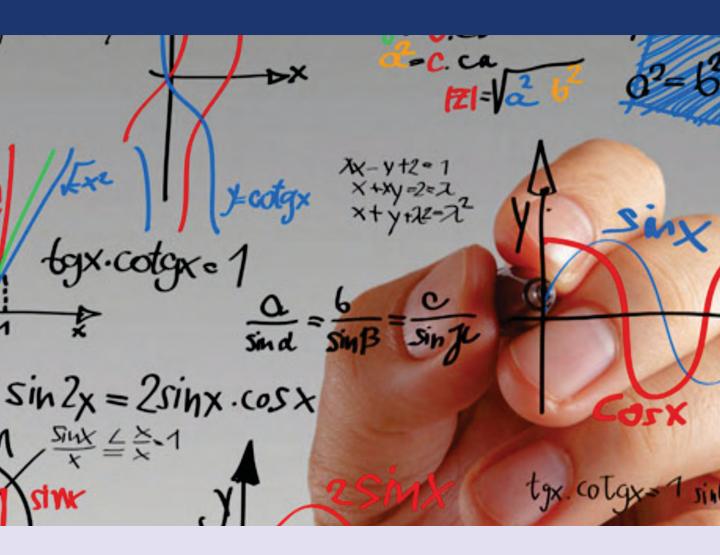# NATIONAL MATHEMATICS CONTEST
ADOLESCENTS (GRADE 9 & 10 / O-LEVELS)

NATIONAL MATHEMATICS CONTEST

ADOLESCENTS (GRADE 9 & 10 / O-LEVELS)

TIME ALLOWED : 90 MINUTES

MAXIMUM MARKS : 90

TOTAL QUESTIONS : 30 MCQS

INSTRUCTIONS

1. DON'T START ATTEMPTING THE PAPER UNTIL INSTRUCTED BY THE INVIGILATORS.
2. INSTRUCTIONS FROM THE EXAMINATION INVIGILATORS MUST BE CARRIED OUT PROMPTLY.
3. WRITE YOUR NAME, FATHER NAME, SCHOOL NAME, ADDRESS ETC AT THE BUBBLE SHEET ONLY.
4. RECORD ALL ANSWERS ON THE BUBBLE SHEET ONLY. SELECT BEST ANSWER FROM THE FOUR GIVEN OPTIONS AND MARK ONLY ONE OPTION IN EACH QUESTION.
5. USE BLUE / BLACK INK TO FILL UP THE CIRCLES FOR YOUR ANSWERS ON THE BUBBLE SHEET. USE OF LEAD PENCIL IS NOT ALLOWED.
6. USE OF ANY HELPING MATERIAL INCLUDING CELL PHONES AND ELECTRONIC DEVICES IS STRICTLY PROHIBITED.
7. EVERY CORRECT ANSWER EARNS THREE POINTS. THERE WOULD BE NEGATIVE MARKING. ONE POINT WOULD BE DEDUCTED FOR EVERY INCORRECT ANSWER.
8. CANDIDATES MAY NOT LEAVE THE EXAMINATION ROOM UNESCORTED FOR ANY REASON, AND THIS INCLUDES USING THE WASHROOM.
9. THERE ARE SIX CATEGORIES OF THE CONTEST AS UNDER:
   A.   TODDLERS (GRADE 1 & 2)
   B.   KIDS (GRADE 3 & 4)
   C.   JUNIORS (GRADE 5 & 6)
   D.   JUVENILES (GRADE 7 & 8)
   E.   ADOLESCENTS (GRADE 9 & 10 / O-LEVELS)
   F.   SENIORS (GRADE 11 & 12 / A-LEVELS)
10. ONLY REGISTERED STUDENTS CAN PARTICIPATE IN THE CONTEST.
11. NO CANDIDATE SHALL TAKE OUT OF THE HALL ANY ANSWER BOOK(S) OR PART OF AN ANSWER BOOK, WHETHER USED OR UNUSED, OR OTHER SUPPLIED MATERIAL.
12. IF A PARTICIPANT DOES NOT UNDERSTAND A WORD OR PHRASE ON THE EXAM PAPER, NEITHER EXAMINER NOR INVIGILATOR IS PERMITTED TO ANSWER.
13. FOR INFORMATION ABOUT UPCOMING CONTESTS OR PROVIDING VALUABLE FEEDBACK, PLEASE VISIT WWW.CATSCONTESTS.ORG
14. ANY ACADEMIC MISCONDUCT OR MALPRACTICE MUST BE REPORTED TO INTERNATIONAL CATS CONTESTS AT INFO@CATSCONTESTS.ORG

