1. Consider the following data with regard to production of cars (in lakhs) :

	Year 2015	Year 2016
Country A	35	38
Country B	45	47
Country C	88	93
Country D	75	79
Country E	58	60·9

In which of the countries, the production of cars has increased by more than or equal to 5% in 2016 over 2015?

(a) B and E

(b) A, C and D only

(c) A, C, D and E

(d) A, D and E only

2. The following table shows the marks of 90 students in a test of 80 marks :

Marks	Number of students
1–10	5
11–20	8
21–30	10
31–40	13
41–50	18
51–60	17
61–70	12
71–80	7

The percentage of students who have obtained less than or equal to 50% marks is

(a) 30%

(b) 40%

(c) 45%

(d) 60%

3. What is the median of the following data?

2, 3, –1, 2, 6, 8, 9

(a) 2

(b) 3

(c) 4

(d) 5

4. What is the arithmetic mean of the first ten composite numbers?

(a) 8·5

(b) 9·5

(c) 10·2

(d) 11·2

5. The marks obtained by 5 students are 21, 27, 19, 26, 32. Later on 5 grace marks are added to each student. What are the average marks of the revised marks of the students?

(a) 26

(b) 30

(c) 31

(d) 32

6. Let p be the mean of m observations and q be the mean of n observations, where $p \leq q$. If the combined mean of $(m + n)$ observations is c, then which one of the following is correct?

(a) $c \leq p$

(b) $c \geq q$

(c) $p \leq c \leq q$

(d) $q \leq c \leq p$

Directions :

For the next **four (4)** items, consider the following data with regard to different types (I, II, III, IV, V) of multivitamin tablets produced in a company (in lakhs) :

Year	I	II	III	IV	V
2000	160	80	70	90	75
2001	200	150	85	160	100
2002	135	35	44	95	85
2003	240	95	120	80	120
2004	180	110	85	95	115
2005	210	150	100	92	110

7. Which product is produced least over the years 2000–2005?

(a) Type II

(b) Type III

(c) Type IV

(d) Type V

8. In which one of the following pairs of years, the difference in total number of tablets produced between them is minimum?

(a) (2003, 2005)

(b) (2001, 2005)

(c) (2003, 2004)

(d) (2000, 2002)

9. The ratio of percentage drop in total production in 2004 compared to 2001 to that in 2000 compared to 2001, is

(a) $\frac{1}{3}$

(b) $\frac{1}{4}$

(c) $\frac{1}{2}$

(d) $\frac{1}{5}$

10. In which year, the production of Type I is more than the sum of the production of Type III and Type IV?

(a) 2001

(b) 2002

(c) 2003

(d) 2004

11. The sides of a right-angled triangle are in the ratio $x : (x-1) : (x-18)$. What is the perimeter of the triangle?

(a) 28 units

(b) 42 units

(c) 56 units

(d) 84 units

12. ABC is a triangle right angled at B. Let M and N be two points on AB such that $AM = MN = NB$. Let P and Q be two points on AC such that PM is parallel to QN and QN is parallel to CB. If $BC = 12$ cm, then what is $(PM + QN)$ equal to?

(a) 10 cm

(b) 11 cm

(c) 12 cm

(d) 13 cm

13. AB and CD are the diameters of a circle which intersect at P. Join AC, CB, BD and DA. If $\angle PAD = 60°$, then what is $\angle BPD$ equal to?

(a) 30°

(b) 60°

(c) 90°

(d) 120°

14. An equilateral triangle ABC and a scalene triangle DBC are inscribed in a circle on same side of the arc. What is $\angle BDC$ equal to?

(a) 30°

(b) 45°

(c) 60°

(d) 90°

15. The sides of a triangle ABC are 4 cm, 6 cm and 8 cm. With the vertices of the triangle as centres, three circles are drawn each touching the other two externally. What is the sum of the radii of the three circles?

(a) 6 cm

(b) 7 cm

(c) 9 cm

(d) 10 cm

16. Let PAB be a secant to a circle intersecting the circle at A and B. Let PT be the tangent segment. If $PA = 9$ cm and $PT = 12$ cm, then what is AB equal to?

(a) 5 cm

(b) 6 cm

(c) 7 cm

(d) 9 cm

17. If the perimeter of a right-angled triangle is 30 cm and the hypotenuse is 13 cm, then what is the area of the triangle?

