Class – VIII

School Accelerated Program

ENTRANCE TEST CUM SCHOLARSHIP TEST (Sample Paper-2)

[Time: 1 Hour 50 Min] **[Max Marks: 400]**

A. *General:*

1. *This booklet is a Question Paper containing 100 questions.*
2. ***Blank Papers, Clipboards, Log Tables, slide rules, calculators, cellular phones, pagers and electronic gadgets*** *in any form are not allowed to be carried inside the examination hall.*
3. *The answer sheet, a machine-readable optical mark recognition sheet (OMR Sheet), is provided separately.*
4. *DO NOT TAMPER WITH THE OMR OR THE BOOKLET.*
5. *Please fill your roll number correctly in the OMR sheet (answer sheet).*
6. *Both Question Paper and OMR Answer Sheet will be submitted after completion of this examination.*

B. *Question Paper Format and marking scheme:*

1. *The Question Paper consists of five parts (Part I: MAT, Part II: Physics, Part III: Chemistry, Part IV: Biology, Part V: Mathematics).*
2. ***Each Question carries +4 marks for correct answer and -1 mark for incorrect answer.***

MAT

Directions (Qs 1 to 3) what will come in place of question mark in the following series?

1. 63,58,51,40,27, ?

(a) 8 (b) 12 (c) 10 (d) 14

2. 3,4,8,17,33,58, ?

(a) 76 (b) 94 (c) 84 (d) 98

3. 8,48,16,96,32, ?

(a) 192 (b) 150 (c) 58 (d) 288

Directions (Qs. 4-5) In each of the following questions, four terms/words have been given, out of which three are alike in some manner and one is different. Choose the odd one out.

4. (a) Broad: Wide (b) Light: Heavy

(c) Tiny : Small (d) Big : Large

5. (a) BDYW (b) CEXZ (c) DFYW (d) EGXV

6. If in a certain code, HAT is 782, RABBIT is 681192 . Then how will HABIT be coded as ?

(a) 78139 (b) 78192 (c) 68192 (d) 78129

7. If REASON is coded as 5 , BELIEVED as 7 , what is the code number of GOVERNMENT?

(a) 6 (b) 8 (c) 9 (d) 10

Directions (Qs. 8-9) Read the following information carefully to answer the questions.

(i) ' $A\$B$ ' means ' A ' is mother of ' B '

(ii) ' $A \# B$ ' means ' A ' is father of ' B '

(iii) ' $A @ B$ ' Means ' A ' is husband of ' B '

(iv) ' $A\%B$ ' means ' A ' is daughter of ' B '

8. P@Q$M# T indicates what relationship of P with T

(a) Paternal grandmother (b) Maternal grandmother

(c) Paternal grandfather (d) Maternal grandfather

9. Which of the following expressions indicates ' R is the sister of H '?

(a) H $ D @ F # R (b) R%D@ F$H

(c) $R\$D@F\#H$ (d) $H\%D@F\$R$

10. Deepak said to Nitin, " That boy playing football is the younger of the two brothers of the daughter of my father's wife "How is the boy playing football related to Deepak ?

(a) Son (b) Brother (c) Cousin (d) Niece

11. If x means -,+ means ÷, − means × and ÷ means + then $15 - 2 \div 900 + 90 \times 100 = ?$

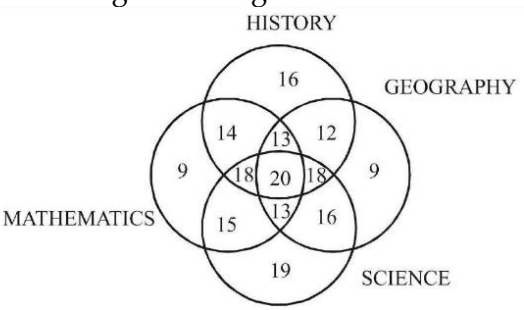
(a) 190 (b) 180 (c) 90 (d) -60

12. One morning after sunrise, Gopal was facing a pole. The shadow of the pole fell exactly to his right. Which direction was he facing?

