



# National Achievement Survey

## Class V

(Cycle 3)

# National

## Subject wise Report

*Learning Gaps in Language, Mathematics and Environmental Studies*



**Educational Survey Division**



राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्  
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

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# Content

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*Preface* ..... iii

*Project Team* ..... iv

**Introduction** ..... **1**

**Language (Reading Comprehension)** ..... **9**

**Mathematics** ..... **29**

**Environmental Studies** ..... **67**

## Preface

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*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.

In this report, item wise performance of students in NAS Class V (Cycle 3) in Reading Comprehension, Mathematics and Environmental Studies is reported. Items are classified into two groups, i.e.; items those were responded correctly by less than 50% and items those were responded by 50% or more students correctly. The items in the first group were tagged as 'What Students can't do' and the second group items were as 'What Students can do'. Besides distracter analysis for each item is also provided for all items tested in all the three subjects. This analysis will provide an insight about how students are doing in the subject tested across the States/UTs where the survey was conducted. 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 is also an attempt to provide feedback in general for planning interventions at National level.

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. Besides, thanks are also due to Shri Sukhvinder, one of the coordinators of project, who contributed in developing this report and provided valuable suggestions in environmental studies part from time to time. Finally, I thank one and all who have contributed to this report in some or other way.

*New Delhi*  
September, 2014

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## Project Team

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## 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.

### **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.

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.

## 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). Arunachal Pradesh, Dadra & Nagar Haveli, Mizoram and Manipur have not participated in the survey.

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.

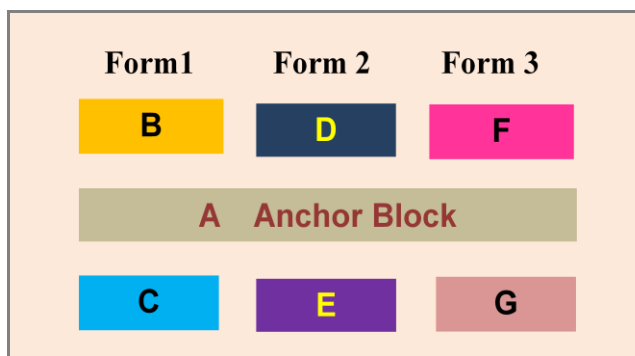
#### What is IRT?

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.

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.

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:



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

Language	Mathematics	EVS
Language Elements	Arithmetic	Social Studies
Reading Comprehension	Algebra	Science
Writing	Geometry	-

Items in different subjects covered the following content areas:

Language	Mathematics	EVS
Vocabulary	Operations	Family & Environment
Tenses	Geometry	Food
Preposition	Measurement	Shelter
Linkers	Number System	Water
Locate information	-	Travel
Grasp ideas/ Interpret		Real life
Infer/Evaluate		-

## Participating States and Sample Coverage

The survey was intended to cover all 35 states and UTs, but Arunachal Pradesh, Dadra and Nagar Haveli, and Lakshadweep could not participate in this endeavour. Manipur participated in the survey administration, but faced problems in data collection and failed to report its data on time. Among the 31 participating states and UTs, six states, Jharkhand, Meghalaya, Mizoram, Nagaland, Sikkim and West Bengal, could not test Class V students at the end of their school year i.e. December 2009. Therefore it was decided to test Class VI children at the beginning of the next school year.

Exclusions of sub-populations from the total target population of NAS, Class V were made at the initial stage of sampling. Large-scale educational surveys allow such exclusions for reasons such as ensuring administrative efficiency– as long as the excluded population does not critically affect the quality of the survey. For example, the exclusion of very small schools from a target population is often accepted. The Class V (NAS) excluded schools having children fewer than five, or in some cases, nine students depending on the enrolment characteristics of the State/UT. In addition to the small school exclusion, Upper Primary Only schools were excluded due to a classification error. As the result of these exclusions, population coverage of the Class V sample varies from 7% to 99%. In five States/UTs, Assam, Daman & Diu, Goa, Kerala and Maharashtra, the population coverage fell below 80 per cent mainly due to the Upper Primary Only school exclusion. It should be noted that it is virtually impossible in such surveys to achieve a sample which covers the entire population. However, if too many possible respondents are excluded then the sample loses much of its value as a description of the population. For this study, NCERT set 80 per cent coverage of above as acceptable for a representative picture. Because of the arrangements for replacing non-cooperating schools with an equivalent, it is considered that response rates at the school level are satisfactory. Unfortunately, no data is available for non-response within selected schools.