(a) 24 cm^2

(b) 27 cm^2

(c) 30 cm^2

(d) 36 cm^2

18. ABC is a triangle right angled at C. Let p be the length of the perpendicular drawn from C on AB. If $BC = 6$ cm and $CA = 8$ cm, then what is the value of p?

(a) 5·4 cm

(b) 5 cm

(c) 4·8 cm

(d) 4·2 cm

19. $ABCD$ is a trapezium in which AB is parallel to DC and $2AB = 3DC$. The diagonals AC and BD intersect at O. What is the ratio of the area of ΔAOB to that of ΔDOC?

(a) 2 : 1

(b) 3 : 2

(c) 4 : 1

(d) 9 : 4

20. A circle touches all the four sides of a quadrilateral $ABCD$. If $AB = 9$ cm, $BC = 8$ cm and $CD = 12$ cm, then what is DA equal to?

(a) 14 cm

(b) 13 cm

(c) 12 cm

(d) 11 cm

21. A cloth of 3 m width is used to make a conical tent 12 m in diameter with a slant height of 7 m. What is the length of the cloth? (Take $\pi = \frac{22}{7}$)

(a) 21 m

(b) 28 m

(c) 44 m

(d) 66 m

22. A sphere of diameter 6 cm is dropped into a cylindrical vessel partly filled with water. The radius of the vessel is 6 cm. If the sphere is completely submerged in water, then by how much will the surface level of water be raised?

(a) 0·5 cm

(b) 1 cm

(c) 1·5 cm

(d) 2 cm

23. A sector is cut from a circle of radius 21 cm. If the length of the arc of the sector is 55 cm, then what is the area of the sector?

(a) 577·5 cm^2

(b) 612·5 cm^2

(c) 705·5 cm^2

(d) 725·5 cm^2

24. A wire is in the form of a circle of radius 70 cm. If it is bent in the form of a rhombus, then what is its side length? (Take $\pi = \frac{22}{7}$)

(a) 55 cm

(b) 75 cm

(c) 95 cm

(d) 110 cm

25. If the perimeter of a semicircular park is 360 m, then what is its area? (Take $\pi = \frac{22}{7}$)

(a) 3850 m^2

(b) 7700 m^2

(c) 11550 m^2

(d) 15400 m^2

26. In a trapezium $ABCD$, AB is parallel to DC. The diagonals AC and BD intersect at P. If $AP : PC = 4 : (4x - 4)$ and $BP : PD = (2x - 1) : (2x + 4)$, then what is the value of x?

(a) 4

(b) 3

(c) $\frac{3}{2}$

(d) 2

27. ΔABC is similar to ΔDEF. The perimeters of ΔABC and ΔDEF are 40 cm and 30 cm respectively. What is the ratio of $(BC + CA)$ to $(EF + FD)$ equal to?

(a) 5 : 4

(b) 4 : 3

(c) 3 : 2

(d) 2 : 1

28. Two isosceles triangles have equal vertical angles and their areas are in the ratio 4-84 : 5-29. What is the ratio of their corresponding heights?

(a) 11 : 23

(b) 23 : 25

(c) 22 : 23

(d) 484 : 529

29. ABC is a triangle right angled at A and AD is perpendicular to BC. If $BD = 8$ cm and $DC = 12{\cdot}5$ cm, then what is AD equal to?

(a) 7·5 cm

(b) 8·5 cm

(c) 9 cm

(d) 10 cm

30. The surface area of a cube is equal to that of a sphere. If x is the volume of the cube and y is the volume of the sphere, then what is $x^2 : y^2$ equal to?

(a) $\pi : 6$

(b) $6 : \pi$

(c) $\pi : 3$

(d) $3 : \pi$

31. A cone and a hemisphere have equal bases and equal volumes. What is the ratio of the height of the cone to the radius of the hemisphere?

(a) 1 : 1

(b) 2 : 1

(c) 3 : 2

(d) 4 : 3

32. A solid sphere of diameter 60 mm is melted to stretch into a wire of length 144 cm. What is the diameter of the wire?