(a) South (b) East

(c) West (d) Data inadequate

Directions (Qs. 13-14) Refer to the following Venn diagram :



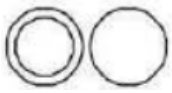
13. The number of students who took any three of the above subjects was

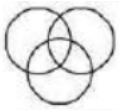
(a) 62 (b) 63 (c) 64 (d) 66

14. Which subject was taken by the largest number of students?

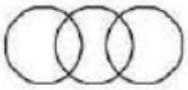
(a) Mathematics (b) Science (c) Geography (d) History

15. Choose the correct alternative that represents the relationship among illiterates, poor people and unemployed.

(a) 

(b) 

(c) 

(d) 

16. Monday falls on 4th April, 1988. What was the day 3rd November, 1987 ?

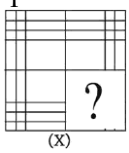
(a) Monday (b) Sunday

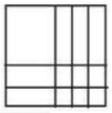
(c) Tuesday (d) Wednesday

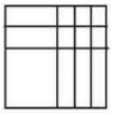
17. When the time is 4.20 , the angle between the hands of the clock is –

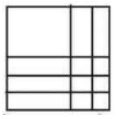
(a) $20°$ (b) $15°$ (c) $12\frac{1}{2}°$ (d) $10°$

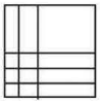
Directions (Qs. 18-19) In each of the following questions, select a figure from the four alternatives, which when placed in the space where the question mark is shown in figure (X) would complete the figure.

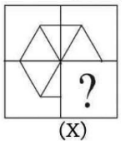
18. 

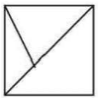
(a) 

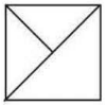
(b) 

(c) 

(d) 

19. 

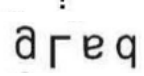
(a) 

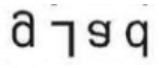
(b) 

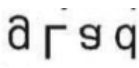
(c) 

(d) 

20. Find the correct option for the water image for the following question.

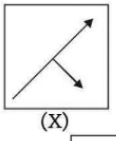
(a) 

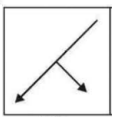
(b) 

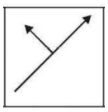
(c) 

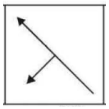
(d) 

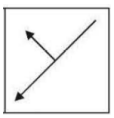
21. In the following question, choose the correct mirror-image of the Fig. (X) from amongst the four alternatives (a), (b), (c) and (d) given along with it.



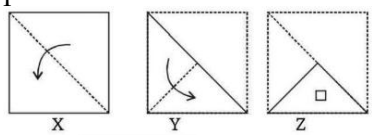
(a) 

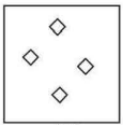
(b) 

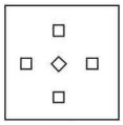
(c) 

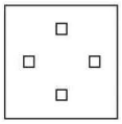
(d) 

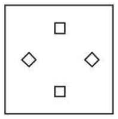
22. Consider the three figures, marked X, Y, and Z showing one fold in X , another in Y and the cut in Z. From amongst the four alternative figures (a), (b), (c) and (d) select the one showing the unfolded position of Z.



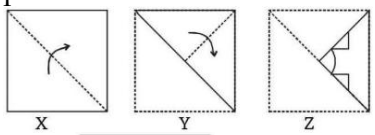
(a) 

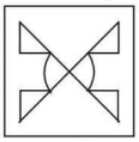
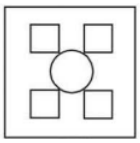
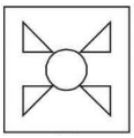
(b) 

(c) 

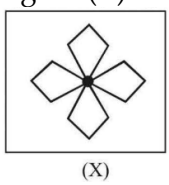
(d) 

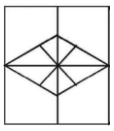
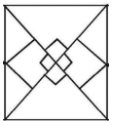
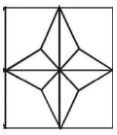
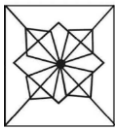
23. Consider the three figures, marked X, Y, and Z showing one fold in X , another in Y and the cut in Z. From amongst the four alternative figures (a), (b), (c) and (d), select the one showing the unfolded position of Z.



