—: WBCS (Main) Exam. Paper – VI Practice Set :—

বিঃদ্র– ডব্লিউবিসিএস (মেন) পরীক্ষার ষষ্ঠ পত্রের ১-৪২ নং প্রশ্ন অ্যাচিভার্সের ১০৯-১১১ নম্বর পাতায় দেওয়া আছে। অবশিষ্ট প্রশ্ন এবং ব্যাখ্যাসহ সমস্ত প্রশ্নের উত্তর নিম্নে দেওয়া হল।

43. In three coloured boxes - Red, Green and Blue, 108 balls are placed. There are twice as many balls in the green and red boxes combined as there are in the blue box and twice as many in the blue box as there are in the red box. How many balls are there in the green box? অ্যাচিভার্স
    (a) 18   (b) 36
    (c) 45   (d) None of these

44. A man travels from X to Y to buy goods which he can get 10% cheaper in Y than in X. If the expenses of the journey are Rs. 15 and he makes a clear saving of Rs.10, how much does he pay for the goods?
    (a) Rs. 225   (b) Rs. 200
    (c) Rs. 150   (d) Cannot be determined

45. A fruit weighs 5000 gm 99% of its weight is water. It is kept in a drying room and after some time it turns out that only 98% of its weight is water. What is its weight now? অ্যাচিভার্স
    (a) 2500 gm   (b) 4500 gm
    (c) 4950 gm   (d) None of these

46. In an examination 45% of the total numbers of students were under 15 years of age. Of these, 65% were boys and there were 441 girls. Find the total number of students.
    (a) 3800   (b) 4000   (c) 2700   (d) 2800

47. At an examination in which the full marks were 500, W got 10% less than X, X got 25% more than Y and Y got 20% less than Z. If W got 360, what % did Z get?
    (a) 60%   (b) 70%   (c) 80%   (d) 50%

48. If $7a + 6b = 420$, 'a' and 'b' are natural numbers, then what can be said about 'a'? অ্যাচিভার্স
    (a) 'a' is always odd
    (b) 'a' is always even
    (c) 'a' is even only if 'b' is odd
    (d) 'a' is odd only if 'b' is even

49. A man bought a Radio set priced at Rs. 1,600. He was given successive discounts of 20% and 10%. The price he paid was:
    (a) Rs. 1200   (b) Rs. 1224
    (c) Rs. 1168   (d) Rs. 1152 অ্যাচিভার্স

Directions (50-54) : Read the given information carefully and answer the questions given beside:

Clothe Lane is 20 km to the north of jewellery lane. অ্যাচিভার্স
Toy lane is 5 km to the east of jewellery lane.
Fruit lane is to the north west of jewellery lane
Vegetable lane is 5 km to the north of fruit lane
Grocery lane is 10 km to the east of fruit lane
The midpoint connecting fruit-grocery lane and clothe-jewellery lane is denoted by X Jewellery lane is 10km away from X Fruit lane is 5 kms to the west of X

50. Which of the following is/are towards the south-east of Clothes lane?
    (a) Fruit lane   (b) Toy lane
    (c) Grocery lane   (d) Both options B and C

51. Vegetable lane is in which direction with respect to the Clothes lane?
    (a) West   (b) East অ্যাচিভার্স
    (c) South-west   (d) North-east

52. A woman is 6 times as old as her Daughter. 2 years hence, she will be 5 times as old as her daughter. Find the present age of the daughter.
    (a) 6 years   (b) 8 years
    (c) 10 years   (d) 12 years

53. Which one of the four interchanges in signs and numbers would make the given equation correct?
    Given equation : $6 \times 4 + 2 = 16$
    (a) + and ×, 2 and 4   (b) + and ×, 2 and 6
    (c) + and ×, 4 and 6   (d) + and ×, 4 and 16

54. Select the option in which the number set shares the same relationship as that shared by the given number set. অ্যাচিভার্স
    (4, 5, 54)
    (a) (8, 9, 89)   (b) (3, 4, 19)
    (c) (11, 12, 132)   (d) (20, 37, 57)

55. Which number will replace the question mark (?) in the following series?
    8, 4, 4, 6, 12, ?
    (a) 24   (b) 30   (c) 29   (d) 62

56. Study the given pattern carefully and select the number that can replace the question mark (?) in it. অ্যাচিভার্স

12	15	?
8	7	11
80	176	240

(a) 27   (b) 19   (c) 22   (d) 18

57. The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown in the following figures. How would this look when unfolded?

(a)   (b)

(c)   (d)
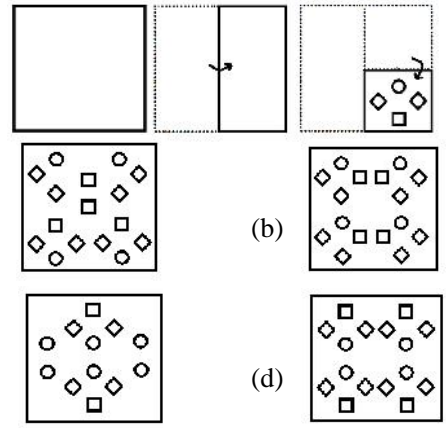
58. Gaurav exits from the backdoor of his north-facing house and walks 25 m straight, then he takes a left turn and walks 36 m, then he turns left and walks 47 m. He turns left again and walks 36 m. How far and in which direction is he from his house now?
(a) 22 m, North   (b) 11 m, North
(c) 22 m, South   (d) 11 m, South

59. Which of the options is the exact mirror image of the given figure when the mirror is held at the right side?
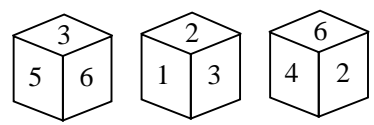
M$T*R(*&)ND

(a) ꓷИ(⅋*)Я*T$M   (b) ꓷИꓷ(⅋*)Я*T$M
(c) ꓷИ(*&)Я*T$M   (d) ꓷИ(⅋*)Я*T$M

60. Select the letter-cluster that can replace the question mark (?) in the following series.
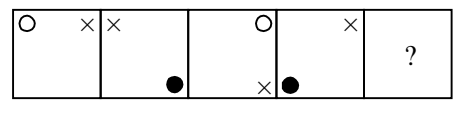ADC, BAH, ?, DUR, ERW
(a) CXM   (b) CRM   (c) CXS   (d) CMM

61. Three different positions of the same dice are shown, the six face of which are numbered from 1 to 6.
Select the number that will be on the face opposite to the one showing '1'.