**Table 1: Sample Coverage and Reporting Classification by State**

S.No.	State	Population Coverage	Reporting Classification	S.No.	State	Population Coverage	Reporting Classification
1.	A & N Islands	96%	Class V, Adequate Coverage	19.	Lakshadweep	--	Did Not Participate
2.	Andhra Pradesh	84%	Class V, Adequate Coverage	20.	Manipur	--	Incomplete and late submission of Data (Not Reported)
3.	Arunachal Pradesh	--	Not Participated	21.	Madhya Pradesh	91%	Class V, Adequate Coverage
4.	Assam	7%	Class V, Inadequate Coverage	22.	Maharashtra	53%	Class V, Inadequate Coverage
5.	Bihar	98%	Class V, Adequate Coverage	23.	Meghalaya	NA	Class VI
6.	Chhattisgarh	87%	Class V, Adequate Coverage	24.	Nagaland	NA	Class VI



S.No.	State	Population Coverage	Reporting Classification	S.No.	State	Population Coverage	Reporting Classification
7.	Dadra & Nagar Haveli	--	Not Participated	25.	Orissa	93%	Class V, Adequate Coverage
8.	Daman & Diu	50%	Class V, Inadequate Coverage	26.	Puducherry	99%	Class V, Adequate Coverage
9.	Delhi	99%	Class V, Adequate Coverage	27.	Punjab	92%	Class V, Adequate Coverage
10.	Goa	51%	Class V, Inadequate Coverage	28.	Rajasthan	84%	Class V, Adequate Coverage
11.	Gujarat	96%	Class V, Adequate Coverage	29.	Sikkim	NA	Class VI
12.	Haryana	94%	Class V, Adequate Coverage	30.	Tamil Nadu	94%	Class V, Adequate Coverage
13.	Himachal Pradesh	93%	Class V, Adequate Coverage	31.	Tripura	99%	Class V, Adequate Coverage
14.	Jammu & Kashmir	92%	Class V, Adequate Coverage	32.	Uttar Pradesh	98%	Class V, Adequate Coverage
15.	Jharkhand	NA	Class VI	33.	Uttarakhand	92%	Class V, Adequate Coverage
16.	Karnataka	90%	Class V, Adequate Coverage	34.	West Bengal	NA	Class VI
17.	Kerala	59%	Class V, Inadequate Coverage				

### Characteristics of Participating States

Table 2 shows that the States and UTs that participated in this survey vary greatly in their physical, demographic and socio-economic characteristics. For example, Bihar, Maharashtra and Uttar Pradesh each have populations of more than 100,000,000 whilst Daman & Diu, and the Andaman and Nicobar Islands have fewer than 400,000 inhabitants. Mizoram has a population density of just 52 people per square kilometre whilst the corresponding figure for Delhi is over 11000. The great disparity in the economic resources of states, and hence the funding available for education, is exemplified by the differences between economically advantaged states such as Delhi, Goa, Maharashtra and Haryana (each with GDP per capita greater than INR 50,000) to those with relatively low incomes such as Bihar and Madhya Pradesh (each with GDP per capita less than INR 20,000).

Of particular importance in this survey are the significant differences in the provision of education at the Class V level. For example, the target population for this survey was all Class V students enrolled in government-run and government-aided schools. However, the proportion of Class V students in such schools varied significantly amongst states. For example, in Bihar, West Bengal and Goa nearly 100% of Class V students are in government schools with an insignificant proportion in the private sector. By way of contrast, in Nagaland fewer than 50% of Class V students are enrolled in government schools.

