National Achievement Survey
Class V
(Cycle 3)

Uttarakhand

Subject wise Report
Learning Gaps in Language, Mathematics and Environmental Studies

Educational Survey Division

NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

2014
National Achievement Survey

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Core Writing Group

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2014
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Preface

Sarva Shiksha Abhiyan (SSA), a flagship programme of the Government of India, provides a variety of inputs designed to ensure access, equity and quality in elementary education. In order to achieve aforesaid objectives, National Achievement Surveys (NAS) are carried out by National Council of Educational Research and Training (NCERT) periodically. NCERT brings out technical report related to NAS which provides status of health of the system, stating what students know and can do in a specific content area and association of student's learning achievement with background of students, schools and teachers factors at national level. Besides, NCERT also provides data of the NAS to states/UTs for preparing their state specific reports.

It has been observed that most of the States/UTs are not further analyzing the NAS data, the results of which can be used by teachers and teacher educators during classroom teaching. Keeping this in view the ESD, NCERT has moved a step ahead to guide States in analyzing the data and giving an insight about utilization of NAS data. This report is a small effort to look into the data of NAS with a purpose of making NAS data more relevant and usable for teachers and classroom practitioners. This will assist in improving the quality of teaching by understanding the type of difficulties faced by students of Class V in different subjects i.e.; Reading Comprehension, Mathematics and Environmental Studies. This report summarizes the findings based on NAS Class V (Cycle 3) regarding learning gaps and what students know at Class V level in states/UTs. This is an effort to provide feedback for planning interventions at various levels of school education.

I am grateful to Prof. B.K. Tripathi, Director, NCERT for extending all encouragement to the activities of NAS as-well-as to the efforts of making NAS outcomes more relevant towards enhancing the quality of school education in the country.

I thank Dr. Santosh Kumar (Coordinator), Dr. Manika Sharma (Consultant) and Ms. Prerana Waila (Computer Assistant) who worked hard in analyzing, interpreting the data and preparing the report. Finally, I thank one and all who have contributed to this report in some or other way.

New Delhi
September, 2014

(Sridhar Srivastava)
Professor and Head
ESD, NCERT
### Project Team

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
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</thead>
<tbody>
<tr>
<td>Dr. Sridhar Srivastava</td>
<td>Professor &amp; Head</td>
</tr>
<tr>
<td>Dr. Santosh Kumar</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Dr. Manika Sharma</td>
<td>Consultant</td>
</tr>
<tr>
<td>Mr. Rituraj Sharma</td>
<td>Sr. Graphic Designer-cum-Visualizer</td>
</tr>
<tr>
<td>Ms. Prerana Waila</td>
<td>Computer Assistant</td>
</tr>
<tr>
<td>Ms. Seema</td>
<td>DTP Operator</td>
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<tr>
<td>Ms. Kamlesh Arya</td>
<td>DTP Operator</td>
</tr>
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Introduction

Background

With the enactment of 'The Right of Children to Free and Compulsory Education' (RTE) Act 2009, government is obligated in ensuring eight years of quality education for all children in the age group 6-14 years. Over the past decade or so since the beginning of the Sarva Shiksha Abhiyan (SSA) programme, there has been a significant increase in the number of schools and in the enrolment of children in government schools, most notably a large proportion of children from amongst Scheduled Castes, Scheduled Tribes, Muslims and girls have joined the schooling system. Most of these children are also first-generation learners, coupled with the fact that they also come from very impoverished socio-economic backgrounds, which present unique challenges for the education system to adequately support the diverse learning needs of students. While high enrolment and diverse classrooms are a sign of healthy inclusion and participation in the education system, it is equally important that all children receive a good quality education. One of the key indicators of quality education is to understand whether children’s learning achievement is improving over time in an equitable manner.

To monitor improvement in children’s learning levels and to periodically assess the health of the government education system as a whole, the National Council of Educational Research and Training (NCERT) has been periodically conducting National Achievement Surveys (NAS) since 2001, for Class III, V and VIII. The NAS report gives a national and state-level picture, rather than scores for individual students, schools or districts.

The purpose of these assessments is to obtain an overall picture of what students in specific classes know and can do and to use these findings to identify gaps and diagnose areas that need improvement. This information can then be used to impact policies and interventions for improving children’s learning under the SSA programme.

Sarva Shiksha Abhiyan – towards universal elementary education

The 86th amendment to the Constitution of India made free and compulsory education for children aged 6-14 a fundamental right. The government’s SSA programme is providing support to achieve this goal.

Spanning the whole country the programme addresses the needs of nearly 200 million children. In areas with no or inadequate schooling facilities, SSA is building new schools or improving existing infrastructure. Teaching capacity is being improved through recruitment and extensive teacher training and many other inputs.
National Achievement Survey-Class V (Third Cycle)

The 2010/11 National Achievement Survey (NAS) of Class V students has been significantly updated in line with international best practice in student assessment. Conducted by the National Council of Educational Research and Training (NCERT), this marks the most comprehensive educational assessment survey in India to date.

Between March and May 2010, the survey tested over one hundred thousand students in language, mathematics and environmental studies. In addition, questionnaires were used to collect information on schools, teachers, and pupils’ school experiences and home backgrounds.

Samples and participants

Cycle 3 of NAS Class V used tests and questionnaires to gather information from 122,543 students in 6,602 schools across 31 states and union territories (UTs).

In each state and UT, the sample was generally selected in three stages. Firstly, districts were selected based on the number of Class V students enrolled. Secondly, the requisite number of schools was selected. Finally, the required number of Class V students in the school was selected at random.

Class V tests

The Class V NAS differs from previous cycles of the survey as it uses Item Response Theory (IRT) to place results on meaningful scales, which are independent of the particular tests used. This method is in line with international best practice.

Previous Class V survey results were reported as the percentage of correct answers. This meant that results were specific to that year’s test and could not be compared to results from other tests or survey cycles. The scales created using IRT, however, permit future comparison in each subject.

For each of the three subjects, the Class V syllabus and textbooks from across the states were used to develop assessment frameworks, which described the knowledge and skills to be covered in the tests.

Once developed, the test booklets were translated into 15 regional languages. The tests were then piloted in 21 states to assess how the items worked across the different languages.

What is IRT?

Item Response Theory, or IRT, uses a mathematical model to calculate the probability that a student will respond correctly to a specific test question, based on the student’s level of ability and the degree of difficulty of the question concerned.
Unlike previous surveys, this round of the Class V survey used three test booklets per subject rather than one. This allowed assessment in greater depth. To enable comparison across all three tests, a block of common questions or ‘anchor items’ were used in all booklets. In EVS and Mathematics, 20 anchor items were used. In Language, 15 items of reading comprehension and 5 items of language elements were used as anchor items. Therefore, three common passages were used in each booklet. And each booklet was having a new passage also. The structure of the Mathematics and EVS booklet was as under:

<table>
<thead>
<tr>
<th>Form 1</th>
<th>Form 2</th>
<th>Form 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>D</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Anchor Block</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>E</td>
<td>G</td>
</tr>
</tbody>
</table>

In all the subjects, the concept/content areas were identified, which are as following:

<table>
<thead>
<tr>
<th>Language</th>
<th>Mathematics</th>
<th>EVS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language Elements</td>
<td>Arithmetic</td>
<td>Social Studies</td>
</tr>
<tr>
<td>Reading Comprehension</td>
<td>Algebra</td>
<td>Science</td>
</tr>
<tr>
<td>Writing</td>
<td>Geometry</td>
<td>-</td>
</tr>
</tbody>
</table>

Items in different subjects covered the following content areas:

<table>
<thead>
<tr>
<th>Language</th>
<th>Mathematics</th>
<th>EVS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocabulary</td>
<td>Operations</td>
<td>Family &amp; Environment</td>
</tr>
<tr>
<td>Tenses</td>
<td>Geometry</td>
<td>Food</td>
</tr>
<tr>
<td>Preposition</td>
<td>Measurement</td>
<td>Shelter</td>
</tr>
<tr>
<td>Linkers</td>
<td>Number System</td>
<td>Water</td>
</tr>
<tr>
<td>Locate information</td>
<td>-</td>
<td>Travel</td>
</tr>
<tr>
<td>Grasp ideas/Interpret</td>
<td>-</td>
<td>Real life</td>
</tr>
<tr>
<td>Infer/Evaluate</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
**About the Report**

The performance of students in a state is compared with overall performance of students in the nation (overall of 31 states/UTs). Besides, gender wise, area wise and category wise performance of students in the state vis-à-vis nation (overall of 31 states/UTs) is also presented. An attempt has also been made to do distracter analysis for each item to find out the learning gaps in each content area. The purpose of distracter analysis is to know where students are doing mistakes and what are their misconceptions. In this report mainly those items are reported where less than 50 per cent students answered the items correctly. Besides, in most of the items where 25 per cent or more students opted for an option which is not the correct answer, is also given to understand the misconception. The reason for taking 25 per cent response as a base for such analysis, is that for each item 4 options have been provided, therefore the chances for responding an item correctly is 25 per cent by guessing. Further, the report also shows what students can do in a specific content area where 50 per cent and more students answered the items correctly.

**Use of Analysis Results**

The analysis output may be used for the following:

- to understand the type of misconception of students in each content area/ concept/ competency
- to provide feedback to teachers, educationist, curriculum developers, textbook writers and other stakeholders associated with the quality of education
- to identify action points to include in teachers’ training
- to develop exemplar materials for use of teachers
- to develop additional material for students’ understanding and practicum

If the State Education Department/SCERT/SIEs take appropriate actions on the above stated areas timely then it will definitely help in improving the quality of education imparted to students as emphasized in RTE act 2009.

Need not to mention that this is an attempt made by NCERT to give an idea to use the outcomes of NAS results. Besides, states/UTs are also advised to do further analysis to get more concrete insight regarding learning gaps and misconceptions in different content areas taught at primary level of school education. NCERT has already provided the data to states during the training programme organised for ‘Report Writing’. The data of this survey can be made available for states/UTs on request to NCERT.
Characteristics of Uttarakhand

Uttarakhand is situated in the northern part of India with an area of 53,566 square kilometers. The total population of the state is 1,01,16,752 as per census of India 2011, and the density of population is 189 per square kilometer. As compared to many other states of India, Uttarakhand has an average GDP which amounts to 2,57,760 millions. The per capita income of the state is 55,877 (INR) 2010, as per the data provided by the state and compiled by the VMW Analytic Services. The sex ratio in Uttarakhand is 963 females per 1000 males. The literacy rate is 79.63.

