

01. A poultry farm has only chickens and pigs. When the manager of the poultry counted the heads of the stock in the farm, the number totalled up to 200. However, when the number of legs was counted, the number totalled up to 540. How many more chickens were there in the farm? Note: Each pig had 4 legs and each chicken had 2 legs.

- A. 70
- B. 120
- C. 60
- D. 130
- E. 80

2. Three years back, a father was 24 years older than his son. At present the father is 5 times as old as the son. How old will the son be three years from now?

- A. 12 years
- B. 6 years
- C. 3 years
- D. 9 years
- E. 27 years

03. For what values of 'k' will the pair of equations $3x + 4y = 12$ and $kx + 12y = 30$ NOT have a unique solution?

- A. 12
- B. 9
- C. 3
- D. 7.5
- E. 2.5

04. The basic one-way air fare for a child aged between 3 and 10 years costs half the regular fare for an adult plus a reservation charge that is the same on the child's ticket as on the adult's ticket. One reserved ticket for an adult costs \$216 and the cost of a reserved ticket for an adult and a child (aged between 3 and 10) costs \$327. What is the basic fare for the journey for an adult?

- A. \$111
- B. \$52.5
- C. \$210
- D. \$58.5
- E. \$6

05. Data Sufficiency : Is $y = 3$?

- 1. $(y - 3)(x - 4) = 0$
- 2. $(x - 4) = 0$

06. A children's gift store sells gift certificates in denominations of \$3 and \$5. The store sold 'm' \$3 certificates and 'n' \$5 certificates worth \$93 on a Saturday afternoon. If 'm' and 'n' are natural numbers, how many different values can 'm' take?

- A. 5
- B. 7
- C. 6
- D. 31
- E. 18

07. What is the largest integral value of 'k' for which the quadratic equation $x^2 - 6x + k = 0$ will have two real and distinct roots?

- A. 9
- B. 7
- C. 3
- D. 8
- E. 12

08. If one of the roots of the quadratic equation $x^2 + mx + 24 = 0$ is 1.5, then what is the value of m ?

- A. -22.5
- B. 16
- C. -10.5
- D. -17.5
- E. Cannot be determined

09. For what value of ' m ' will the quadratic equation $x^2 - mx + 4 = 0$ have real and equal roots?

- A. 16
- B. 8
- C. 2
- D. -4
- E. Choice (B) and (C)

10. $y = x^2 + bx + 256$ cuts the x axis at $(h, 0)$ and $(k, 0)$. If h and k are integers, what is the least value of b ?

- A. -32
- B. -256
- C. -255
- D. -257
- E. 0

11. $x^2 + bx + 72 = 0$ has two distinct integer roots; how many values are possible for 'b'?

- A. 3
- B. 12
- C. 6
- D. 24
- E. 8

12. If "x" is an integer, which of the following inequalities have a finite range of values of "x" satisfying them?

- 1. $x^2 + 5x + 6 > 0$
- 2. $|x + 2| > 4$
- 3. $9x - 7 < 3x + 14$
- 4. $x^2 - 4x + 3 < 0$
- 5. (B) and (D)

13. What values of 'x' will be the solution to the inequality $15x - \frac{2}{x} > 1$?

- 1. $x > 0.4$
- 2. $x < \frac{1}{3}$
- 3. $-\frac{1}{3} < x < 0.4, x > \frac{15}{2}$
- 4. $-\frac{1}{3} < x < 0, x > \frac{2}{5}$
- 5. $x < -\frac{1}{3}$ or $x > \frac{2}{5}$

14. What is the smallest integer that satisfies the inequality $(x-3)/(x^2 - 8x - 20) > 0$?

- 1. -2
- 2. 10
- 3. 3
- 4. -1
- 5. 0

15. Data Sufficiency: Is $a < b$?

- 1. $a^b < b^a$
- 2. $a/b > 1$

16. Is $|a| > |b|$?

1. $1/(a-b) > 1/(b-a)$

2. $a + b < 0$

17. Is $a^3 > a^2$

1. $1/a > a$

2. $a^5 > a^3$

18. Is $|a| > a$?

1. $a^2 < a$

2. $(a/2) > (2/a)$

19. Is 'a' positive?

1. $a - b > 0$

2. $2a - b > 0$

20. If both 112 and 33 are factors of the number $a * 43 * 62 * 1311$, then what is the smallest possible value of a?

A. 121

B. 3267

C. 363

D. 33

E. None of the above

21. How many different positive integers exist between 10^6 and 10^7 , the sum of whose digits is equal to 2?

A. 6

B. 7

- C. 5
- D. 8
- E. 18

22. A number when divided by a divisor leaves a remainder of 24. When twice the original number is divided by the same divisor, the remainder is 11. What is the value of the divisor?