(a) 4   (b) 5   (c) 6   (d) 2

62. Select the option that will come next in the given series.

(a)   (b)

(c)   (d)

63. Select the correct option that indicates the arrangement of the given words in the order in which they appear in English dictionary.
1) Sensational   2) Sensitize
3) Sentiment   4) September
5) Sentence
(a) 1, 2, 5, 3, 4   (b) 2, 1, 5, 3, 4
(c) 5, 1, 2, 4, 3   (d) 5, 3, 2, 1, 4

64. In the following question, select the related number from the given alternatives.
3 : 5 :: 8 : ?
(a) 55   (b) 44   (c) 43   (d) 45

65. If A is the mother of B, X is the father of Y, His the brother of J, Lis the brother of Y's father, B is the sister of L and J is the husband of A, then how is J related to Y?
(a) Paternal grandfather (b) Nephew
(c) Son-in-law   (d) Son

66. In a certain code language, "INSTANT" is written as "IOUWESZ". How is "FORGET" written in that code language?
(a) FPOGXI   (b) FOSIGX
(c) FPSKHW   (d) FPTJIY

67. Select the pair in which the letter-groups are similarly related as in the given pair.
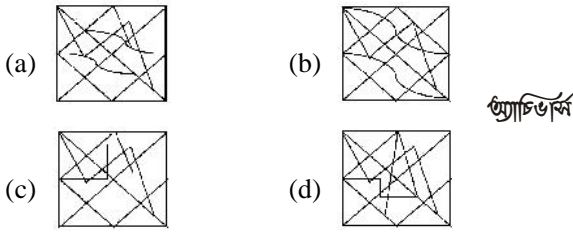UWZ : OQT
(a) ACE : FIK   (b) IKM : CEG
(c) JKL : CDF   (d) MNT : FHZ

68. Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the letter-cluster that is different.
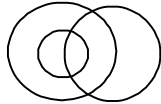(a) RVEK   (b) GKPV   (c) CGTZ   (d) NRIP

69. Select the option figure in which the given figure is embedded (rotation is NOT allowed).

(a)   (b)

অ্যাচিভার্স

(c)   (d)
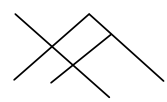
70. Which of the following sets of classes is best represented by the given diagram?

(a) Birds, Reptiles, Animals
(b) Girls, Students, daughters   অ্যাচিভার্স
(c) Flowers, Leaves, Garden
(d) Men, Women, Human Beings

71. In the following question, some statements followed by some conclusions are given. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusions logically follows the given statements.

Statements :
1. Some bricks are marble.
2. No marble is tile.
3. Some tile is sandstone.
Conclusions :
I. Some bricks are sandstone.
II. Some marble is sandstone.   অ্যাচিভার্স
III. Some bricks are not tile.
(a) Only conclusions II and III follow.
(b) Only conclusions I and II follow.
(c) Only conclusion III follows.
(d) None of the conclusions follow.

72. In the following question, correct the equation by interchanging two signs.
$7 \times 6 + 5 - 12 \div 3 = 41$
(a) + and ÷   (b) × and ÷
(c) + and −   (d) × and −

73. Select the option in which the words share the same relationship as that shared by the given pair of words.
Kindle : Burn   অ্যাচিভার্স
(a) Sink : War   (b) Moist : Renowned
(c) Wish : Unhappy   (d) Crime : Sin

74. If $(7a^3 + 9b^3) : (13a^3 - 16b^3) = 13 : 15$, then $(2a + 5b) : (6a - 7b) = ?$
(a) 10 : 13   (b) 17 : 7
(c) 7 : 5   (d) 3 : 2

75. Simplify the following expression.

$$\left(3\frac{2}{3} \text{ of } \frac{3}{4} - \frac{1}{4} \text{ of } \frac{4}{3}\right) \div \left(\frac{1}{4} \div \frac{3}{2}\right) + 1\frac{1}{2}$$ অ্যাচিভার্স

(a) $\dfrac{143}{18}$ (b) $\dfrac{32}{3}$ (c) $\dfrac{29}{2}$ (d) 16

76. The ratio of three angles of a triangle is 1 : 3 : 5. Which is the measure of the greatest angle?
(a) 120°   (b) 60°   (c) 80°   (d) 100°

77. A circular ground of radius 7 m is surrounded by a path of width 3.5 m. Find the area of the path. (π = 22/7)
(a) 202 sq.m   (b) 154 sq.m
(c) 192.5 sq.m   (d) 346.5 sq.m

অ্যাচিভার্স

78. Paras started for the station $1\frac{1}{2}$ km from his home walking at 3 km/h to catch the train in time. After 12 min he realised that he had forgotten his wallet at home and returned with increased speed and came to the station with same increased speed. Find his latter speed in km/h.
(a) 9 km/h   (b) 7 km/h
(c) 6 km/h   (d) 5 km/h

79. Ram can complete a certain work in 35 days and Shyam can complete the same work in 15 days. They worked together for 7 days, and then Shyam left the work. In how many days Ram can complete the $\frac{3}{7}$th part of the remaining work.   অ্যাচিভার্স
(a) $\dfrac{35}{3}$ days   (b) 5 days
(c) 7 days   (d) 3.5 days

80. P is 4 times of Q then Q is how much percent less than P?
(a) 25 percent   (b) 75 percent
(c) 60 percent   (d) 80 percent   অ্যাচিভার্স

81. A group of students scored an average of 63 in a class test. The students with the highest marks, 30% of total, scored an average of 80. And the students with the lowest marks, 20% of total, scored an average of 43. What is the average score of the other 50% of the students?
(a) 84.9   (b) 62.1   (c) 60.8   (d) 32.5

82. The pie chart shows the different kinds of expenses of a particular family for a month. If the amount spent on electricity is Rs 2250, then what is the difference between the amounts spent on Rent and Food? The numbers given in the pie chart are in proportion to the expenses of the family.

Expenses of a Particular Family

Miscellaneous, 120   Shopping, 150
Education, 135
Rent, 240
Electricity, 75
Food, 180
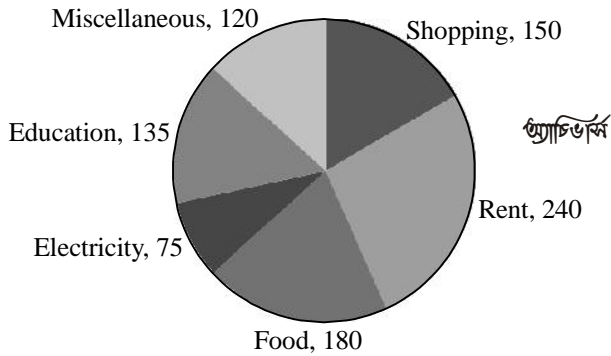
(a) Rs. 2700   (b) Rs. 2400
(c) Rs. 1600   (d) Rs. 1800

83. A TV set is being sold for ₹ X in Delhi. A dealer went to Chandigarh and bought the TV at 20% discount (from the price of Delhi). He spent Rs. 600 on transport. Thus, he sold the set in Delhi for ₹ X making $\left(\dfrac{100}{7}\right)$% profit what is the value of X?

