

Based on Central Board of Secondary Education (CBSE) and NCTE

CTET/All TET

Teacher Eligibility Test

MATHS

Class (I-V) Paper-I Solved Papers

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SYLLABUS

For Classes 1 to V : Primary Stage

S.No.	Subject	Question No.	Marks
1.	Child Development and Pedagogy	30	30
2.	Language I	30	30
3.	Language II	30	30
4.	Math	30	30
5.	Environmental Studies.	30	30
Total		150	150

I. Child Development and Pedagogy 30 Questions

(A) Child Development (Primary School Child) 15 Questions

- Concept of development and its relationship with learning.
- Principles of the development of Children
- Influence of Heredity & Environment
- Socialization processes : Social world & children (Teacher, Parents, Peers)
- Piaget, Kohlberg and Vygotsky: constructs and critical perspectives
- Concepts of child-centered and progressive education
- Critical perspective of the construct of intelligence
- Multi-Dimensional Intelligence
- Language & thought
- Gender as a social construct; gender roles, gender-bias and educational practice
- Individual differences among learners, understanding differences based on diversity of language, caste, gender, community, religion etc.
- Distinction between Assessment for learning and assessment of learning; School-Based Assessment, Continuous & Comprehensive Evaluation: perspective and practice.
- Formulating appropriate questions for assessing readiness levels for learners; for enhancing learning and critical thinking in the classroom and for assessing learner achievement.

(B) Concept of inclusive education and understanding children with special needs. 5 Questions

- Addressing learners from diverse backgrounds including disadvantaged and deprived.
- Addressing the needs of children with learning difficulties, 'impairment' etc.
- Addressing the Talented, Creative, Specially abled learners.

(C) Learning and Pedagogy 10 Questions

- How children think and learn; how and why children 'fail' to achieve success in school performance.
- Basic processes of teaching and learning; children's strategies of learning; learning as a social activity; social context of learning.
- Child as a problem solver and a 'scientific investigator'
- Alternative conceptions of learning in children, understanding children's 'errors' as significant steps in the learning process.
- Cognition & Emotions
- Motivation and learning
- Factors contributing to learning-personal & environmental

II. Language I 30 Questions

(a) Language comprehension 15 Questions

Reading unseen passages- two passages one prose or drama and one poem with questions on comprehension, inference, grammar and verbal ability (Prose passage may be literary, scientific narrative or discursive)

(b) Pedagogy of language Development 15 Question

- Learning and acquisition

- Principles of language Teaching
- Role of listening and speaking; function of language and how children use it as a tool
- Critical perspective on the role of grammar in learning a language for communicating ideas verbally and in written form.
- Challenges of teaching language in a diverse classroom; language difficulties, errors and disorders.
- Language Skills
- Evaluating language comprehension and proficiency; speaking, listening, reading and writing.
- Remedial Teaching.

III. Language - II 30 Questions

(a) Comprehension 15 Questions

Two unseen prose passages (discursive or literary or narrative or scientific) with question on comprehension, grammar and verbal ability.

(b) Pedagogy of language Development 15 Questions

- Learning and acquisition
- Principles of language Teaching
- Role of listening and speaking; function of language and how children use it as a tool.
- Critical perspective on the role of grammar in learning a language for communicating ideas verbally and in written form;
- Challenges of teaching language in a diverse classroom; language difficulties, errors and disorders
- Language Skills
- Evaluating language comprehension and proficiency: speaking, listening, reading and writing
- Teaching- learning materials: Textbook, multi-media materials, multilingual resource of the classroom.
- Remedial Teaching.

IV. Mathematics 30 Questions

(a) Content 15 Questions

- Geometry
- Shapes & spatial Understanding
- Solids around Us
- Addition and Subtraction
- Division
- Weight
- Volume
- Patterns
- Numbers
- Multiplication
- Measurement
- Time
- Data Handling
- Money

(B) Pedagogical issues 15 Questions

- Nature of Mathematics/Logical thinking; understanding children's thinking and reasoning patterns and strategies of making meaning and learning.
- Place of Mathematics in Curriculum
- Language of mathematics
- Community Mathematics
- Evaluation through formal and informal methods.
- Problems of Teaching
- Error analysis and related aspects of learning and teaching.
- Diagnostic and Remedial Teaching.

V. Environmental Studies. 30 Questions

(a) Content 15 Questions

- i. Family and Friends: Relationships, Work and Play, Animals, Plants
- ii. Food, iii. Shelter, vi. Water, v. Travel
- vi. Things We Make and Do

(b) Pedagogical Issues 15 Questions

- Concept and scope of EVS
- Significance of EVS, integrated EVS
- Environmental studies & Environmental Education.
- Learning Principles
- Scope & relation to science & Social Science
- Approaches of presenting concepts.
- Activities, ■ Experimentation/practical work
- Discussion, ■ CCE, ■ Teaching material/Aids
- Problems

Central Teacher Eligibility Test (CTET) July 2024

Primary Level (Class I-V)

Solved Paper with Explanation

(Exam Date : 07.07.2024)

MATHEMATICS

1. **12 thousand + 13 hundred + 2 tens is equal to :**
 (a) 121320 (b) 12132 (c) 130132 (d) 13320

