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KTET CATEGORY III
MATHEMATICS
CODE : C

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71. The algebraic form of an arithmetic sequence is $4n+3$. The sum of the first 20 terms of this sequence is :

(A) 830

(B) 930

(C) 900

(D) 800

72. The factors of x^3+2x^2-5x-6 is :

(A) $(x+1)(x-2)(x+3)$

(B) $(x-1)(x-2)(x+3)$

(C) $(x-1)(x-2)(x-3)$

(D) $(x+1)(x-2)(x-3)$

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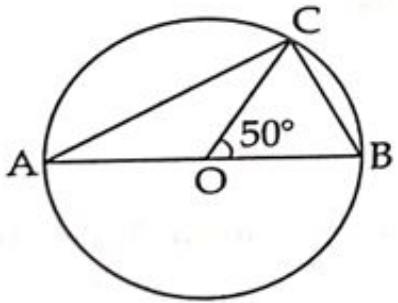
73. In the figure O is the centre of the circle and AB is a diameter. $\angle BOC = 50°$. The measure of $\angle OAC$ is :



(A) 50°

(B) 25°

(C) 35°

(D) 40°

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74. The equation of the circle with centre (8, 5) and radius 6 is :

(A) $(x-8)^2+(y-5)^2=36$

(B) $x^2-y^2=36$

(C) $(x-5)^2+(y-8)^2=36$

(D) $(x-8)^2+(y-5)^2=6$

75. If $a+\frac{1}{a}=2$, what is $a^{2024}+\frac{1}{a^{2024}}$?

(A) 2

(B) 2^{2024}

(C) 2024

(D) 2024^2

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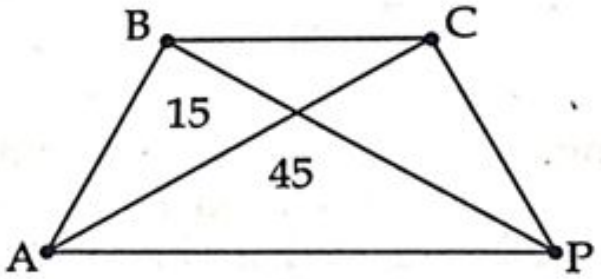
76. In the figure, APCB is a trapezium. AP is parallel to BC. The diagonals of the trapezium divide it into four parts. The areas of two parts are given as 45 and 15 sq. units. The area of the trapezium in sq. units is :



(A) 90

(B) 120

(C) 82.5

(D) 80

77. Which among the following quadratic equation has no real solution ?

(A) $x^2 + 2x - 8 = 0$

(B) $x^2 + 2x + 8 = 0$

(C) $x^2 + 4x + 4 = 0$

(D) $x^2 - 4x + 4 = 0$

78. The decimal form of $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16}$ is :

(A) 0.9735

(B) 0.9375

(C) 0.9335

(D) 0.9725

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79. Which among the following is a natural number ?

(A) $\sqrt{2\frac{1}{2}} \times \sqrt{3\frac{1}{2}}$

(B) $\sqrt{7\frac{1}{2}} \times \sqrt{3\frac{1}{3}}$

(C) $\sqrt{2\frac{1}{2}} \times \sqrt{4\frac{1}{4}}$

(D) $\sqrt{5\frac{1}{5}} \times \sqrt{4\frac{1}{4}}$

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80. A rectangle has a perimeter 64 centimetres. Its length is represented by $4x+6$ and breadth by $3x-2$. What is its length and breadth in centimetres ?