(a) ₹ 7200   (b) ₹ 8000
(c) ₹ 8800   (d) ₹ 9600

84. If the sum of five consecutive even numbers is 40 more than the average of those numbers, then find the middle number of the series?
(a) 30   (b) 10   (c) 20   (d) 40

85. Krati earns a profit of 17% on selling an article at a certain price. If she sells the articles for ₹ 18 more, then the profit is 25%. What is the original cost price of 25 such articles?
(a) ₹ 5625   (b) ₹ 4625
(c) ₹ 4500   (d) ₹ 5125

86. The pie chart given below shows sale of different types of cars in a city for a given year. The total sale of cars in the city is 600000.

T7 6%
T6 8%
T1 20%
T5 17%
T2 15%
T4 21%
T3 13%
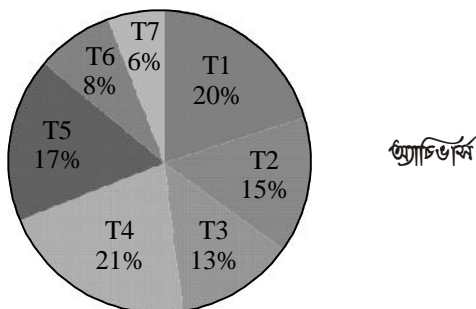
What is the difference in the number of cars sold of type T5 and T1?
(a) 21000   (b) 24000   (c) 18000   (d) 27000

87. A and B can complete a task in 1.5 days. However, A had to leave a few days before the task was completed and hence it took 2 days in all to complete the task. If A alone could complete the work in 2.625 days, how many days before the work getting over did A leave?
(a) 1.125   (b) 0.625   (c) 0.375   (d) 0.875

88. A conical figure is reformed where the radius is increased by 20 percent and the height is reduced by 20 percent. What is the change in the volume of the figure?
(a) 15.2 percent increase
(b) 20 percent increase
(c) 20 percent decrease
(d) 15.2 percent decrease

89. Om Prakash travels Bombay to Pune at a speed of 80 km/hr and returns back to Bombay by increasing his speed by 50%, then his average speed for the whole journey is–
(a) 96 km/hr   (b) 67 km/hr
(c) 69 km/hr   (d) 65 km/hr

90. Four bells in the Siddhi Vinayak temple toll at the interval of 48, 72, 288 and 432 seconds individually. If they tolled all together at 7 AM, then at what time will they toll together after 7 AM?
(a) 7 : 07 : 12 AM   (b) 7 : 14 : 24 PM
(c) 7 : 29 : 48 AM   (d) 7 : 14 : 24 AM

91. Parth has lent some money to Rohit at 10% p.a. and the Shyam at 8% p.a. At the end of the year, he has gained the overall interest at 9% p.a. Find the ratio of money he had given to Rohit and Shyam.
(a) 1 : 1   (b) 2 : 3   (c) 1 : 3   (d) 3 : 5

92. The compound interest on a certain principal at the rate of $9\dfrac{1}{11}$% per annum compounded annually is ₹ 1008 in third year. Then find the principal (in ₹).
(a) 9713   (b) 9317   (c) 9137   (d) 9173

93. If a person sells a ceiling fan for Rs.557.75, then he gets a 15% profit. To get a 20% profit, at what amount should he sell the fan?
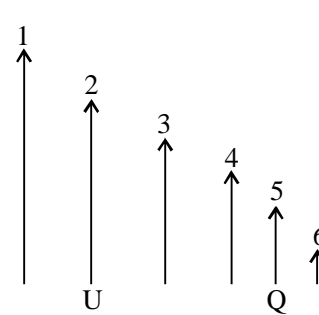(a) Rs.582   (b) Rs.572   (c) Rs.589   (d) Rs.596

94. Rs. 6000 is given at 15% per annum for one year and interest is compounded half yearly. Rs. 8000 is given at 40% per annum compounded quarterly for 1 year. The total interest received is nearest to :
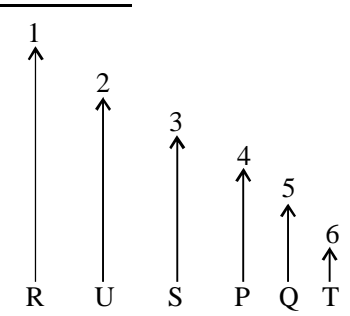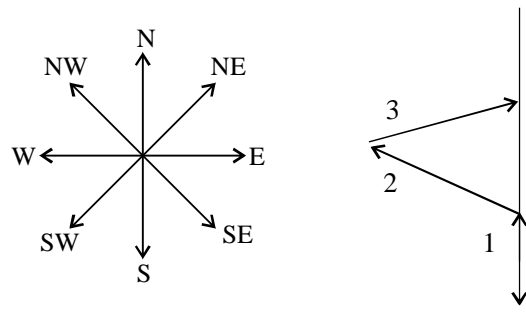(a) Rs. 6446.55   (b) Rs. 4646.55
(c) Rs. 4664.55   (d) Rs. 6464.55

95. A train covers 840 km at a uniform speed. If the speed had been 10 km/h more, it would have taken 1.5 hours less for the same journey. What is the usual time taken (in hours) by it to complete the journey? অ্যাচিভার্স
    (a) 8 (b) 15 (c) 12 (d) 10

96. If the median of the following data is 11, then find the value of k.
    3, 21, 10, 7, 6, 9, (k + 6), 15, 20, 16
    (a) 4 (b) 7 (c) 6 (d) 5

97. If a = 1.25, b = -0.25 and c = 2.25, then find the value of $\dfrac{a^2 + b^2 - c^2 + 2ab}{b^2 - a^2 - c^2 + 2ac}$
    (a) 0 (b) $4\dfrac{1}{3}$ (c) 1 (d) $3\dfrac{2}{3}$

98. Ratio of present age of A and B is 2:3. Find after how many years ratio of their ages will become 3:4? If we know that 5 years ago B is 20 years elder than A. অ্যাচিভার্স
    (a) 10 years (b) 15 years
    (c) 20 years (d) 25 years

99. The area of a rectangular plot is 2475 m² and the ratio of length and breadth are 11:9, respectively. Find the cost of fencing the plot at the rate of Rs. 8 per metre.
    (a) Rs 1800 (b) Rs 1600
    (c) Rs 2100 (d) Rs 1200

100. If b = 0.65a then find the value of $\dfrac{a-b}{a+b} + \dfrac{19}{66}$:
    (a) 0.5 (b) 0.7 (c) 0.8 (d) 1

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Answers with Explanation

1. (c) **Speed   Distance**

   15 ↖ ↗ D
   20 ↙ ↘ D + 25
   (Speed and distance are directly propositional. So cross multiply)
   20 D = 15D + 375
   5D = 375
   D = 75 km

2. (c) Let the quantities of the two solutions be 3x litres and 7x litres অ্যাচিভার্স
   Quantity of final mixture = 10x litres
   Quantity of sulphuric acid in final mixture
   = (0.2) (3x) + (0.3) (7x) = 2.7x litres
   Concentration of sulphuric acid in final mixture
   $= \dfrac{2.7x}{10x}(100) = 27\%$

3. (c)

   অ্যাচিভার্স
   S>P>T
   R, U > S, Q
   Since R should be before S, and P and T has to be after S, it can be combined as R>S>P>T, which should be placed like this.