Ans. (d) : According to the question,
 Given, 12 Thousand + 13 Hundred + 2 Ten
 $12 \times 1000 + 13 \times 100 + 2 \times 10$
 $= 12000 + 1300 + 20$
 $= 13,320$
 Hence option (d) is correct

2. **One crore is :**
 (a) hundred million (b) ten million
 (c) one million (d) one billion

Ans. (b) : A crore is a natural number that is expressed as 100,00,000 according to the Indian numbering system. As per the International number it is equal to 10 million. It's expressed as 10^7 in scientific notation, which means 10,000,000.
 1 crore = 1,00,00,000
 & 10 million = 10,000,000
 Hence, $1 \text{ crore} = 10 \text{ million}$

3. **Which of the following resourced is best suited to explain the concept of decimals?**

- (1) Number Chart (2) Dienes Blocks
 (3) Taylor's Abacus (4) Graph Paper

Choose the correct option :

- (a) (1) and (2) (b) Only (2)
 (c) (2) and (4) (d) (1) and (3)

Ans. (c) : The concept behind decimal multiplication can be easily explained by the use of graph paper with the help of blocks.
 Dienes Block- It is a mathematical manipulating tool that helps children to learn basic mathematics like, addition, subtraction, place value, counting and simple multiplication.
 Graph paper- It is a very versatile and useful device for learning mathematics graph for multiple and division extends to fractions and decimals and should be used.
 Hence, option (c) is correct.

4. **Which of the following letters has no line of symmetry?**

- (a) X (b) L
 (c) A (d) M

Ans. (b) : L letter has no line of symmetry.

5. **In a certain week, the number of patients in a dental clinic was as follows:**

Day	Number of patients
Monday	25
Tuesday	38
Wednesday	45
Thursday	18
Friday	36
Saturday	39

Based on above table, choose the wrong statement :

- (a) Total number of patients was 200
 (b) Range of the data is 27
 (c) On most of the days, number of patients was more than 30
 (d) Difference between the number of patients on Monday and Wednesday is 20

Ans. (a) : According to the option
 (a) Total number of patient = 201
 (b) Range of data = $45 - 18 = 27$
 (d) Monday - Number of patient = 25
 Wednesday - Number of patient = 45
 Difference = 20
 Hence option (a) is correct.

6. **If $x : y = p : q$, then which of the following is true?**

1. $x + y : y = p + q : q$
 2. $x - y : y = p - q : q$
 3. $x : p = y : q$
 4. $x + y : x - y = p - q : p + q$
 (a) 1, 2 and 3 (b) 1 and 2
 (c) only 3 (d) 1 and 4

Ans. (a) : According to the question,
 Let $x = 3$ and $p = 6$
 $y = 4$ $q = 8$
 From option (a)
 $= x + y : y = p + q : q$
 $\Rightarrow 7 : 4 = 14 : 8$
 $\Rightarrow 7 : 4 = 7 : 4$

From option (b)

$$x - y : y = p - q : q$$

$$-1 : 4 = -2 : 8$$

$$-1 : 4 = -1 : 4$$

From option (c)

$$x : p = y : q$$

$$3 : 6 = 4 : 8$$

$$1 : 2 = 1 : 2$$

From option (d)

$$x + y : x - y = p - q : p + q$$

$$7 : -1 = -2 : 14$$

$$7 : -1 = -1 : 7$$

Hence 1,2 and 3 will be correct

Hence option (a) is correct.

7. Which of the following Indian mathematicians are known as founders of numerical analysis?

- (i) Ramanujan (ii) Bhaskaracharya
(iii) Varahmihir (iv) Aryabhata

Choose the correct option

- (a) (i) and (iv) (b) (i) and (iii)
(c) (ii) and (iv) (d) (ii) and (iii)

Ans. (b) : Srinivasa Ramanujan's Contribution of Mathematical theories such as analytical theory of numbers elliptic functions, continued fractions and infinite series is considered remarkable in the world of mathematics. His theories have contributed to changing the mathematics of the 21st century. Varahamihira developed the algebraic properties of zero and trinegative numbers under numerical analysis. He was one of the first mathematicians to discover a different form of pascal's triangle. It was used to calculate binomial coefficients.

8. Which of the following statement (s) is/are true about numbers?

1. All positive integers are whole numbers.
2. All whole numbers are integers.
3. All rational numbers are real numbers.
4. All irrational numbers are real numbers.

Choose the correct option :

- (a) 1 and 4 (b) only 2
(c) only 3 (d) 2, 3 and 4

Ans. (*) : Whole number are the set of real numbers that includes zero and all positive counting numbers whereas, fraction includes negative integers, fraction and decimals. The following statement are true about numbers.

- All positive integers are whole numbers.
- All whole numbers are integers.
- All rational numbers are real numbers.
- All irrational numbers are real numbers.

Hence all options are correct.

9. The main approach suggested by National Curriculum Framework (NCF) 2005 in teaching learning of mathematics is :

- (a) Constructivism (b) Instructivism
(c) Pragmatism (d) Behaviourism

Ans. (a) : The main approach suggested by National curriculum framework (NCF) 2005 in teaching learning of mathematic is constructivism.

Jean Piaget is known as one of the first theorists in constructivism. His theories indicates that humans create knowledge through the interaction between their experiences and ideas.

Hence option (a) is correct.