(A) 20 and 12

(B) 24 and 8

(C) 19 and 13

(D) 22 and 10

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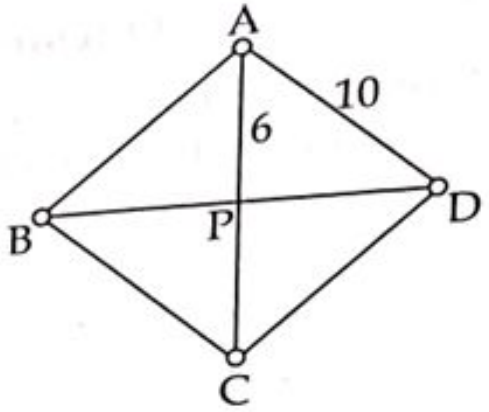
81. In the figure, ABCD is a rhombus. AD = 10 centimetres, PA = 6 centimetres. The area of the rhombus is :



(A) 60 sq. centimetres
(B) 96 sq. centimetres
(C) 48 sq. centimetres
(D) 192 sq. centimetres

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82. The monthly expenditure of a family on different items are given in the pie-diagram. If monthly income is Rupees 40,000/-, how much money is spent for education ?

(A) Rupees 8,200

(B) Rupees 9,200

(C) Rupees 4,600

(D) Rupees 7,200

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83. A sphere of surface area 500π square centimetres is cut into two equal hemispheres. The surface area of each hemisphere in square centimetres is :

(A) 250π

(B) 500π

(C) 375π

(D) 125π

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84. Four friends A, B, C and D started a business and earned a profit of Rupees 30,000. They shared it according to their investment. A, B, C and D had invested in the ratio 2 : 5 : 4 : 3. What is the profit share of A and B together ?

(A) Rupees 20,000

(B) Rupees 15,000

(C) Rupees 17,000

(D) Rupees 7,000

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85. $p(x) = 2x^2 + 4x - 6$ is a polynomial. For what number of x, is $p(x) = 0$?

(A) 3

(B) 2

(C) -2

(D) -3

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86. What number is x if $|x+2|=|x-5|$?

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

(B) $\frac{5}{2}$

(C) $\frac{7}{2}$

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

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87. A metallic cylinder of base radius 6 centimetres and height 16 centimetres is melted and recast into spheres of radius 3 centimetres. The number of spheres that can be made is :

(A) 14

(B) 6

(C) 8

(D) 16

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88. A square pyramid of base edge 10 centimetres and slant height 12 centimetres is made of paper. What are the lengths of the edges of the lateral face in centimetres ?

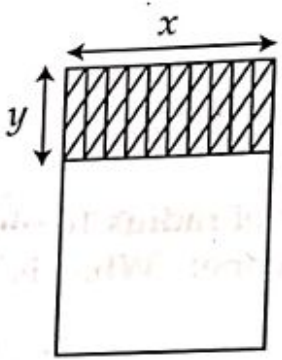
(A) 10, 10, 12

(B) 5, 5, 12

(C) 10, 13, 13

(D) 5, 5, 13

89. Observe the picture of a hall. It has been divided by a line. One part of the hall is a stage of length x and breadth y. The remaining area of the hall is a square. What is the total area of the hall ?



(A) x^2+y^2+2xy

(B) x^2+y^2

(C) x^2+xy

(D) x^2+2xy

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90. The base radii of two cones are in the ratio 5 : 3 and their heights are equal. If the volume of the first cone is 750 π cu. centimetres, then what is the volume of the second cone in cu. centimetres ?

(A) 250 π

(B) 270 π

(C) 370 π

(D) 350 π

91. The equation of a line with slope $\frac{2}{3}$ and passing through $(3, -2)$ is :

(A) $2x - 6y = 12$

(B) $3x - 2y = 12$

(C) $2x - 3y = 6$

(D) $2x - 3y = 12$

92. The sum of the factors of 12 is equal to :

(A) 26

(B) 28

(C) 27

(D) 29

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93. A semi-circular sector of radius 16 centimetres is rolled to make a cone. What is the base radius of the cone ?

(A) 16 centimetres

(B) 8 centimetres

(C) 4 centimetres

(D) 12 centimetres

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94. The lengths of the adjacent sides of a parallelogram are 5 centimetres and 12 centimetres. The length of one of its diagonals is 13 centimetres. The area of the parallelogram is :

(A) 400 sq. centimetres

(B) 169 sq. centimetres

(C) 40 sq. centimetres

(D) 60 sq. centimetres

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95. The surface area of a cube is 216 sq. centimetres. Its volume in cu. centimetres is :

(A) 108

(B) 36

(C) 512

(D) 216

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96. The perimeter of an equilateral triangle is 24 centimetres. Its area in square centimetres is :

(A) $24\sqrt{3}$

(B) $12\sqrt{3}$

(C) $16\sqrt{3}$

(D) $6\sqrt{3}$

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97. The average mark of 40 students in the class 8 mathematics test was 70. It was later found that the marks of two students had been wrongly entered as 47 instead of 74 and 46 instead of 64. What is the correct average ?