4. (a)
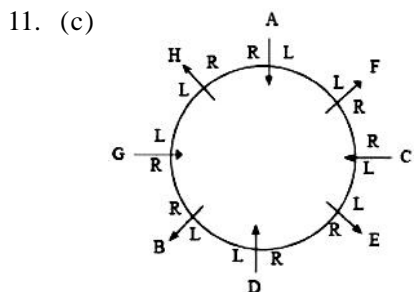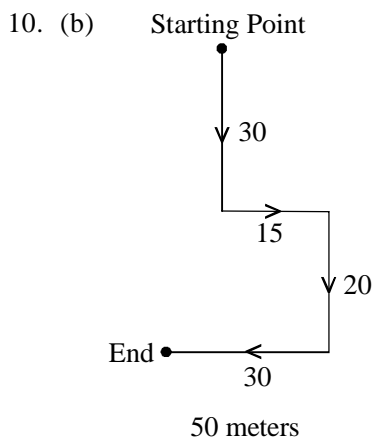
   অ্যাচিভার্স

5. (b)

6. (b) The number of odd days from 15th May to 12th September is
   Month : May + June + July + Aug + September
   Odd days : 8   2   3   3   5
   = 16 = 2 odd days অ্যাচিভার্স
   Hence 12th September is 2 days always from Sunday which is Tuesday.

7. (c) Let the time taken by M to complete the pob be 't' days
   Time taken by N to complete it = '2t' days

Time taken by R to complete it = '3t' days
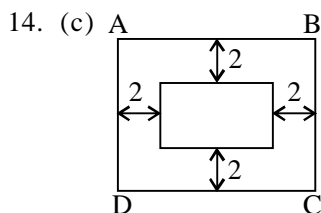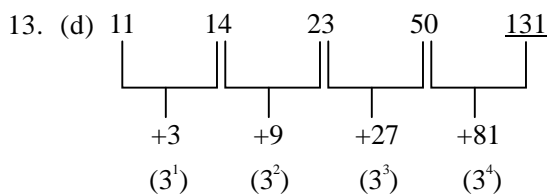
Work done by 'N' and 'P' in one day

$$\frac{1}{2t} + \frac{1}{3t} = \frac{1}{12}$$

8. (b) 380, 188, 92, 48, 20, 8, 2

$(380 \div 2) - 2 = 188$

$(188 \div 2) - 2 = 92$

$(92 \div 2) - 2 = (44) \rightarrow$

$(44 \div 2) - 2 = 20$

9. (b) 35% x = 2 x 75% y, $\frac{x}{y} = \frac{150}{35} = \frac{30}{7}$

10. (b) Starting Point

50 meters

11. (c)

12. (a)

13. (d) 11   14   23   50   <u>131</u>

+3   +9   +27   +81

(3^1) (3^2) (3^3) (3^4)
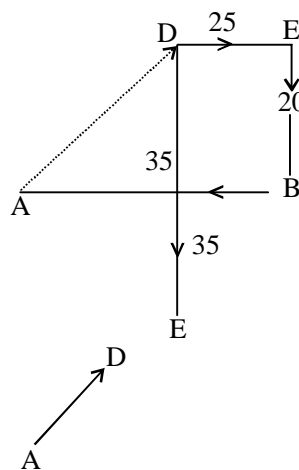
14. (c)

Area of ABCD = 96 sq.m

From this, length & breadth has multiple values.

Therefore Area of path can't be determined.

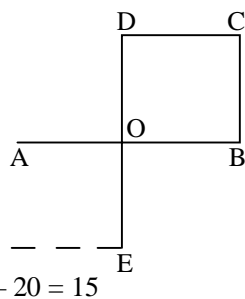Direction For the following 2 questions

Village A is 35 km to the west of Village B. Village B is 20 km to the south of Village C. Village C is 25 km to the east of Village D and village E is 35 km to the south of village D.
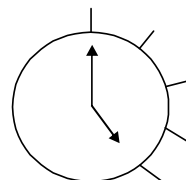
15. (c)

This arrow indicates North East

16. (c)

$35 - 20 = 15$

17. (d) To strike 4 it is taking 9 seconds which means to cover 3 Sectors it is taking 9 seconds, so to cover I sector it will take 3 seconds So to reach 12 it has to cover 11 sectors so, $11 \times 3 = 33$ seconds

18. (b) Pass Mark = 125 + 40 = 165 = 33% of Max. marks

$\therefore$ Max. Marks $= 165 \times \frac{100}{33} = 500$

19. (c) Let '+' denotes male, '−' denotes female.
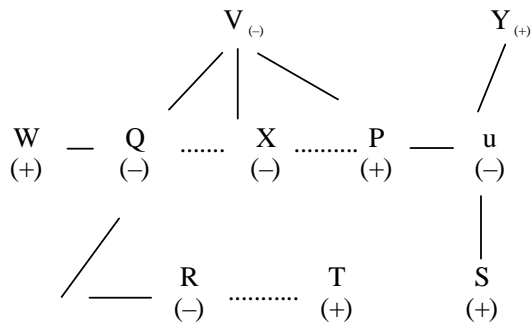
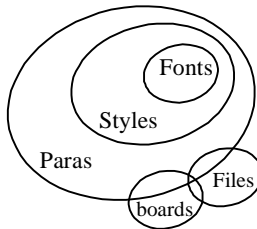

If Z is mother in law of P, then Z is mother of 'u'

∴ 'Z' is grandmother of 'S'.

20. (a) If M is husband of R, then 'M' is son of 'W' and 'Q'.

21. (d) If N is father of 'P', then 'N' is father in law of 'U'.

22. (a)

All files being paras is a possibility but not concluded.

So conclusion 2 is wrong.

23. (a) $6n^2 + 6n = 6n(n+1)$

$n(n+1)$ is always even, (Product of odd & even)

∴ $6n(n+1)$ is always divisible by 6 & 12.

24. (c) Total = 17 + 1 + 9 = 27

Excluding A & B there are 25 Persons

25. (b) K : B = 7 : 9

$K = 7x$, $B = 9x$

$B - K = 7yrs \Rightarrow 9x - 7x = 2x = 7yrs$

$x = 3.5$ yrs.

∴ $K = 7 \times 3.5 = 24.5$ yrs

26. (b) On 4th December 1993 = Saturday

On 4th December 1994 = Sunday

On 4th December 1995 = Monday

On 4th December 1996 = Wednesday

On 4th December 1997 = Thursday

27. (c)

28. (d)

29. (c) If top left is rotated 90 degree clockwise we get top right figure. In the same way, if bottom left is rotated 90 degree clockwise we will get option c

30. (a)

31. (d) opt a cant be selected since it contains 'P' (violates 2nd condition)

opt b cant be selected since it contains Q and D together (violates 3rd condition)

opt c cant be selected since it contains S and not A (violates 1st condition)

32. (d) Since A is a member S also must be there. Since option d doesn't contain S, that team is not possible.