- A. 13
- B. 59
- C. 35
- D. 37
- E. 12

23. How many keystrokes are needed to type numbers from 1 to 1000??

- A. 3001
- B. 2893
- C. 2704
- D. 2890
- E. None of these

24. When 242 is divided by a certain divisor the remainder obtained is 8. When 698 is divided by the same divisor the remainder obtained is 9. When the sum of the two numbers 242 and 698 is divided by the divisor, the remainder obtained is 4. What is the value of the divisor?

- A. 11
- B. 17
- C. 13
- D. 23
- E. None of these

25. How many integral divisors does the number 120 have?

- A. 14
- B. 16

- C. 12
- D. 20
- E. None of these

26. How many trailing zeros will be there after the rightmost non-zero digit in the value of $25!$ (factorial 25)?

- A. 25
- B. 8
- C. 6
- D. 5
- E. 2

27. What is the remainder when $1044 * 1047 * 1050 * 1053$ is divided by 33?

- A. 3
- B. 27
- C. 30
- D. 21
- E. 18

28. Data Sufficiency: Is $x^3 > x^2$?

- 1. $x > 0$
- 2. $x < 1$

29. Data Sufficiency : Is x/y a terminating decimal?

- 1. x is a multiple of 2
- 2. y is a multiple of 3

30. Data Sufficiency: Is the positive integer X divisible by 21?

- 1. When X is divided by 14, the remainder is 4

2. When X is divided by 15, the remainder is 5

31. Data Sufficiency : If x and y are positive integers, is y odd?

1. x is odd.

2. xy is odd.

32. Data Sufficiency : Is $xy < 0$?

1. $5|x| + |y| = 0$

2. $|x| + 5|y| = 0$

33. Data Sufficiency : When a positive integer ' x ' is divided by a divisor ' d ', the remainder is 24. What is d ?

1. When $2x$ is divided by d , the remainder is 23.

2. When $3x$ is divided by d , the remainder is 22.

34. Data Sufficiency : How many of the numbers x , y , and z are positive if each of these numbers is less than 10?

1. $x + y + z = 20$

2. $x + y = 14$

35. What is the sum of all 3 digit numbers that leave a remainder of '2' when divided by 3?

A. 897

B. 164,850

C. 164,749

D. 149,700

E. 156,720

36. How many 3 digit positive integers exist that when divided by 7 leave a remainder of 5?

- A. 128
- B. 142
- C. 143
- D. 141
- E. 129

37. The average of 5 consecutive integers starting with m as the first integer is n . What is the average of 9 consecutive integers that start with $(m + 2)$?

- A. $m + 4$
- B. $n + 6$
- C. $n + 3$
- D. $m + 5$
- E. $n + 4$

38. The sum of the fourth and twelfth term of an arithmetic progression is 20. What is the sum of the first 15 terms of the arithmetic progression?

- A. 300
- B. 120
- C. 150
- D. 170
- E. 270

39. Set A contains all the even numbers between 2 and 50 inclusive. Set B contains all the even numbers between 102 and 150 inclusive. What is the difference between the sum of elements of set B and the sum of the elements of set A?

- A. 2500
- B. 5050
- C. 11325
- D. 6275
- E. 2550

40. Data Sufficiency: A set S contains the following elements: {7, 11, 15, 19, 23, x}. What is the value of x?

- 1. The elements are in arithmetic progression.
- 2. x is prime.

41. In the first 1000 natural numbers, how many integers exist such that they leave a remainder 4 when divided by 7, and a remainder 9 when divided by 11?

- A. 11
- B. 14
- C. 12
- D. 13
- E. 10

42. Data Sufficiency: What is the 6th term of the Arithmetic sequence?

- 1. The sum of the 6th to the 12th term of the sequence is 77.
- 2. The sum of the 2nd to the 10th term of the sequence is 108.

43. A train traveling at 72 kmph crosses a platform in 30 seconds and a man standing on the platform in 18 seconds. What is the length of the platform in meters?