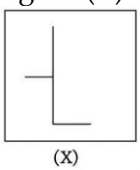
(a)  (b)  (c)  (d) 

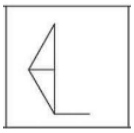
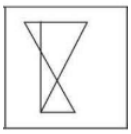
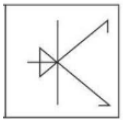
24. Find amongst the four alternatives (a), (b), (c) and (d), the figure which most nearly contains the figure (X).



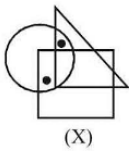
(a)  (b)  (c)  (d) 

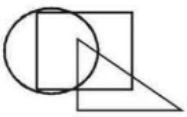
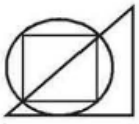
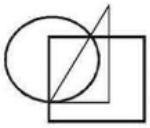
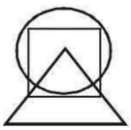
25. Find amongst the four alternatives (a), (b), (c) and (d), the figure which most nearly contains the figure (X).



(a)  (b)  (c)  (d) 

26. In the following question, there is a diagram marked (X), with one or more dots placed in it. The diagram is followed by four other figures, marked (a), (b), (c) and (d) only one of which is such as to make possible the placement of the alternative in each these.



(a)  (b)  (c)  (d) 

27. In the following question, two statements are given followed by four conclusions numbered I, II, III & IV. You have to take the given statements to be true even if they seem to be at variance from the commonly known facts & then decide which of the following conclusions logically follows from the given statements disregarding commonly known facts.

Statements: Some bottles are drinks. All drinks are cups.

Conclusions:

I. Some bottles are cups
II. Some cups are drinks
III. All drinks are bottles
IV. All cups are drinks.
(a) Only I & II follow
(b) Only II & III follow
(c) Only II & IV follow
(d) Only III & IV follow

Directions (Q.27 to 29): A number arrangement machine, when given a particular input, rearranges it following a particular rule. The following is the illustration of the input and the steps of arrangement:
Input, 27, 213, 309, 43, 89, 159, 275
Step I, 27, 213, 309, 159, 43, 89, 275
Step II, 27, 213, 89, 159, 309, 43, 275
Step III, 27, 309, 89, 159, 213, 43, 275
Step IV, 27, 43, 89, 159, 213, 309, 275
Step V, 27, 43, 89, 159, 213, 275, 309
This is the final arrangement and Step *V* is the last step for this input.

28. How many steps will be required to get the final output from the following input?
Input: 39, 149, 407, 79, 315, 217, 195
(a) 5 (b) 6 (c) 7 (d) 8

29. What will be the fourth step for the following input?
Input: 312, 49, 215, 413, 187, 297, 132
(a) 312,49,187,215,297,413,132 (b) 312,132,187,215,297,49,413
(c) 312,49,187,215,413,297,132 (d) 49,132,187,215,297,312,413

30. If following is the second step for an input, what will be the fifth step?
Step II: 439, 167, 297, 317, 517, 487, 132
(a) 167,517,297,317,439,487,132 (b) 517,167,297,317,439,487,132
(c) 132,167,297,317,439,487,517 (d) Can't be determined

PHYSICS

31. What is an electrolyte?
(a) A substance that does not conduct electricity in any form
(b) A substance that conducts electricity only in solid state
(c) A substance that conducts electricity when dissolved in water or in molten state due to free ions
(d) A substance used only in dry cells

32. Which of the following is NOT a good conductor of electricity?
(a) Salt solution (b) Distilled water
(c) Copper sulfate solution (d) Lemon juice