(A) 71.125

(B) 71.215

(C) 70.125

(D) 70.215

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98. The coordinates of the centre of a circle are (2, 5) and the circle passes through (8, 13). The area of the circle in sq. units is :

(A) 120 π

(B) 10 π

(C) 100 π

(D) 121 π

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99. The sum of the inner angles of a regular polygon is 1800°. The measure one inner angle of the polygon is :

(A) 150°

(B) 180°

(C) 160°

(D) 120°

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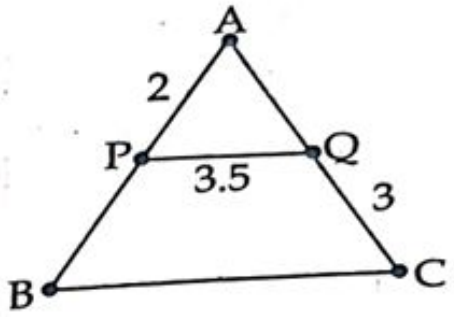
100. In the figure P and Q are mid points of AB and AC respectively. The perimeter of triangle ABC is :



(A) 17

(B) 16.5

(C) 11.5

(D) 16

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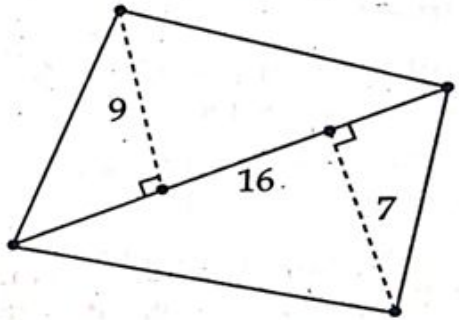
101. A quadrilateral is given in the figure. The length of one diagonal is 16 centimetres and the lengths of the perpendiculars from the opposite vertices to that diagonal are 9 centimetres and 7 centimetres. The area of the quadrilateral in square centimetres is :



(A) 504

(B) 128

(C) 441

(D) 103.5

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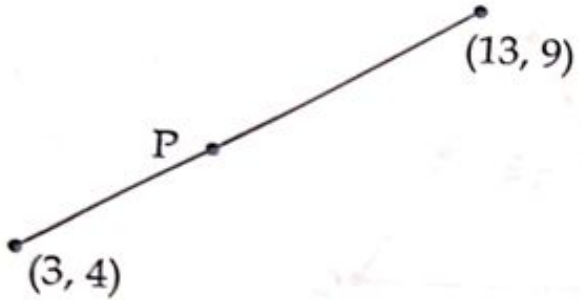
102. In the figure the coordinates of the endpoints of a line are given. The point P divides the line in the ratio 2 : 3. The coordinates of P are :



(A) (8, 6)

(B) (8, 7)

(C) (7, 7)

(D) (7, 6)

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103. A number is first increased by 20% and then decreased by 20%. What is the net increase or decrease in the original number ?

(A) 20% increase

(B) 10% increase

(C) 4% increase

(D) 4% decrease

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104. Which among the following statements is/are **not** true ?