(a) 0·5 cm

(b) 1 cm

(c) 1·5 cm

(d) 2 cm

33. The ratio of the radius of base to the height of a cylinder is 2 : 3. If the volume of the cylinder is 1617 cm^3, then what is the curved surface area of the cylinder? (Take $\pi = \frac{22}{7}$)

(a) 242 cm^2

(b) 385 cm^2

(c) 462 cm^2

(d) 770 cm^2

34. The difference between the outside and the inside surface area of a cylindrical pipe 14 cm long is 44 cm^2. The pipe is made of 99 cm^3 of metal. If R is the outer radius and r is the inner radius of the pipe, then what is $(R + r)$ equal to? (Take $\pi = \frac{22}{7}$)

(a) 9 cm

(b) 7·5 cm

(c) 6 cm

(d) 4·5 cm

35. A metal solid cube of edge 24 cm is melted and made into three small cubes. If the edges of two small cubes are 12 cm and 16 cm, then what is the surface area of the third small cube?

(a) 1200 cm^2

(b) 1800 cm^2

(c) 2400 cm^2

(d) 3600 cm^2

36. A conical vessel whose internal radius is 5 cm and height 24 cm is full of water. The water is emptied into a cylindrical vessel with internal radius 10 cm. What is the height to which the water rises?

(a) 1 cm

(b) 2 cm

(c) 3 cm

(d) 4 cm

37. A metal solid cube of side 22 cm is melted to make a cone of height 21 cm. What is the radius of the base of the cone? (Take $\pi = \frac{22}{7}$)

(a) 11 cm

(b) 16·5 cm

(c) 22 cm

(d) 27·5 cm

38. A cone of height 24 cm has a curved surface area 550 cm^2. What is the ratio of its radius to slant height? (Take $\pi = \frac{22}{7}$)

(a) $\frac{5}{12}$

(b) $\frac{5}{13}$

(c) $\frac{7}{25}$

(d) $\frac{7}{27}$

39. A rectangular paper is 44 cm long and 22 cm wide. Let x be the volume of the largest cylinder formed by rolling the paper along its length and y be the volume of the largest cylinder formed by rolling the paper along its width. What is the ratio of x to y? (Take $\pi = \frac{22}{7}$)

(a) 1 : 1

(b) 2 : 1

(c) 1 : 2

(d) 3 : 2

40. A hollow spherical shell is made up of a metal of density 3 g /cm^3. If the internal and external radii are 5 cm and 6 cm respectively, then what is the mass of the shell? (Take $\pi = \frac{22}{7}$)

(a) 1144 g

(b) 1024 g

(c) 840 g

(d) 570 g

41. Consider the following inequalities :

1. $\sin 1^\circ < \cos 57^\circ$
2. $\cos 60^\circ > \sin 57^\circ$

Which of the above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

42. If $p = \sec\theta - \tan\theta$ and $q = \operatorname{cosec}\theta + \cot\theta$, then what is $p + q(p - 1)$ equal to?

(a) -1

(b) 0

(c) 1

(d) 2

43. If $\operatorname{cosec}\theta - \cot\theta = m$, then what is $\operatorname{cosec}\theta$ equal to?

(a) $m + \frac{1}{m}$

(b) $m - \frac{1}{m}$

(c) $\frac{m}{2} + \frac{2}{m}$

(d) $\frac{m}{2} + \frac{1}{2m}$

44. Let ABC be a triangle right angled at C, then what is $\tan A + \tan B$ equal to?

(a) $\frac{a}{bc}$

(b) $\frac{a^2}{bc}$

(c) $\frac{b^2}{ca}$

(d) $\frac{c^2}{ab}$

45. Let $\cos\alpha + \cos\beta = 2$ and $\sin\alpha + \sin\beta = 0$, where $0 \le \alpha \le 90^\circ$, $0 \le \beta \le 90^\circ$. What is the value of $\cos 2\alpha - \cos 2\beta$?

(a) 0

(b) 1

(c) 2

(d) Cannot be determined due to insufficient data

46. If $\sec\theta + \cos\theta = \frac{5}{2}$, where $0 \le \theta \le 90^\circ$, then what is the value of $\sin^2\theta$?

(a) $\frac{1}{4}$

(b) $\frac{1}{2}$

(c) $\frac{3}{4}$

(d) 1

47. What is $(1 + \cot\theta - \operatorname{cosec}\theta)(1 + \tan\theta + \sec\theta)$ equal to?

(a) 4

(b) 3

(c) 2

(d) 1

48. If $6 + 8\tan\theta = \sec\theta$ and $8 - 6\tan\theta = k\sec\theta$, then what is the value of k^2?

(a) 11

(b) 22

(c) 77

(d) 99

49. A pole on the ground leans at 60° with the vertical. At a point x metre away from the base of the pole on the ground, two halves of the pole subtend the same angle. If the pole and the point are in the same vertical plane, then what is the length of the pole?

