

SUMMATIVE EVALUATION – 1
2026-2027
SUB: MATHEMATICS GRADE: 8 BLUE PRINT

i. Weightage to the content

Sr. No.	Chapter Name	Marks
1.	A Story of Numbers	07
2.	Number Play	10
3.	Quadrilaterals	07
4.	We distribute, yet things multiply	07
5.	A Square & a Cube	09
6.	Power Play	10

ii. Weightage to the cognitive level as per Revised Bloom’s Taxonomy

Bloom’s level	Marks	Percentage
Remember	5	10 %
Understand	10	20 %
Apply	10	20 %
Analyze	10	20 %
Evaluate	10	20 %
Create	5	10 %
Total	50	100 %

iii. Weightage to the difficulty level

Difficulty level	Marks	Percentage
Easy	15	30 %
Average	20	40 %
Difficult	15	30 %
Total	50	100 %

iv. Weightage to the question form

Question Form	Marks	Percentage	Suggested item
MCQ/VSA	20 (20×1)	40 %	Multiple-choice questions.
SA	12 (6×2)	24 %	Brief explanation, steps, inference or reason.
LA (long answer have been sub-divided into three sub- questions)	18 (6×3)	36 %	Case, passage, problem, data, judgment or creation.
Total	50	100 %	

v. Weightage to the assessment style

Assessment style	Marks	Percentage	Requirement
Competitive-style competency-based	25	50 %	All items should be mapped to CG/Competency and unfamiliar, integrative or high discrimination formats should be used.
Regular competency-	25	50 %	All items should be application-

based			oriented, age-appropriate and mapped to the assessed competency.
Total	50	100 %	

SAMPLE QUESTION PAPER

SUMMATIVE EVALUATION - 1
2026-2027

Grade 8-English Medium
Sub- Mathematics
No of Questions: 32

Marks- 50
Sub. Code- 8MATENG
Duration- 120 Mins

GENERAL INSTRUCTIONS:

1. All questions are compulsory.
2. The question paper contains 32 questions.
3. Q. 1 to Q. 20 are MCQ questions of 1 mark each and are to be marked on the OMR sheet.
4. Q. 21 to Q. 26 are small answer questions of 2 marks each.
5. Q. 27 to Q. 32 are large answer questions of 3 marks each.
6. Internal choice has been provided for one 2 mark and one 3 mark question.

Choose the most correct alternative from the given alternatives and write your responses in the OMR sheet provided to you. **(20 × 1 = 20)**

1. In the expression $7x + 5$, which number represents the coefficient of x ?
A. 5
B. -5
C. 7
D. -7
2. In the mathematical expression 1^{100} , what is number 1 called ?
A. Base
B. Exponents
C. Coefficient
D. Power
3. Which Hindu-Arabic numeral does this Mayan number represent?



- A. 10
 - B. 11
 - C. 12
 - D. 15
4. Asad writes the equation $T \div 9 = B$ to represent his packing, where T is the total packets and B is the number of boxes. If there are no packets left over. What does it tell us about the relationship of T and 9?
A. 9 is the factor of T
B. T is the factor of 9
C. B is always greater than T
D. T is a prime number
 5. Which of the following statements best explains why a collection of 468 tiles cannot be arranged to form a complete square?
A. It is an even number
B. A perfect square can never end in the digit 8
C. The number 468 is not divisible by 5
D. A complete square must always have an odd number of tiles

6. Meera uses a calculator to check different expressions. She wants to know which expression is equal to 7^8 .
- $7^3 \times 7^5$
 - $7^4 + 7^4$
 - $7^9 \div 7$
 - Both A and C
7. In the Egyptian number system, what number does the symbol represent ?
- 10^2
 - 10^3
 - 10^4
 - 10^5
8. The smallest natural number by which 32 must be multiplied to obtain a perfect cube is
- 2
 - 4
 - 8
 - 16
9. Pallavi builds a cube using 64 small blocks. Each edge of the cube has the same number of blocks, represented by a . If $a^3 = 64$, what is the value of a ?
- 2
 - 4
 - 8
 - 16
10. In a parallelogram shaped playground one of the corner angles measures 110° according to the properties of a parallelogram. What is the measure of the adjacent angle?
- 60°
 - 70°
 - 90
 - 180°
11. The Hindu representation of a number $2(5^2) + 2(5) + 4(5^0)$ is
- 54
 - 64
 - 74
 - 94
12. At a Goa village festival, the number of food items sold was recorded using the base 7 number system.
- Day 1: $4 \times 7^2 + 7^0$
- Day 2: $3 \times 7^2 + 5 \times 7^1$
- How many food items were sold on the first two days together in the decimal number system ?
- 378
 - 379

- C. 380
- D. 394

13. Express 7004000000 in the standard form.

- A. 7.4×10^9
- B. 0.7004×10^9
- C. 7.004×10^9
- D. 7×10^{-9}

14. Aman wants to write the number 45 as the sum of two consecutive natural numbers. Following the standard procedure which two consecutive numbers must he add together ?