10. Students in a class are solving questions based on percentage discounts. One question requires the students to calculate the cost of two bikes, with a 8% discount on each bike. One of the groups calculates the total cost of the bikes and then deducts 16% from the total cost. The method used by this group is:

- (a) False, since they have deducted 16% from the total instead of 16% from the average of the total
(b) Correct and is the only way to calculate the discount and cost.
(c) An alternate strategy to solve the question.
(d) False, since they have deducted 16% discount from the total instead of 8%

Ans. (d) : Students in a class are solving questions based on percentage discounts. One question requires the students to calculate the cost of two bikes, with a 8% discount on each bike. One of the groups calculates the total cost of the bikes and then deducts 16% from the total cost. The method used by this group is false, since they have deducted 16% discount from the total instead of 8%.

Hence option (d) is corret.

11. While teaching equations a teacher explains the concept of a linear equation having unique solution. She further asks, "If a solution is given then how many equations you can create"?

Choose the correct option :

- (a) Two equations (b) One equation
(c) No equation (d) Many equations

Ans. (d) : A linear equation has a unique solution when both equations refer to the same line, suggesting that there are an infinite number of solutions. In most cases, a system of linear equations has only one solution, but it may have no solutions (parallel lines) or infinite solutions (same line).

Therefore, the answer to the question asked by the teacher will be many infinite equations.

Hence, option (d) is correct.

12. Two columns are given as shown below :

Column-I	Column-II
(a) face of a black-board	(i) two end points
(b) a line has	(ii) one end point
(c) a ray has	(iii) represents a part of a plane
(d) a line segment has	(iv) no definite length

Column - I and II are matched as :

- (a) (a)-(i), (b)-(iii), (c)-(iv), (d)-(ii)
 (b) (a)-(ii), (b)-(iii), (c)-(i), (d)-(iv)
 (c) (a)-(iii), (b)-(ii), (c)-(i), (d)-(iv)
 (d) (a)-(iii), (b)-(iv), (c)-(ii), (d)-(i)

Ans. (d) : The correct match of given column I and column II .

Column - I	Column - II
(a) face of a black - board	(iii) represent a part of a plane
(b) a line has	(iv) no definite length
(c) a ray has	(ii) one end point
(d) a line segment has	(i) two end points

Hence, option (d) is the correct matching sequence.

13. If $(7 * 2) \times (123) = 92496$, then value of * is:

- (a) 5 (b) 2
 (c) 1 (d) 4

Ans. (a) : Given

$$(7 * 2) \times (123) = 92496$$

from option (a)

$$752 \times 123 = 92496$$

$$92496 = 92496$$

Hence option (a) is correct.

14. Saumya joined her job on 13-01-1992 and she took retirement on 31-03-2023. Duration of her service was :

- (a) 31 years 2 months and 18 days
 (b) 30 years 10 months and 19 days
 (c) 30 years 9 months and 18 days
 (d) 31 years 2 months and 19 days

Ans. (a) : Starting day of saumya's job = 13-01-1992

Retirement day of saumya = 31-03-2023

Job period = Retirement day – Joining day

D	M	Y
31	03	2023
-13	01	1992
18	02	0031

When we count ending point of both days + 1
 $= 18 + 1 = 19$ days

or

Simply –

13,	14,	15,	16,	17
18,	19,	20,	21,	22
23,	24,	25,	26,	27
28,	29,	30,	31	

= 19 days

Hence 31 years 2 months and 19 days of her service was.

15. In order to identify individual differences of students in the mathematics class, which of the following assessment technique will not be appropriate?

- (a) Peer assessment
 (b) Summative assessment
 (c) Formative assessment
 (d) Diagnostic assessment

Ans. (b) : Summative assessment technique will not be suitable for identifying individual differences among students in mathematics class. The goal of summative assessment is to evaluate student learning by comparing it to some standard at the end of an instructional unit.

Hence, option (b) is correct.

16. Which among the following is/are true about the computation in basic operations for Grade-II learners?

- (1) It involves child's ability to develop informal strategies.
 (2) It involves child's ability to estimate.
 (3) It involves child's ability to do calculations with large numbers.

Choose the correct option :

- (a) (1) and (2) (b) Only (3)
 (c) (2) and (3) (d) (1) and (3)

Ans. (a) : Computation is one of the basic operations used to calculate values. Operational computations include addition, subtraction, multiplication and division.

- Basic operations for computations for Grade - II learners :
- (a) It involves child's ability to develop informal strategies.
 (b) It involves child's ability to estimate.

Hence, option (a) is correct.

17. In a mathematics class a teacher explains the concept of different angles. He/she realizes that scissors is a best example to explain _____.

- (1) Vertically opposite angles
 (2) Linear pair of angles
 (3) Corresponding angles
 (4) Alternate angles

Choose the correct option

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

Ans. (b) : Scissors have two blades which rotate around a point. When the blades are opened, they form an angle at the pivot point. The angles formed by the blades represent vertical angles. The angles formed on opposite sides of the intersection of the blades represent a 'linear pair of angles.'

Hence, option (b) is correct.