In Uttarakhand, the enrolment in Class V in all schools is 1,85,980 while in only Government and Government aided schools, it is 1,33,500. The ratio of government schools and all schools is 0.72. The gross enrolment ratio (class 1-5) is 119.4. Uttarakhand used Hindi as the medium of instruction in the schools.

This report summarises the findings of the Uttarakhand state under the National Achievement Survey (NAS) of Class V students conducted in 2010 by the National Council for Educational Research and Training (NCERT). It is based on information gathered through tests administered to a sample comprising 4,285 students in 296 schools across 9 districts of Uttarakhand. The subjects covered were Reading Comprehension, Mathematics and Environmental Studies (EVS).

Language
(Reading Comprehension)
Overall

- In Uttarakhand, students scored lower as compared to overall average in Reading Comprehension.

<table>
<thead>
<tr>
<th>Locating Information</th>
<th>Grasp ideas/interpret</th>
<th>Infer/evaluate</th>
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</thead>
<tbody>
<tr>
<td>Overall</td>
<td>State</td>
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<tr>
<td>54 (28.6)</td>
<td>46 (29.1)</td>
<td>47 (25.9)</td>
</tr>
<tr>
<td>47 (25.9)</td>
<td>38 (24.7)</td>
<td>55 (35.2)</td>
</tr>
<tr>
<td>55 (35.2)</td>
<td>44 (35.1)</td>
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</tr>
</tbody>
</table>

Gender

- Scores of both boys and girls were lower than the overall national average on all the mental processes.
- Performance of girls was better than boys on 'Grasp ideas/interpret' and 'Infer/evaluate'.

Area

- Performance of both rural and urban students was lower than the overall average score in Reading Comprehension.
- Rural students achieved higher than urban students on all the areas of Reading Comprehension.

Social Groups

- Students from all the social groups scored lower than the overall national average.
- General category students scored highest among all the social groups.
**Learning Gaps:** Items responded correctly by Less than 50% Students in Reading Comp.

### LOCATING INFORMATION

**Q.No. 20:** Identify the correct place name from those given in the notice

Read the following carefully. Then answer the questions that follow. For each question encircle the number of the correct answer.

In which town is this cricket club located?

1. Sadanand
2. Mahatma Gandhi
3. Rampur
4. Uttar Pradesh

This question was based on a 'Notice' of Cricket Club in which students were asked to find out name of the town in which cricket club was located. Only 41% students could locate the place name correctly.

**Q.No. 28:** Use information from a table to determine the frequency of an event

This is Rohit’s school time table. Use it to answer the questions given below it.

<table>
<thead>
<tr>
<th>Periods</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
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<td>Days</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Monday</td>
<td>English</td>
<td>Hindi</td>
<td>Hindi</td>
<td>Science</td>
<td>Art</td>
<td>Maths</td>
<td>SUPW</td>
</tr>
</tbody>
</table>

Which subject does Rohit study for two periods together?

1. English
2. Science
3. Maths
4. Hindi

**Q.No. 29:** Use information from a table to determine the frequency of an event

Which subject does Rohit have most often in a week?

1. Hindi
2. English
3. Maths
4. Social Studies
Q.No. 30 : Use information from a table to determine the frequency of an event

How many art classes does Rohit have in a week?

1. Two
2. Three
3. Four
4. Five

<table>
<thead>
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<td>Option - 4</td>
<td>21</td>
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<tr>
<td>Multi. Resp.</td>
<td>3</td>
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</table>

Question nos. 28, 29 and 30 were based on a school Time Table. Only 44%, 47%, and 28% students respectively could find out the frequency of events correctly. In question 28, about 27% students opted option 1 (English), that is coming in the same period but on consecutive days.

GRASP IDEAS / INTERPRET

Q.No. 18 : Use information from a notice to conclude timing of an event

Read the following carefully. Then answer the questions that follow. For each question encircle the number of the correct answer.

Which of the following is true?

1. The girls’ practice is earlier than the boys’ practice.
2. The girls’ practice is longer than the boys’ practice.
3. The boys and girls learn cricket on different days.
4. The boys’ practice is on Sunday afternoon.

<table>
<thead>
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<tr>
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<td>Option - 4</td>
<td>16</td>
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<tr>
<td>Multi. Resp.</td>
<td>3</td>
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</tbody>
</table>

Only 34% students could conclude timing of an event from the given notice.

Q.No. 19 : Use information from the notice to derive the duration of an event

For how long will the boys be taught cricket?

1. thirty minutes
2. one and a half hours
3. two hours
4. three hours

<table>
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<td>Option - 2</td>
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<td>Option - 4</td>
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</tr>
<tr>
<td>Multi. Resp.</td>
<td>2</td>
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</tbody>
</table>

About 38% students could derive duration of an event correctly.


**Q.No. 21 : Use information in the text to identify the ingredients of an object**

Read the following passage carefully. Then answer the questions that follow. For each question encircle the number of the correct answer.

**Passage**

Aam Panna is a cool drink mainly used in north India during summer. It is prepared using raw mangoes, sugar and some spices like salt, black pepper, roasted cumin seed powder and mint leaves. It quenches thirst and also prevents loss of salt and iron during summer due to excessive sweating. It is also a good source of vitamins B and C.

Aam Panna is easy to prepare. You boil some raw mangoes. Then peel, stone and pulp the mangoes with a spoon. Placing the pulp in a bowl, add water, sugar, salt, pepper and cumin seed powder. Also add chopped mint leaves. Mix it thoroughly. Serve chilled with ice. Apart from being tasty, your Aam Panna will also look good due to its refreshing light green colour.

What is the main ingredient of the drink described in the passage?

1. mint
2. salt
3. mangoes
4. sugar

Only 44% students could identify mangoes as the main ingredient of Aam Panna from the passage.

**Q.No. 22 : Identify relationship between an object and its characteristics**

Aam Panna can be called a health drink because __________

1. it has a lot of spices.
2. it is tasty.
3. it is refreshing.
4. it contains iron and vitamins.

Only 36% students responded correctly, i.e., it contains iron and vitamins. However, about 21% students gave the reason that Aam Panna can be called a health drink because it is tasty.

**Q.No. 23 : Use information to draw simple conclusion about the usefulness of an object**

Aam Panna is useful when a person suffers from __________.

1. high fever
2. excessive cough
3. excessive sweating
4. intense headache

About 45% students concluded that Aam Panna is useful when a person suffers from excessive sweating. While 26% think that it is useful when a person suffers from high fever.
Q.No. 24: Determine the sequence of activities in a process

What do you do first to make Aam Panna?

1. Peel the mangoes.
2. Mix mint leaves.
3. Boil some mangoes.
4. Make a pulp of mangoes.

Only 35% students could give correct sequence of activities that would be followed for making 'Aam Panna'. Further, about 32% students selected option 1, which is in wrong order.

Q.No. 25: Identify relationship between an abstract idea and a concrete phenomenon

Aam Panna looks refreshing because ____________

1. it is made of raw mangoes.
2. it is a light green colour.
3. it contains salt and iron.
4. it has roasted cumin seed powder.

Only 29% students responded correctly that is a light green colour of Aam Panna which makes it look refreshing. However, 28% students selected wrong option i.e., 'It is made of raw mangoes'.

Q.No. 33: Use information in the story to grasp the problem

Read the following passage carefully. Then answer the questions that follow. For each question encircle the number of the correct answer.

Passage

King Rahugana was travelling in a palanquin. Four palanquin bearers were running with the palanquin on their shoulders. The journey was long and when they reached near a well, a bearer said, “Your Highness, we are thirsty. We’ll have some water and be back soon.”

One of the bearers was so tired that he could not take another step. He ran away from there. Now only three bearers were left. The problem arose as to how the palanquin should be carried. Just then they saw Jadbharat coming their way. The king said, “Catch him! Make him carry the palanquin.”

Now Jadbharat started carrying the palanquin on his shoulder in place of the fourth bearer. The king continued with the journey. But he was not comfortable. Sometimes the king’s head would hit the side of the palanquin, sometimes he would tumble from side to side. The king said angrily to the bearers, “Walk properly.” All the three bearers pleaded, “Your Highness, we are walking properly, but this new person is not walking properly.”

The king scolded Jadbharat, “Why are you walking like a dead man?” Jadbharat replied, “My dear king, I am at least walking but what about you? You are making others carry you. A man is carried like this only when he is dead.”

On hearing Jadbharat’s words, the king immediately got off the palanquin.

What problem came up in lifting the palanquin?

1. One of the poles broke.
2. The bearers were thirsty.
3. The road was bad.
4. One bearer had run away.

Only 33% students could grasp the correct problem, i.e., 'One bearer had run away'. Remaining students could not do it.
**Q.No. 34 :** Use information in the story to identify the cause of an event

Why did the king scold his bearers?
1. The king could not look out of the palanquin.
2. The king wanted to reach his destination soon.
3. The king’s head was hitting the sides of the palanquin.
4. The bearers refused to carry the palanquin.

<table>
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<tbody>
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<tr>
<td>Option - 4</td>
<td>11</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>4</td>
</tr>
</tbody>
</table>

Only 38% students could identify the right reason for scolding bearers. Remaining students did not go through the passage carefully and selected the wrong options.

**Q.No. 35 :** Use information in the story to determine the cause of an event

Why was Jadbharat asked to lift the palanquin?
1. Jadbharat was very strong.
2. One bearer had run away.
3. Only Jadbharat knew the road ahead.
4. The king liked Jadbharat.

<table>
<thead>
<tr>
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<th>255</th>
</tr>
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<tbody>
<tr>
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<td>Option - 4</td>
<td>11</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>5</td>
</tr>
</tbody>
</table>

Only 38% students could determine the reason for lifting the palanquin.

**Q.No. 44 :** Identify relationship between a pronoun and the object/person

Read the following passage carefully. Then answer the question that follows.

**Passage**

In ancient times books were written by hand. Most of the book making in those days was done by monks. They used to sit in their small cells and make copies of books. Their fingers grew stiff and their eyes got tired, but still they worked far into the night.

Just think, how long do you take to write a page or even a line? You can now understand how much patience and hard work went into the making of books.

After many years, a clever man in Belgium invented a printing press. With its help many copies of books could now be made in very little time. In the last 500 years, many improvements have been made in book printing and today thousands and millions of books can be printed very easily.