**Table 2: Selected physical, demographic and socio-economic indicators for the states and UTs of India**

States	Population+	Area (sq. km)	Population Density (per sq. km)+	GDP(INR millions)***	GDP per capita (INR)***	Per-capita Income (INR)-2010**	Class V enrolment (All schools)*	Class V enrolment (Gov. & Gov.-aided)*	Sex ratio (female per 1000 males)+	Ratio Gov: All schs*	Literacy Rate+	Gross Enrolment Ratio (Class I-V)++
A & N Islands	3,79,944	8,249	46	15,620	43,876	74,340	7,561	6,471	878	0.86	86.27	101.8
Andhra Pradesh	8,46,65,533	275,045	308	2,691,730	33,200	51,025	1,355,758	890,628	992	0.66	67.66	95.5
Assam	3,11,69,272	78,483	397	575,970	21,607	27,197	687088	642984	954	0.94	73.18	106.1
Bihar	10,38,04,637	94,164	1102	796,820	9,614	16,119	1,872,017	1,867,758	916	1.00	63.82	104.4
Chandigarh	10,54,686	144	9252	98,720	109,688	120,912	16,606	11,315	818	0.68	86.43	96.1
Chhattisgarh	2,55,40,196	135,194	189	519,210	24,921	38,059	500,598	436,829	991	0.87	71.04	125.5
Daman & Diu	2,42,911	122	2169	5,028	31,781	39,970	2,890	2,387	618	0.83	87.07	135.9
Delhi	1,67,53,235	1,483	11,297	1,053,856	76,087	116,886	289,143	191,010	866	0.66	86.34	109.1
Goa	14,57,723	3,702	394	124,000	92,010	132,719	21,944	21,795	968	0.99	87.40	129.6
Gujarat	6,03,83,628	196,024	308	2,166,510	43,330	63,961	1,048,280	845,998	918	0.81	79.31	123.0
Haryana	2,53,53,081	44,212	573	1,063,850	50,312	78,781	358,622	263,773	877	0.74	76.64	90.4
Himachal Pradesh	68,56,509	55,673	123	254,350	45,391	50,365	136,668	107,540	974	0.79	83.78	111.7
Jammu and Kashmir	1,25,48,926	222,236	124	264,880	26,488	30,582	222,329	136,877	883	0.62	68.74	103.2
Jharkhand	3,29,66,238	79,700	414	629,500	23,361	30,719	800,019	752,206	947	0.94	67.63	153.9
Karnataka	6,11,30,704	191,796	319	1,707,412	35,818	50,676	1,106,586	866,323	968	0.78	75.60	106.1
Kerala	3,33,87,677	38,863	859	1,189,980	36,030	59,179	466,424	440,487	1084	0.94	93.91	92.3
Madhya Pradesh	7,25,97,565	308,144	236	1,163,220	19,274	27,250	2,019,792	1,471,511	930	0.73	70.63	153.4
Maharashtra	11,23,72,972	307,713	365	4,324,131	69,377	74,027	1,957,729	1,762,636	925	0.90	82.91	101.8
Meghalaya	29,64,007	22,429	132	64,700	28,130	42,601	63,475	57,550	986	0.91	75.48	191.5
Mizoram	10,91,014	21,081	52	26,970	30,346	45,982	31,840	21,652	975	0.68	91.58	171.0
Nagaland	19,80,602	16,579	119	56,412	28,346	21,434	41,451	16,631	931	0.40	80.11	92.5
Orissa	4,19,47,358	155,707	269	785,360	21,338	33,226	859,069	822,711	978	0.96	73.45	117.0
Puducherry	12,44,464	492	2598	57,000	58,684	82,767	21,373	14,184	1038	0.66	86.55	144.4
Punjab	2,77,04,236	50,362	550	1,097,350	44,901	62,153	309,554	259,748	893	0.84	76.68	92.8
Rajasthan	6,86,21,012	342,236	201	1,242,240	24,921	34,189	1,375,324	880,421	866	0.64	67.06	118.3
Sikkim	6,07,688	7,096	86	18,030	25,018	48,937	14,490	12,960	889	0.89	82.20	148.0
Tamil Nadu	7,21,38,958	130,058	555	2,462,660	39,300	62,499	1,213,607	903,890	995	0.74	83.33	116.1
Tripura	36,71,032	10,492	350	91,240	28,512	35,799	85,178	81,519	961	0.96	87.75	147.8
Uttar Pradesh	19,95,81,477	240,928	828	2,360,442	15,600	23,132	4,133,429	3,063,248	908	0.74	69.72	113.7
Uttarakhand	1,01,16,752	53,566	189	257,760	30,362	55,877	185,980	133,500	963	0.72	79.63	119.4
West Bengal	9,13,47,736	88,752	1029	2,360,340	30,950	41,469	1,794,862	1,732,376	947	0.97	77.08	112.9
India	1,21,01,93,422	3,287,240	382	37,900,630	46,492				940		74.04	114.0

**Source :** The District Information System for Education 2007/08.

+ Source: Census of India 2011, Provisional Population Totals

++ Source: Economic Survey 2010-2011, Government of India, Oxford University Press

\*\*Source: Data exclusively compiled by the VMW Analytic Services and provided by the Federal State Governments.