(a) $\sqrt{2}\,x$ metre

(b) $\sqrt{3}\,x$ metre

(c) $2x$ metre

(d) $2\sqrt{2}\,x$ metre

50. A vertical tower standing at the corner of a rectangular field subtends angles of 60° and 45° at the two nearer corners. If θ is the angle that the tower subtends at the farthest corner, then what is $\cot\theta$ equal to?

(a) $\frac{1}{2}$

(b) 2

(c) $\frac{2}{\sqrt{3}}$

(d) $\frac{4}{\sqrt{3}}$

51. What is $\log_{10} 31{\cdot}25$ equal to?

(a) $3 - 5\log_{10} 2$

(b) $3 - 2\log_{10} 2$

(c) $5 - 5\log_{10} 2$

(d) $5 - 3\log_{10} 2$

52. What is the square root of $15 - 4\sqrt{14}$?

(a) $2\sqrt{2} - \sqrt{7}$

(b) $3\sqrt{2} - 2\sqrt{7}$

(c) $\sqrt{15} - \sqrt{7}$

(d) $\sqrt{5} - \sqrt{3}$

53. The sum of the reciprocals of two alternate natural numbers is $\frac{7}{24}$. What is the sum of the numbers?

(a) 12

(b) 13

(c) 14

(d) 16

54. If n is any natural number, then $5^{2n} - 1$ is always divisible by how many natural numbers?

(a) One

(b) Four

(c) Six

(d) Eight

55. If $5^{x-3} = 8$, then what is x equal to?

(a) $\frac{3}{1-\log_{10} 2}$

(b) $\frac{3}{1+\log_{10} 2}$

(c) $\frac{2}{1-\log_{10} 2}$

(d) $\frac{5}{1-\log_{10} 2}$

56. What is the least value of $3\sin^2\theta + 4\cos^2\theta$?

(a) 5

(b) 4

(c) 3

(d) 2

57. If $\sin\theta\cos\theta = k$, where $0 \le \theta \le \frac{\pi}{2}$, then which one of the following is correct?

(a) $0 \le k \le 1$

(b) $0 \le k \le 0.5$ only

(c) $0.5 \le k \le 1$ only

(d) $0 < k < 1$

58. If $p = \sin^2\theta + \cos^4\theta$ for $0 \le \theta \le \frac{\pi}{2}$, then consider the following statements :

1. p can be less than $\frac{3}{4}$.
2. p can be more than 1.

Which of the above statements is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

59. What is the ratio of the greatest to the smallest value of $2 - 2\sin x - \sin^2 x$, $0 \le x \le \frac{\pi}{2}$?

(a) -3

(b) -1

(c) 1

(d) 3

60. If the equation $x^2 + y^2 - 2xy\sin^2\theta = 0$ contains real solution for x and y, then

(a) $x = y$

(b) $x = -y$

(c) $x = 2y$

(d) $2x = y$

61. A trader gives successive discounts of 20%, 10% and 5% respectively. What is the overall discount?

(a) 30%

(b) 31·6%

(c) 32·8%

(d) 35%

62. A sum of money was invested at simple interest at a certain rate for 5 years. Had it been invested at a 5% higher rate, it would have fetched ₹500 more. What was the principal amount?

(a) ₹2,000

(b) ₹1,800

(c) ₹1,600

(d) ₹1,200

63. The difference between the compound interest (compounded annually) and the simple interest on a certain sum of money at 12% per annum for 2 years is ₹72. What is the principal amount?

(a) ₹6,500

(b) ₹6,000

(c) ₹5,500

(d) ₹5,000

64. A train travels 600 km in 5 hours and the next 900 km in 10 hours. What is the average speed of the train?

(a) 80 km/hr

(b) 90 km/hr

(c) 100 km/hr

(d) 120 km/hr

65. Walking at $\frac{4}{5}$th of his usual speed, a man is 12 minutes late for his office. What is the usual time taken by him to cover that distance?