“With its help ...............”. Here, ‘its’ refers to
1. a clever man
2. the printing press
3. Belgium
4. a monk

<table>
<thead>
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<th>Scale Score</th>
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<td>Multi. Resp.</td>
<td>2</td>
</tr>
</tbody>
</table>

Nearly one fourth of the students could give correct reference. About 24% students understood wrong and referred ‘its’ as ‘a clever man’.
**Q.No. 47 :** Use information in the text to identify the remedy of a problem

Read the following passage carefully and answer the questions given below it. Encircle the number of the correct answer.

**Passage**

Millions of people in the world are blind. Formerly people thought that blind people could not do anything. But now a days many blind schools have been opened. All these facilities are available to the blind for studying. Now many blind students are earning their livelihood after finishing their studies. Many blind people have become scholars in the world. Apart from this, the doctors are trying to prevent blindness among children by providing appropriate medical care and prescribing nutritious diet.

Today, many people donate their eyes. After their death, their eyes are transplanted in the blind people’s eyes. Thus many blind persons are able to see.

The blindness can be removed through

1. nutritious diet.
2. eye transplant.
3. higher education.
4. some training.

Only 30% students could identify correctly that blindness can be removed through eye transplant. However, 26% students identified 'nutritious diet' as a remedy for blindness.

<table>
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<td>Option - 4</td>
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<tr>
<td>Multi. Resp.</td>
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</tbody>
</table>

**Q.No. 50 :** Grasp the relevant idea about the thinking of people from the text

What did people think about blinds in the past?

1. There is no cure for blindness.
2. Blind can get training.
4. Blind can donate their eyes.

Only 30% students could respond correctly, i.e. blind cannot do anything. However, more than half of the students could not grasp the idea about thinking of people from the passage and selected other options.

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<tr>
<td>Multi. Resp.</td>
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</tbody>
</table>

**INFER / EVALUATE**

**Q.No. 17 :** Use information from a notice to make a simple inference about the participation in a sport

Read the following carefully. Then answer the question that follows.

Who are asked to come to the Cricket Club?

1. boys only
2. girls only
3. all students
4. students and their friends

This question was based on 'Notice', in which students were asked to make a simple inference about who were asked to come to the cricket club. Nearly half of the students could infer correctly.

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<tr>
<td>Option - 4</td>
<td>11</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>4</td>
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</tbody>
</table>
Q.No. 41: **Use information in the text to infer the cause of an event**

Read the following passage carefully. Then answer the questions that follow. For each question encircle the number of the correct answer.

**Passage**

In ancient times books were written by hand. Most of the book making in those days was done by monks. They used to sit in their small cells and make copies of books. Their fingers grew stiff and their eyes got tired, but still they worked far into the night.

Just think, how long do you take to write a page or even a line? You can now understand how much patience and hard work went into the making of books.

After many years, a clever man in Belgium invented a printing press. With its help many copies of books could now be made in very little time. In the last 500 years, many improvements have been made in book printing and today thousands and millions of books can be printed very easily.

Why were there very few books in ancient times?
1. Monks were too tired to write.
2. Books were only made in Belgium.
3. Books were written by hand.
4. People had no patience.

Only 41% students could infer the reason based on the passage.

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<td>Option - 4</td>
<td>10</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>3</td>
</tr>
</tbody>
</table>

Q.No. 42: **Make complex inference about the quality of persons from their activities**

“Still they worked far into the night”. What quality of monks does this sentence show?

1. carefulness
2. hard work
3. cleverness
4. devotion to god

In this question students were asked to infer the quality of the work of monks on the basis of the sentence. Only 37% students could infer correct quality as 'Hard Work'.

<table>
<thead>
<tr>
<th>Scale Score</th>
<th>249</th>
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<tbody>
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<td>Option - 4</td>
<td>13</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>3</td>
</tr>
</tbody>
</table>

Q.No. 43: **Make complex inference about the effect of an activity on concerned persons**

The monks wrote for many hours. What was the effect on them?

1. Their books were beautiful.
2. They worked in the dark.
3. They didn’t prepare any books.
4. Their fingers and eyes grew tired.

About 43% students could infer correctly i.e., 'Their fingers and eyes grew tired'.

<table>
<thead>
<tr>
<th>Scale Score</th>
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</thead>
<tbody>
<tr>
<td>Missing</td>
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<td>Option - 4</td>
<td>43</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>3</td>
</tr>
</tbody>
</table>
Q.No. 45: Use information to identify the main theme and evaluate the title

Which of the following is the best title for this passage?

1. Books, Our Friends
2. Importance of Books
3. Invention of the Printing Press
4. Suffering of the Monks

Students were asked to infer the best title for the passage. Only 26% could select the best title as 'Invention of the Printing Press'. However, about 22% students selected best title as 'Importance of Books'.

Q.No. 46: Use information in the text to make inference about the cause of an act

Read the following passage carefully and answer the question given below it. Encircle the number of the correct answer.

Passage

Millions of people in the world are blind. Formerly people thought that blind people could not do anything. But nowadays many blind schools have been opened. All these facilities are available to the blind for studying. Now many blind students are earning their livelihood after finishing their studies. Many blind people have become scholars in the world. Apart from this, the doctors are trying to prevent blindness among children by providing appropriate medical care and prescribing nutritious diet.

Today, many people donate their eyes. After their death, their eyes are transplanted in the blind people's eyes. Thus many blind persons are able to see.

Why do many people donate their eyes?

1. Their eyes are weak.
2. Blind people can become scholars.
3. Their eyes will enable a blind to see.
4. They want to become famous.

This question was based on a passage about the blind people. In this question students were asked to infer the reason for donating their eyes. Only 39% students could respond correctly that 'Their eyes will enable a blind to see'.
## What Students Can Do?

### Items responded correctly by 50% and more Students in Reading Comprehension

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Scale Score</th>
<th>Mental Process</th>
<th>Item Description</th>
<th>% Correct</th>
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<tr>
<td>26</td>
<td>203</td>
<td></td>
<td>Use information in a table to identify phenomena occurring at a particular time</td>
<td>60</td>
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<tr>
<td>27</td>
<td>213</td>
<td>Locating Information</td>
<td>Use information in a table to identify the time for a phenomenon</td>
<td>52</td>
</tr>
<tr>
<td>49</td>
<td>234</td>
<td></td>
<td>Recognize appropriate information about the action to be taken by a person</td>
<td>55</td>
</tr>
<tr>
<td>16</td>
<td>217</td>
<td>Grasp ideas/interpret</td>
<td>Recognize the text type as a notice from the format and the content</td>
<td>54</td>
</tr>
<tr>
<td>48</td>
<td>292</td>
<td></td>
<td>Identify the causal relationship of two events</td>
<td>51</td>
</tr>
<tr>
<td>31</td>
<td>228</td>
<td>Infer/evaluate</td>
<td>Use information in a story to make a simple inference about the cause of an act</td>
<td>50</td>
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<tr>
<td>32</td>
<td>231</td>
<td></td>
<td>Use information in a story to make a simple inference about the cause of an act</td>
<td>50</td>
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</table>
Sample Items: Items responded correctly by 50% and more Students in Reading Comprehension

LOCATING INFORMATION

Q.No. 26 : Use information in a table to identify phenomena occurring at a particular time

This is Rohit’s school time table. Use it to answer the question given below it.

<table>
<thead>
<tr>
<th>Periods</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td>Days</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Monday</td>
<td>English</td>
<td>Hindi</td>
<td>Hindi</td>
<td>Science</td>
<td>Art</td>
<td>Maths</td>
<td>SUPW</td>
</tr>
</tbody>
</table>

What does Rohit learn in the sixth period on Wednesday?

1. Maths
2. Science
3. Social Studies
4. Hindi

About 60% students could identify subject taught to Rohit in the sixth period on Wednesday correctly from the given table.

GRASP IDEAS / INTERPRET

Q.No. 16 : Recognize the text type as a notice from the format and the content

Read the following carefully. Then answer the question that follows.

The above piece is___________.

1. a notice
2. a story
3. an order
4. an essay

This question was based on a ’Notice’ of Cricket Club. About 54% students could interpret correctly that the given piece of information is a 'notice'.
Mathematics
Overall
- In Uttarakhand, performance of students was lower as compared to overall average, on all the content areas of Mathematics.

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Operations</th>
<th>Geometry</th>
<th>Measurement</th>
<th>Number System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>54 (24.5)</td>
<td>49 (23.7)</td>
<td>52 (25.2)</td>
<td>49 (24.2)</td>
</tr>
<tr>
<td>State</td>
<td>54</td>
<td>49</td>
<td>52</td>
<td>49</td>
</tr>
</tbody>
</table>

Gender
- On each content area, average scores of both boys and girls were lower than the overall average.
- Performance of boys was higher than girls on all the content areas of Mathematics.

Area
- On each content area, scores of both rural and urban students were lower than the overall average.
- Performance of rural students was higher than urban students on all the content areas.

Social Groups
- For all the social groups, average scores on each content area were lower than the overall average.
- SC category students scored higher than ST students on all the content areas.
**Learning Gaps:** Items responded correctly by Less than 50% Students in Mathematics.

### OPERATIONS

#### Q.No. 1 : Place value of a digit in the given number

The number 107 can be written as...

<table>
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<tbody>
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<tr>
<td>Option - 2</td>
<td>45</td>
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<tr>
<td>Option - 3</td>
<td>21</td>
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<tr>
<td>Option - 4</td>
<td>11</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>2</td>
</tr>
</tbody>
</table>

About 45% students could do this correctly. While 21% students were not clear about the concept of place value of digits and selected option 3.

#### Q.No. 3 : Largest three digit number from given numbers

Renu has the following three number cards:

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<tbody>
<tr>
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<td>6</td>
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<tr>
<td>Option - 3</td>
<td>42</td>
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<td>Option - 4</td>
<td>40</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>2</td>
</tr>
</tbody>
</table>

Only 42% students could do this item correctly. While 40% students selected the number 999 on the basis of their memory that it is a largest three digit number. It indicates that those students could not comprehend the question.

#### Q.No. 11 : Differentiating two numbers (4 digit) using the less than property of numbers

Which one of the following is true?

<table>
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<tr>
<td>Option - 3</td>
<td>40</td>
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<td>Option - 4</td>
<td>19</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>2</td>
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</tbody>
</table>

In this question students were supposed to use less than property of number (in four digit numbers). About 40% students could use the property of numbers correctly.
**Q.No. 28 : Difference between two decimal numbers**

What is the difference between 500.2 and 499.101?