\*Three States/UTs do not announce their respective economies, hence VMW Analytic come out with the rough income estimates.

## About the Report

The performance of students in the nation (overall of 31 states/UTs), gender wise, area wise and category wise is presented. In each subject, items are classified into two groups on the basis of students' responses. Items in group I are those items, where less than 50% students have responded correctly and termed them as 'What students' can't do?' The group II contains those items, where 50% or more students have responded correctly and termed as 'What students' can do?'. In this report some items have also been presented as an example for both the groups to provide an idea. Besides, an attempt has also been made to show the performance of students falling in top 25% and bottom 25% groups on the basis of their total scores on the test. State wise performance of both the groups is also presented in each content area. The purpose of providing such information is to have an idea about the learning gaps between the two groups as well as heterogeneity within the group. The distractor analysis of all items is also provided along with the items for understanding of report readers at the end of each subject as an Appendix.

## Use of Analysis Results

The analysis output may be used for the following:

- to understand the gaps between the performance of top 25% and bottom 25% students 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

The analysis presented in this report may be used only as an inference on common errors committed by students in general. This inference may or may not be true for a specific State/UT, therefore it provides only an idea of general health of the education system in the country. Outcomes of the report may be utilized by curriculum and syllabi developers, text books writers and provide guidelines in States/UTs.

Besides National Report, an attempt is also being made to provide state specific subject wise report separately as complementary to this report.

# **Language**

**(Reading Comprehension)**

## Language Tests

The Language tests used in the National Achievement Survey (NAS) included three categories of item: those testing 'reading comprehension'; those testing 'language-specific elements' such as vocabulary and grammar; and 'extended writing' tasks. The tests were administered in 15 languages. Within these, the reading comprehension passages and their associated items were translated directly and, hence, are comparable. The language-specific items were, of necessity, unique to each language. The writing tasks were common across languages, but the variability of marking was too great to allow meaningful comparisons to be made. Therefore, this report focuses on student achievement in the reading comprehension domain only.

### Overview of the Reading Comprehension part

The reading comprehension items given to class V students were included in all the three test booklets, each containing four reading passages with five multiple-choice items on each passage. The passages were chosen to represent a range of text types including informational passages, tables, public notices, and stories. Three reading passages were common across all test forms. These served as 'anchors' so that the different test booklets could be linked together and, hence, all items could be placed on a common scale. In addition, each test form contained an extra, unique passage. Thus, altogether the reading comprehension instruments used in the survey comprised six passages and thirty items.

The items were designed to test a range of relevant *cognitive processes* or 'reading skills'. These are classified as 'locate information', 'grasp ideas and interpret' and 'infer and evaluate' as defined below:

#### Cognitive Processes for Reading Comprehension

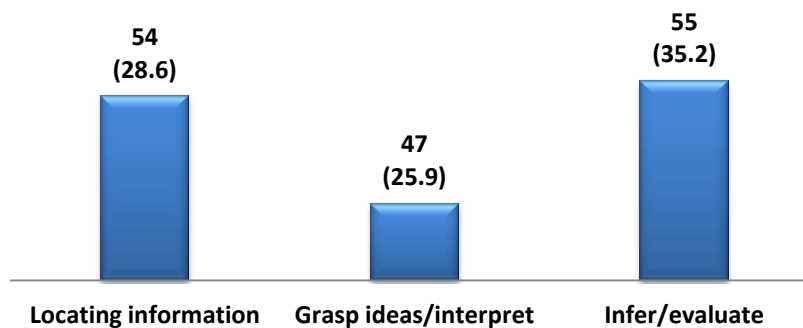
**Locate information:** In items testing this process, students need to find and extract a specific piece of information explicitly stated in the text. 'Locating' requires students to focus on a specific element of the given piece.

**Grasp ideas and interpret:** In items testing this process, students need to demonstrate that they have understood an idea being conveyed in the text and have interpreted it correctly. For example, students may need to identify the text's main idea and/or the sequence of events and/or relationships between ideas, events, or characters across the text. In addition, students may need to draw simple conclusions based on their interpretation of the text.