(a) 48 minutes

(b) 50 minutes

(c) 54 minutes

(d) 60 minutes

66. The cost price of 100 mangoes is equal to the selling price of 80 mangoes. What is the profit percentage?

(a) 16%

(b) 20%

(c) 24%

(d) 25%

67. X sells his goods 25% cheaper than Y and 25% dearer than Z. How much percentage is Z's goods cheaper than Y?

(a) $\frac{100}{3}$%

(b) 40%

(c) 50%

(d) $\frac{200}{3}$%

68. In a mixture of 80 litres of a liquid and water, 25% of the mixture is the liquid. How much water should be added to the mixture so that the liquid becomes 20% of the mixture?

(a) 15 litres

(b) 20 litres

(c) 24 litres

(d) 25 litres

69. If 20 persons can clean 20 floors in 20 days, then in how many days can 16 persons clean 16 floors?

(a) 25 days

(b) 24 days

(c) 20 days

(d) 16 days

70. Let the work done by $(x-1)$ men in $(x+1)$ days be y. Let the work done by $(x+2)$ men in $(x-1)$ days be z. If $y:z = 9:10$, then what is the value of x?

(a) 8

(b) 9

(c) 10

(d) 12

71. For how many real values of k is $6kx^2 + 12kx - 24x + 16$ a perfect square for every integer x?

(a) Zero

(b) One

(c) Two

(d) Four

72. If $x + \frac{1}{x} = \frac{5}{2}$, then what is $x^4 - \frac{1}{x^4}$ equal to?

(a) $\frac{195}{16}$

(b) $\frac{255}{16}$

(c) $\frac{625}{16}$

(d) 0

73. If the equation $4x^2 - 2kx + 3k = 0$ has equal roots, then what are the values of k?

(a) 4, 12

(b) 4, 8

(c) 0, 12

(d) 0, 8

74. If the sum as well as the product of the roots of the equation $px^2 - 6x + q = 0$ is 6, then what is $(p+q)$ equal to?

(a) 8

(b) 7

(c) 6

(d) 5

75. $4x^3 + 12x^2 - x - 3$ is divisible by

(a) $(2x + 1)$ only

(b) $(2x - 1)$ only

(c) Both $(2x + 1)$ and $(2x - 1)$

(d) Neither $(2x + 1)$ nor $(2x - 1)$

76. Which one of the following fractions will have minimum change in its value if 3 is added to both the numerator and the denominator of all the fractions?

(a) $\frac{2}{3}$

(b) $\frac{3}{4}$

(c) $\frac{4}{5}$

(d) $\frac{5}{6}$

77. Let the average score of a class of boys and girls in an examination be p. The ratio of boys and girls in the class is 3 : 1. If the average score of the boys is $(p + 1)$, then what is the average score of the girls?

(a) $(p - 1)$

(b) $(p - 2)$

(c) $(p - 3)$

(d) p

78. The incomes of A, B and C are in the ratio 7 : 9 : 12 and their expenditures are in the ratio 8 : 9 : 15. If A's saving is one-fourth of his income, then the ratio of savings of A, B and C is

(a) 56 : 99 : 69

(b) 99 : 56 : 69

(c) 69 : 56 : 99

(d) 99 : 69 : 56

79. A train 200 m long passes a platform 100 m long in 10 seconds. What is the speed of the train?

(a) 40 m/s

(b) 30 m/s

(c) 25 m/s

(d) 20 m/s

80. If

$$\frac{1}{1\times2} + \frac{1}{2\times3} + \frac{1}{3\times4} + \cdots + \frac{1}{n(n+1)} = \frac{99}{100}$$

then what is the value of n?

(a) 98

(b) 99

(c) 100

(d) 101

81. The expression

$$\frac{(x^3-1)(x^2-9x+14)}{(x^2+x+1)(x^2-8x+7)}$$

simplifies to

(a) $(x-1)$

(b) $(x-2)$

(c) $(x-7)$

(d) $(x+2)$

82. What should be added to $\frac{1}{(x-2)(x-4)}$ to get $\frac{2x-5}{(x^2-5x+6)(x-4)}$?

(a) $\frac{1}{(x^2-7x+12)}$

(b) $\frac{1}{(x^2+7x+12)}$

(c) $\frac{1}{(x^2-7x-12)}$

(d) $\frac{1}{(x^2+7x-12)}$

83. If $\frac{x}{a}+\frac{y}{b}=a+b$ and $\frac{x}{a^2}+\frac{y}{b^2}=2$, then what is $\frac{x}{a^2}-\frac{y}{b^2}$ equal to?