33. (d) 1 and 7 are straight opposites in the clock. So, if the hour hand needs to go to 7 from 1, it has to rotate 180 degree

34. (b) (25 − 45) + (35 − 25) = 30

(52 − 52) + (62 − 42) = 20

(86 − 66) + (76 − 56) = 40

35. (c) When this image is turned from right to left, we will get the mirror image which is option c

36. (b) 10th letter from left is $

2nd to the right of $ is $.

37. (b) $R = P + 3$

$P = Q + 3$

Combining the above two equations,

$R = (Q + 3) + 3 = Q + 6$

$R - Q = 6$

$R - L = 6$ (since Q and L are twins)

38. (c) If 'c' occupies the second chair, remaining 4 persons can be arranged in remaining 4 chairs in 4! Ways

$1 * 4! = 24$

39. (c) The factors of x^2 are 1, x and x^2. The factors of xy are 1, x, y and xy. The factors of x^3 are 1, x, x^2 and x^3.

40. (a) Number is $120K + 1 = \{(13 \times 9 + 3)K + 1\}$

$= 13 \times 9K + 3K + 1$; which is divisible by 13.

$3K + 1$ is divisible by 13.

∴ K = 4, Number = 481.

41. (a) $X = \dfrac{63}{6} = 10.5$

∴ Total amount = $10.5 \times 7 = 73.50$

42. (c) Let the fraction be $\dfrac{x}{y}$

Let $x_1 = x + 0.25x = 1.25x$

$y_1 = y - 0.25x = 0.75$

∴ $\dfrac{x_1}{y_1} = \dfrac{1.25x}{0.75} = \dfrac{5x}{3y}$

∴ Increase

$$= \frac{\frac{5x}{3y} - \frac{x}{y}}{\frac{x}{y}} \times 100 = \frac{2}{3} \times 100 = 66.67\%$$

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Thus, the resultant fraction is more than the original fraction by 67%.

43. (d) Let R, G and B represent the number of balls in red, green and blue boxes respectively.

Then, অ্যাচিভার্স

R + G + B = 108 ...(i)

G + R = 2B ...(ii)

B = 2R ...(iii)

From (ii) and (iii), we have G + R = 2x 2R = 4R or G = 3R.

Putting G = 3R and B = 2R in (i), we get:

R + 3R + 2R = 108 => 6R = 108 => R = 18.

Therefore Number of balls in green box = G = 3R = (3 x 18) = 54.

44. (a) Let CP in X be Rs. x

∴ CP in Y = Rs. 0.9x

∴ 0.9 + 15 + 10 = x

0.1x = 25 অ্যাচিভার্স

X = 250

∴ Price in Y = 250 × 0.9 = Rs. 225.

45. (a) The non-water matter is 1% of 5000 = 50 gm. After drying, this matter becomes 2% of the weight of the fruit. Hence the weight of the fruit now is 2500 gm.

46. (d) 65% of the under 15 are boys.

∴ 35% of the under 15 are girls.

35% represents 441 girls.

∴ 100% is represented by $441 \times \frac{100}{35}$ = 1260.

45% of the students is represented by 1260.

∴ 100% is $1260 \times \frac{100}{45}$ = 2800

∴ Total number of students is 2800.

47. (c) W = 0.9X = 360

∴ X = 400

X = 1.25 Y;

∴ 400 = 1.25 Y; Y = 320 অ্যাচিভার্স

Y = 0.8 Z;

∴ 320 = 0.8 Z; Z = 400

∴ % of Z = $\frac{400}{500} \times 100 = 80\%$

48. (b) 7a + 6b = 420

The equation is of the form: 7a + even number = even number

∴ 7a has to be even অ্যাচিভার্স

∴ "a" has to be even.

49. (d) 1600 × 0.8 × 0.9 = 1600 × 0.72 = Rs. 1152.

50. (d)
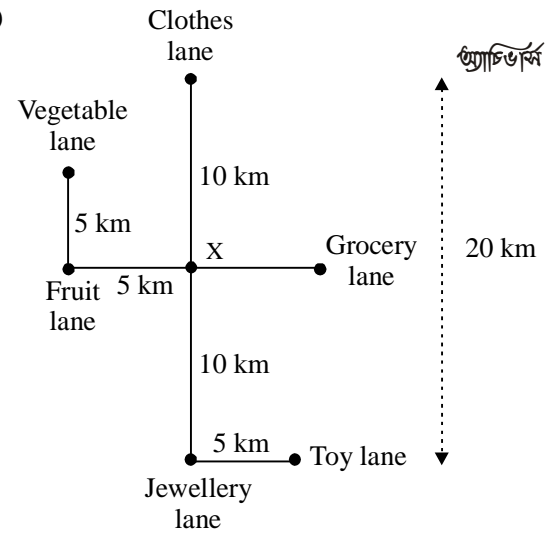
51. (c)

52. (b) Let the daughter's present age be 'x' years.

∴ women's age = 6x years

5(x + 2) = (6x = 2)

5x + 10 = 6x + 2

∴ x = 8

53. (c) 6 × 4 + 2 = 16 to be changed to 4 + 6 × 2 = 16

54. (b) The logic here is that the difference between the cube of the first number and twice the second number gives the third number –

4^3 – (5 × 2) = 54

Similarly,

3^3 – (4 × 2) = 19

55. (b) The logic here is that each number is multiplied by numbers increasing by

0.5 – 8 × 0.5 = 4

4 × 1 = 4

4 × 1.5 = 6

6 × 2 = 12 অ্যাচিভার্স

12 × 2.5 = 30

56. (b) Pattern is:

column 1:

12^2 – 82 = 144 – 64 = 80
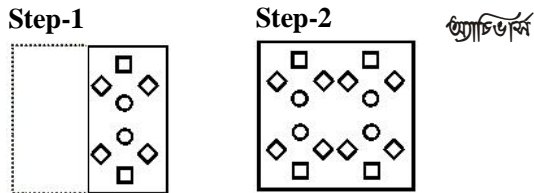
column 2:

$15^2 - 7^2 = 225 - 49 = 17$
column 3:
$19^2 - 11^2 = 361 - 121 = 240$
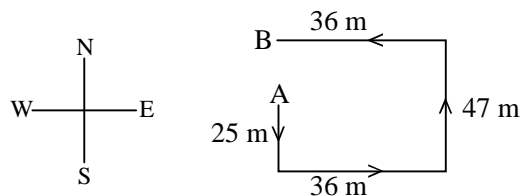
57. (d) When the paper is unfolded it will appear as:

Step-1   **Step-2**

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58. (a) According to the question:
Starting Point = A
End Point = B
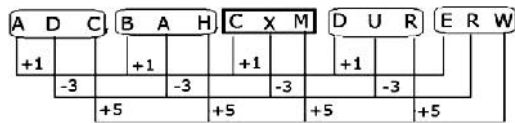Difference between A & B = 47 – 25 = 22 m
Point B is in 22 m North of Point A.

```
        N                B ←——36 m——
                              A
W ——+—— E              25 m↓        ↑ 47 m
        S                   ——36 m——→
```

59. (a) The mirror image is –
ᗡᴎ(ᘔ*)Я*TꙄM

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60. (a) The pattern is:

```
[A  D  C] [B  A  H] [C  X  M] [D  U  R] [E  R  W]
  +1          +1        +1        +1
     -3          -3        -3        -3
        +5          +5        +5        +5
```

So, the missing letter-cluster is CXM.