- A. 240 meters
- B. 360 meters
- C. 420 meters

- D. 600 meters
- E. Cannot be determined

44. A train traveling at 100 kmph overtakes a motorbike traveling at 64 kmph in 40 seconds. What is the length of the train in meters?

- A. 1777 meters
- B. 1822 meters
- C. 400 meters
- D. 1111 meters
- E. None of these

45. Jim travels the first 3 hours of his journey at 60 mph speed and the remaining 5 hours at 24 mph speed. What is the average speed of Jim's travel in mph?

- A. 42 mph
- B. 36 mph
- C. 37.5 mph
- D. 42.5 mph
- E. 48 mph

45. A runs 25% faster than B and is able to allow B a lead of 7 meters to end a race in dead heat. What is the length of the race?

- A. 10 meters
- B. 25 meters
- C. 45 meters
- D. 15 meters
- E. 35 meters

46. Jane covered a distance of 340 miles between city A and city B taking a total of 5 hours. If part of the distance was covered at 60 miles per hour speed and the balance at 80 miles per hour speed, how many hours did she travel at 60 miles per hour?

- A. 2 hours 30 minutes
- B. 3 hours

- C. 2 hours
- D. 1 hour 45 minutes
- E. None of these

47. Steve traveled the first 2 hours of his journey at 40 mph and the last 3 hours of his journey at 80 mph. What is his average speed of travel for the entire journey?

- A. 60 mph
- B. 56.67 mph
- C. 53.33 mph
- D. 64 mph
- E. 66.67 mph

48. Working together, Jose and Jane can complete an assigned task in 20 days. However, if Jose worked alone and completed half the task and then Jane takes over and completes the second half, the task will be completed in 45 days. How long will Jose take to complete the task if he worked alone? Assume that Jane is more efficient than Jose.

- A. 25 days
- B. 30 days
- C. 60 days
- D. 65 days
- E. 36 days

49. A can complete a project in 20 days and B can complete the same project in 30 days. If A and B start working on the project together and A quits 10 days before the project is completed, in how many days will the project be completed?

- A. 18 days
- B. 27 days
- C. 26.67 days
- D. 16 days
- E. 12 days

50. Ram, who is half as efficient as Krish, will take 24 days to complete a task if he worked alone. If Ram and Krish worked together, how long will they take to complete the task?

- A. 16 days
- B. 12 days

- C. 8 days
- D. 6 days
- E. 18 days

51. Three friends Alice, Bond and Charlie divide \$1105 among them in such a way that if \$10, \$20 and \$15 are removed from the sums that Alice, Bond and Charlie received respectively, then the share of the sums that they got will be in the ratio of 11 : 18 : 24. How much did Charlie receive?

- A. \$495
- B. \$510
- C. \$480
- D. \$375
- E. \$360

52. Mary and Mike enter into a partnership by investing \$700 and \$300 respectively. At the end of one year, they divided their profits such that a third of the profit is divided equally for the efforts they have put into the business and the remaining amount of profit is divided in the ratio of the investments they made in the business. If Mary received \$800 more than Mike did, what was the profit made by their business in that year?

- A. \$2000
- B. \$6000
- C. \$4000
- D. \$1333
- E. \$3000

53. A, B and C, each working alone can complete a job in 6, 8 and 12 days respectively. If all three of them work together to complete a job and earn \$ 2340, what will be C's share of the earnings?

- A. \$1100
- B. \$520
- C. \$1080
- D. \$1170
- E. \$630

54. In what ratio should a 20% methyl alcohol solution be mixed with a 50% methyl alcohol

solution so that the resultant solution has 40% methyl alcohol in it?

- A. 1 : 2
- B. 2 : 1
- C. 1 : 3
- D. 3 : 1
- E. 2 : 3

55. If the price of gasoline increases by 25% and Ron intends to spend only 15% more on gasoline, by how much % should he reduce the quantity of gasoline that he buys?

- A. 10%
- B. 12.5%
- C. 8%
- D. 12%
- E. 6.66%

56. The wages earned by Robin is 30% more than that earned by Erica. The wages earned by Charles is 60% more than that earned by Erica. How much % is the wages earned by Charles more than that earned by Robin?

- A. 23%
- B. 18.75%
- C. 30%
- D. 50%
- E. 100%

57. In an election contested by two parties, Party D secured 12% of the total votes more than Party R. If party R got 132,000 votes, by how many votes did it lose the election?