1. 1.099
2. 1.101
3. 1.109
4. 1.99

Scale Score 304
Missing 15
Option - 1 28
Option - 2 27
Option - 3 17
Option - 4 11
Multi. Resp. 2

Only 28% students computed difference between two decimal numbers correctly. More than half of the students were not clear how to deal with decimal part of numbers.

**Q.No. 33 : Using measure of unit as per suitability of situation**

Which of the following units would be the best to measure the length of a school building?

1. Millimetre
2. Centimetre
3. Metre
4. Kilometre

Scale Score 254
Missing 14
Option - 1 7
Option - 2 19
Option - 3 39
Option - 4 19
Multi. Resp. 2

About 39% students could select suitable unit for measuring the length of school building. The remaining were not clear in selection of suitable unit.

**Q.No. 43 : Numbers in increasing and decreasing numbers**

In which of the following, numbers are written in increasing order?

1. 295, 297, 290
2. 351, 350, 356
3. 265, 267, 269
4. 789, 786, 780

Scale Score 242
Missing 11
Option - 1 13
Option - 2 9
Option - 3 43
Option - 4 22
Multi. Resp. 2

About 43% students selected the correct option in which numbers were arranged in increasing order. It clearly indicates that more than half of the students were confused.
Q.No. 53 : Equivalent fractions

Which of the following is a pair of equivalent fractions?

1. \( \frac{2}{9}, \frac{1}{9} \)
2. \( \frac{3}{5}, \frac{15}{25} \)
3. \( \frac{4}{7}, \frac{16}{49} \)
4. \( \frac{3}{8}, \frac{8}{3} \)

<table>
<thead>
<tr>
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<th>Option - 1</th>
<th>Option - 2</th>
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</table>

Only 31% students could select the pair of equivalent fractions correctly.

Q.No. 63 : Equivalent and non equivalent fractions

Given below are 4 fractions. Three of them are equivalent to one another. Which of them is NOT equivalent to the other three?

1. \( \frac{6}{10} \)
2. \( \frac{3}{5} \)
3. \( \frac{21}{35} \)
4. \( \frac{5}{3} \)

<table>
<thead>
<tr>
<th>Scale Score</th>
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<th>Option - 1</th>
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</table>

Only 33% students could respond correctly. Majority of students were not clear about equivalent and non equivalent fractions.

GEOMETRY

Q.No. 2 : Part of a geometrical figure (rectangle)

Which of the following is NOT a side of rectangle ABCD?

1. AD
2. AC
3. AB
4. BC

<table>
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<th>Scale Score</th>
<th>Missing</th>
<th>Option - 1</th>
<th>Option - 2</th>
<th>Option - 3</th>
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<td>11</td>
<td>43</td>
<td>22</td>
<td>11</td>
<td>2</td>
</tr>
</tbody>
</table>

Only 43% students could do this correctly. This indicates that about 57% students were not clear about the sides of a geometrical figure.
**Q.No. 16:** Locating object which is interior to some and exterior to some

In the figure, given here, which letter is inside of the square and the circle but **not** inside the triangle?

1. B  
2. C  
3. D  
4. E

Only 37% students could locate object which is interior to some and exterior to some figures. Remaining students could not understand the question and selected wrong options.

**Q.No. 26:** Relationship between radius and diameter

In the circle, given here, O is the centre of the circle. If AB = 4cm, then OP is equal to...

1. \( \frac{1}{4} \) cm  
2. \( \frac{3}{4} \) cm  
3. 3 cm  
4. 2 cm

Only 39% students selected the correct option. However, more than half of the students could not understand the relationship between radius and diameter.

**Q.No. 27:** Computation of diameter of a circle with given radius

The diameter of the circle given below is...

1. 2 cm  
2. 4 cm  
3. 5 cm  
4. 6 cm

About 45% students could compute the diameter of the circle. 23% students selected option 1 i.e. 2cm which is the radius of the circle. It clearly indicates that about 55% students were not clear that how to compute diameter if radius is given.
**Q.No. 38 : Radius of a circle and relation thereof**

In the figure, given here, the radius of the smaller circle is 3 cm. What is the radius of the larger circle having centre O?

1. 3 cm
2. 6 cm
3. 9 cm
4. 12 cm

In this question two circles were given, one small and other large. The smaller circle was embedded in the large circle. Only 28% students could do the same. The remaining students couldn't find out because they were not clear about the relationship between radius and diameter.

**Q.No. 48 : Smallest angle in the given angles**

Which of the following angles is the smallest?

1. \( \angle A \)
2. \( \angle B \)
3. \( \angle C \)
4. \( \angle D \)

Only 45% students selected the correct figure. While 23% students selected option 2. It suggests that they could not understand the question.

**Q.No. 58 : Computation of degree measure of an angle**

What is the measure of half of a right-angle?

1. \( 30^\circ \)
2. \( 45^\circ \)
3. \( 50^\circ \)
4. \( 180^\circ \)

In this question students were asked the degree measure of half of a right angle. Only 44% students could do this.
**Q.No. 62 :** Largest angle from given angles

Which angle of the figure, given below is the largest?

1. \(\angle A\)  
2. \(\angle B\)  
3. \(\angle C\)  
4. \(\angle D\)

Only 26% students could identify the largest angle in the given four sided geometrical figure. Surprisingly, about 41% students selected option 4, the reason might be they have a confusion between sides and angles.

**Q.No. 68 :** Triangles embedded in the figure

The total number of triangles in the figure, given here, is...

1. three  
2. four  
3. five  
4. nine

Only 29% students could answer correctly. Further 24% students selected option 2, the reason for this is that they have not included the triangle in which other triangles are embedded.

**Q.No. 78 :** Computation area of a square of a given side

The area of a square with side 6 cm is...

1. 6 sq cm  
2. 12 sq cm  
3. 24 sq cm  
4. 36 sq cm

Only 26% students could compute the area of a square with side 6 cm. However, about 29% students calculated perimeter instead of area of the square.
### Q.No. 6 : Computation of time period from given time points

Rajesh went to sleep at 10 p.m. and woke up at 6:30 a.m. next morning. How many hours did he sleep?

1. $16 \frac{1}{2}$
2. $4 \frac{1}{2}$
3. $6 \frac{1}{2}$
4. $8 \frac{1}{2}$

In this question students were asked to compute total time from starting point to end point of an activity. About 45% students could compute the correct duration of the activity.

### Q.No. 7 : Computation of area of a rectangle of given dimensions

What is the area of a rectangle of length 6 cm and breadth 4 cm?

1. 10 sq cm
2. 20 sq cm
3. 24 sq cm
4. 100 sq cm

Only 40% students could compute area of a rectangle correctly.

### Q.No. 10 : Computation of value multiplying fractional numbers

For given rates of tomatoes and potatoes, what will be total cost of $2 \frac{1}{2}$ kg of tomato and $1 \frac{1}{2}$ kg of potato?

1. Rs 45.00
2. Rs 54.50
3. Rs 59.60
4. Rs 64.50

Only 32% students could compute the total cost of the vegetables.
**Q.No. 13**: Matching the value represented in different measuring units (capacity)

The measure 4 litres 250 millilitres is equal to...

1. 0.4250 L
2. 4.250 L
3. 4.520 L
4. 42.50 L

<table>
<thead>
<tr>
<th>Scale Score</th>
<th>224</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing</td>
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<td>Option - 3</td>
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<tr>
<td>Option - 4</td>
<td>12</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>2</td>
</tr>
</tbody>
</table>

About 48% students could match the values represented in different measuring units.

**Q.No. 23**: Matching values given in two different measuring units

Which of the following is NOT correct?

1. $2\frac{1}{2} \text{ m} = 250 \text{ cm}$
2. $2\frac{1}{2} \text{ kg} = 2500 \text{ g}$
3. $2\frac{1}{2} \text{ hours} = 130 \text{ minutes}$
4. $2\frac{1}{2} \text{ rupees} = 250 \text{ paise}$

<table>
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<td>Option - 4</td>
<td>12</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>3</td>
</tr>
</tbody>
</table>

**Q.No. 24**: Matching values given in two different measuring units

Which of the following is NOT correct?

1. 1.2 m = 120 cm
2. 1.2 kg = 1200 g
3. 1.2 hours = 120 minutes
4. 1.2 rupees = 120 paise

<table>
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<td>Option - 4</td>
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</tr>
<tr>
<td>Multi. Resp.</td>
<td>2</td>
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</tbody>
</table>

Only 43% students on question no. 23 and 36% students on question no. 24 could match value of one large unit with smaller unit of the same one.
**Q.No. 25 :** Computation of length given in the different measurement scales/units

How many strips of length 30 cm each can be cut out of 6 m long strip?

<table>
<thead>
<tr>
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<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 6</td>
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<tr>
<td>2. 14</td>
<td></td>
</tr>
<tr>
<td>3. 18</td>
<td></td>
</tr>
<tr>
<td>4. 20</td>
<td></td>
</tr>
</tbody>
</table>

In this question students were asked to cut a 6m long strip into strips of 30cm length and find out the number of small strips. About 47% students could respond correctly. It indicates that nearly half of the students have not understood the conversion of a larger unit into smaller unit of the length.

**Q.No. 30 :** Computation of time using time scale

A train leaves Ramnagar at 3:00 p.m. and reaches Karimnagar at 9:00 a.m. next day. The time taken by the train in the journey is...

<table>
<thead>
<tr>
<th>Option</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 6 hrs.</td>
<td></td>
</tr>
<tr>
<td>2. 9 hrs.</td>
<td></td>
</tr>
<tr>
<td>3. 12 hrs.</td>
<td></td>
</tr>
<tr>
<td>4. 18 hrs.</td>
<td></td>
</tr>
</tbody>
</table>

This question was a word problem based on departure and arrival of a train on a specified time. Only 38% could compute the total duration of the journey. While 25% students simply added the time of the departure and arrival of the train.

**Q.No. 40 :** Computation of difference in weights and expression greater than

The weight of mangoes is 2 kg 600 g and apples is 1 kg 450 g. The weight of mangoes is greater than that of apples by...

<table>
<thead>
<tr>
<th>Option</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>1. 150 g</td>
<td></td>
</tr>
<tr>
<td>2. 1 kg 150 g</td>
<td></td>
</tr>
<tr>
<td>3. 1 kg 200 g</td>
<td></td>
</tr>
<tr>
<td>4. 4 kg 50 g</td>
<td></td>
</tr>
</tbody>
</table>

This question was a word problem based on measurement of weights of objects and comparing them. Only 27% students could compute and answer correctly.
Q.No. 47 : Computation of time after a given time period

A four-hour movie ended at 7:15 p.m. At what time did it begin?

