2-x-9}=x+1$$

A. -2
B. 2
C. 3
D. 5
E. 6

88. If $x+|x|+y=7$ and $x+|y|-y=6$, then $x+y=$

A. -1
B. 1
C. 3
D. 5
E. 13

89. If $6\cdot|4-k/3|>12$, which of the following could be the value of k ?

A. -15
B. -10
C. -5
D. 0
E. 5
F. 10
G. 15
H. 20

90. If $x+y\neq 0$, which of the following is a solution to the inequality below?

$$\frac{x^2-y^2-1}{x+y} > \frac{-1}{x+y}$$

A. x=3 and y =7
B. x=-3 and y =7
C. x=-11 and y =-9
D. x=9 and y =-6
E. x=-20 and y =-24
F. x=12 and y =9
G. x=-2 and y =16

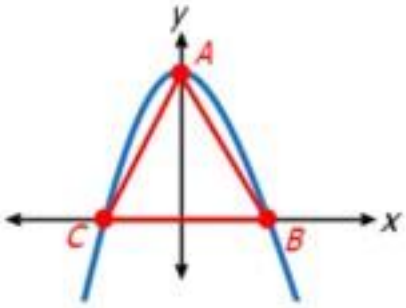
91. What is the y-intercept of the graph of the equation y=2·|4x-4|-10?

92. How many points (x, y) lie on the line segment between (22, 38/3) and (7, 53/3) such that x andy are both integers?

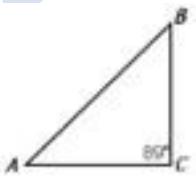
A. 4
B. 5
C. 7
D. 8
E. 9

93. The figure shows the graph of the equation $y=k-x^2$, where k is a constant. If the area of triangle ABC is 1/8, what is the value of k?

Give your answer to the nearest 0.01.



94.

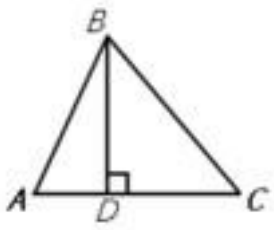


Quantity A:Length of AB
Quantity B:Length of BC

A. Quantity A is greater.
B. Quantity B is greater.

C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

95.

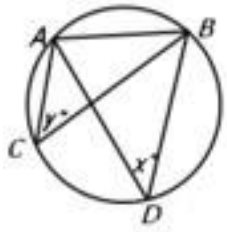


Quantity A:BD/AB

Quantity B:BC/DC

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

96.



AB = 12, AC = 10, AD = 18

Note: the region above is circular

Quantity A:x

Quantity B:y

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

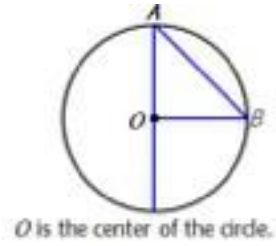
97.

Quantity A:Area of a rectangle with perimeter 20

Quantity B:Area of a triangle with base 5 and height 10.

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

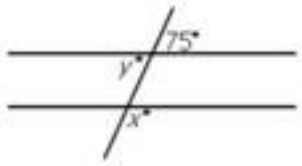
98.



Quantity A:Length of AO
Quantity B:Length of AB

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

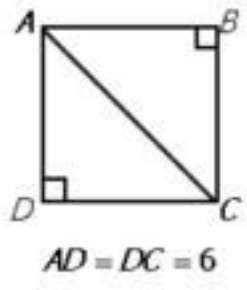
99.



Quantity A:x
Quantity B:y

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

100.



Quantity A:AB
Quantity B:BC

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

101. If x>0, and two sides of a certain triangle have lengths 2x+1 and 3x+4 respectively, which of the following could be the length of the third side of the triangle?

Indicate all possible lengths.

A. 4x+5
B. x+2
C. 6x+1
D. 5x+6
E. 2x+17

102. If the length of each side of an equilateral triangle were increased by 50 percent, what would be the percent increase in the area?

A. 75%
B. 100%
C. 125%
D. 150%
E. 225%

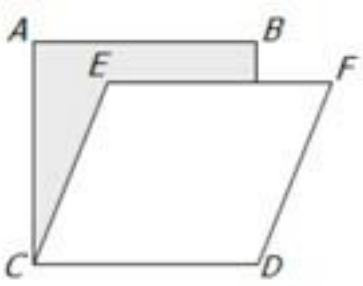
103. Two sides of a triangle have length 6 and 8. Which of the following are possible areas of the triangle?