33. Which of the following is NOT correct about electroplating?
(a) It is used to coat one metal with another metal
(b) It improves appearance and prevents corrosion
(c) It is a chemical process without electricity
(d) It involves passing electric current through an electrolyte

34. Identify the voltaic (galvanic) cell among the following:
(a) Electroplating cell
(b) Dry cell used in torch
(c) Electrolytic cell used for decomposition of water
(d) None of the above

35. An electromagnet works on the principle of:
(a) Heating effect of current (b) Chemical effect of current
(c) Magnetic effect of current (d) Electrostatic effect

36. Muscular force is also called _____ force.
(a) non-contact (b) contact (c) gravitational (d) magnetic

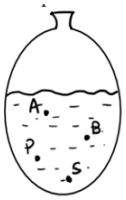
37. Which of the following is responsible for wearing out of bicycle tyres?
(a) Muscular force (b) Magnetic force (c) Frictional force (d) Electrostatic force

38. Three forces which are generally acting on a inflated balloon moving in upward direction in earth atmosphere

(a) Gravity, Electrostatic force, Magnetic force (b) Gravity, Air friction, Buoyancy

(c) Gravity, Buoyancy, Magnetic force (d) None of these

39. Given figure shows a balloon filled with water. Rahul wants to make a hole in the balloon so that water comes out with maximum pressure. At which point should he make the hole?



(a) At P (b) At B (c) At A (d) At S

40. A force of 160 N is distributed uniformly on one surface of a cube of edge 4 cm . The pressure on this surface is:

(a) 10000 Pa (b) 1000000 Pa (c) 100000 Pa (d) None of these

41. A wooden block exerts a force of 500 N on a surface. If the area of contact is 0.25 m^2, what pressure does it exert?

(a) 1000 N/m^2 (b) 125 N/m^2 (c) 2000 N/m^2 (d) 2500 N/m^2

42. Pressure at a point inside a liquid depends on:

(a) The color of the liquid

(b) The shape of the container

(c) The material of the container

(d) The depth of the point below the liquid surface

43. A girl wearing flat shoes exerts less pressure on the ground than when wearing high heels because:

(a) Flat shoes have less weight (b) High heels reduce force

(c) Flat shoes have a larger area of contact (d) High heels increase mass

44. The SI unit of pressure is:

(a) Newton (N) (b) Pascal (Pa) (c) Joule (J) (d) Watt (W)

45. Why do porters place a cloth pad on their heads while carrying heavy loads?

(a) To increase the weight of the load

(b) To reduce friction

(c) To increase the area of contact and reduce pressure

(d) To make the load look bigger

CHEMISTRY

46. In liquids, there is _____ and _____ between particles than in solids.

(a) Strong force of attraction, more spacing (b) Weaker force of attraction, less spacing

(c) Weaker force of attraction, more spacing (d) Strong force of attraction, less spacing.

47. Which of the following is NOT true about the particles of matter?

(a) They are in constant motion. (b) They have space between them.

(c) They attract each other. (d) They are all identical in size and shape.

48. Which example shows diffusion in liquids?

(a) Burning incense stick smell spreading (b) Potassium permanganate spreading in water

(c) Compressing air in a syringe (d) Melting ice

49. As temperature increases, rate of evaporation _____.

(a) Increases (b) Decreases

(c) First increases then decreases (d) Remains same.

50. Which element has neither definite shape nor volume?

(a) Sodium (b) Hydrogen (c) Iodine (d) Lithium

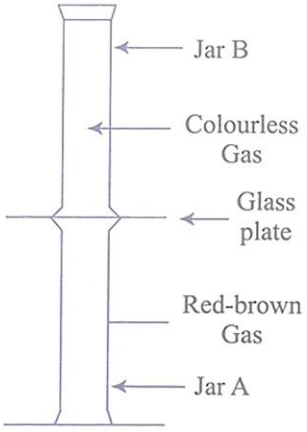
51. While playing on a beach, Veera collected some grains of sand and wondered if they were the smallest units of matter. Later, she noticed that each grain could be crushed into finer particles. What does this observation tell us about the nature of matter?