- A. 240,000
- B. 300,000
- C. 168,000
- D. 36,000
- E. 24,000

58. The difference between the value of a number increased by 12.5% and the value of the original number decreased by 25% is 30. What is the original number?

- A. 60
- B. 80
- C. 40
- D. 120
- E. 160

59. What is the % change in the area of a rectangle when its length increases by 10% and its width decreases by 10%?

- A. 0%
- B. 20% increase
- C. 20% decrease
- D. 1% decrease
- E. Insufficient data

60. If the cost price of 20 articles is equal to the selling price of 25 articles, what is the % profit or % loss made by the merchant?

- A. 25% loss
- B. 25% profit
- C. 20% loss
- D. 20% profit
- E. 5% profit

61. Sam buys 10 apples for \$1. At what price should he sell a dozen apples if he wishes to make a profit of 25%?

- A. \$0.125
- B. \$1.25
- C. \$0.25
- D. \$1.5
- E. \$1.8

62. By selling an article at 80% of its marked price, a merchant makes a loss of 12%. What % profit will the merchant make if the article is sold at 95% of its marked price?

- A. 5% profit
- B. 1% loss
- C. 10% profit
- D. 5.5% profit
- E. 4.5% profit

63. What is the maximum percentage discount that a merchant can offer on her Marked Price so that she ends up selling at no profit or loss, if she had initially marked her goods up by 50%?

- A. 50%
- B. 20%
- C. 25%
- D. 16.67%
- E. 33.33%

64. A merchant who marked his goods up by 50% subsequently offered a discount of 20% on the marked price. What is the percentage profit that the merchant made after offering the discount?

- A. 30%
- B. 125%
- C. 25%
- D. 20%
- E. 16.66%

65. Braun invested a certain sum of money at 8% p.a. simple interest for 'n' years. At the end of 'n' years, Braun got back 4 times his original investment. What is the value of n?

- A. 50 years
- B. 25 years
- C. 12 years 6 months
- D. 37 years 6 months
- E. 40 years

66. Shawn invested one half of his savings in a bond that paid simple interest for 2 years and received \$550 as interest. He invested the remaining in a bond that paid compound interest, interest being compounded annually, for the same 2 years at the same rate of interest and received \$605 as interest. What was the value of his total savings before investing in these two bonds?

- A. \$5500
- B. \$11000
- C. \$22000
- D. \$2750
- E. \$44000

67. Ann invested a certain sum of money in a bank that paid simple interest. The amount grew to \$240 at the end of 2 years. She waited for another 3 years and got a final amount of \$300. What was the principal amount that she invested at the beginning?

- A. \$200
- B. \$150
- C. \$210
- D. \$175
- E. Insufficient data

68. Peter invested a certain sum of money in a simple interest bond whose value grew to \$300 at the end of 3 years and further to \$400 at the end of another 5 years. What was the rate of interest in which he invested his sum?

- A. 12%

- B. 12.5%
- C. 6.67%
- D. 6.25%
- E. 8.33%

69. What is the equation of a circle of radius 6 units centered at (3, 2)?

- 1. $x^2 + y^2 + 6x - 4y = 23$
- 2. $x^2 + y^2 - 6x + 4y = 23$
- 3. $x^2 + y^2 + 6x + 4y = 23$
- 4. $x^2 + y^2 - 6x - 4y = -23$
- 5. $x^2 + y^2 - 6x - 4y = 23$

70. Set S contains points whose abscissa and ordinate are both natural numbers.

Point P, an element in set S has the property that the sum of the distances from point P to the point (8, 0) and the point (0, 12) is the lowest among all elements in set S. How many such points P exist in set S?

- 1. 1
- 2. 5
- 3. 11
- 4. 8
- 5. 3

71. Data Sufficiency : Line L is perpendicular to line K whose equation is $3y = 4x + 12$; Lines L and K intersect at (p, q). Is $p + q > 0$?

- 1. x intercept of Line L is less than that of Line K
- 2. y intercept of Line L is less than that of Line K

72. Data Sufficiency : Does the line $x + y = 6$ intersect or touch the circle C with radius 5 units?

- 1. Center of the circle lies in the third quadrant.
- 2. Point (-4, -4) does not lie inside the circle.

73. If the mean of numbers 28, x , 42, 78 and 104 is 62, what is the mean of 48, 62, 98, 124 and x ?

- A. 78
- B. 58
- C. 390
- D. 310
- E. 66

74. The arithmetic mean of the 5 consecutive integers starting with 's' is 'a'. What is the arithmetic mean of 9 consecutive integers that start with $s + 2$?