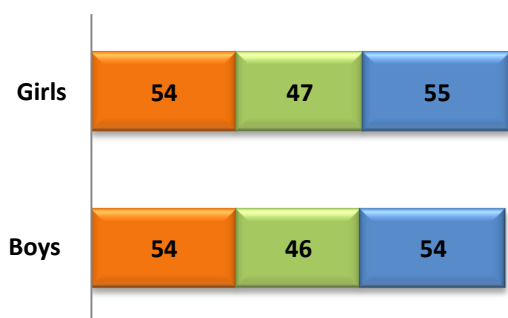
**Infer and evaluate:** In items testing this process, students need to demonstrate understanding beyond the information and/or ideas stated explicitly in the text. They are asked to read between the lines and, for example, make inferences about the qualities or actions of characters. They may be asked to identify the text's underlying theme and/or evaluate its title by examining the text from more than one perspective.

## Overall

- Performance of students was highest in 'infer/evaluate' and lowest in 'grasp ideas/interpret'.



■ Locating Information 
 ■ Grasp ideas/interpret 
 ■ Infer/evaluate

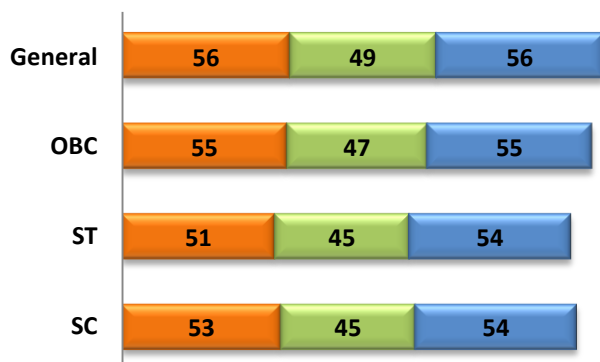
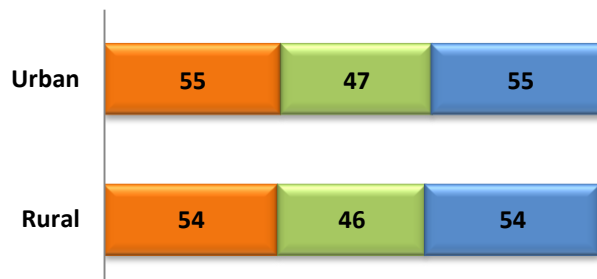


## Gender

- Both boys and girls scored lower in 'grasp ideas/interpret' in comparison to two other mental processes.
- Girls scored slightly higher than boys both in 'grasp ideas/interpret' and 'infer/evaluate'.

## Area

- Urban students achieved higher than rural students on all the mental processes.



## Social Groups

- General category students performed best among all the social groups.

### What Students Can't Do?

#### Items responded correctly by less than 50% Students in Reading Comprehension

Item No.	Scale Score	Mental Process	Item Description	% Correct
20	279	<b>Locate Information</b>	Identify the correct place name from those given in the notice	41
30	274		Use information from a table to determine the frequency of an event	41
18	279	<b>Grasp ideas/interpret</b>	Use information from a notice to conclude timing of an event	39
19	252		Use information from the notice to derive the duration of an event	49
22	265		identify relationship between an object and its characteristics	44
24	264		Determine the sequence of activities in a process	43
25	285		Identify relationship between an abstract idea and a concrete phenomenon	40
33	258		Use information in the story to grasp the problem	46
34	259		Use information in the story to identify the cause of an event	46
35	255		Use information in the story to determine the cause of an event	47
44	305		Identify relationship between a pronoun and the object/person	33
47	293		Use information in the text to identify the remedy of a problem	39
48	292		Identify the causal relationship of two events	41
50	279		Grasp the relevant idea about the thinking of people from the text	40
45	313	<b>Infer/Evaluate</b>	Use information to identify the main theme and evaluate the title	32

### What Students Can Do?

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

Item No.	Scale Score	Mental Process	Item Description	% Correct
26	203	<b>Locate Information</b>	Use information in a table to identify phenomena occurring at a particular time	71
27	213		Use information in a table to identify the time for a phenomenon	68
28	244		Use information in a table to identify the most frequent event	52
29	250		Use information from a table to determine the frequency of an event	50
49	234		Recognize appropriate information about the action to be taken by a person	54
16	217	<b>Grasp ideas/interpret</b>	Recognize the text type as a notice from the format and the content	63
21	244		Use information in the text to identify the ingredients of an object	52
23	246		Use information to draw simple conclusion about the usefulness of an object	51
17	231	<b>Infer/evaluate</b>	Use information from a notice to make a simple inference about the participation in a sport	58
31	228		Use information in a story to make a simple inference about the cause of an act	60
32	231		Use information in a story to make a simple inference about the cause of an act	59
41	242		Use information in the text to infer the cause of an event	52
42	249		Make complex inference about the quality of persons from their activities	50
43	247		Make complex inference about the effect of an activity on concerned persons	50
46	247		Use information in the text to make inference about the cause of an act	51

**SAMPLE ITEM AND READING PASSAGE**

The passage and items reproduced below were used in one of the tests of Reading Comprehension. Statistics showing how students responded to these items are given.

