

TEST CODE :



NGSE

CLASS 6

Time :
90 Minutes

**National Genius Search
Examination® : Advanced**

Your NGSE Roll No. Date of the Test

Student's Name

Signature of the Student	Signature of the Invigilator Check the correctness of the Roll No. with the Answer Sheet.
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INSTRUCTIONS TO THE CANDIDATE

- 1. DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO.**
- Fill and sign this Question Booklet. Fill the information required in first page of the Answer Booklet. Start your answers from the third page of the Answer Sheet. Do not write answers on the second page of the Answer Sheet, which is kept blank. You may carry this booklet with you after the scheduled time of the test.
- Do not seek clarification on any item in the test booklet from anyone including the test invigilator or the center supervisor. Use your best judgement.
- This booklet consists of two sections as given below :
SECTION-1: MATHEMATICS – 5 Questions and **SECTION - 2: SCIENCE – 5 Questions.** In case of any problem with your test booklet, inform the invigilator immediately. You will be provided with a replacement.
- Use black/blue ball point pen only for writing the answers.
- Use of mathematical instruments/compass box is allowed. Standalone calculators are also allowed.
- All questions are compulsory. Each question carries 10 marks. Negative marks are not awarded.
- Each answer should not be more than 150 words. You may demand additional Answer sheets if required.
- Staple all the answer sheets together, page wise.
- Failure to follow instructions and examination norms will lead to disqualification.

PLEASE WAIT FOR THE SIGNAL TO OPEN THE TEST BOOKLET

Open from this side →

SECTION – 1: MATHEMATICS

1. Following table shows the monthly expenditure of Imran's family on various items.

Items	Expenditure (in Rs)
House rent	3000
Food	3400
Education	800
Electricity	400
Transport	600
Miscellaneous	1200

To represent this data in the form of a bar diagram, here are the steps.

- Draw two perpendicular lines, one vertical and one horizontal.
- Along the horizontal line, mark the 'items' and along the vertical line, mark the corresponding expenditure.
- Take bars of same width keeping uniform gap between them.
- Choose suitable scale along the vertical line. Let 1 unit length = Rs 200 and then mark the corresponding values.

Calculate the heights of the bars for various items given below.

- | | | |
|-----------------|--------------|-------------------|
| i. House rent | ii. Food | iii. Education |
| iv. Electricity | v. Transport | vi. Miscellaneous |

2. Vidya wonders why numbers one and zero are neither composite numbers nor prime numbers. Could you please explain to Vidya what can happen if they are either composite numbers or prime numbers? Use an example to punch your points.

3. Richa's Grandma had 17 rings. Her will stipulated that upon her death Richa's mother should receive one-half of her rings, her second daughter one-third, and Richa, the grandchild one-ninth.

When Grandma died, the two daughters tried as hard as they could, but they could not figure out a way to divide 17 rings according to their mother's wishes as they were not interested to have a piece cut from the ring. They asked Richa how they can settle the division.

Richa said "Take my ring and divide the rings, and then, when you're done, return my ring. You should have one ring left. They agreed.

How many rings did each of them receive?

4. Euclid influenced politicians such as Abraham Lincoln. Lincoln would lay on the floor for hours at night studying Euclid's *Elements* by lamplight. He was a great admirer of the logical delivery of information that *The Elements* contained and used Euclid's systematic approach in many of his speeches and actions. It

is said that Lincoln had solved Euclid's geometry problems to improve his logic in decision making.

Lincoln, speaking of his study of Euclid, said:

"In the course of my law reading I constantly came upon the word 'demonstrate'. I thought at first that I understood its meaning, but soon became satisfied that I did not. I said to myself, What do I do when I demonstrate more than when I reason or prove? How does demonstration differ from any other proof?

I consulted Webster's Dictionary. They told of 'certain proof,' 'proof beyond the possibility of doubt'; but I could form no idea of what sort of proof that was. I thought a great many things were proved beyond the possibility of doubt. I consulted all the dictionaries and books of reference I could find, but with no better results. You might as well have defined blue to a blind man."

Can you suggest how your mother can use Mathematics for better management of her kitchen? Explain with examples.

5. Vidya was asked by her teacher to explain (1) proportion, (2) similarity and (3) axis of symmetry and the relation among the three through a demonstration. Back home, many things flashed on her mind. Finally she stood in front of a mirror at a distance. She thought for while and has decided that by increasing the distance between her and the mirror, she can make a better demonstration to her class. If you were Vidya, what would you demonstrate to the class to explain all the three terms given?

SECTION – 2: SCIENCE

6. Excess intake of fats is harmful to our body. What about other nutrients? (1) What are the implications if we take too much of proteins or vitamins in diet? (2) What should be the balanced diet for a 12 year old child living in India?
7. Write an email to your friend describing how power cuts for a long time would affect your day to day activities. Suggest environment friendly solutions you have in mind.
8. When Wisden visited Vidya yesterday, her mother offered him a glass of cold drink produced by a reputed company. Wisden politely told her mother that he won't take fizzy drinks to avoid health issues in future. Instead, he asked for a cup of black tea.

After sometime, Vidya noticed that water droplets accumulated on the outer side of the glass filled with cold drink. But two hours later, she found droplets on the outer side of the glass have vanished.

Explain us the reasons for her observations and your conclusions.

9. During National Genius Search Foundation's "*Make Your Own Question*" drive in Quana's school, the students were asked to frame a four option multiple choice question with single right answer, applying all the following parameters.
- Circular motion
 - periodic motion need not necessarily circular motion
 - Playing drums / Tabla
- Frame the required question.

10. What are the effective and economical ways you suggest to protect the environment from plastic bags?

END OF DOCUMENT

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