18. $1233210 \div 5555 - 222$ is equal to:

- (a) 3 (b) 1
(c) 0 (d) 2

Ans. (c) :

$$1233210 \div 5555 - 222$$

$$222 - 222 = 0$$

Hence option (c) is correct

19. Arrangement of fractions $\frac{1}{9}, \frac{1}{21}, \frac{3}{7}, \frac{12}{63}$ in decreasing order is :

- (a) $\frac{1}{9}, \frac{12}{63}, \frac{3}{7}, \frac{1}{21}$ (b) $\frac{3}{7}, \frac{1}{9}, \frac{12}{63}, \frac{1}{21}$
(c) $\frac{3}{7}, \frac{12}{63}, \frac{1}{9}, \frac{1}{21}$ (d) $\frac{12}{63}, \frac{3}{7}, \frac{1}{21}, \frac{1}{9}$

Ans. (c) : Given fraction

$$\frac{1}{9}, \frac{1}{21}, \frac{3}{7}, \frac{12}{63}$$

Making denominator equal

$$\frac{7}{63}, \frac{3}{63}, \frac{27}{63}, \frac{12}{63}$$

$$\begin{aligned} \text{Decreasing order } \frac{27}{63} &> \frac{12}{63} > \frac{7}{63} > \frac{3}{63} \\ &= \frac{3}{7} > \frac{12}{63} > \frac{1}{9} > \frac{1}{21} \end{aligned}$$

Hence option (c) correct

20. One egg has a mass of about 65g, what is the mass of 2 dozen eggs?

- (a) 1 kg 544g (b) 1.56 kg
(c) 1 kg 56g (d) 1.304 kg

Ans. (b) : According to question,

Given,

$$\text{mass of 1 egg} = 65\text{g.}$$

$$\text{mass of 24 egg} = 65\text{g} \times 24$$

$$= 1560\text{g.}$$

$$= 1.56 \text{ kg.}$$

Hence option (b) is correct.

21. Which of the following represents the features of a mathematics laboratory?

- (1) It is a place to enjoy mathematics through informal exploration.
(2) It provides opportunities to prove mathematical theorems through experiments.
(3) It provides opportunity to make conjectures, test them and to generalise observed patterns.
(4) It is used to assess students' knowledge of mathematics and grade them accordingly.

Choose the correct option.

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

Ans. (c) : Mathematics laboratory refers to place where students can perform experiments and explore structures and ideas.

* These provide opportunities of learners to experiment and explore mathematics.

* This is a place to enjoy mathematics through informal exploration.

* It provides opportunities to formulate conjectures, test them and to generalize observed patterns.

22. National Curriculum Framework For Foundational Stage (NCFFS), 2022 highlighted the importance of the following components while teaching an abstract mathematical concept :

- (1) Written Symbols (2) Experience
(3) Spoken Language (4) Picture

Which of the following is the appropriate sequence of these components while teaching an abstract mathematical concept?

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

Ans. (a) : National curriculum framework for foundational stage (NCF FS) 2022 highlighted the importance of the following components while teaching an abstract mathematical concepts-

- (2) E → Experience (3) L → Spoken Language
(4) P → Pictures (1) S → Written symbols

Hence option (a) is in the correct order.

23. Raju has turpentine oil in 5 containers each of 20 L size. He fills them in 10 cans of 5L, 10 cans of 2 L and rest in 1 L cans. Number of 1 L cans filled is :

- (a) 28 (b) 25 (c) 30 (d) 22

Ans. (c) :

$$\begin{aligned} \text{Total quantity of Turpentine Raju have} &= 20\text{L} \times 5 \\ &= 100\text{L} \end{aligned}$$

$$\text{Total Turpentine in 10 container of 5L} = 50\text{L}$$

Total Turpentine in 10 container of 2L = $2 \times 10 = 20L$
 Total remaining turpentine = $100L - 70L = 30L$
 1L container = $\frac{30}{1} = 30$ container
 Hence option (c) is correct.

24. Which of the following learning experiences for children does not reflect the contribution of mathematics to everyday life and society?

- (a) Play small group games that draw on mathematical skills and concepts.
- (b) Communication of mathematical ideas in writing using both formal and informal languages.
- (c) Meeting people from different areas of employment and exploring how they use mathematics in their work.
- (d) Collecting, organising, representing and interpreting data in day-today life.

Ans. (*) : According to final answer key of board, bonus mark given to all. Because it translation form of answers will not match or appropriate to accurate answer.

25. 22 hm 8 dam is equal to :

- (a) 22080 m
- (b) 22800 m
- (c) 2208 m
- (d) 2280 m

Ans. (d) : Given,
 22 hm 8 dam
 $1 \text{ hm} = 100\text{m}$
 $1 \text{ dm} = 10\text{m}$
 $22 \times 100\text{m} + 8 \times 10\text{m}$
 $= 2280 \text{ m}$

26. A mathematics teacher discusses the concept of open and closed curve in class. For better understanding of students she gave an example with four points. If the curve is open then nature of four points is :

- (a) Three of them must be non-collinear
- (b) All are collinear
- (c) Two of them must be collinear
- (d) Three of them must be collinear

Ans. (b) : A mathematics teacher discusses the concept of open and closed curve in the class. She gives an example with four points for better understanding of the students. If the curve is open then the positions of the four points should all be collinear.
 Hence, option (b) is correct.

27. Two angles of a triangle are 50° and 30° . Then the third angle of the triangle is :

- (a) 80°
- (b) 100°
- (c) 40°
- (d) 60°

Ans. (b) : Given, Two angles $50^\circ, 30^\circ$
 Sum of three angles of triangles = 180°
 Third angle = $180^\circ - (50 + 30) = 100^\circ$
 Hence option (b) is correct.