(a) Matter is continuous and cannot be broken.
(b) Matter is made of small invisible particles.
(c) Sand is a special kind of liquid.
(d) Sand is the smallest possible unit.

52. When a solid is dissolved in a liquid, the volume of the solution does not change significantly. This is because

(a) Liquid particles are incompressible
(b) Solid particles occupy the spaces between the liquid particles
(c) Solid particles evaporate
(d) The mass of the solid is negligible

53. Name the brown gas which could be in jar A.

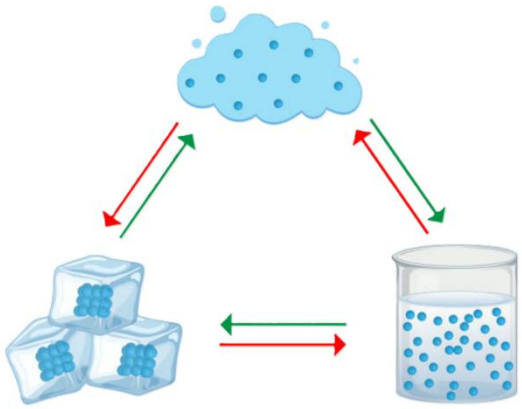


(a) Bromine vapour
(b) Carbon vapour
(c) Sulphur vapour
(d) Phosphorus vapour

54. When chalk is crushed into powder and still shows the same properties, what does it prove?

(a) New substance is formed
(b) Chalk is made of continuous matter
(c) Matter is made of tiny particles
(d) Chalk becomes a liquid when crushed

55. During which change of state do water molecules lose speed?



(a) Ice → Water
(b) Ice → Steam
(c) Steam → Ice
(d) Water → Steam

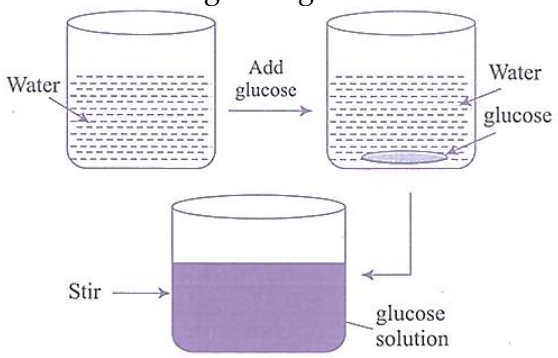
56. Which of the following shows the correct increasing order of rigidity of the substances?

(a) Water < Nitrogen < Book
(b) Hydrogen < Diesel < Wooden block
(c) Alcohol < Sugar < Carbon dioxide
(d) Stone < Oxygen < Oil

57. Identify the incorrect pair from the following.

(a) Carbon dioxide - CO_2
(b) Sodium chloride - NaCl
(c) Oxygen - O_2
(d) Hydrogen - H

58. An experiment is performed as shown in the given figure.

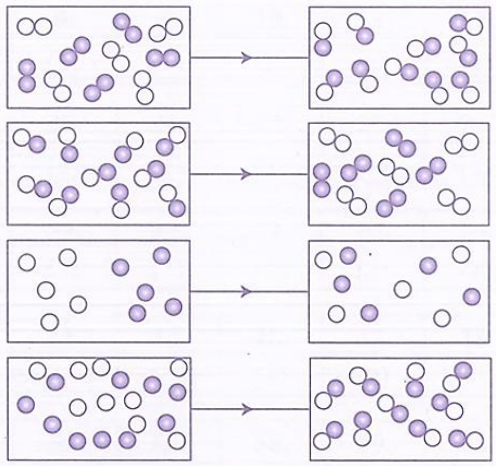


What conclusion can we draw from the given experiment?