1. 11 : 15 p.m.
2. 4 : 00 p.m.
3. 3 : 15 p.m.
4. 3 : 15 a.m.

In this item students were asked to compute starting time of a movie of four hour duration which ended at 7:15 p.m. Only 35% students could compute the starting time of the movie.

Q.No. 50 : Computation of least fractional value

Ram spends \( \frac{1}{2} \) of his salary in paying fee, \( \frac{1}{5} \) of it in paying house rent and \( \frac{3}{10} \) of it in purchasing grocery. In which item does he spend the least?

1. Paying house rent
2. Paying fees
3. Purchasing grocery
4. Equal in all the three

This was a word problem, in which expenditure incurred on various stages were indicated in fractions, students were asked to compute on which item the person spent the least. Only 19% students could compute the right value. Instead of this, about 28% students selected the fraction which is having smallest denominator.

Q.No. 57 : Conversion of different units of time

How many hours make 3600 minutes?

1. 60
2. 150
3. 300
4. 600

About 39% students could compute correctly hours from 3600 minutes. However, 20% students selected option 4, i.e., 600, which is a wrong answer. The reason for opting 600 might be that they divided 3600 minutes by 6 instead of 60.
Q.No. 60: **Difference of two numbers expressed in different units**

In the following question, which number will be in the blank?

1 km – 1 m = \[\square\] m

1. 0
2. 99
3. 990
4. 999

The question was based on units of distance/length. Students were asked to subtract 1 m from 1 km. Only 33% students could compute correctly. Majority of students were not able to subtract a small unit from large unit of the distance.

Q.No. 66: **Computation of number given in less than expression**

Gaurav collected 422 marbles. His brother collected 100 marbles less than him. How many marbles did his brother collect?

1. 312
2. 322
3. 512
4. 522

About 47% students could do this correctly. While 30% students selected option 4, they simply added the number of marbles instead of subtracting.

Q.No. 67: **Perimeter of a given square**

What is the perimeter of a square of side 3 cm?

1. 6 cm
2. 9 cm
3. 12 cm
4. 1 m 2 cm

In this question side of a square was given and students were asked to compute the perimeter of the square. About 45% students could do this correctly. Remaining students were not clear about the perimeter of a square.
**Q.No. 80 : Perimeter of a given figure**

In the figure given here, there are four equal squares each of perimeter 24 cm, joined together. What is the perimeter of the shaded part of the figure?

![Figure with shaded part]

1. 36 cm
2. 42 cm
3. 48 cm
4. 60 cm

Only 30% students could compute perimeter of the shaded part of the figure showing four equal squares joined together. Remaining students were not clear how to compute perimeter of joined squares.

### NUMBER SYSTEM

**Q.No. 4 : Computation of remainder after division**

When 5205 is divided by 9, the remainder is...

1. one
2. two
3. three
4. five

Only 46% students could do this correctly. While 25% students were not able to compute the remainder correctly and selected option 4.

**Q.No. 5 : Difference of two (four digit numbers) with carry**

\[
8501 \\
- 7510 \\
\hline
?
\]

1. 891
2. 991
3. 1011
4. 1091

Only 42% students could do correctly. Surprisingly, more than half of the students were not clear about the concept of Carry.
### Q.No. 9: Smallest number divisible by two given number

Which smallest 3-digit number is exactly divisible by both 5 and 6?

1. 150
2. 120
3. 105
4. 102

<table>
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<tr>
<th>Option</th>
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<th>Multi. Resp.</th>
</tr>
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<tbody>
<tr>
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<td>Option - 3</td>
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<td></td>
</tr>
<tr>
<td>Option - 4</td>
<td>43</td>
<td></td>
</tr>
</tbody>
</table>

In this question three digit numbers were given. Students were asked to identify a number out of the given numbers which is divisible by both 5 and 6. Only 23% students could identify the correct number. Surprisingly, about 43% students simply selected the smallest 3-digit number out of the given numbers.

### Q.No. 12: Computation of difference of two (4 digit numbers) with borrowing

9607 – 8268 is equal to...

1. 1461
2. 1449
3. 1439
4. 1339

<table>
<thead>
<tr>
<th>Option</th>
<th>Missing</th>
<th>Multi. Resp.</th>
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</thead>
<tbody>
<tr>
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<td>Option - 2</td>
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<td>Option - 3</td>
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<td></td>
</tr>
<tr>
<td>Option - 4</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>

About 45% students could compute the difference of given numbers correctly. It indicates that more than half of the students were not much familiar with the concept of borrowing.

### Q.No. 22: Difference between two numbers with carry (5/6 digit numbers)

The difference between 939852 and 43234 is...

1. 507512
2. 896618
3. 896628
4. 983086

<table>
<thead>
<tr>
<th>Option</th>
<th>Missing</th>
<th>Multi. Resp.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Option - 2</td>
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<td></td>
</tr>
<tr>
<td>Option - 4</td>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>

Only 43% students could find out the correct answer. However, 22% students simply added the numbers instead of subtracting.
**Q.No. 34 :** Computation of value using information given in chart form

The following chart shows the price of some vegetables. Rabiya wants \(2\frac{1}{2}\) kg tomatoes. How much she will pay?

<table>
<thead>
<tr>
<th>Rate List</th>
<th>Items</th>
<th>Price in Rs (Per kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomatoes</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Potatoes</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Onions</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

1. Rs 50
2. Rs 35
3. Rs 34
4. Rs 30

Only 34% students could compute the required value. Remaining students could not interpret the information given in the chart.

**Q.No. 35 :** Recognising the appropriate operation in given situation

Aditya made 56 laddoos. He put equal number of laddoos on 8 plates. Which of the following shows the number of laddoos on each plate?

1. \(56 + 8\)
2. \(56 - 8\)
3. \(56 \div 8\)
4. \(56 \times 8\)

Only 39% students could recognise the appropriate operation (division) for putting objects in equal number.

**Q.No. 36 :** Relationship between two measures of time

Number of hours in a week is...

1. 72
2. 84
3. 144
4. 168

About 47% students could recognise the appropriate answer.
Q.No. 39: Computation of divisor using dividend, remainder and relationship

If \( \square \div 25 = 9 \), then the number in the \( \square \) will be...

1. 34
2. \( \frac{25}{9} \)
3. \( \frac{9}{25} \)
4. 225

Only 37% students could find out correct answer. More than half of the students selected wrong options out of confusion.

Q.No. 45: Computation of how much a number is greater/smaller than other

How much greater is 555 than 198?

1. 357
2. 358
3. 367
4. 753

In this question students were asked to compute that 555 is how much greater than 198. Only 43% students could do correctly. Surprisingly about 22% students added both the digits.

Q.No. 49: Computation of difference in place values digits of number are interchanged

The digits 3 and 4 of the number 354 are interchanged to form a new number. What is the difference between the new number and the original number?

1. 99
2. 101
3. 109
4. 199

Only 31% students could compute difference correctly. Remaining could not find out the difference between the original number and the new number formed after interchanging the digits.
### Q.No. 54: Computation of multiplicative sum of two numbers

\[ 90 \times 305 = ? \]

1. 3150
2. 7470
3. 27450
4. 270450

<table>
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<td>Option - 3</td>
<td>47</td>
</tr>
<tr>
<td>Option - 4</td>
<td>15</td>
</tr>
</tbody>
</table>

Only 47% students could multiply a two digit number with a three digit number correctly.

### Q.No. 55: Denominator of equivalent fraction

If \( \frac{3}{8} = \frac{9}{\square} \), then the number in the \( \square \) will be...

1. 8
2. 12
3. 14
4. 24

<table>
<thead>
<tr>
<th>Option</th>
<th>Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option - 1</td>
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<td>Option - 3</td>
<td>14</td>
</tr>
<tr>
<td>Option - 4</td>
<td>40</td>
</tr>
</tbody>
</table>

Only 40% students responded correctly. More than half of the students could not select the appropriate denominator to make the two fractions equivalent.

### Q.No. 56: Computation of time after a given time period

What will be the correct time exactly 75 minutes after 2:00 p.m.?

1. 2 : 45 p.m.
2. 2 : 75 p.m.
3. 3 : 15 p.m.
4. 3 : 45 p.m.

<table>
<thead>
<tr>
<th>Option</th>
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<tbody>
<tr>
<td>Option - 1</td>
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<td>Option - 3</td>
<td>45</td>
</tr>
<tr>
<td>Option - 4</td>
<td>8</td>
</tr>
</tbody>
</table>

In this question students were asked to compute the time exactly 75 minutes after 2:00 p.m. About 45% students could do correctly. While 24% students selected the option 2:75 p.m. It indicates that they are not clear about addition of minutes in the given hours.
**Q.No. 59 :** Average of given data

The rainfall in a town in five consecutive months was recorded as 2 cm, 5 cm, 11 cm, 8 cm and 4 cm respectively. The average rainfall in the town was

1. 2 cm
2. 5 cm
3. 6 cm
4. 11 cm

Only 29% students could compute the average of the given digits. While about same percentage of students selected the highest number as average of all given numbers.

**Q.No. 65 :** Relationship between divisor and dividend

If $654 \div 6 = \square$, then the number in the $\square$ will be...

1. 19
2. 100
3. 109
4. 648

Only 43% students could answer correctly. About 20% students were confused and opted the wrong option, i.e.; option 1.

**Q.No. 74 :** Sum of a simple multiplication of numbers

If $\frac{5}{6} = \square \div 24$, then the number in the $\square$ is...

1. 5
2. 18
3. 20
4. 23

Only 39% students could compute this item correctly.
Q.No. 75: Sum of the fractional number with different denominator

\[
\frac{2}{3} + \frac{3}{5}
\]

is equal to...

1. \[
\frac{2+3}{3\times5}
\]

2. \[
\frac{2\times3+3\times5}{3\times5}
\]

3. \[
\frac{2+3}{3+5}
\]

4. \[
\frac{2\times5+3\times3}{3\times5}
\]

Only 24% students could do this correctly. Majority of students were not clear about the method of finding the sum of fractions.

Q.No. 76: Days in week after days interval

If today is Tuesday, which day will be 10th day after today?

1. Thursday
2. Friday
3. Saturday
4. Tuesday

In this question students were asked the day after 10 days from today(Tuesday). Nearly half of the students could compute correctly. While remaining students could not compute the day correctly which will be after 10 days from Tuesday.