61. (c) From fig (i) and (ii) 3 is common, thus keeping it fixed and moving clockwise–
3 – 6 – 5
3 – 1 – 2
Thus, 6 is opposite 1

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62. (c) Logic: bubble shape is moving first 2 steps clockwise and then 1 step alternately in anticlockwise direction.
Also, bubble is whitened and blackened alternately.
Cross shape is moving first 1 step clockwise and then 2 steps alternately in anticlockwise directions.
After carefully observing the figures given in the question, it is very clear that the figure given in option (c) will be the next figure:

```
┌─────────┐
│         │
│ ×     ○ │
└─────────┘
```
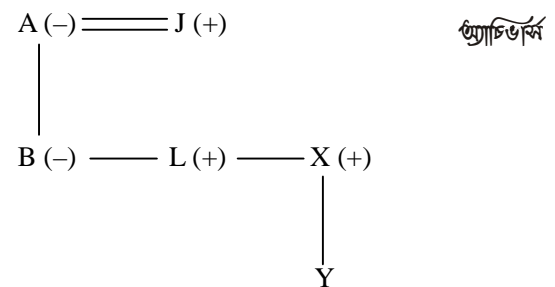
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63. (a) Sensational. Sensitize. Sentence. Sentiment. September
1 2 5 3 4

64. (a) Here the correct expression is X : $X^2 - (x + 1)$
So $3^2 - 4 = 5$
Likewise, $8^2 - 9 = 55$

65. (a) As per the given information:

```
A (–) ════════ J (+)
 |
 |
B (–) ———— L (+) ———— X (+)
                         |
                         |
                         Y
```

So, J is Paternal grandfather of Y.

66. (d) I is written as it is
N + 1 = O
S + 2 = U
T + 3 = W
A + 4 = E
N + 5 = S
T + 6 = Z
Similarly following the pattern we can get the answer as,
F is written as it is
O + 1 = P
R + 2 = T
G + 3 = J
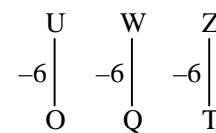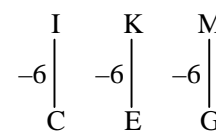E + 4 = I
T + 5 = Y

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67. (b) As,

```
 U     W     Z
-6|   -6|   -6|
 O     Q     T
```

Similarly,

```
 I     K     M
-6|   -6|   -6|
 C     E     G
```

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68. (d) The three letter clusters follow the same pattern:

(a) R ⌒+4 V ——opp. letter—— E ⌒+4 K

(b) G ⌒+4 K ——opp. letter—— P ⌒+6 V

(c) C ⌒+4 G ——opp. letter—— T ⌒+6 Z

But,

(d) N ⌒+4 R ——opp. letter—— I ⌒+7 P

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69. (b)

70. (b) The diagram will represent "Girls, Students, daughters".

As all Daughters are girls and some daughter and some girls are student.
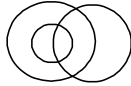
71. (c) The least possible Venn-diagram is :

Conclusions:

I. Some bricks are sandstone - It is false as it is not a definite case.

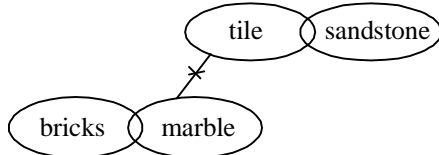II. Some marble is sandstone - As per the least possible Venn-diagram, it is not a definite case because there is no direct relation between marble and sandstone, hence false.

III. Some bricks are not tile - As per the least possible Venn-diagram, some bricks those are parts of marble cannot be tile as no marble is tile, this is a definite case, hence true.

So, only III follows.

72. (c) Given expression: $7 \times 6 + 5 - 12 \div 3 = 41$

Interchanging the signs + and – gives the following equation,

$7 \times 6 - 5 + 12 \div 3 = 41$

$\Rightarrow 42 - 5 + 4 = 41$

$\Rightarrow 41 = 41$

Thus, by interchanging the signs + and – the given equation becomes correct.

73. (d) As, Burn is of higher intensity than kindle.

Similarly, Sin is of higher intensity than Crime.

74. (b) Given, $(7a^3 + 9b^3) : (13a^3 - 16b^3) = 13 : 15$

$$\Rightarrow \frac{(7a^3 + 9b^3)}{(13a^3 - 16b^3)} = \frac{13}{15}$$

$\Rightarrow 105a^3 + 135b^3 = 169a^3 - 208b^3$

$\Rightarrow 169a^3 - 105a^3 = 135b^3 + 208b^3$

$\Rightarrow 64a^3 = 343b^3$

$$\Rightarrow \frac{a^3}{b^3} = \frac{343}{64}$$

$$\Rightarrow \frac{a}{b} = \frac{7}{4}$$

Let a be 7x, then,

$$b = (7x) \times \frac{4}{7} = 4x$$

Now, required

$(2a + 5b) : (6a - 7b)$

$= [2 \times (7x) + 5 \times (4x)] : [6 \times (7x) - 7 \times (4x)]$

$= (14x + 20x) : (42x - 28x)$

$= 34x : 14x$

$= 17 : 7$

75. (d) Given:

$$\left(3\frac{2}{3} \text{ of } \frac{3}{4} - \frac{1}{4} \text{ of } \frac{4}{3}\right) \div \left(\frac{1}{4} \div \frac{3}{2}\right) + 1\frac{1}{2}$$

$$= \left(\frac{11}{3} \times \frac{3}{4} - \frac{1}{4} \times \frac{4}{3}\right) \div \left(\frac{1}{4} \times \frac{2}{3}\right) + \frac{3}{2}$$

$$= \left(\frac{11}{4} - \frac{1}{3}\right) \div \left(\frac{1}{6}\right) + \frac{3}{2}$$

$$= \left(\frac{33 - 4}{12}\right) \div \left(\frac{1}{6}\right) + \frac{3}{2}$$

$$= \frac{29}{12} \times 6 + \frac{3}{2}$$

$$= \frac{29}{12} + \frac{3}{2}$$

$$= \frac{32}{2} = 16$$

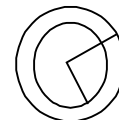76. (d) Let three angles are 1x, 3x and 5x respectively. Therefore, $x + 3x + 5x = 180°$

$\Rightarrow 9x = 180°$

$\Rightarrow x = 20°$

So, $5x = 5 \times 20° = 100°$

77. (c) It is given that a circular ground of radius 7 m is surrounded by a path of width 3.5 m.