28. Which of the following are correct example of the statement "mathematics is hierarchical in levels that are logically structured".

- (1) The concept of integers needs to be developed before the concept of multiplication and division of numbers.
- (2) Multiplication follows and builds on the concept of addition.
- (3) Number sense needs to be developed before the concepts of addition and subtraction

Choose the correct option :

- (a) Only (2)
- (b) (1) and (2)
- (c) (2) and (3)
- (d) (1) and (3)

Ans. (c) : Mathematical concepts are hierarchical, meaning they build on practical and conceptual knowledge from one grade to the next they are taught in a predetermined order like arithmetic first, then algebra, trigonometry and calculus.

Multiplication follows and develop on the concept of addition.

- Number sense needs to be developed before the concepts of addition and subtraction.

Hence, option (c) is correct.

29. The difference between the greatest and smallest 6 digit numbers formed by using the digits 5, 1, 0, 3, 9 and 6 is :

- (a) 851731
- (b) 861741
- (c) 862731
- (d) 951741

Ans. (b) : According to question,,

Greatest 6 digit number formed by given number = 965310

Smallest 6 digit number formed by given number = 103569

difference = 861741

Hence option (b) is correct.

30. The missing number (?) in the following :

43, 47, 53, 59, ?, 67, 71, 73 is :

- (a) 65
- (b) 61
- (c) 60
- (d) 63

Ans. (b) : Given series
 43, 47, 53, 59, 61, 67, 71, 73
 All are prime numbers.

Central Teacher Eligibility Test (CTET) Jan 2024

Primary Level (Class I-V)

Solved Paper with Explanation

(Exam Date : 21.01.2024)

MATHEMATICS

1. Which of the following should be the characteristics of mathematical language at primary level.

- (A) It should be precise.
 (B) It must be ambiguous as it can add openness in the subject.
 (C) It should be reinforced through child's language used in everyday life.
 (D) It must be highly technical as it will help students to communicate accurately in mathematics.
- (a) (a) and (d) (b) (a), (b) and (c)
 (c) (a) and (c) (d) (a), (c) and (d)

Ans. (c) : Mathematical language at the primary stage should have the following characteristics -

- (1) It should be precise.
 (2) It should be reinforced through the child's language used in everyday life.
 (3) Should be simple, clear and accurate.
 (4) It should not be too dense and large.
 (5) Concepts, relationships and procedures should be expressed in a clear and unambiguous manner.

2. A student of class III solved 26×5 as :

$$\begin{array}{r} 26 \\ \times 5 \\ \hline 1030 \end{array}$$

Revisiting which of the following will best remediate this misconception?

- (a) Multiplication of one digit by one digit
 (b) Concept of regrouping
 (c) Recalling multiplication tables
 (d) One to one correspondence

Ans. (b) : Misconception refers to the gap in children's knowledge. If they are not addressed properly, can build over time. Here in the given question, concept of regrouping will be best remediate this misconception.

3. A number becomes double if it is increased by 8. What is the number?

- (a) 6 (b) 8
 (c) 12 (d) 16

Ans. (b) : Let the number be = x

According to the question-

$$x + 8 = 2x$$

$$2x - x = 8$$

$$x = 8$$

Hence the number is 8.

4. One millimeter is the same as :

- (a) 0.01 cm (b) 0.1 cm
 (c) 0.01 m (d) 0.1 m

Ans. (b) : 1 millimeter = $\frac{1}{10}$ cm
 = 0.1 cm

5. A _____ is always a regular polygon.

- (a) Isosceles triangle
 (b) Square
 (c) Pentagon
 (d) Circle

Ans. (b) : A square is always a regular Polygon.

6. The sum of all angles of a triangle is :

- (a) 60° (b) 90°
 (c) 180° (d) 360°

Ans. (c) : The sum of all the angles of a triangle is 180° .

7. Which of the following is/are related to early number concept formation?

- (A) One to one correspondence
 (B) Hierarchical inclusion
 (C) Basic operations

Choose the correct option :

- (a) Only (a) (b) (a) and (c)
 (c) (a) and (b) (d) (b) and (c)

Ans. (c) : One to one correspondence and hierarchical inclusion are related to early number concept formation. Early numeracy provides an essential foundation for learning basic arithmetic. It includes the following.

- (1) Classroom Inclusion (2) Mental arithmetic
 (3) Learning early numbers (4) Number acquisition
 (5) Place counting

8. Which of the following statements is/are most appropriate for the idea of cognitive conflict in teaching mathematics?

- (A) Thoughtful efforts of a teacher to expose children to cognitive conflict can enhance their mathematical understanding.
 (B) It is not useful for promoting mathematical understanding in children.
 (C) Children get confused so cognitive conflict must be avoided.

Choose the correct option :

- (a) (b) and (c) (b) (a) and (c)
 (c) Only (a) (d) Only (c)

Ans. (c) : During Mathematics learning, cognitive conflict occurs when students have a preconceived idea about how a mathematical problem should be solved which differs from the way it is being solved.

Thoughtful efforts of a teacher to expose children to cognitive conflict can enhance their mathematical understanding is most appropriate for the idea of cognitive conflict in teaching mathematics.

9. Which aspect of evaluation is used when a teacher ensures that test made by her fulfils the objectives and criteria of that test?