Q.No. 79: Using fundamental operation in conditional situation

There are 250 rooms in a hostel. Students are staying in 225 rooms. How many rooms are vacant if the warden is staying in 2 rooms?

1. 21
2. 23
3. 25
4. 27

Only 37% students could compute correctly. However, about 22% students selected option 3, i.e.; 25 without subtracting the number of rooms occupied by the warden.
## What Students Can Do?

**Items responded correctly by 50% and more Students in Mathematics**

<table>
<thead>
<tr>
<th>Item No.</th>
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<th>Content Area</th>
<th>Item Description</th>
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<td>Operations</td>
<td>Computation of difference of place value of a digit in a given number</td>
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<td>205</td>
<td>Operations</td>
<td>Matching two values given in different measuring units (length)</td>
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<tr>
<td>19</td>
<td>224</td>
<td>Operations</td>
<td>Place value of a digit in given 6 digit number</td>
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<td>31</td>
<td>211</td>
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<tr>
<td>41</td>
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<td>Number and its number name</td>
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<td>51</td>
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<td>Operations</td>
<td>Smallest four digit number</td>
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<td>73</td>
<td>233</td>
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<td>Uses more than a number to find value</td>
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<td>Sides of a given geometrical figure</td>
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<tr>
<td>14</td>
<td>168</td>
<td>Geometry</td>
<td>Figure of a triangle</td>
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<td>Angle of specific measure (in a range)</td>
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<td>Geometrical figures by its sides</td>
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<tr>
<td>72</td>
<td>223</td>
<td>Geometry</td>
<td>Dots lie inside/outside a figure</td>
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<td>Reading time in a watch</td>
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<td>229</td>
<td>Number System</td>
<td>Computation of value given in different units</td>
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</tr>
</tbody>
</table>
Sample Items: Items responded correctly by 50% and more Students in Mathematics.

**OPERATIONS**

**Q.No. 18:** Matching two values given in different measuring units (length)

Rama’s height is one metre fifty centimetres. It can be written as...

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
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<td>Option - 4</td>
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<tr>
<td></td>
<td>Multi. Resp.</td>
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<td></td>
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</tbody>
</table>

About 68% students could match values given in different measuring units.

**GEOMETRY**

**Q.No. 14:** Figure of a triangle

Which of the following figures is a triangle?

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
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<td>Option - 2</td>
<td>4</td>
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</tr>
<tr>
<td>3.</td>
<td>Option - 3</td>
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<td></td>
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</tbody>
</table>

About 86% students could identify figure of a triangle out of the given figures.
Environmental Science (EVS)
Overall

- In Uttarakhand, performance of students was lower as compared to overall average, on all the content areas of EVS.

<table>
<thead>
<tr>
<th>Area</th>
<th>Family &amp; Environment</th>
<th>Food</th>
<th>Shelter</th>
<th>Water</th>
<th>Travel</th>
<th>Real Life</th>
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<tr>
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<td>58 (23.4)</td>
<td>50 (22.8)</td>
<td>49 (26.6)</td>
<td>47 (26.1)</td>
<td>53 (34.5)</td>
<td>64 (27.4)</td>
</tr>
<tr>
<td>State</td>
<td>58 (23.4)</td>
<td>50 (22.8)</td>
<td>49 (26.6)</td>
<td>47 (26.1)</td>
<td>53 (34.5)</td>
<td>64 (27.4)</td>
</tr>
</tbody>
</table>

Gender

- On each content area, average scores of both boys and girls were lower than overall average, except for boys on the content area ‘Food’.
- Performance of girls was at par with boys on the content areas of ‘Shelter’, ‘Water, and ‘Real Life’ and they scored more than boys on ‘Travel’.

Area

- On each content area, scores of both rural and urban students were lower than overall average, except for urban students on the content area ‘Food’.
- Performance of rural students was higher than urban students on the content areas of ‘Family and Environment’ and ‘Real Life’ and their performance was at par with urban students on ‘Food’ and ‘Water’ and ‘Travel’.

Social Groups

- For all the social groups, average scores on each content area were lower than the overall average, except for General category students on the content area ‘Food’.
- SC category students scored higher than ST students on the content areas ‘Food’ and ‘Travel’.
Learning Gaps: Items responded correctly by Less than 50% Students in EVS.

**FAMILY AND ENVIRONMENT**

**Q.No. 11:** Relating characteristics of plants with their habitat

Which of the following plants grows naturally in the desert?

1. lotus
2. cactus
3. marigold
4. deodar

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<td>Option - 4</td>
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</table>

Only 43% students answered correctly i.e cactus. While 20% students responded ‘Lotus’ which is wrong answer. It states that students do not know about the desert and type of plants grow in desert.

**Q.No. 26:** Importance of team work

A team can show better results if its members

1. are worried about results.
2. show the team spirit.
3. play for themselves.
4. criticise each other.

<table>
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<td>14</td>
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<td>Option - 4</td>
<td>16</td>
</tr>
<tr>
<td>Multi. Resp.</td>
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</tbody>
</table>

In this question students were asked about the importance of team work. About 43% students responded correctly.

**Q.No. 27:** Stages of seed germination

Look at the pictures below.

Which order shows the germination of a seed?

1. D, B, A, C
2. C, A, B, D
3. D, B, C, A
4. C, B, A, D

<table>
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<td>Option - 2</td>
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<td>17</td>
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<tr>
<td>Option - 4</td>
<td>32</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>2</td>
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</tbody>
</table>

About 32% students could identify the figures (pictures) related to seed germination in correct order.
Q.No. 33: Edible part of carrot

Which part of the carrot plant is eaten?

1. flower
2. leaves
3. stem
4. root

Out of the total, about 47% of students know that root is edible part of carrot. Further, about 26% students understand that ‘stem’ is edible part of carrot.

Q.No. 34: Relation between the weather and breathe air

The air coming out of your mouth is felt hottest in ____________.

1. summer
2. winter
3. the rainy season
4. spring

About 34% students could relate that air coming out of our mouth is felt hottest in winter. While 37% students had opted first option as summer.

Q.No. 36: Measuring instruments used to see small organism

Which of the following instrument is used best to see very small organisms?

Only 39% students could identify correctly that microscope is used to see very small organisms among other instruments.
Q.No. 40: Effects of cutting down of trees

Rapidly cutting down many trees in a forest leads to ____________.

1. increase in soil erosion
2. increase in wild life population
3. increase in rainfall
4. increase in soil fertility

Scale Score 249
Missing 11
Option - 1 46
Option - 2 14
Option - 3 16
Option - 4 11
Multi. Resp. 2

About 46% students know that rapidly cutting down many trees in the forest leads to *increase in soil erosion*.

Q.No. 43: Process of breathing

During breathing when we inhale air our chest ____________.

1. contracts
2. expands
3. vibrates
4. heats up

Scale Score 284
Missing 6
Option - 1 27
Option - 2 36
Option - 3 15
Option - 4 13
Multi. Resp. 3

This question is related with students’ knowledge about process of breathing. Only 36% students know that during breathing when we inhale air our chest *expands*.

Q.No. 45: Relationship in family tree

**Direction:** Family tree of Meena is shown below. Based on the figure answer the question.

![Family Tree Diagram]

Rakesh gets married. What will be the relation of his wife with Meena?

1. sister
2. sister-in-law
3. mother
4. daughter-in-law

Scale Score 240
Missing 6
Option - 1 16
Option - 2 44
Option - 3 10
Option - 4 21
Multi. Resp. 2

This question was based on given family tree figure. About 44% students could find out the correct answer.
**Q.No. 47 :** Critical analysis of the family tree

Rakesh is transferred to some other place and lives like a nuclear family. Now how many members are staying in Meena’s family?

1. 4
2. 5
3. 6
4. 7

About 44% students could find out the correct members of the family.

**Q.No. 50 :** Interpret the graph

**Direction:** Look at the graph and answer the question

Which of the following animals has the lowest heartbeats per minute?

1. mouse
2. dog
3. elephant
4. squirrel

For responding on this question ‘Bar Graph’ was provided showing animals on ‘x’ axis and heartbeats per minute on ‘y’ axis. The students were supposed to read the bar graph and find out the animal having the lowest heartbeats per minutes. Nearly half of the students could interpret the graph correctly.

**Q.No. 53 :** Animals and their habitat

Carefully observe the following figures and classify the animals according to their group.

1. pet animals
2. water animals
3. birds
4. insects

About 46% students know the correct answer. More than half of the students could not classify the animals according to their group.
### Q.No. 58: Edible part of sweet potato

Which part of the sweet potato plant is eaten?

1. root
2. stem
3. leaves
4. fruit

<table>
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<th>Scale Score</th>
<th>291</th>
</tr>
</thead>
<tbody>
<tr>
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<td>10</td>
</tr>
<tr>
<td>Option - 4</td>
<td>37</td>
</tr>
<tr>
<td>Multi. Resp.</td>
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</tr>
</tbody>
</table>

Only 32% students identified that *root* of the sweet potato plant is eaten. But 37% students know that fruit of sweet potato plant is eaten.

### Q.No. 64: Importance of wild animals in eco system

Wild animals should be protected because ____________.

1. they are an important part of the eco system
2. they live in forests
3. children love them
4. they do not need houses to live in

<table>
<thead>
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<th>Scale Score</th>
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</tr>
</thead>
<tbody>
<tr>
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<td>Option - 2</td>
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<tr>
<td>Option - 3</td>
<td>15</td>
</tr>
<tr>
<td>Option - 4</td>
<td>17</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>2</td>
</tr>
</tbody>
</table>

Only 30% students could explain that wild animals are *important part of eco system* and should be protected. But 28% students understood that wild animals should be protected because they live in forests.

### Q.No. 70: Importance of forest in human life

Read statements A, B and C about forests.

- **A.** Forests provide us medicines, herbs and bamboos.
- **B.** Forests help in maintaining our climate.
- **C.** Forests provide us foods.

Which statements are true?

1. A and B only
2. A and C only
3. B and C only
4. A, B and C

<table>
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<td>Option - 2</td>
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<tr>
<td>Option - 3</td>
<td>11</td>
</tr>
<tr>
<td>Option - 4</td>
<td>26</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>3</td>
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</tbody>
</table>

Given all the three statements were indicating the importance of forests. Only 26% students could select the right combination of the statements. Surprisingly, 29% students selected option 1, they think that ‘Forests provide us food’ is not the right statement.
Q.No. 78: Interpreting the data given in the graph

**Direction:** Look at the graph and answer the question.

What is the rate of heartbeat of a mouse?
1. 80 beats per minute
2. 150 beats per minute
3. 500 beats per minute
4. 1000 beats per minute

![Graph showing rates of heartbeats of different animals]

Only 30% students could interpret the information given in the graph related with the rate of heartbeat of mouse.