(I) The sum of opposite angles of a parallelogram is 180°

(II) The sum of adjacent angles of a parallelogram is 180°

(III) The opposite sides of a parallelogram are equal

(IV) The sum of the inner angles of a parallelogram is 360°

(A) Only statement (I)

(B) Statements (I) and (II)

(C) Statements (I), (III) and (IV)

(D) Statements (I) and (IV)

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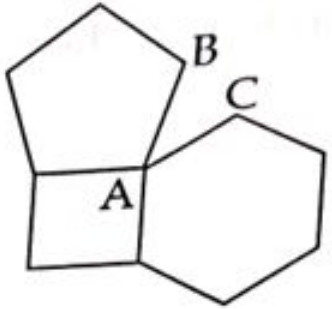
105. In the figure, a square is joined to a regular pentagon and a regular hexagon. The measure of $\angle BAC$ is :



(A) 52°

(B) 32°

(C) 22°

(D) 42°

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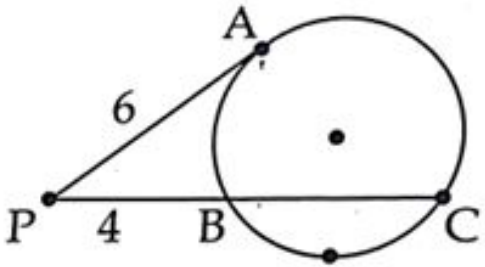
106. In the figure, BC is a chord and PA is a tangent to the circle. PB = 4 centimetres, PA = 6 centimetres, the length of the chord BC is :



(A) 6 centimetres

(B) 8 centimetres

(C) 5 centimetres

(D) 10 centimetres

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107. A rectangular box is of length 3 metres, breadth 2 metres and height 1 metre. How many bricks of length 30 centimetres, breadth 20 centimetres and height 10 centimetres will exactly fill the box ?

(A) 1000

(B) 2000

(C) 1500

(D) 2500

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108. A courtyard is 16 metres long and 8 metres broad. How many square tiles of side 40 centimetres are required to pave the courtyard ?

(A) 600

(B) 700

(C) 800

(D) 900

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109. The area of a square is $x^2+4xy+4y^2$. What is the length of a side of the square ?

(A) $x+y$

(B) $x+2y$

(C) $2x+y$

(D) $2x+3y$

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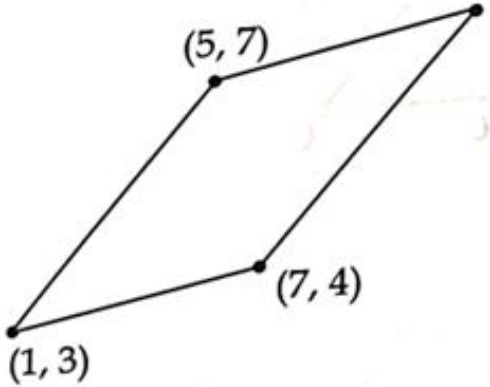
110. Which among the following are the coordinates of the fourth vertex of the parallelogram ?



(A) (13, 14)

(B) (11, 7)

(C) (11, 8)

(D) (12, 8)

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111. Which among the following irrational numbers represents a point lying between 3 and 4 on the number line ?

(A) $\sqrt{7}$

(B) $\sqrt{8}$

(C) $\sqrt{10}$

(D) $\sqrt{5}$

112. The 6^{th} term of an arithmetic sequence is 24 and the 8^{th} term is 34. What is the sum of the first 13 terms of the arithmetic sequence ?

(A) 277

(B) 297

(C) 377

(D) 397

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113. The fraction to be added to $y^2 - \frac{10}{11}y + \frac{11}{121}$ to make it a perfect square is :

(A) $\frac{14}{121}$

(B) $\frac{11}{121}$

(C) $\frac{14}{11}$

(D) $\frac{15}{11}$

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114. Which among the following fractions are in between $\frac{2}{5}$ and $\frac{4}{7}$?

(A) $\frac{11}{35}, \frac{21}{35}$

(B) $\frac{16}{35}, \frac{18}{35}$

(C) $\frac{13}{35}, \frac{29}{35}$

(D) $\frac{15}{35}, \frac{22}{35}$

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115. What is the value of $\dfrac{\left(\frac{3}{5}\right)^2 \times \left(\frac{5}{7}\right)^{-2}}{\left(\frac{3}{5}\right)^3 \times \left(\frac{7}{5}\right)^2}$?