(a) Matter is continuous in nature.
(b) Matter is made up of particles.
(c) Particles of sugar fill the spaces between particles of water.
(d) Both (b) and (c).

59. Which diagram shows the process of diffusion?

(a)
(b)
(c)
(d)



60. Why we cannot break a stream of water easily?

(a) Water particles are constantly moving.
(b) There are spaces between water particles.
(c) There is no force of attraction between water particles.
(d) There is a force of attraction between water particles.

BIOLOGY

61. The symbols of the root and the kite used to convey the idea that scientific investigation requires a balance between

(a) Past traditions and future possibilities
(b) Complex laboratory work and simple kitchen experiments
(c) grounded observations and imaginative thinking
(d) the natural world and human-made technology

62. While classifying substances they are mainly considered at

(a) Pure substances
(b) Motion of particles- two or more elements bonded together
(c) Method of separation - can be separated physically
(d) Number of particles can be separated chemically

63. What is the starting point of scientific investigation?

(a) Memorization
(b) Observation
(c) Wonder and curiosity
(d) Drawing conclusions

64. What type of microorganism is E. coli?
(a) Algae (b) Protozoa (c) Bacteria (d) Fungi

65. What type of microorganism is Paramecium?
(a) Algae (b) Protozoa (c) Bacteria (d) Fungi

66. Rhizobium bacteria _____
(a) Help in digestion (b) Help in nitrogen fixation
(c) Cause diseases (d) All of the above

67. Aspergillus is a
(a) Algae (b) Fungus (c) Bacteria (d) Yeast

68. _____ is the basic unit of life.
(a) Bacteria (b) Virus (c) Cell (d) Nucleus

69. What are the main groups of microorganisms?
(a) Bacteria, Fungi, Protozoa, and Algae (b) Plants, Animals, and Insects
(c) Bacteria, Viruses, and Fungi only (d) Only Algae and Fungi

70. Which of the following diseases is a communicable disease?
(a) Diabetes (b) Common cold (c) Cancer (d) Asthma

71. Which habit helps improve both physical and mental health?
(a) Spending excessive time on screens (b) Eating a diet high in sugar and oil
(c) Limiting screen time and getting adequate sleep (d) Skipping meals to stay fit

72. Yoga and meditation are recommended because _____
(a) Cure all bacterial infections (b) Reduce anxiety and increase concentration
(c) Replace the need for a balanced diet (d) Prevent air pollution

73. Which of the following is NOT an example of a good daily personal habit?
(a) Washing hands before eating (b) Leaving food uncovered
(c) Brushing teeth twice a day (d) Taking a daily bath

74. Maintaining regular handwashing can reduce certain infections by up to:
(a) 10% (b) 25% (c) 50% (d) 90%

75. Diseases that are caused by pathogens and can spread from one person to another are called:
(a) Non-communicable diseases (b) Genetic disorders
(c) Communicable diseases (d) Deficiency diseases

MATHEMATICS

76. The square root of $\frac{0.342\times0.684}{0.000342\times0.000171}$ is.
(a) 2000 (b) 4000 (c) 12000 (d) 20000

77. What is the smallest five-digit number which is a perfect square?
(a) 10025 (b) 10201 (c) 10404 (d) 10000

78. What is the value of $\sqrt{\frac{0.49}{0.25}}+\sqrt{\frac{0.81}{0.36}}$?
(a) 2.9 (b) 3.1 (c) 2.5 (d) 1.9

79. What is the smallest number by which 392 must be multiplied so that the product is a perfect cube?
(a) 2 (b) 3 (c) 5 (d) 7

80. The volume of a cubical box is 46.656 cm^3. Find the length of each side.
(a) 4.6 cm (b) 2.6 cm (c) 3.6 cm (d) 3.4 cm

81. The difference between the cubes of two consecutive natural numbers is 397. Find the smaller number.
(a) 12 (b) 11 (c) 13 (d) 14