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

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.

**Sample Item : Use information in the text to make inference about the cause of an act**

**Mental Process:** Infer/evaluate

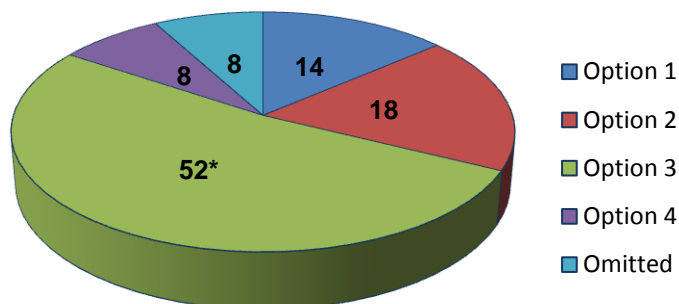
**Scale score : 247**

Item 46. 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 person to see.
4. They want to become famous.

This item requires students to make inference about the cause of an action. 52% of students in the sample selected the correct answer that donation of eyes will enable a blind person to see. 18% students inferred incorrectly that donation of eyes will help blind people to become scholar.

**Percentage of students in each response category (Item 46)**





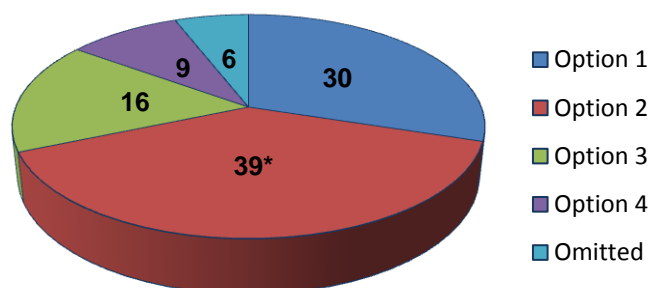
**Sample Item : Use information in the text to identify the remedy of a problem****Mental Process:** Grasp Ideas/interpret**Scale score : 293**

Item 47. The blindness can be removed through

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

This item requires students to integrate and use the information given in the text to arrive at the remedy of a problem. Only 39% of students in the sample were able to select the correct answer that blindness can be removed through eye transplant. About 30% students misunderstood that nutritious diet help in removing blindness.

Percentage of students in each response category (Item 47)

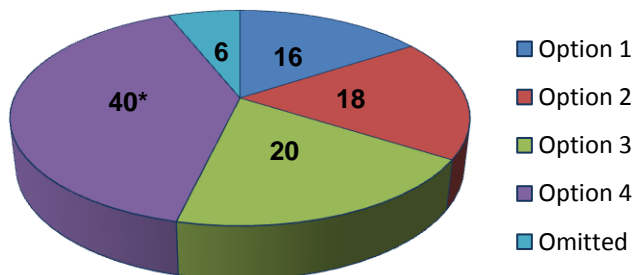
**Sample Item : Identify the causal relationship of two events****Mental Process:** Grasp ideas/interpret **Scale score : 292**

Item 48. The blind can become scholars by

1. taking nutritious diet.
2. getting back their eyesight.
3. eye transplant.
4. studying hard.

This item requires students to grasp ideas and interpret the text to make an inference about the causal relationship of two events. Only 40% of students in the sample were able to select the correct answer and interpret that blind can become scholars by studying hard.

(Item 48) Percentage of students in each response category (Item 48)



**Sample Item :** Recognize appropriate information about the action to be taken by a person

**Mental Process:** Locate information

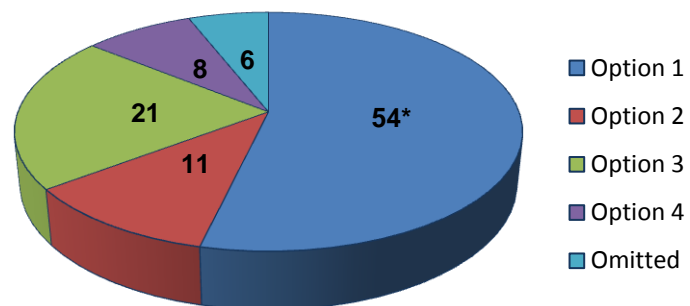
**Scale score :** 234

Item 49. What can a doctor do to prevent blindness?