- A. $2 + s + a$
- B. $22 + a$
- C. $2s$
- D. $2a + 2$
- E. $4 + a$

75. The average weight of a group of 30 friends increases by 1 kg when the weight of their football coach was added. If average weight of the group after including the weight of the football coach is 31 kg, what is the weight of their football coach?

- A. 31 kg
- B. 61 kg
- C. 60 kg
- D. 62 kg
- E. 91 kg

76. The average wages of a worker during a fortnight comprising 15 consecutive working days was \$90 per day. During the first 7 days, his average wages was \$87 per day and the average wages during the last 7 days was \$92 per day. What was his wage on the 8th day?

- A. \$83
- B. \$92

- C. \$90
- D. \$97
- E. \$104

77. The average of 5 numbers is 6. The average of 3 of them is 8. What is the average of the remaining two?

- A. 4
- B. 5
- C. 3
- D. 3.5
- E. 0.5

78. The average age of a group of 10 students was 20. The average age increased by 2 years when two new students joined the group. What is the average age of the two new students who joined the group?

- A. 22 years
- B. 30 years
- C. 44 years
- D. 32 years
- E. None of these

79. Data Sufficiency : If m , s are the average and standard deviation of integers a , b , c , and d , is $s > 0$?

- 1. $m > a$
- 2. $a + b + c + d = 0$

80. Positive integers from 1 to 45, inclusive are placed in 5 groups of 9 each. What is the highest possible average of the medians of these 5 groups?

- A. 25
- B. 31
- C. 15

- D. 26
- E. 23

81. If the average of 5 positive integers is 40 and the difference between the largest and the smallest of these 5 numbers is 10, what is the maximum value possible for the largest of these 5 integers?

- A. 50
- B. 52
- C. 49
- D. 48
- E. 44

82. An analysis of the monthly incentives received by 5 salesmen : The mean and median of the incentives is \$7000. The only mode among the observations is \$12,000. Incentives paid to each salesman were in full thousands. What is the difference between the highest and the lowest incentive received by the 5 salesmen in the month?

- A. \$4000
- B. \$13,000
- C. \$9000
- D. \$5000
- E. \$11,000

83. Vertices of a quadrilateral ABCD are A(0, 0), B(4, 5), C(9, 9) and D(5, 4). What is the shape of the quadrilateral?

- A. Square
- B. Rectangle but not a square
- C. Rhombus
- D. Parallelogram but not a rhombus
- E. Kite

84. What is the area of an obtuse angled triangle whose two sides are 8 and 12 and the angle included between the two sides is 150 degree?

- A. 24 sq units

- B. 48 sq units
- C. $24\sqrt{3}$
- D. $48\sqrt{3}$
- E. Such a triangle does not exist

85. What is the measure of the radius of the circle that circumscribes a triangle whose sides measure 9, 40 and 41?

- A. 6
- B. 4
- C. 24.5
- D. 20.5
- E. 12.5

86. If the sum of the interior angles of a regular polygon measures 1440 degrees, how many sides does the polygon have?

- A. 10 sides
- B. 8 sides
- C. 12 sides
- D. 9 sides
- E. None of these

87. What is the radius of the incircle of the triangle whose sides measure 5, 12 and 13 units?

- A. 2 units
- B. 12 units
- C. 6.5 units
- D. 6 units
- E. 7.5 units

88. How many diagonals does a 63-sided convex polygon have?
- A. 3780
B. 1890
C. 3843
D. 3906
E. 1953
89. If 10, 12 and 'x' are sides of an acute angled triangle, how many integer values of 'x' are possible?
- A. 7
B. 12
C. 9
D. 13
E. 11
90. Data Sufficiency :Is triangle ABC obtuse angled?
1. $a^2 + b^2 > c^2$.
2. The center of the circle circumscribing the triangle does not lie inside the triangle.
91. Data Sufficiency :Is triangle ABC with sides a, b and c acute angled?
1. Triangle with sides a^2 , b^2 , c^2 has an area of 140 sq cms.
2. Median AD to side BC is equal to altitude AE to side BC.
92. A cube of side 5 cm is painted on all its side. If it is sliced into 1 cubic centimeter cubes, how many 1 cubic centimeter cubes will have exactly one of their sides painted?
- A. 9
B. 61
C. 98

- D. 54
- E. 64

93. A wheel of a car of radius 21 cms is rotating at 600 RPM. What is the speed of the car in km/hr?

- A. 79.2 km/hr
- B. 47.52 km/hr
- C. 7.92 km/hr
- D. 39.6 km/hr
- E. 3.96 km/hr

94. The area of a square field is 24200 sq m. How long will a lady take to cross the field diagonally at the rate of 6.6 km/hr?