- A. 22 and 23
- B. 20 and 25
- C. 21 and 24
- D. 44 and 1

15. Ashiyana says “ 24 is divisible by 6 because $6 \times 4 = 24$ ”. Her friend tries to generalize this and claims “If a number is divisible by 6, it must be divisible by 4.

Which of the following provides the best example to find the mistake in friend logic?

- A. 12 , because it is divisible by both 6 and 4
- B. 18, because it is divisible by 6 but not evenly by 4
- C. 30 , because it is a multiple of 10
- D. 24, because it is a prime number

16. A student says that $\sqrt[3]{0.008}$ is 2, because $2^3 = 8$. Why is the student incorrect?

- A. The decimal point was ignored
- B. The cube root of 8 is 0.2
- C. 0.008 is not a perfect cube
- D. Cube roots cannot be in decimals

17. A student simplified the expression $(x^3 \times x^{-5}) \times x^{-2}$ using the following steps

Step 1 : $x^{3+(-5)} \times x^{-2}$

Step 2 : $x^{-2} \times x^{-2}$

Step 3 : x^{-4}

Step 4 : $-x^{-4}$

At which step did the student make a critical error in applying negative exponent law?

- A. Step 1
- B. Step 3
- C. Step 4
- D. None of the above

18. A coded addition puzzle is shown below. If each letter represents a unique digit, what is the value of a and b?

$$\begin{array}{r} a 1 5 \\ + \underline{1 b a} \\ 9 1 2 \end{array}$$

- A. a=2,b=3
- B. a=7,b=9
- C. a=9,b=7
- D. a=3,b=2

19. Which of the following numbers have 4 in the units place ?

- A. 26^2
- B. 22^3
- C. 26^3
- D. 22^2

20. Evaluate $(5^0 - 3^0) \times 2^0$.

- A. 0
- B. 1
- C. 2
- D. 4

Attempt the following- **(6×2=12)**

21. A square floor tile has a side length of 98 cm. An interior designer wants to calculate the area of the tile. Find the area of the square tile by finding 98^2 using a suitable identity.

22. Warehouse stores 5^4 cartons, and each carton contains 5^3 packets of supplies. The packets are shared equally among 5^2 delivery trucks. Use the laws of exponents to simplify the expression

23. Consider a and b as initial numbers.A student claims that changing the numbers to (a+3) and (b−2) changes the product only by $ab+3a−2b−6$. Evaluate this claim by expanding the product and explaining whether the reasoning is correct.

24. If $121^2 = 14641$ then calculate 122^2 using the given information.

25. A student claims that the product of 198 and 202 can be found by calculating $200^2 - 2^2$.
Evaluate the student's claim. Justify your answer with suitable calculations.

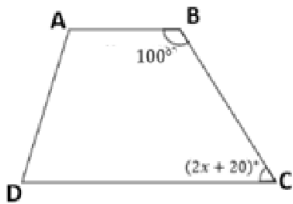
26. A bacterium doubles every hour. Create a mathematical expression to represent the number of bacteria after n hours. Hence, find the number of bacteria after 10 hours.

Attempt the following: (6 x 3 =18)

27. An architect is designing the side frame of a glass panel in the shape of a trapezium $ABCD$, where $AB \parallel DC$.