I. 2
II. 12
III. 24

A. I only
B. I and II only
C. II and III only
D. I and III only

E. I, II, and III

104.



If ABCD is a square with area 625, and CEFD is a rhombus with area 500, then the area of the shaded region is

Note: Figure not drawn to scale

A. 125
B. 175
C. 200
D. 250
D. 275

105. If $5,000,000 is the initial amount placed in an account that collects 7% annual interest, which of the following compounding rates would produce the largest total amount after two years?

A. compounding annually
B. compounding quarterly
C. compounding monthly
D. compounding daily
E. All four of these would produce the same total

106. Tuk weighs 60 percent more than Kim, Lee weighs 50 percent less than Tuk, and Pat weighs25 percent more than Lee. If Pat weighs 126 pounds, what is Kim's weight?

107. If x>0, which of the following expressions are equal to 3.6 percent of 5x/12?

Indicate all such expressions.

A. 3 percent of 20x
B. x percent of 3/2
C. 3x percent of 0.2
D. 0.05 percent of 3x
E. 3x/200

108.

Quantity A:0.05 percent of 4000

Quantity B:1/200 of 4000

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

109.

Quantity A:22 percent of x

Quantity B:2/9 of x

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

110. Anne pays 150 percent more for a wholesale widget than Bart pays. Anne's retail price per widget is 15 percent greater than the wholesale price she paid. Bart's retail price per widget is 185 percent greater than the wholesale price he paid.

Quantity A:Anne's retail price

Quantity B:Bart's retail price

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

111. Diana invested $61,293 in an account with a fixed annual percent of interest, compounding quarterly. At the end of five full years, she had $76,662.25 in principal plus interest. Approximately what was the annual percent rate of interest for this account?

A. 1.2%
B. 4.5%
C. 10%
D. 18%
E. 25.2%

112. Events A and B are independent.

The probability that events A and B both occur is 0.6

Quantity A:The probability that event A occurs

Quantity B:0.3

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

113. A box contains 10 balls numbered from 1 to 10 inclusive. If Ann removes a ball at random and replaces it, and then Jane removes a ball at random, what is the probability that both women removed the same ball?

A. 1/100
B. 1/90
C. 1/45
D. 1/10
E. 41/45

114. A: {71,73,79,83,87} B: {57,59,61,67}

If one number is selected at random from set A, and one number is selected at random from set B, what is the probability that both numbers are prime?

A. 9/20
B. 3/5
C. 3/4
D. 4/5
E. 1

115. If points A and B are randomly placed on the circumference of a circle with radius 2, what is the probability that the length of chord AB is greater than 2?

A. 1/4
B. 1/3
C. 1/2
D. 2/3
E. 3/4

116. If k is the greatest positive integer such that 3^k is a divisor of 15! then k =

A. 3
B. 4
C. 5
D. 6
E. 7

117. In a certain sock drawer, there are 4 pairs of black socks, 3 pairs of gray socks and 2 pairs of orange socks. If socks are removed at random without replacement, what is the minimum number of socks that must be removed in order to ensure that two socks of the same color have been removed?

A. 4
B. 7
C. 9
D. 10
E. 11

118. Sid intended to type a seven-digit number, but the two “3” he meant to type did not appear. What appeared instead was the five-digit number 52115. How many different seven-digit numbers could Sid have meant to type?

A. 10
B. 16
C. 21
D. 24
E. 27

119. In how many different ways can 3 boys and 3 girls be seated in a row of 6 chairs such that the girls are not separated, and the boys are not separated?

A. 24
B. 36
C. 72
D. 144
E. 288

120. N equals the number of positive 3-digit numbers that contain odd digits only.

Quantity A:N

Quantity B:125

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

121. From a group of 8 people, it is possible to create exactly 56 different k-person committees. Which of the following could be the value of k ?

Indicate all such values.

A. 1

B. 2
C. 3
D. 4
E. 5
F. 6
G. 7

122. A knockoff website requires users to create a password using letters from the word MAGOSH.If each password must have at least 4 letters and no repeated letters are allowed, how many different passwords are possible?

123. In how many different ways can 3 identical green shirts and 3 identical red shirts bedistributed among 6 children such that each child receives a shirt?

A. 20
B. 40
C. 216
D. 720
E. 729

124. How many integers between 1 and $10^{21}$are such that the sum of their digits is 2?

A. 190
B. 210
C. 211
D. 230
E. 231

125. There are 10 people in a room. If each person shakes hands with exactly 3 other people, what is the total number of handshakes?