Area of the path $= \pi(R^2 - r^2)$

$= \pi(10.5^2 - 7^2) = 192.5$

78. (a) Formula used :

$$\text{Time} = \frac{\text{distance}}{\text{speed}}$$

$$\text{Time} = \frac{\frac{3}{2}}{3} = \frac{1}{2} \text{ hours}$$

Net time $= \frac{1}{2} \times 60 - 12 = 18$ min. $= (18/60)$ hours

$= 0.3$ hours

Total distance $= 1.5 + 2 \times 3 \times \dfrac{12}{60} = 2.7$ km

Required speed $= \dfrac{2.7}{0.3} = 9$ km/h

79. (b) Let the total work be 105x.

Then, efficiency of Ram $= \dfrac{105x}{35} = 3x$ and

Efficiency of Shyam $= \dfrac{105x}{15} = 7x$

Work done by them in 7 days $= (3x + 7x) \times 7$
$= (10x) \times 7 = 70x$
Remaining work $= 105x - 70x = 35x$

Time taken by Ram to complete the $\dfrac{3}{7}$ th part

of the remaining work

$= \left(\dfrac{35x}{3x}\right) \times \dfrac{3}{7} = 5$ days

80. (b) P is 4 times of Q
Let Q = x
P = 4x

Required % $= \dfrac{4x - x}{4x} \times 100 = 75\%$

81. (c) Let the required average be x
Then, according the given question,

$\left(\dfrac{30}{100} \times 80\right) + \left(\dfrac{20}{100} \times 43\right) + \left(\dfrac{50}{100} x\right) = 63$

$\Rightarrow 240 + 86 + 5x = 630$
$\Rightarrow 5x = 304$
$\Rightarrow x = 60.8$

82. (d) Amount spent on electricity = Rs 2250
According to question
$\Rightarrow$ 75 unit = Rs. 2250
$\Rightarrow$ 1 unit = Rs. 30
Difference between the amounts spent on Rent
and Food = 240 unit – 180 unit = 60 unit
$\Rightarrow$ 60 unit = Rs. (60 × 30) = Rs. 1800
Hence, Required difference = Rs. 1800

83. (b) Purchase price of TV set for dealer = X – (X) ×
20% = X – 0.2X = 0.8X
₹ 600
Sale price of TV set for dealer = X

$\Rightarrow 0.8X + 600 + (0.8X + 600) \times \left(\dfrac{100}{7}\right)\% = X$

$\Rightarrow 600 + \dfrac{600}{7} = X - 0.8X - \dfrac{0.8}{7}X$

$\Rightarrow \dfrac{4200 + 600}{7} = \dfrac{7X - 5.6X - 0.8X}{7}$

$\Rightarrow 0.6X = 4800$

$\Rightarrow X = \dfrac{4800}{0.6} = ₹ 8000$

84. (b) Let the five consecutive even numbers are = x,
(x + 2), (x + 4), (x + 6), and (x + 8) respectively.
Sum = (x + x + 2 + x + 4 + x +6 + x + 8) = (5x
+ 20)
And average of the numbers = (5x + 20)/5 = x
+ 4
According to the question,
(5x + 20) – (x + 4) = 40
$\Rightarrow$ 5x + 20 – x – 4 = 40
$\Rightarrow$ 4x + 16 = 40
$\Rightarrow$ 4x = 40 – 16
$\Rightarrow$ x = 24/4 = 6
∴ Middle number of the series will be = x + 4 =
6 + 4 = 10

85. (a) Let the cost price of an article be ₹ x.
Then, selling price in case of profit of 17% = x
+ (x) × 17% = 1.17x
And selling price in case of profit of 25% = x +
(x) × 25% = 1.25x
Now, as (a)per the question,
1.25x – 1.17x = 18
$\Rightarrow$ 0.08x = 18

$\Rightarrow x = \dfrac{18}{0.08} = 225$

Therefore, the cost price of 25 such articles =
25x = 25 × 225 = ₹ 5625

86. (c) Percentage difference of type T5 and T1
= 20 – 17 = 3%
So, number of cars sold will be
= 3% of 600000

$= \dfrac{3}{100} \times 600000$

= 3 × 6000 = 18000

87. (d) Let the total work be 21x.

Then, efficiency of A and B together $= \dfrac{21x}{1.5}$

$= 14x$

Efficiency of A $= \dfrac{21x}{2.625} = 8x$

Therefore, efficiency of B = 14x – 8x = 6x
Work done by B in 2 days = 2 × (6x) = 12x
Remaining work (done by A) = 21x – 12x = 9x

Time taken by A to do the remaining work $= \dfrac{9x}{8x}$

= 1.125 days
Therefore, A left 0.875 days (2 – 1.125) before
the work getting over.

88. (a) A conical figure is reformed where the radius is
increased by 20 percent and the height is reduced
by 20 percent.

Let original radius of the cone = r unit
original height of the cone = h unit

original volume of the cone $= \frac{1}{3}\pi r^2 h$ অ্যাচিভার্স

New radius of the cone $= r + \frac{20}{100}r = \frac{6}{5}r$ unit

New height of the cone $= h - \frac{20}{100}h = \frac{4}{5}h$ unit

New volume of the cone $= \frac{1}{3}\pi \left(\frac{6}{5}r\right)^2 \left(\frac{4}{5}h\right)$

Change in the volume of the figure

$$= \frac{\left[\frac{1}{3}\pi \left(\frac{6}{5}r\right)\left(\frac{4}{5}h\right)\right] - \left[\frac{1}{3}\pi r^2 h\right]}{\frac{1}{3}\pi r^2 h} \times 100$$ অ্যাচিভার্স

$$= \frac{\frac{19}{125} \times \left[\frac{1}{3}\pi r^2 h\right]}{\frac{1}{3}\pi r^2 h} \times 100 = 15.2\%$$

89. (a) Speed of Om Prakash from Bombay to Pune
= 80 km/hr
Speed of Om Prakash from Pune to Bombay
= 80 + 50% of 80 = 80 + 40 = 120 km/hr
Since the distance is same, so average speed
will be

$$= \frac{2 \times S_1 \times S_2}{S_1 + S_2}$$

$$= \frac{2 \times 80 \times 120}{80 + 120}$$ অ্যাচিভার্স

$$= \frac{160 \times 120}{200} = 12 \times 8 = 96 \text{ km/hr}$$

90. (d) The fours bell will together only at the time,
which is the LCM of their individual time.
$48 = 2^4 \times 3$
$72 = 2^3 \times 3^2$
$288 = 2^5 \times 3^2$
$432 = 2^4 \times 3^3$
LCM of 48, 72, 288 and 432 $= 2^5 \times 3^3 = 864$
Thus the LCM of 48, 72, 288 and 432 will be
864 seconds.   অ্যাচিভার্স
Hence all the four bells will toll together at
7 : 14 : 24
[7 AM + 864 seconds (14 minutes 24 seconds)]