(A) $\frac{3}{5}$

(B) $\frac{7}{3}$

(C) $\frac{3}{7}$

(D) $\frac{5}{3}$

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116. If $m+\frac{1}{m}=4$, then what is $m^3+\frac{1}{m^3}$?

(A) 48

(B) 52

(C) 42

(D) 54

117. The weight (in kilogram) of 8 students in a class are given as 56, 48, 53, 55, 49, 52, 46, 57. The median weight of the students is :

(A) 53.5

(B) 53

(C) 52

(D) 52.5

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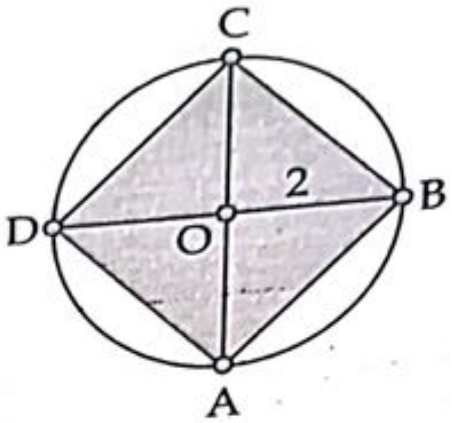
118. A circle is drawn with centre O and radius 2 metres. ABCD is a square. The area of the unshaded region is :



(A) $2\pi - 2$ square metres

(B) $2 - 2\pi$ square metres

(C) $8 - 4\pi$ square metres

(D) $4\pi - 8$ square metres

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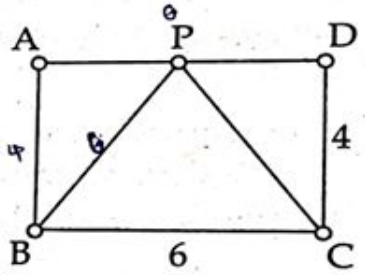
119. In the figure ABCD is a rectangle. BC = 6 centimetres, CD = 4 centimetres. Triangle PCB is isosceles. If we put a dot in this figure, what is the probability of it being in the triangle PAB ?



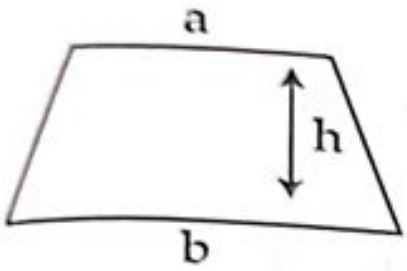
(A) $\frac{1}{2}$

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

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

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

120. In the figure of the trapezium, $a = 8$ centimetres, $b = 14$ centimetres, $h = 6$ centimetres. What is its area ?



(A) 62 sq. centimetres

(B) 80 sq. centimetres

(C) 66 sq. centimetres

(D) 68 sq. centimetres

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121. Which of the following principle is **not** included in Dalton plan ?

(A) Principle of freedom

(B) Principle of continuity

(C) Principle of self pacing

(D) Principle of cooperation

122. Which of the following is the main objective of continuous assessment ?

(A) To help the learners to understand their progress in learning

(B) To compare the learner with other children and advise them study well

(C) To encourage the involvement of parents

(D) To maintain progress record properly

123. As a teacher which of the following will you consider at the beginning of an academic year ?

(A) Planning individual units

(B) Preparing lesson plan

(C) A broad planning of instruction for the year

(D) Preparing unit tests

124. BALA concept which is an innovative approach to education is :

(A) Building as a Learning Aid

(B) Black board as a Learning Aid

(C) Books as a Learning Aid

(D) Braille Aided Learning Assessment

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125. Mathematics club activities are specially meant for :

(A) Helping gifted students in completing project work

(B) Stimulating interest in learning mathematics

(C) Engaging free time of students

(D) To enable children to do well in tests

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126. 'The Man Who Knew Infinity' is related to the life history of :

(A) Sreenivasa Ramanujan

(B) Isaac Newton

(C) Robert Kanigel

(D) Euclid

127. Unknown to known is used for which teaching method ?

(A) Inductive method

(B) Analytic method

(C) Synthetic method

(D) Lecture method

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128. Learning aids are mainly used for :

(A) Completing the topics within a period of time

(B) Creating novelty

(C) Reducing abstractness

(D) Engaging free times of students

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129. Errors play an important role in mathematics. This statement is :

(A) False, as errors indicate carelessness

(B) False, as there is no scope of errors in mathematics

(C) True, as they give ideas about how children construct mathematics concepts

(D) True, identify the weak students in the class

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130. Which of the following is **not** used as a software for learning mathematics ?