- A. 3 minutes
- B. 0.04 hours
- C. 2 minutes
- D. 2.4 minutes
- E. 2 minutes 40 seconds

95. A lady grows cabbage in her garden that is in the shape of a square. Each cabbage takes 1 square foot of area in her garden. This year, she has increased her output by 211 cabbages when compared to last year. The shape of the area used for growing the cabbage has remained a square in both these years. How many cabbages did she produce this year?

- A. 11236
- B. 11025
- C. 14400
- D. 12696
- E. Cannot be determined

96. The length of a rope, to which a cow is tied, is increased from 19 m to 30 m. How much additional ground will it be able to graze? Assume that the cow is able to move on all sides with equal ease.

- A. 1696 sq m
- B. 1694 sq m

- C. 1594 sq m
- D. 1756 sq.m
- E. 1896 sq.m

97. In a class of 120 students numbered 1 to 120, all even numbered students opt for Physics, those whose numbers are divisible by 5 opt for Chemistry and those whose numbers are divisible by 7 opt for Math. How many opt for none of the three subjects?

- 1. 19
- 2. 41
- 3. 21
- 4. 57
- 5. 26

98. Of the 200 candidates who were interviewed for a position at a call center, 100 had a two-wheeler, 70 had a credit card and 140 had a mobile phone. 40 of them had both, a two-wheeler and a credit card, 30 had both, a credit card and a mobile phone and 60 had both, a two wheeler and mobile phone and 10 had all three. How many candidates had none of the three?

- 1. 0
- 2. 20
- 3. 10
- 4. 18
- 5. 25

99. In a class of 40 students, 12 enrolled for both English and German. 22 enrolled for German. If the students of the class enrolled for at least one of the two subjects, then how many students enrolled for only English and not German?

- 1. 30
- 2. 10
- 3. 18
- 4. 28
- 5. 32

100. In a class 40% of the students enrolled for Math and 70% enrolled for Economics.

If 15% of the students enrolled for both Math and Economics, what % of the students of the class did not enroll for either of the two subjects?

1. 5%
2. 15%
3. 0%
4. 25%
5. None of these

101. What is the value of X , if X and Y are two distinct integers and their product is 30?

1. X is an odd integer
2. $X > Y$

102. What is the standard deviation (SD) of the four numbers p , q , r , s ?

1. The sum of p , q , r and s is 24
2. The sum of the squares of p , q , r and s is 224

103. If a salesman received a commission of 3% of the sales that he has booked in a month, what was the sales booked by the salesman in the month of November 2003?

1. The sales booked by the salesman in the month of November 2003 minus salesman's commission was \$245,000
2. The selling price of the sales booked by the salesman in the month of November 2003 were 125 percent of the original purchase price of \$225,000.

104. Is m divisible by 6?

1. m is divisible by 3
2. m is divisible by 4

105. Is ab positive?

1. $(a + b)^2 < (a - b)^2$
2. $a = b$

106. When Y is divided by 2, is the remainder 1?

1. $(-1)^{(Y+2)} = -1$
2. Y is prime.

107. Is the two digit positive integer P a prime number?

1. $(P + 2)$ and $(P - 2)$ are prime.
2. $(P - 4)$ and $(P + 4)$ are prime.

108. If m , s are the average and standard deviation of integers a , b , c , and d , is $s > 0$?

1. $m > a$
2. $a + b + c + d = 0$

109. Is $x^3 > x^2$?

1. $x > 0$
2. $x < 1$

110. Is $y = 3$?

1. $(y - 3)(x - 4) = 0$
2. $(x - 4) = 0$

111. Is the positive integer X divisible by 21?

1. When X is divided by 14, the remainder is 4
2. When X is divided by 15, the remainder is 5

112. A set S contains the following elements: $\{7, 11, 15, 19, 23, x\}$. What is the value of x ?

1. The elements are in arithmetic progression.
2. x is prime.

113. Is $xy < 0$?

1. $5|x| + |y| = 0$
2. $|x| + 5|y| = 0$