91. (a) Let the total amount lent to be ₹ 100 he lent ₹
x to Rohit and ₹ (100 – x) to Shyam.
According to the question,

$$\frac{x \times 10 \times 1}{100} + \frac{(100 - x) \times 8 \times 1}{100} = \frac{100 \times 9 \times 1}{100}$$
10x + 800 – 8x = 900
x = 50   অ্যাচিভার্স
Required ratio = 50 : (100 – 50) = 1: 1

92. (b) Rate of interest $= 9\frac{1}{11}\% = \frac{1}{11}$
Year Principal : Amount
1st year 11 × 121 : 12 × 121= 1452
2nd year 121 × 11 : 144 × 11 = 1584
3rd year 1331 : 1728
Interest at the end of third year (In above
calculation) = 1728 – 1584 = 144
Here 144 denote an amount of ₹ 1008 (Interest
at the end of third year).   অ্যাচিভার্স
Therefore, principal $= \frac{1008}{144} \times 1331 = ₹\ 9317$

93. (a) Selling price of ceiling fan = Rs. 557.75
Profit = 15%
Cost price of ceiling fan

$$= 557.75 \times \frac{100}{(100 + 15)} = \frac{55775}{115} = \text{Rs. 485}$$

If profit = 20%
Selling price of ceiling fan

$$= 485 \times \frac{(100 + 20)}{100} = 485 \times \frac{120}{100} = \text{Rs. 582}$$

94. (b) First case:

Principal =Rs.6000, Rate of interest $= \frac{15}{2} = $ 7.5%,
Time period = 1 × 2 = 2   অ্যাচিভার্স

Interest $= 6000 \times \left(1 + \frac{7.5}{100}\right)^2 - 6000$

$= 6000 \times \left(1 + \frac{3}{40}\right)^2 - 6000$

= 6000 × 1.155625 – 6000
= 6933.75 – 6000 = Rs. 933.75
Second case:

Principal = Rs.8000, Rate of interest $= \frac{40}{4} = $ 10%
Time period = 1 × 4 = 4   অ্যাচিভার্স

Interest $= 8000 \times \left(1 + \frac{10}{100}\right) - 8000$

= 8000 × (1.1)⁴ – 8000
= 8000 × 1.4641 – 8000

= 11712.8 – 8000 = Rs. 3712.80

Hence, Total interest = 933.75 + 3712.80 = Rs. 4646.55

95. (c) Let the usual time taken by train be x hours. Then, as per the question,

Usual speed – Increased speed = 10 km/h

$$\Rightarrow \frac{840}{x-1.5} - \frac{840}{x} = 10$$

$$\Rightarrow \frac{840x - (840x - 1260)}{x(x-1.5)} = 10$$

$$\Rightarrow \frac{1260}{x^2 - 1.5x} = 10$$

$\Rightarrow 10x^2 - 15x = 1260$

On dividing the whole equation by 5:

$\Rightarrow 2x^2 - 3x - 252 = 0$

$\Rightarrow 2x^2 - 24x + 21x - 252 = 0$

$\Rightarrow 2x(x - 12) + 21(x - 12) = 0$

$\Rightarrow (x - 12)(2x + 21) = 0$

$\Rightarrow x - 12 = 0$ or $2x + 21 = 0$

$\Rightarrow x = 12$ or $2x = -21$ (Not possible, since time taken can't be negative)

Therefore, usual time taken by train to complete the journey is 12 hours.

96. (c) Data :

3, 21, 10, 7, 6, 9, (k + 6), 15, 20, 16

Now, arrange it

3, 6, 7, 9, 10, (k + 6), 15, 16, 20, 21

Total no. of terms = 10

Median will be average of 5th (10/2) and 6th $\left(\frac{10}{2}+1\right)$ term.

Since median is 11, the term (k + 6) must be in middle of the series.

Therefore, $\frac{(10+k+6)}{2} = 11$

$\Rightarrow k + 16 = 22$

$\Rightarrow k = 22 - 16 = 6$

97. (b) $\dfrac{a^2 + b^2 - c^2 + 2ab}{b^2 - a^2 - c^2 + 2ac}$

$= \dfrac{a^2 + 2ab + b^2 - c^2}{b^2 - (a^2 + c^2 - ac)}$

$= \dfrac{(a+b)^2 - c^2}{b^2 - (a-c)^2}$

$= \dfrac{(a+b-c)(a+b+c)}{(b-a+c)(b+a-c)}$

$$= \frac{(1.25 - 0.25 - 2.25)(1.25 - 0.25 + 2.25)}{(-0.25 - 1.25 + 2.25)(-0.25 + 1.25 - 2.25)}$$

$$= \frac{(-1.25) \times 3.25}{0.75 \times (-1.25)}$$

$$= \frac{13}{3} = 4\frac{1}{3}$$

98. (c) Let the present age of A and B are 2x and 3x respectively.

Now, according to question,

$\Rightarrow 3x - 5 - (2x - 5) = 20$

$\Rightarrow x = 20$

So, present age of A = 2x = 2 × 20 = 40 years

Present age of B = 3x = 3 × 20 = 60 years

Let after x years ratio will be 3 : 4.

Therefore, $\dfrac{40+x}{60+x} = \dfrac{3}{4}$

$\Rightarrow 160 + 4x = 180 + 3x$

$\Rightarrow x = 20$ years

Therefore, ratio of their ages will become 3: 4 after 20 years.

99. (b) Area of the rectangular plot = 2475m²

l : b = 11:9

Let the length and breadth be 11x and 9x, respectively.

(11x) × (9x) = 2475

x² = 2475/99 = 25

x = 5

Hence, length = 55 m and breadth = 45 m

Perimeter of the plot = 2(l + b) = 2(55 + 45) = 200 m

Total cost of fencing = 8 × 200 = Rs. 1600

100. (a) Given, b/a = 0.65 = 13/20

On applying componendo-dividendo rule:

$\Rightarrow \dfrac{b+a}{b-a} = \dfrac{13+20}{13-20}$

$\Rightarrow \dfrac{b+a}{b-a} = \dfrac{33}{-7}$

$\Rightarrow \dfrac{a+b}{a-b} = \dfrac{33}{7}$

$\Rightarrow \dfrac{a-b}{a+b} = \dfrac{7}{33}$

Now, $\dfrac{a-b}{a+b} + \dfrac{19}{66} = \dfrac{7}{33} + \dfrac{19}{66}$

$= \dfrac{14+19}{66} = \dfrac{33}{66} = 0.5$

———★★★———