A. 15
B. 30
C. 45
D. 60
E. 120

126. How many positive integers less than 10,000 are such that the product of their digits is 210?

A. 24
B. 30
C. 48
D. 5s4
E. 72

127. In a group of 45 children, 60 percent of the children are boys, and 60 percent of the children are left-handed.

Quantity A:Number of boys who are left-handed

Quantity B:8

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

128. In a group of 200 workers, 10 percent of the males smoke, and 49 percent of the females smoke.

Quantity A:Total number of workers who smoke

Quantity B:59

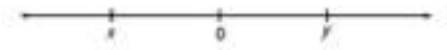
A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

129. A-town and B-ville are connected by a straight, 420-mile road. At noon, Atu left A-town for Bville, and Brek left B-ville for A-town. If Atu travels at 56 miles per hour and Brek travels at 49 miles per hour, how many miles apart will Atu and Brek be 1 hour before they meet?

130. At a certain university, 60% of the professors are women, and 70% of the professors aretenured. If 90% of the professors are women, tenured, or both, then what percent of the men are tenured?

A. 25
B. 37.5
C. 50
D. 62.5
E. 75

131.



Note: Figure not drawn to scale

If x and y are numbers on the number line above, which of the following statements must be true?

I. $|x+y| < y$
II. $x + y < 0$
III. $xy < 0$

A. I only

B. III only
C. I and II
D. I and III E. II and III

132.

Quantity A:The number of prime numbers divisible by 13

Quantity B:The number of prime numbers divisible by 2

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

133.

Quantity A:Number of primes between 50 and 60

Quantity B:Number of primes between 80 and 90

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

134. x and y are prime numbers and x+y=18

Quantity A:xy

Quantity B:70

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

135. x is a positive integer. k is the remainder when x^3-x is divided by 3.

Quantity A:k

Quantity B:1

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

136. x and y are integers greater than 5. x is y percent of x^2.

Quantity A:x

Quantity B:10

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

137. x is a positive integer. When x is divided by 2, 4, 6 or 8, the remainder is 1.

Quantity A:x

Quantity B:24

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

138. 16,000 has how many positive divisors?

139. If x and y are integers, and $w=(x^2)y+x+3y$, which of the following statements must be true?

Indicate all such statements.

A. If w is even, then x must be even.
B. If x is odd, then w must be odd.
C. If y is odd, then w must be odd.
D. If w is odd, then y must be odd.

140. If x and y are positive integers, and 1 is the greatest common divisor of x and y, what is the greatest common divisor of 2x and 3y?

A. Cannot be determined
B. 1
C. 2
D. 5
E. 6

141. If $n= 2\times3\times5\times7\times11\times13\times17$, then which of the following statements must be true?

I. n^2 is divisible by 600

II. n+19 is divisible by 19
III. (n+4)/2 is even

A. I only
B. II only
C. III only
D. I and III
E. None of the above

142. In the game of Dubblefud, red chips, blue chips and green chips are each worth 2, 4 and 5 points respectively. In a certain selection of chips, the product of the point values of the chips is 16,000. If the number of blue chips in this selection equals the number of green chips, how many red chips are in the selection?

A. 1
B. 2
C. 3
D. 4
E. 5

143. If x is an odd negative integer and y is an even integer, which of the following statements must be true?

I. (3x - 2y) is odd
II. xy^2 is an even negative integer
III. (y^2-x) is an odd negative integer

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

144. How many integers from 1 to 900 inclusive have exactly 3 positive divisors?

A. 10
B. 14
C. 15
D. 29
E. 30

145. How many positive integers less than 100 have a remainder of 2 when divided by 13?

A. 6
B. 7
C. 8
D. 9

E. 10

146. Which of the following are equal to $(1/560)^{-4}$?

Indicate all correct answers.

A. $(560^5-560^4)/559$
B. $560^{-8}/560^2$
C. $70^4 \cdot (1/8)^{-4}$
D. $(560_{16})_{0.5}$

147. S is a set of n consecutive integers.

Quantity A:The mean of S

Quantity B:The median of S

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

148. When the even integer n is divided by 7, the remainder is 3.

Quantity A:The remainder when n is divided by 14.

Quantity B:10

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

149. The 20 people at a party are divided into n mutually exclusive groups in such a way that the number of people in any group does not exceed the number in any other group by more than 1.