Q.No. 79: Trends of growth

**Direction:** Use the information in the table to answer questions 79 and 80.

How much does the plant grow each day?

<table>
<thead>
<tr>
<th>Day</th>
<th>Heights of the plant (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>0.5</td>
</tr>
<tr>
<td>Day 2</td>
<td>1.0</td>
</tr>
<tr>
<td>Day 3</td>
<td>1.5</td>
</tr>
<tr>
<td>Day 4</td>
<td>2.0</td>
</tr>
<tr>
<td>Day 5</td>
<td>2.5</td>
</tr>
</tbody>
</table>

About 41% students could read the data in the given table and find out the trend of growth in plant.

Q.No. 80: Trends of growth

What will be the height of the plant on day 6 if it continues to grow in the same way?
1. 4.5 cm
2. 4.0 cm
3. 3.5 cm
4. 3.0 cm

Only 40% students could predict the growth of the plant on a specific day on the basis of the data provided in the table.
## FOOD

### Q.No. 21: Effect of food items on health

Which of the following food items help in keeping our gums healthy?

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>sweets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>nuts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>oranges</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>chocolates</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Scale Score:** 290
- **Missing:** 4
- **Option - 1:** 8
- **Option - 2:** 37
- **Option - 3:** 39
- **Option - 4:** 10
- **Multi. Resp.:** 2

About 39% students have responded correctly that **oranges** help in keeping our gums healthy. While 37% students have wrong information that nuts keep our gums healthy.

### Q.No. 35: Process of preservation of pickles

Pickles can be preserved using ____________.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>salt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>garam masala</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>aniseed (saunf)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>garlic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Scale Score:** 250
- **Missing:** 8
- **Option - 1:** 40
- **Option - 2:** 27
- **Option - 3:** 13
- **Option - 4:** 10
- **Multi. Resp.:** 2

Only 40% students know that pickles can be preserved using **salt.** About 27% students responded 'garam masala'.

### Q.No. 41: Components of food /diet and their functions

Which of the following promotes body-building and growth?

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>carbohydrates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>fats</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>proteins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>minerals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Scale Score:** 290
- **Missing:** 6
- **Option - 1:** 24
- **Option - 2:** 10
- **Option - 3:** 47
- **Option - 4:** 10
- **Multi. Resp.:** 3

About 47% students have knowledge that **proteins** promote body building and growth. But 24% students have said that body building and growth was promoted by carbohydrates.
Q.No. 48: **Energy giving nutrient**

Which one of the following are energy giving nutrients?

1. carbohydrates  
2. minerals  
3. proteins  
4. vitamins

<table>
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<tr>
<td>Option - 4</td>
<td>23</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>2</td>
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</tbody>
</table>

Only 34% students are aware that *carbohydrates* are energy giving nutrients. While 23% students have misconception that 'Vitamins' are energy giving nutrients.

Q.No. 52: **Deficiency disease due to lack of iron**

Lack of iron in human body causes ____________.

1. anaemia  
2. malaria  
3. rickets  
4. night blindness

<table>
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</table>

About 35% students have responded correctly that lack of iron in human body causes *anemia*. But 25% students have wrong information that rickets is caused due to lack of iron.

Q.No. 62: **Areas of tongue for different taste**

Which part of the tongue senses sweetness?

1. A  
2. B  
3. C  
4. D

<table>
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<td>Option - 4</td>
<td>16</td>
</tr>
<tr>
<td>Multi. Resp.</td>
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</table>

In this question a figure indicating different areas of a child’s tongue was shown. Students were asked to identify the area of a tongue which senses sweetness. Only 39% students could identify correctly.
Q.No. 76: Animal source of food

Asha has a meal of bread, milk and egg. Which foods are from animals?

1. bread and eggs
2. milk and bread
3. milk and egg
4. bread, milk and egg

About 47% students are aware that both milk and egg are obtained from animals.

Q.No. 28: Problems of population explosion

The problems of unemployment and housing in India are mainly because of

1. information explosion.
2. technological advancement.
3. knowledge development.
4. population explosion.

Nearly half of the students could give main reason of the problem of unemployment and housing in India. However, 21% students responded 'knowledge development' is the main reason.

Q.No. 32: Reason for construction of Dams

Dams are constructed mainly for ____________.

1. shifting the surrounding villages
2. tourism purposes
3. producing electricity and for irrigation
4. making fish ponds

About 46% students explained that dams are constructed mainly for producing electricity and for irrigation. About 18% students have misconception that dams can also be used for making fish ponds.
Q.No. 9 :  Interpreting the information given in the graph

**Direction:** Renu’s classmates measured rainfall for a week. Based on the chart please answer question.

What was the rainfall on Wednesday?

1. 8 mm
2. 7 mm
3. 5 mm
4. 4 mm

About 43% students could answer correctly. Remaining students could not interpret the information given in the graph correctly.

Q.No. 20 :  Sources of water and their usage

Which of these is **NOT** drinking water?

1. tube well water
2. well water
3. sea water
4. tap water

About 44% students could answer correctly that *sea water* is not drinking water. But 23% students think that tube well water is not suitable for drinking.

Q.No. 30 :  Cause and effect relationship between climatic conditions and evaporation

Look at the pictures. The same amount of water is put in each glass and each bowl. They are left in the sun or the shade. After five hours which will have lost most water?

1. A
2. B
3. C
4. D

This question is based on pictures showing climate and containers having equal amount of water. Only 42% of students could establish relationship between size of container and climate conditions with respect to evaporation of water correctly.
**Q.No. 15**: Forms of energy with their relevance to home

Which of the following forms of energy is NOT commonly used at home?

1. wind  
2. nuclear  
3. heat  
4. electrical

Out of the total students, only 37% students know that **nuclear** energy is not commonly used at home.

**Q.No. 17**: Different fuels with their properties

Which of the following is the least polluting fuel?

1. kerosene  
2. LPG  
3. wood  
4. coal

This question compares and contrasts different fuels with their properties. After comparing different fuels, about 41% students selected correct answer **LPG** as the least polluting fuel as compared to kerosene, wood and coal. However, 20% students found kerosene as least polluting among others.

**Q.No. 25**: Interrelate the thing around the earth

When the Earth is seen from the outer space, it looks mainly blue. This is because **most** of the Earth is covered with _______________.

1. ice  
2. mountains  
3. deserts  
4. oceans

In this question students were asked why earth looks mainly blue when it is seen from the outer space. About 47% students know that most of the earth is covered with **oceans**.
### Q.No. 37: Least polluting mode of transportation

Which one of these modes of travelling does **NOT** cause pollution in the surroundings?

1. travelling in an aeroplane
2. sailing in a motor boat
3. driving a car
4. riding a bicycle

Out of total students, only 40% students know that **riding a bicycle** does not cause pollution in the surroundings.

### Q.No. 44: Sources of energy and their by product

Which one of the following sources of energy produces carbon dioxide?

1. solar energy
2. energy from coal
3. wind energy
4. hydrothermal energy

Only 38% students know that carbon dioxide gas is produced by **coal**. While 28% students responded as 'solar energy'.

### Q.No. 57: Importance of historical monuments

Which is a wrong practice when we visit historical monuments?

1. taking photographs
2. singing and dancing in the premises
3. writing our names on its walls
4. throwing garbage into the dustbins

Only 40% of students know that **writing names on the walls** of historical monuments is a wrong practice.
Q. No. 65: Least polluting fuel

When burning, which of the following causes least air pollution?

1. petrol
2. biogas
3. wood
4. coal

This question aims at identifying least polluting fuel on the basis of their combustion. About 37% students could answer correctly that on burning biogas causes least air pollution as compared to petrol, wood and coal. However, 20% students think that on burning wood causes least pollution.

Q. No. 10: Interpreting the graph

A flag is tied to a bamboo to measure the wind strength as shown below.

Choose the correct order that shows the wind strength from the strongest to the weakest.

1. 3, 4, 2, 1
2. 3, 4, 1, 2
3. 3, 1, 4, 2
4. 3, 2, 1, 4

About 29% students could give correct order of flag showing the wind strength from the strongest to the weakest. Remaining students could not choose the correct order.

Q. No. 16: Phenomena of lunar eclipse

Lunar eclipse occurs when

1. the sun is between the moon and the earth.
2. the moon is between the sun and the earth.
3. the earth is between the sun and the moon.
4. the Jupiter is between the sun and the moon.

Only 28% students know that lunar eclipse occurs when the earth is between the sun and the moon. About 27% students understand that lunar eclipse occurs when 'the sun is between the moon and the earth'.
### Q.No. 23: Measuring apparatus with the quantity of water

Which of these is the best used to measure 5 milliliters of water?

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Spoon</td>
</tr>
<tr>
<td>B</td>
<td>Jar</td>
</tr>
<tr>
<td>C</td>
<td>Bucket</td>
</tr>
<tr>
<td>D</td>
<td>Bottle</td>
</tr>
</tbody>
</table>

Only 22% students could relate that **spoon** is best used to measure 5 milliliter of water. Majority of the students were not clear about measuring apparatus and as a result they (25%) have selected bucket for measuring 5 milliliter of water.

### Q.No. 31: Neighboring country of India

Which one of these is NOT our neighbouring country?

1. Pakistan
2. China
3. Nepal
4. Iran

About 47% students identified that **Iran** is not our neighbouring country. While 22% students have wrong information that Pakistan is not a neighbouring country of India.

### Q.No. 39: Co-relating properties of oil with water

Oil is spread on stagnant water to ________________ .

1. kill fishes
2. kill mosquito larvae
3. remove smell
4. make water layer shining

Only 29% students know that oil is spread on stagnant water **to kill mosquito larvae**. But most of the students are not clear why the oil is spread on stagnant water. 23% students think that it is used to ‘make water layer shining’.
Q.No. 49: Effect of exhaled air on mirror

A part of the mirror clouds up when you breathe on it because of ____________.

1. water vapour from your breath
2. carbon dioxide from your breath
3. oxygen from your breath
4. nitrogen around you

About 26% students know that it is the **water vapour** that clouds the mirror when we breathe on it. However, 36% students think that it is because of carbon dioxide.

Q.No. 56: Dissolving property of kerosene

Ramesh uses kerosene oil to clean paint from his hand instead of water because ____________.