- (a) Validity (b) Practicality
(c) Reliability (d) Consistency

Ans. (a) : Validity of evaluation is used when a teacher ensures that test made by her fulfils the objectives and criteria of that test. Validity is the accuracy with which a method measures what it is intended to measure is referred to as its validity. Thus validity aspect is used when a teacher ensures that the learner completes an exercise of mathematics.

10. What should be subtracted from the sum of 9909, 9099 and 9009 to obtain 25454?

- (a) 2356 (b) 2365
(c) 2536 (d) 2563

Ans. (d) : Sum = 9909 + 9099 + 9009
= 28017

The number to be subtracted to get 25454
= 28017 - 25454
= 2563

11. Which of the following statements is correct?

- (a) 1 is a prime number
(b) 1 is a composite number
(c) 1 is both, a prime and a composite number
(d) 1 is neither prime nor a composite number

Ans. (d) : 1 is Neither prime nor a composite Number.

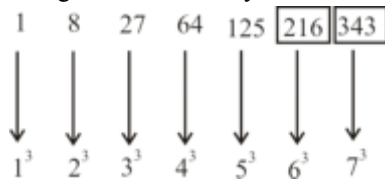
12. See the number pattern given below :

1, 8, 27, 64, 125, _____, _____

What will be the next two terms?

- (a) 256 and 289 (b) 216 and 289
(c) 256 and 343 (d) 216 and 343

Ans. (d) : The given series is as follows-



Hence the next two terms will be 216 and 343.

13. Which of the following statement is least appropriate for encouraging mathematical learning?

- (a) Failure does not imply that students cannot do mathematics.
(b) Everyone can learn mathematics.
(c) Mathematics learning is not gender specific.
(d) Discourage intuition as it hampers the development of mathematical ideas.

Ans. (d) : Discourage intuition as it hampers the development of mathematical ideas is least appropriate for encouraging mathematical learning.

There are some following points to encourage mathematical communication in the classroom.

- * Enhancing mathematical understanding.
- * Making learners able to assimilate mathematical terms.
- * Developing the ability to recognize the patterns of mathematical thought.

Enabling learners to express mathematical thoughts and ideas.

14. The value of $25.3 \times 5 - 35 \div 5 - 3 \times 18.5$ is :

- (a) 283.05 (b) 64.0
(c) 95.0 (d) -26.5

Ans. (b) :

$$25.3 \times 5 - 35 \div 5 - 3 \times 18.5$$

$$= 126.5 - 7 - 55.5$$

$$= 64$$

15. According to National Education Policy (NEP) 2020, assessment of learners include :

- (a) Cognitive and physical domains
(b) Cognitive, affective and psychomotor domains.
(c) Cognitive, social and spiritual domains.
(d) Physical and psychological domains.

Ans. (b) : According to the National Education Policy 2020 learners assessment include cognitive, affective and psychomotor domain.

According to the National Education Policy 2020.

1. It emphasizes on overall development of students.
2. Emphasizes conceptual understanding instead of rote learning.
3. Promotes self-assessment and peer assessment.

16. A frog jumps 3 steps and a rabbit jumps 7 steps at a time starting from a place O. At which of the following steps, they both will be jumping together?

- (a) 343 (b) 371
(c) 378 (d) 354

Ans. (c) : Frog jumps = 3 steps

Rabbit jumps = 7 steps

$$\text{LCM} = 3 \times 7 = 21$$

378 which is divisible by 21.

Hence both of them will jump together at the 378 step.

17. The number of degrees in $2\frac{2}{3}$ right angles is :

- (a) 210 (b) 285
(c) 240 (d) 330

Ans. (c) : The number of degrees in $2\frac{2}{3}$ right angles.

$$= \frac{8}{3} \times 90^\circ = 8 \times 30^\circ = 240^\circ$$

18. Which one of the following costs least?

- (a) 75 packets of ₹750 each
(b) 750 packets of ₹7.50 each
(c) 7.5 dozen items of ₹750 each item.
(d) 75 dozen items of ₹7.50 each item.

Ans. (b): From option (a)-

$$\text{cost} = 750 \times 75 = 56250$$

from option (b),

$$\text{cost} = 7.50 \times 750 = 5625$$

from option (c)

$$\text{cost} = 750 \times 7.5 \times 12 = 67500$$

from option (d)

$$\begin{aligned}\text{cost} &= 7.50 \times 75 \times 12 \\ &= 6750\end{aligned}$$

Hence option (b) has the least cost.

19. National Education Policy (NEP) - 2020 talks about "Knowledge of India". Which of the following are not included in it?

- Knowledge from ancient India and its contributions to modern India.
- Tribal knowledge, indigenous and traditional ways of learning as part of various subjects like Mathematics, Astronomy, Medicine, Agriculture etc.
- Field visits to different states as part of cultural exchange programmes.
- Formal examination to assess the knowledge gained by the students.

Ans. (d) : Formal examinations to assess the growth in knowledge of students are not included in the NEP 2020, while the knowledge of ancient India and its contribution towards modern India is included in the learning of tribal knowledge as a part of various subjects like mathematics, astronomy, medicine, agriculture etc. Visiting various states as part of indigenous and traditional methods exchange programs are included in NEP 2020.

20. Which of the following model is least appropriate to develop the conceptual understanding regarding the relationships of ones, tens and hundreds in early grade learners?