(A) Kig

(B) J Fraction Lab

(C) Geo gibra

(D) Celestia

131. Which of the following is **not** a process skill in mathematics ?

(A) Handling mathematical instruments

(B) Interpreting graphs and diagrams

(C) Analyzing data

(D) Explanation

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'132. Which of the following is not a problem solving technique in mathematics ?

(A) Draw a picture to visualize the problem

(B) Find a pattern

(C) Data collection

(D) Make a table or a list to organize the information

133. Which of the following is the first step in a mathematics project ?

(A) Data collection

(B) Identifying the problem

(C) Formulation of hypothesis

(D) Fixing the objectives

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134. Which one of the following is **not** related with the blue print of a question paper preparation ?

(A) Objectives

(B) Content areas

(C) Type of questions

(D) Learning aids

135. Which of the following is **not** an objective of learning history of mathematics ?

(A) To provide opportunities for guessing and doing mental mathematics

(B) To find suitable situation for introducing certain topic

(C) To understand the nature and growth of mathematics

(D) To develop motivation in children for learning mathematics

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136. To whom is concept attainment model related ?

(A) Jean Piaget

(B) Richard Suchman

(C) B.F. Skinner

(D) Jerome Bruner

137. Which of the following is **not** an award given in mathematics ?

(A) Field's medal

(B) Abel's prize

(C) Adam's prize

(D) Nobel prize

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138. Which of the following is **not** a characteristic of project method ?

(A) Developing interest in learning

(B) Developing good memory

(C) Developing research attitude

(D) Developing analytical skill

9. A good mathematics teacher is one who :

(A) encourages children to search for knowledge

(B) gives a lot of problems to practice with

(C) enables children to do well in tests

(D) follows same method always

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140. The branch of mathematics which is a continuation and generalization of arithmetic is :

(A) Geometry

(B) Algebra

(C) Trigonometry

(D) Topology

141. Aim of mathematics education is :

(A) Mathematisation of child's thought process

(B) Teaching formulas

(C) Teaching numbers

(D) Encourage convergent thinking

142. According to Edgar Dale, Audio Visual aids are termed as :

(A) Sensory objects

(B) Sense of light

(C) Multi-sensory materials

(D) Supplementary devices

143. Which of the following is **not** a suitable method for developing creativity in mathematics ?

(A) Preparing mathematical stories and poems

(B) Solving a large number of mathematical problems

(C) Preparing/identifying number patterns

(D) Participating in the construction of geometrical charts

144. Which of the following can **not** be used as learning aid for visually challenged in mathematics classroom ?

(A) Geo board

(B) Fraction kit

(C) Number chart

(D) Abacus

145. Which of the first step in the procedure for the problem solving method ?

(A) Formulating tentative solutions

(B) Understand the problem

(C) Gathering data in a systematic manner

(D) Look back and review

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146. A teacher uses examples and non-examples for developing a concept in her class. Which among the following is her choice ?

(A) Inductive thinking model

(B) Inquiry training model

(C) Advance organiser model

(D) Concept attainment model

147. Social constructivist theory is associated with :

(A) Piaget

(B) Bruner

(C) Gagne

(D) Vygotsky

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148. It is possible to provide first hand experiences in mathematics to the learners through :

(A) Assignments

(B) Debates

(C) Field trips

(D) Symposium

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149. The lowest level of learning according to Robert M Gagne is :

(A) Problem solving

(B) Verbal association

(C) Signal learning

(D) Concept learning

150. The most appropriate tool that helps to identify the misconcepts of students in mathematics is :

(A) Diagnostic test

(B) Aptitude test

(C) Unit test

(D) Personality test