(a) -2

(b) -1

(c) 0

(d) 1

84. If $(x-k)$ is the HCF of x^2+ax+b and x^2+cx+d, then what is the value of k?

(a) $\frac{d-b}{c-a}$

(b) $\frac{d-b}{a-c}$

(c) $\frac{d+b}{c+a}$

(d) $\frac{d-b}{c+a}$

85. Consider the following statements :

1. If x is directly proportional to z and y is directly proportional to z, then $(x^2 - y^2)$ is directly proportional to z^2.
2. If x is inversely proportional to z and y is inversely proportional to z, then (xy) is inversely proportional to z^2.

Which of the above statements is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

86. What is the HCF of $x^3 - 19x + 30$ and $x^2 - 5x + 6$?

(a) $(x+2)(x-3)$
(b) $(x-2)(x+3)$
(c) $(x+2)(x-1)$
(d) $(x-3)(x-2)$

87. What is

$$\frac{8x}{1-x^4} - \frac{4x}{x^2+1} + \frac{x+1}{x-1} - \frac{x-1}{x+1}$$

equal to?

(a) 0
(b) 1
(c) 2
(d) 4

88. For what integral value of x is

$$\frac{12}{7 - \dfrac{6}{7 - \dfrac{3}{5-x}}} = x?$$

(a) 4
(b) 3
(c) 2
(d) 1

89. If $x(x-1)(x-2)(x-3) + 1 = k^2$, then which one of the following is a possible expression for k?

(a) $x^2 - 3x + 1$
(b) $x^2 - 3x - 1$
(c) $x^2 + 3x - 1$
(d) $x^2 - 2x - 1$

90. What is

$$\frac{1}{bc(a-b)(a-c)} + \frac{1}{ca(b-c)(b-a)} + \frac{1}{ab(c-a)(c-b)}$$

equal to?

(a) $a + b + c$
(b) 3
(c) $ab + bc + ca$
(d) 0

91. If the number 413283P759387 is divisible by 13, then what is the value of P?

(a) 3

(b) 6

(c) 7

(d) 8

92. What is the remainder when $2^{1000000}$ is divided by 7?

(a) 1

(b) 2

(c) 4

(d) 6

93. How many pairs of (x, y) can be chosen from the set {2, 3, 6, 8, 9} such that $\frac{x}{y} + \frac{y}{x} = 2$, where $x \neq y$?

(a) Zero

(b) One

(c) Two

(d) Three

94. Consider the pairs of prime numbers (m, n) between 50 and 100 such that $m - n = 6$. How many such pairs are there?

(a) 2

(b) 3

(c) 4

(d) 5

95. How many terms are there in the following product?

$$(a_1 + a_2 + a_3)(b_1 + b_2 + b_3 + b_4)(c_1 + c_2 + c_3 + c_4 + c_5)$$

(a) 15

(b) 30

(c) 45

(d) 60

96. What is the remainder when $27^{27} - 15^{27}$ is divided by 6?

(a) 0

(b) 1

(c) 3

(d) 4

97. If $a + b + c = 0$, then which of the following are correct?

1. $a^3 + b^3 + c^3 = 3abc$
2. $a^2 + b^2 + c^2 = -2(ab + bc + ca)$
3. $a^3 + b^3 + c^3 = -3ab(a + b)$

Select the correct answer using the code given below.

(a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

98. If

$$p = \frac{\sqrt{3q+2} + \sqrt{3q-2}}{\sqrt{3q+2} - \sqrt{3q-2}}$$

then what is the value of $p^2 - 3pq + 2$?

(a) 0

(b) 1

(c) 2

(d) 3

99. What is the unit digit in the expansion of 67^{32}?

(a) 1

(b) 3

(c) 7

(d) 9

100. What is the value of x, if

$$\frac{b + \sqrt{b^2 - 2bx}}{b - \sqrt{b^2 - 2bx}} = a?$$

(a) $\frac{ab}{(a+b)}$

(b) $\frac{2ab}{(a+1)}$

(c) $\frac{2ab}{(a+1)^2}$

(d) $\frac{ab}{(a+b)^2}$