1. kerosene is soft
2. kerosene smells good
3. the paint dissolves in kerosene
4. kerosene is easily available

In this question students have to give reason that why a person uses kerosene oil to clean paint from his hand instead of water? Only 41% gave the correct reason, i.e. **the paint dissolves in kerosene**. Others were not clear about the dissolving property of kerosene.

Q.No. 59: Locating Jim Corbett Park in the map

**Direction:** Use the information in the map to answer the question.

In which part of India does the Jim Corbett Park lie?

1. the eastern part
2. the northern part
3. the southern part
4. the western part

Only 31% students could locate the Jim Corbett park in the map. While 29% students selected option 4. It indicates that majority of students could not interpret the directions from the map.
**Q.No. 60 :** Locating Kaziranga Sanctuary in the map

**Direction:** Use the information in the map to answer the question.

In which part of India does the Kaziranga sanctuary lie?

1. the eastern part
2. the northern part
3. the southern part
4. the western part

Only 42% students could locate Kaziranga Sanctuary in the given map.

**Q.No. 66 :** Instrument for measuring temperature

Rahim pours hot water in one vessel and cold water in another vessel. Which of the following instruments will he use to compare the temperature of the water?

1. barometer
2. thermometer
3. voltmeter
4. hygrometer

Only 42% students are aware that **thermometer** is used to measure the temperature of water. Remaining are confused they think that barometer, voltmeter or hygrometer may be used for measuring temperature of water.

**Q.No. 69 :** Direction in the map

Which is the direction shown by B?

1. east
2. north
3. south
4. west

About 43% students were able to find the right direction of the point marked in the given map. Remaining were not able to find out the correct direction.
**Q.No. 73 : Temperature measuring instrument**

What does a doctor use to measure the body temperature?

1. stethoscope
2. stopwatch
3. lactometer
4. thermometer

Only 44% students know that *thermometer* is used for measuring the body temperature. While about 18% think that stethoscope is used for measuring the body temperature.

**Q.No. 74 : Water absorbing substances**

Which of the substances given below does **NOT** absorb water?

<table>
<thead>
<tr>
<th>CHALK</th>
<th>COTTON</th>
<th>GLASS</th>
<th>SPONGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
</tbody>
</table>

1. A
2. B
3. C
4. D

Nearly half of the students know that glass does not absorb water. Remaining students are not clear they think that chalk, cotton and sponge also do not absorb water.
### What Students Can Do?

**Items responded correctly by 50% and more Students in EVS**

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Scale Score</th>
<th>Content Area</th>
<th>Item Description</th>
<th>% Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>184</td>
<td>Family and Environment</td>
<td>Habits and habitats of animals.</td>
<td>74</td>
</tr>
<tr>
<td>3</td>
<td>182</td>
<td>Family and Environment</td>
<td>Classifying animals in different groups.</td>
<td>78</td>
</tr>
<tr>
<td>5</td>
<td>211</td>
<td>Family and Environment</td>
<td>Egg laying animals.</td>
<td>64</td>
</tr>
<tr>
<td>18</td>
<td>197</td>
<td>Family and Environment</td>
<td>Role of different parts of the plant.</td>
<td>73</td>
</tr>
<tr>
<td>19</td>
<td>185</td>
<td>Family and Environment</td>
<td>Footprints of birds.</td>
<td>60</td>
</tr>
<tr>
<td>46</td>
<td>234</td>
<td>Family and Environment</td>
<td>Establishing relationships on the basis of family tree</td>
<td>52</td>
</tr>
<tr>
<td>51</td>
<td>209</td>
<td>Family and Environment</td>
<td>National game of India.</td>
<td>65</td>
</tr>
<tr>
<td>61</td>
<td>172</td>
<td>Family and Environment</td>
<td>Flying birds and their features.</td>
<td>82</td>
</tr>
<tr>
<td>63</td>
<td>203</td>
<td>Family and Environment</td>
<td>Function of nose</td>
<td>62</td>
</tr>
<tr>
<td>71</td>
<td>225</td>
<td>Family and Environment</td>
<td>Functions of roots</td>
<td>51</td>
</tr>
<tr>
<td>72</td>
<td>225</td>
<td>Family and Environment</td>
<td>Animals give birth to babies</td>
<td>65</td>
</tr>
<tr>
<td>77</td>
<td>214</td>
<td>Family and Environment</td>
<td>Breathing in different conditions</td>
<td>66</td>
</tr>
<tr>
<td>1</td>
<td>230</td>
<td>Food</td>
<td>Richest source of iron</td>
<td>52</td>
</tr>
<tr>
<td>12</td>
<td>249</td>
<td>Food</td>
<td>Vitamins and their deficiency causing diseases</td>
<td>55</td>
</tr>
<tr>
<td>22</td>
<td>228</td>
<td>Food</td>
<td>Different types of clothes and their properties</td>
<td>60</td>
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<tr>
<td>14</td>
<td>215</td>
<td>Shelter</td>
<td>Finding solution in the given situation.</td>
<td>59</td>
</tr>
<tr>
<td>24</td>
<td>240</td>
<td>Shelter</td>
<td>House roofs in different geographical conditions.</td>
<td>51</td>
</tr>
<tr>
<td>6</td>
<td>218</td>
<td>Water</td>
<td>Features of aquatic animals.</td>
<td>64</td>
</tr>
<tr>
<td>8</td>
<td>211</td>
<td>Water</td>
<td>Interpreting the information given in the graph.</td>
<td>52</td>
</tr>
<tr>
<td>13</td>
<td>185</td>
<td>Water</td>
<td>Mode of transmission of diseases.</td>
<td>70</td>
</tr>
<tr>
<td>38</td>
<td>215</td>
<td>Water</td>
<td>Usage of water</td>
<td>63</td>
</tr>
<tr>
<td>42</td>
<td>201</td>
<td>Water</td>
<td>Animals and their habitat.</td>
<td>75</td>
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<tr>
<td>55</td>
<td>199</td>
<td>Water</td>
<td>Properties of solutes and solvents.</td>
<td>60</td>
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<tr>
<td>67</td>
<td>218</td>
<td>Water</td>
<td>Suitable conditions for breeding of mosquitoes</td>
<td>56</td>
</tr>
<tr>
<td>75</td>
<td>220</td>
<td>Water</td>
<td>Benefits of boiling water</td>
<td>58</td>
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<tr>
<td>4</td>
<td>218</td>
<td>Travel</td>
<td>Sources of energy and their uses.</td>
<td>57</td>
</tr>
<tr>
<td>54</td>
<td>213</td>
<td>Travel</td>
<td>Means of transportation causing pollution.</td>
<td>60</td>
</tr>
<tr>
<td>7</td>
<td>250</td>
<td>Real life</td>
<td>Neighboring country of India</td>
<td>66</td>
</tr>
<tr>
<td>29</td>
<td>242</td>
<td>Real life</td>
<td>Relationship between motion and gravity</td>
<td>61</td>
</tr>
<tr>
<td>68</td>
<td>224</td>
<td>Real life</td>
<td>Direction in the map.</td>
<td>56</td>
</tr>
</tbody>
</table>
Sample Items: Items responded correctly by 50% and more Students in EVS.

<table>
<thead>
<tr>
<th>FAMILY AND ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.No. 61: Flying birds and their features</td>
</tr>
<tr>
<td>Which of the following birds can NOT fly?</td>
</tr>
<tr>
<td>1. parrot</td>
</tr>
<tr>
<td>2. crow</td>
</tr>
<tr>
<td>3. eagle</td>
</tr>
<tr>
<td>4. ostrich</td>
</tr>
</tbody>
</table>

Scale Score 172

<table>
<thead>
<tr>
<th>Option</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>3</td>
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<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>82</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>1</td>
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</tbody>
</table>

About 82% students could identify the bird that cannot fly.

<table>
<thead>
<tr>
<th>WATER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.No. 42: Animals and their habitat</td>
</tr>
<tr>
<td>Which of these animals can live on both land and water?</td>
</tr>
<tr>
<td>1. fish</td>
</tr>
<tr>
<td>2. cat</td>
</tr>
<tr>
<td>3. rabbit</td>
</tr>
<tr>
<td>4. frog</td>
</tr>
</tbody>
</table>

Scale Score 201

<table>
<thead>
<tr>
<th>Option</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>75</td>
</tr>
<tr>
<td>Multi. Resp.</td>
<td>3</td>
</tr>
</tbody>
</table>

About 75% students know that frog can live both on land and water.
**Sum up**

**Language (Reading Comprehension)**

Overall, it may be concluded that the teachers need to work with their students to develop their competence in reading at different levels. This can be done by presenting the students with unseen texts of different varieties and asking them to read, understand and answer the given questions. The problems in reading occur due to the fact that most of the language testing in our country is textbook based and only tests recall of information from the seen texts. As a result, students have no opportunity to negotiate the unseen texts on their own. If they are made to read different kinds of reading texts often during an academic session, they would certainly be able to perform better on reading comprehension.

**Mathematics**

It could be concluded from the given results that students are lagging behind in some specific areas of mathematics. In those areas it is advisable that teachers should identify the steps where students do not understand the concept behind the problem or doing silly mistakes. Therefore, there is need of reteaching and more practice in those areas. Besides some activities may also be organized so that they may be able to overcome such type of problems. Moreover, in some areas students are doing well upto some extent but there is still a need of mastery of these concepts.

**Environmental Studies (EVS)**

Data presented in the report reveals that in most of the content areas of Environmental Studies, some concepts are not well understood by the students. In these content areas, less than half of the students are responding correctly. There is a need to probe in these content areas and understand how well these may be explained or learning experience may be provided so that students do not face any problem in dealing with such type of questions.

Besides, the output of the study may also be included in teachers training (pre and in service) programme to improve pedagogy aspect of teaching reading comprehension, mathematics and environmental studies so that teachers use innovative methodology for motivating students during teaching learning process.
Epilogue

The performance of students in a state is compared with overall performance of students in the nation (overall of 31 states/UTs) on the basis of gender, area and category. Besides, distracter analysis is also presented for items to find out the learning gaps in each subject content area. For this purpose such items were considered for analysis where less than 50% students answered the item correctly. The purpose of distracter analysis is to know where students are doing mistakes and what are their misconceptions. The report also shows what students can do in a specific content area by analysing where 50% or more students answered item correctly.

The data from this survey will provide feedback to policy makers, curriculum specialists, researchers and most importantly school principals and teachers a 'snapshot' of where students are lagging behind in content areas of a subject tested in a particular class.

Educational Survey Division