Q1. Mr. Thomas invested an amount of Rs. 13,900 divided in two different schemes A and B at the simple interest rate of 14% p.a. and 11% p.a. respectively. If the total amount of simple interest earned in 2 years be Rs. 3500, what was the amount invested in scheme B?

A Rs. 6400	**B** Rs. 6500	**C** Rs. 7200	**D** Rs. 7500

Q2. In a certain store, the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit?

A 30%	**B** 70%	**C** 100%	**D** 250%

Q3. A train running at the speed of 60 km/hr crosses a pole in 9 seconds. What is the length of the train?

A 120 meters	**B** 150 meters	**C** 180 meters	**D** 324 meters

Q4. From a point P on a level ground, the angle of elevation of the top tower is $30°$ if tower is 100 m high, the distance of point P from the foot of the tower is:

A 149 m	**B** 156 m	**C** 173 m	**D** 200 m

Q5. Two numbers A and B are such that the sum of 5% of A and 4% of B is two-third of the sum of 6% of A and 8% of B. Find the ratio of A : B.

A 1 : 1	**B** 2 : 3	**C** 3 : 4	**D** 4 : 3

Q6. *Today is Monday. After 61 days, it will be:*

| **A** Saturday | **B** Tuesday | **C** Wednesday | **D** Thursday |

Q7. *A family consists of two grandparents, two parents and three grandchildren. The average age of the grandparents is 67 years, that of the parents is 35 years and that of the grandchildren is 6 years. What is the average age of the family?*

| **A** $28\frac{4}{7}$ years | **B** $31\frac{5}{7}$ years | **C** $32\frac{1}{7}$ years | **D** None of these |

Q8. *A hall is 15 m long and 12 m broad. If the sum of the areas of the floor and the ceiling is equal to the sum of the areas of four walls, the volume of the hall is:*

| **A** $720\,m^3$ | **B** $900m^3$ | **C** $1200m^3$ | **D** $1800m^3$ |

Q9. *How many of the following numbers are divisible by 132 ?*
264, 396, 462, 792, 968,2178, 5184, 6336

| **A** 4 | **B** 5 | **C** 6 | **D** 7 |

Q10. *There are two examination rooms A and B. If 10 students are sent from A to B, then the number of students in each room is the same. If 20 candidates are sent from B to A, then the number of students in A is double the number of students in B. The number of students in room A is:*

| **A** 20 | **B** 80 | **C** 100 | **D** 200 |

Q11. If 7 spiders make 7 webs in 7 days, then 1 spider will make 1 web in how many days?

A	1	B	7	C	7/2	D	49

- -

Q12. A boat takes 90 minutes less to travel 36 miles downstream than to travel the same distance upstream. If the speed of the boat in still water is 10 mph, the speed of the stream is:

A	2 mph	B	2.5 mph	C	3 mph	D	4 mph

- -

Q13. Find the odd man out.
331, 482, 551, 263, 383, 362, 284

A	263	B	331	C	383	D	551

- -

Q14. A father said to his son, "I was as old as you are at the present at the time of your birth".If the father's age is 38 years now, the son's age five years back was:

A	14 years	B	19 years	C	33 years	D	38 years

- -

Q15. The angle between the minute hand and the hour hand of a clock when the time is 4:20, is:

A	0°	B	5°	C	10°	D	20°

Q16. *When 0.232323..... is converted into a fraction, then the result is:*

A	1/5	B	2/9	C	23/99	D	23/100

Q17. $\dfrac{(0.1667)(0.8333)(0.3333)}{(0.2222)(0.6667)(0.1250)}$ *is approximately equal to:*

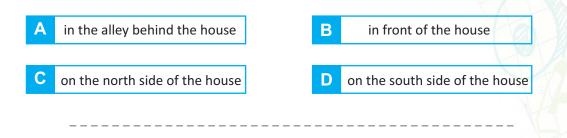| A	2	B	2.40	C	2.43	D	2.50

Q18. Tea worth Rs. 126 per kg and Rs. 135 per kg are mixed with a third variety in the ratio 1:1: 2. If the mixture is worth Rs. 153 per kg, the price of the third variety per kg will be:

A	Rs. 169.50	B	Rs. 170	C	Rs. 175.50	D	Rs. 180

Q19. *A can do a certain work in the same time in which B and C together can do it. If A and B together could do it in 10 days and C alone in 50 days, then B alone could do it in:*

A	15 days	B	20 days	C	25 days	D	30 days

Q20. B_2CD, _____, BCD_4, B_5CD, BC_6D

A	B_2C_2D	B	BC_3D	C	B_2C_3D	D	BCD_7

Q21. *A four person crew from Classic Colors is painting Mr. Field's house. Michael is painting the front of the house. Ross is in the alley behind the house painting the back. Jed is painting the window frames on the north side, Shawn is on the south. If Michael switches places with Jed. and Jed then switches places with Shawn, where is Shawn?*

A	in the alley behind the house	B	in front of the house
C	on the north side of the house	D	on the south side of the house

---

Q22. *In a four period Monday through Thursday each of the following temporary office worked only one day, each a different day. Ms. Johnson was scheduled to work on Monday, but she traded with Mr. Carter, who was originally scheduled to work on Wednesday. Ms. Falk traded with Mr. Kirk, who was originally scheduled to work on Thursday. After all the switching was done, who worked on Tuesday?*

A	Mr. Carter	B	Ms. Falk	C	Ms. Johnson	D	Mr. Kirk

Q23. *Look at this series: 80, 10, 70, 15, 60, ... What number should come next?*

A	20	B	25	C	30	D	50

Q24. *If one-third of one-fourth of a number is 15, then three-tenth of that number is:*

A	35	B	36	C	45	D	54

Q25. The difference between a two-digit number and the number obtained by interchanging the digits is 36. What is the difference between the sum and the difference of the digits of the number if the ratio between the digits of the number is 1 : 2?

A	4	B	8	C	16	D	None of these

Q26. A train can travel 50% faster than a car. Both start from point A at the same time and reach point B 75 kms away from A at the same time. On the way, however, the train lost about 12.5 minutes while stopping at the stations. The speed of the car is:

A	100 kmph	B	110 kmph	C	120 kmph	D	130 kmph

Q27. A vessel is filled with liquid. 3 parts of which are water and 5 parts syrup. How much of the mixture must be drawn off and replaced with water so that the mixture may be half water and half syrup?

A	$\frac{1}{3}$	B	$\frac{1}{4}$	C	$\frac{1}{5}$	D	$\frac{1}{7}$

Q28. Six bells commence tolling together and toll at intervals of 2, 4, 6, 8, 10 and 12 seconds respectively. In 30 minutes, how many times do they toll together?

A	4	B	10	C	15	D	16

Q29. *What least number must be added to 1056, so that the sum is completely divisible by 23 ?*

A	2	B	3	C	18	D	21

Q30. *(935421 x 625) = ?*

A	575648125	B	584638125	C	584649125	D	585628125