- Dienes blocks
- Money
- Abacus
- Place value chart

Ans. (d) : The place value chart model is least suitable for developing conceptual understanding of the relationship between units, tens and hundreds in early grade learners. One of the many materials used in teaching mathematics to young children is units, tens and hundreds and deans blocks, currency and counting models are suitable for developing conceptual understanding about the relationship of hundreds.

21. Brij had a wire of length 100 metres to cover the land of his choice. He wanted to take the biggest land. Which of the following measurements should he choose to take the biggest area?

- $15 \text{ m} \times 35 \text{ m}$
- $30 \text{ m} \times 20 \text{ m}$
- $25 \text{ m} \times 25 \text{ m}$
- $5 \text{ m} \times 45 \text{ m}$

Ans. (c) : Length of wire to cover the land = 100 meter

If the fence is square,

$$4 \times \text{side} = 100$$

$$\text{side} = 25$$

$$\text{Area of land} = 25\text{m} \times 25\text{m}$$

22. Which of the following is not true about 'multiplicity of approaches' in teaching mathematics?

- Very often, there are many ways of solving a problem.
- It hampers the learning of child as it leads to confusion.
- Offering such a choice allows children to explore and use the approach that is most natural and easy for them.
- It is crucial for liberating school mathematics from the tyranny of the one correct answer.

Ans. (b) : The following statements are true for different types of methods in teaching mathematics :

- It often happens that there are many way to solve a problem.
- It enhances childrens learning as it does not to confusions.
- Have the opportunity to explore and use approaches that are natural and easy for them.
- To break free from the tradition of there being only one right answer.
- This develops children's understanding.

23. Which of the following statement is most appropriate?

- Mathematics lab is essential as it provides opportunities for hands on activities for students.
- Charts are used in mathematics class as an effective teaching-learning material.
- Use of teaching-learning material in mathematics class consume students' time for practice.
- Students do not enjoy riddles in mathematics class.

Ans. (a) : Mathematics labs are necessary because the provde opportunities for hands-on activities to the students. The statements are most appropriate. Activity based learning : processes like making observations, collecting data, classifying, analyzing, formulating hypothesis, interpreting and reaching conclusion to establish objective truth are suitable for teaching and learning mathematics.

24. How many packets of $\frac{1}{12}$ kg salt can be made

from $7\frac{1}{2}$ kg of salt?

- 45
- 60
- 72
- 90

Ans. (d) : Total salt = $7\frac{1}{2}$ kg = $\frac{15}{2}$ kg

$$1 \text{ packet salt} = \frac{1}{12} \text{ kg}$$

$$\text{Number of packets} = \frac{\text{Total salt}}{\text{One packet salt}}$$

$$= \frac{15}{2} \times \frac{12}{1} = 90$$

25. While solving $\frac{-67}{-}$ in class II, a teacher

explained that we have to subtract 7 from 2 and 2 is smaller than 7. So we will borrow one from 8 and then we can subtract 7 from 12. One student told teacher: Man! why we are borrowing from eight, as borrowing is not good. What a teacher should do in such a situation?

- Teacher should scold the student and make him sit.
- Teacher should change the word 'borrowing' to 'regrouping' and then show the process of regrouping.
- Teacher should tell the student to focus on learning the algorithm of subtraction
- Teacher should ignore the student's question and continue with her work.

Ans. (b) : In the above situation the teacher should replace the word 'borrow' with 'regrouping' and show the process of regrouping.

Regrouping - Regrouping is known as carryover. Regrouping is a method of addition and subtraction that combines numbers in to group of tens. This makes solving problems more understandable and easir for young children.

26. Yamina threw a die 10 times and got the following results :

5, 3, 6, 6, 1, 4, 5, 3, 3, 2

Which of the following numbers she got the maximum number of times?

- 6
- 3
- 1
- 5

Ans. (b) : Result = 5, 3, 6, 6, 1, 4, 5, 3, 3, 2

The number, she get the maximum number of times = 3

27. Which of the following is true for word problems in school mathematics?

- Word problems refer to exercies where the child formalises the situation into a form where a specific mathematical technique can be applied.
- Word problems are not examples of mathematical modelling.
- Word problems are important in secondary classes only.
- Word problems focus more on procedural knowldege in mathematics.

Ans. (a) : Statement with reference to word problems in school mathematics, word problems refer to those exercises where the child gives a formal form to the situation in which mathematical. The technology can be implemented correctly. Word questions are verbal descriptions of a problem situation in which one or more questions are abet, the answers to which can be obtained using mathematical operations using numerical data information available in the text.

28. The parcel sending rates are given below :
Parcel weighing (50 grams or less) : ₹15.00
parcel weighing (for every additional 50 grams) : ₹7.00
Meena wants to sent a parcel to her friend Charu in Delhi. The parcel weighs 350 g. Look at the charges and select the correct cost of sending the parcel :

- ₹42
- ₹50
- ₹55
- ₹57

Ans. (d) : Weight of parcel (50 grames or less) = ₹15

For additional 50 grames = ₹ 7

Amount for 350 gm parcel

= 50 + 300

= (50 × 50 × 6) ग्राम

= (15 + 7 × 6)

= ₹57

29. Which of the following is most appropriate to introduce 'Data Handling' at primary stage?

- Asking the students to read time tables of bus and train timings.
- Within classroom, collecting statistics of students' height; favourite food; colour; cartoon etc. and asking questions related to data.
- Showing population census of a city for five years and asking students to compare population growth.
- Drawing a bar graph on the blackboard and asking students to read the data from it.