82. Find the value of x if $2^x + 2^x + 2^x + 2^x = 2^{10}$.

(a) 10 (b) 9 (c) 8 (d) 7

83. Simplify $\left[\left\{\left(-\frac{1}{3}\right)^2\right\}^{-2}\right]^{-1}$

(a) $\frac{1}{81}$ (b) 81 (c) 9 (d) $\frac{1}{9}$

84. If $x = \left(\frac{5}{3}\right)^2 \times \left(\frac{3}{5}\right)^{-4}$, find the value of x^{-2}.

(a) $\left(\frac{3}{5}\right)^{12}$ (b) $\left(\frac{5}{3}\right)^{12}$ (c) $\left(\frac{3}{5}\right)^{6}$ (d) $\left(\frac{5}{3}\right)^{8}$

85. What is the reciprocal of $\left(\frac{1}{2}\right)^{-5}$?

(a) 32 (b) $\frac{1}{32}$ (c) -32 (d) $-\frac{1}{32}$

86. If $10^{2y} = 25$, then 10^{-y} equals:

(a) $-\frac{1}{5}$ (b) $\frac{1}{50}$ (c) $\frac{1}{25}$ (d) $\frac{1}{5}$

87. If a quadrilateral has three acute angles, each measuring 80°, find the measure of the fourth angle.

(a) 80° (b) 100° (c) 120° (d) 140°

88. Which of the following statements is false?

(a) Every square is a rectangle. (b) Every rhombus is a parallelogram.
(c) Every rectangle is a square. (d) Every square is a rhombus.

89. If the line segment joining the midpoints of two non-parallel sides of a trapezium is 12 cm long and one parallel side is 8 cm, find the other parallel side.

(a) 16 cm (b) 20 cm (c) 10 cm (d) 24 cm

90. In a parallelogram $ABCD$, if diagonals intersect at O and $AO = 3$ cm, $BO = 4$ cm, then the length of diagonal AC is:

(a) 3 cm (b) 6 cm (c) 8 cm (d) 12 cm

91. The maximum number of obtuse angles a quadrilateral can have is:

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

92. In a square $ABCD$, diagonal AC and BD meet at O. The triangle ΔAOB is a/an:

(a) Equilateral triangle (b) Isosceles right-angled triangle
(c) Scalene triangle (d) Obtuse-angled triangle

93. Expand: $(4x - 7y)^2$.

(a) $16x^2 - 56xy + 49y^2$ (b) $16x^2 - 28xy + 49y^2$
(c) $16x^2 + 56xy + 49y^2$ (d) $16x^2 - 56xy - 49y^2$

94. Simplify: $(a + b + c)(a - b)$

(a) $a^2 - b^2 + ac - bc$ (b) $a^2 - b^2 + ac + bc$
(c) $a^2 + b^2 - ac - bc$ (d) $a^2 - b^2 - ac - bc$

95. If $x + \frac{1}{x} = 6$ find the value of $x^2 + \frac{1}{x^2}$.

(a) 36 (b) 38 (c) 34 (d) 32

96. Find the value of $\frac{0.78\times0.78-0.22\times0.22}{0.78-0.22}$

(a) 0.56 (b) 1.00 (c) 0.88 (d) 0.44

97. If $(4x^2 - 3y^2) : (2x^2 + 5y^2) = 12 : 19$, find the positive ratio $x : y$.

(a) 2:3 (b) 1:2 (c) 4:5 (d) 3:2

98. Two containers contain wine and water in the ratio 3: 2 and 4: 1 respectively. If both containers are mixed together in equal quantities, what is the ratio of wine to water in the new mixture?

(a) 7:3 (b) 11:9 (c) 7:2 (d) 14:5

99. In an army camp, there are provisions for 1200 soldiers for 60 days. If 300 soldiers leave the camp at the start, how long will the provisions last now?

(a) 75 days (b) 80 days (c) 90 days (d) 45 days

100. What number must be added to each of the numbers 6, 15, 20, and 43 so that the resulting numbers are in proportion?

(a) 2 (b) 5 (c) 4 (d) 3