Quantity A:The value of n if at least one of the groups consists of 3 people

Quantity B:6

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

150. If n is a positive integerthen n^+ denotes a number such that $n < n^+ < n+1$.

Quantity A:$20^+/4^+$

Quantity B:5^+

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

151. At a sale,the cost of each tie was reduced by 20 percent and the cost of each belt was reduced by 30 percent.

Quantity A:The percent reduction on the total cost of 1 tie and 2 belts

Quantity B:25%

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

152. If *n* is any prime number greater than 2, which of the following CANNOT be a prime number ?

A. n-4
B. n-3
C. n-1
D. n+2
E. n+5

153. The "reflection" of a positive integer is obtained by reversing its digits. For example, 321 is the reflection of 123 The difference between a five-dight integer and its reflection must be divisible by which of the following?

A. 2
B. 4
C. 5
D. 6
E. 9

154. If 55 percent of a group of people have brown hair and 80 percent of the same group do <u>not</u> have red hair,what fraction of those who do <u>not</u> have brown hair have red hair?

A. 1/4
B. 4/11
C. 4/9

D. 5/9
E. 4/5

155. A certain money market account that had a balance of $48,000 during all of last month earned $360 in interest for the month.At what simple annual interest rate did the account earn interest last month?

A. 7%
B. 7.50%
C. 8%
D. 8.50%
E. 9%

156. If N is an integer and $99 < N^2 < 200$,then N could have at most how many values?

A. Two
B. Four
C. Six
D. Eight
E. Ten

157. If one number is chosen at random from the first 1,000 positive integers, what is the probability that the number chosen is a multiple of both 2 and 8?

A. 1/125
B. 1/8
C. 1/2
D. 9/16
E. 5/8

158. To obtain an FHA mortgage for $50,000 or more, the home buyer must have a down payment equal to 4 percent of the first $25,000 of the mortgage amount and 5 percent of the portion in excess of $25,000. At settlement the buyers pays a mortgage-insurance premium equal to 3 percent of the mortgage amount. What is the maximum FHA mortgage, if any, a buyer can obtain if the buyer has only $6,000 available for the down payment and insurance premium?

A. $62,500
B. $71,875
C. $78,125
D. $125,000
E. The home buyer cannot obtain an FHA mortgage.

159. A certain holiday is always on the fourth Tuesday of Month X. If Month X has 30 days, on how many different dates of Month X can the holiday fall?

A. Four
B. Five
C. Six
D. Seven
E. Eight

160. How many positive integers can be expressed as a product of two or more of the prime numbers 5, 7, 11, and 13 if no one product is to include the same prime factor more than once?

A. Eight
B. Nine
C. Ten
D. Eleven
E. Twelve

161. The decorating committee for a dance plans to fringe the 3-inch-wide end of a streamer by making small cuts every 1/16 inch. How many cuts must be made to fringe the end?

A. 45
B. 46
C. 47
D. 48
E. 49

162. What is the remainder when 3^{283} is divided by 5?

A. 0
B. 1
C. 2
D. 3
E. 4

163. If n is a positive odd integer and $k=n^3+2n$, what is the value of $(-1)^k-(-1)^{k+1}$?

A. -2
B. -1
C. 0
D. 1
E. 2

164. If n and m are positive integers and m is a factor of 2^6, what is the greatest possible number of integers that can be equal to both 3n and $2^6/m$?

A. Zero
B. One
C. Three

D. Four
E. Six

165. In a data set of 10,000 numbers varying from 20 to 80, the number 62 is the 60th percentile and the number 74 is the nth percentile.

Quantity A: n
Quantity B: 70

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

166. If 2, 4, 6, 9 are the digits of two 2-digit integers, what is the least possible positive difference between the integers?

A. 28
B. 27
C. 17
D. 13
E. 9

167. A box at a yard sale contains 3 different china dinner set, each consisting of 5 plates. A customer will randomly select 2 plates to check for defects. What is the probability that the 2 plates selected will be from the same dinner set?

A. 2/7
B. 2/5
C. 2/3
D. 5/6
E. 3/2

168. Mike, Scott, Jim, Kate and Pete each have a different number of assignments this month. Pete has fewer assignments than Kate, Kate has more assignments than Mike, Mike has more assignments than Jim, and Jim has more assignments than Scott. Which of the following could be the person who has the median number of assignments this month for the five people listed?

Indicate all such answers.

A. Mike
B. Scott
C. Jim
D. KateE. Pete

169. If the product of 7 consecutive integers is equal to the median of the integers, what is the leastof the 7 integers?

170. 所有 GRE 数学单词都背过了吗？