Ans. (b) : To introduce 'data management' at the primary level, it is most appropriate to collect data in the class on the height of the students, their favorite food, colours. Cartoons etc and ask questions based on the data. Some specific questions related to data are addressed in data management. It involves presenting a systematic collection of data and interpreting it with a view to find the answer.

30. According to National Curriculum Framework, 2005, which of the following processes are least relevant in a primary mathematics classroom?

- Memorising formulae
- Use of patterns
- Visualization
- Making connections and representations

Ans. (a) : According to the National curriculum frame work 2005, the process of memorizing formulas is the least relevant in a primary mathematics class.

According to the National curriculum frame work 2005 the following processes are relevant in a primary mathematics classroom -

- Using patterns
- Visualization
- Establishing and formulating relationships.
- Teaching through tangible objects and visual process.
- Mathematics should be made relevant with the help of examples from daily life.

Central Teacher Eligibility Test (CTET) 2023

Primary Level (Class I-V)

Solved Paper with Explanation

(Exam Date : 20.08.2023)

MATHEMATICS

1. Which one of the following groups have all 3-dimensional shapes?

- (a) Cube, Cuboid, Sphere, Cylinder
- (b) Cube, Cuboid, Semi-circle, Cone
- (c) Cube, Cuboid, Circle, Cone
- (d) Cube, Cuboid, Circle, Triangle

Ans. (a) : Cube, Cuboid, Sphere and Cylinder are all three dimensional figure, whereas Semi Circle, Cone, Triangle, these are two dimensional figure.

2. Which of the following statements is not true?

- (a) A parallelogram becomes a rectangle if all its angles are equal
- (b) A kite becomes a rectangle if its opposite angles are equal
- (c) A rectangle becomes a square if all its sides are equal
- (d) A rhombus becomes a square if all its angles are equal

Ans. (b) : We know that if all the angle of a parallelogram are equal then it becomes a rectangle. If all the side of rectangles are equal then it becomes a square. If all the angles of a rhombus are equal, then it becomes a square. but is the opposite angle of kite are equal, then it does not become a rectangle. hence statement (b) is not correct.

3. Read the following table:

Blood Group	-	Number of students
A	-	9
B	-	6
O	-	12
AB	-	3
Total	-	30

What is the ratio of the most common and rarest blood groups?

- (a) 3:1
- (b) 1:4
- (c) 1:3
- (d) 4:1

Ans. (d) : Most common blood group (O) = 12
Most rarest blood group (AB) = 3

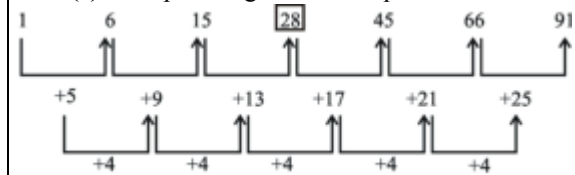
Hence required ratio = $\frac{12}{3}$
= 4:1

4. What is the missing number in the pattern given below?

1, 6, 15, _____, 45, 66, 91

- (a) 25
- (b) 36
- (c) 28
- (d) 32

Ans. (c) : The pattern given in the question is as follows-



Hence, '28' will be the required answer.

5. Ammini is arranging 36 identical squares in the form of different rectangles. How many different types of rectangles can she make these squares?

- (a) Six
- (b) Eight
- (c) Four
- (d) Five

Ans. (d) : Total number of identical squares = 36
hence the rectangles that can be made will be as follow.

$$1 \times 36, 2 \times 18, 3 \times 12, 4 \times 9, 6 \times 6$$

hence it is clear that different type of five rectangles can be made.

6. A whole number is added to 100 and the same number is subtracted from 100. The sum of the two resulting numbers so obtained is:

- (a) 100
- (b) 200
- (c) 0
- (d) 50

Ans. (b) : Let the whole number be 'x'

$$\begin{aligned} &\text{Required sum} \\ &= (100 + x) + (100 - x) \\ &= 100 + x + 100 - x \\ &= 200 \end{aligned}$$

7. The sum of $5 - 5 + 5 - 5 + 5 - 5 \dots\dots$, to odd number of terms is :

- (a) 5
- (b) 15
- (c) 0
- (d) -5

Ans. (a) : As per question, let the number of terms is 9 (odd)

$$\begin{aligned} &5 - 5 + 5 - 5 + 5 - 5 + 5 - 5 + 5 \\ &= 5 - 5 + 5 - 5 + 5 - 5 + 5 - 5 + 5 \\ &= 5 \end{aligned}$$

8. Which of the following arrangements represents a descending order of numbers?

- (a) 10.5, 1.50, 1.05, 1.055, 1.005, 0.155
- (b) 10.5, 1.50, 1.055, 1.05, 1.055, 0.155
- (c) 1.05, 1.005, 1.50, 1.055, 10.5, 0.155
- (d) 10.5, 1.05, 1.055, 1.50, 1.005, 0.155

Ans. (b) : $10.5 > 1.50 > 1.055 > 1.05 > 1.055 > 0.155$

Hence, option (b) represents descending order of the numbers.