The angles are labeled as $\angle ABC = 100^\circ$ and $\angle BCD = (2x + 20)^\circ$. (3)

(a) Find the value of x



(b) Find $\angle BCD$

(c) State the property used to find the value of x

28. The students of Class 8 collected ₹1296 for the PM's Relief Fund. Each student donated an amount equal to the total number of students in the class. Analyse the given information to form an equation and find the number of students in the class. (3)

29. A library received 4620 books. The librarian wants to arrange them into equal groups of 3, 6, and 11. Use the divisibility rules for 3, 6, and 11 to explain whether 4620 can be arranged into equal groups of each size. Support your explanation with appropriate calculations. (3)

30. Design a 3 digit secret password system for a vault where the first digit must be 5 and entire number must fall between 500 to 600. Write any 4 clues for a user to crack the code based on the digital root 7. (3)

31. During a school visit to a history museum, Anil noticed that an ancient stone tablet had the number CCLXXVI carved on it. He became curious and wanted to understand how the same number would be represented in different number systems. (3)

- a) Help Anil to write CCLXXVI in the Hindu number system.
- b) Write the number obtained above in the Egyptian number system.
- c) Which number system is more suitable for performing basic calculations: Roman or Hindu?

OR

Amita and her father bought a teddy bear from a toy shop. Her father originally handed over Rs. DCCCLXXX but the shopkeeper gave them a discount of Rs.CXV.

- a) Represent both Roman numeral amount using Hindu-Arabic Numerals
- b) Calculate the final amount paid for the Teddy bear into Roman Numerals

THE END

ANSWER KEY

1	C	6	D	11	B	16	A
2	A	7	B	12	B	17	C
3	C	8	A	13	C	18	B
4	A	9	B	14	A	19	D
5	B	10	B	15	B	20	A

21	98^2 $= (100-2)^2$ $= 10000 - 400 + 4$ $= 9604$	 1 1
22	$(5^4 \times 5^3) \div 5^2$ $= 5^{4+3-2}$ $= 5^5$ $= 3125$	 Correct use of laws of exponents – 1 Final answer $5^5 = 3125$ – 1
23	$(a+3)(b-2) = ab - 2a + 3b - 6$ Student's claim: $ab + 3a - 2b - 6$ is incorrect .	 Correct expansion – 1 Correct evaluation with justification – 1

24 Given $121^2=14641$
 122^{nd} odd number = $2(122)-1$ ----- $1/2$ mk
 $=244-1=243$ ----- $1/2$ mk
 Therefore $122^2=14641+243$ ----- $1/2$ mk
 $=14884$ ----- $1/2$ mk

25 198×202
 $= (200-2)(200+2) \text{-----} 1/2 \text{ mk}$
 $= 200^2 - 2^2 \text{-----} 1/2 \text{ mk}$
 $= 40000 - 4$
 $= 39996 \text{-----} 1/2 \text{ mk}$
 Student's claim is **correct**.-----1/2mk

26	Expression:	2^n	1
	After 10 hours:	$2^{10} = 1024$	1

27

a. $(100)+(2x+20)=180$

$$5x + 120 = 180$$

$$5x = 180 - 120$$

$$x = 60/2$$

$x = 30$

1

b. $\angle BCD = 2(30) + 20 = 80^\circ$

c. Since $AB \parallel DC$, the $\angle B + \angle C = 180^\circ$

1

1

28

a. Since diagonals bisect each other,

$$20 = x + 7$$

$x = 13$

$and x + y = 16$

therefore $y = 3$

1

b. No, Since $AC=40$ and $BD=32$

$AC > BD$

1

Therefore,

$AO = 20, OC = 20$

$AC = 20 + 20 = 40$

$AC = 40$

1

The diagonals of a parallelogram bisect each other, so $AO = OC$.
Hence, the total length of diagonal AC is 40

29

Let number of students = x

Each student donated ₹ x

$$x^2 = 1296$$

$$x = 36$$

Formation of equation – 1

Solving – 1

Answer:36 students

Final answer – 1

30

• Divisible by 3

$4 + 6 + 2 + 0 = 12$, divisible by 3

• Divisible by 6

Even number and divisible by 3

• Divisible by 11

$(4 + 2) - (6 + 0) = 0$

Rule for 3 – 1

Rule for 6 – 1

Rule for 11 1

Hence **4620 is divisible by 3, 6 and 11.**

31

Any 6 clues for a user to crack the code based on digital root 7 can be given 3 marks

Clues -- 502,511,520,529,538,547,556,565,574,583,592 [any 2 right clues carry 1 mark]

32

Hindu number:

$CCLXXVI = 276$

1

(b) Egyptian number:



1

2 symbols for 100

7 symbols for 10

6 symbols for 1

(c) **Hindu number system** is more suitable for

1

calculations.

OR

DCCLXXX=780 -----1/2 mk

CXV=115-----1/2 mk

Final Amount =780-115=665-----1mk

In Roman Numerals DCLXV-----1mk