1. Provide medical care.
2. Train blind people.
3. Provide nutritious diet.
4. Turn the blind people into scholars.

This item requires students to locate a specific piece of information given explicitly in the text. About half of the students in the sample were able to respond correctly by recognizing that doctors can prevent blindness by providing medical care.

Percentage of students in each response category (Item 49)



**Sample Item :** Grasp the relevant idea about the thinking of people from the text

**Mental Process:** Grasp ideas/interpret

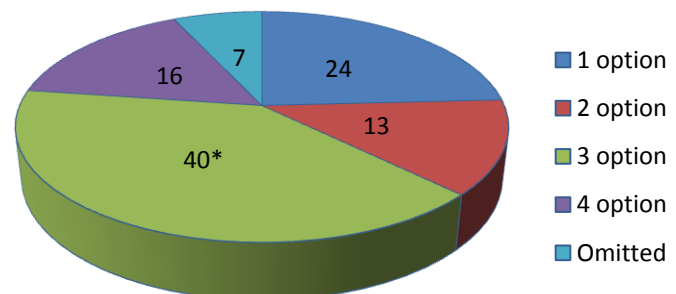
**Scale score :** 279

Item 50. What did people think about the blind in the past?

1. There is no cure for blindness.
2. Blind can get training.
3. Blind cannot do anything.
4. Blind can donate their eyes.

The item requires students to interpret and grasp the relevant idea from the text. Only 40% of students in the sample were able to select the correct answer (3). Students were able to grasp from the passage that in the past people think blind people cannot do anything. Nearly one fourth of the students have deduced that in the past people think there is no cure of blindness.

Percentage of students in each response category (Item 50)



### Performance of top 25% and bottom 25% students on different mental processes

Mental Processes	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Locating information	84	14.5	23	16.6
Grasp ideas	80	13.1	20	12.1
Infer/Evaluate	88	18.7	21	24.1

Above table shows that there is a large gap between top 25% and bottom 25% students on all the three mental processes tested in reading comprehension passages.

#### What top 25% Students Can't Do?

Performance of top 25% students on Reading Comprehension items was above 50%. The range of percent correct for this group on all items was 56% to 98%.

#### What bottom 25% Students Can Do?

Performance of bottom 25% students on Reading Comprehension items was below 50%. The range of percent correct for this group on all items was 14% to 37%

### Sum up

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 text book 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.

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.

# Appendix

## Performance of top 25% and bottom 25% students on different mental processes

### Locating Information

State/UT	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Andhra Pradesh	86	14.2	23	15.6
Assam	85	14.7	23	16.5
Bihar	79	13.8	21	16.7
Chhattisgarh	83	16.9	23	16.2
Delhi	83	14.8	25	15.9
Goa	85	13.3	27	17.3
Gujarat	78	15.0	22	16.7
Haryana	82	16.6	23	16.1
Himachal Pradesh	84	15.7	25	16.0
Jammu & Kashmir	83	14.9	20	16.5
Jharkhand	86	13.6	20	16.7
Karnataka	83	15.2	23	16.3
Kerala	83	12.5	22	17.3
Madhya Pradesh	85	13.6	20	15.6
Maharashtra	85	14.1	22	16.6
Meghalaya	83	12.9	25	17.4
Mizoram	76	15.4	22	15.8
Nagaland	85	13.9	21	16.3
Orissa	85	14.3	21	16.0
Punjab	85	13.4	24	17.7
Rajasthan	86	13.8	22	16.4
Sikkim	79	14.3	26	16.4
Tamil Nadu	91	12.7	29	18.3
Tripura	84	13.5	21	16.0
Uttar Pradesh	89	12.1	19	17.4
Uttarakhand	84	14.7	22	16.6
West Bengal	84	13.6	27	16.9
A & N Islands	79	13.6	23	17.0
Chandigarh	81	16.2	25	16.8
Puducherry	88	14.0	24	16.2
Daman & Diu	80	14.9	24	17.1

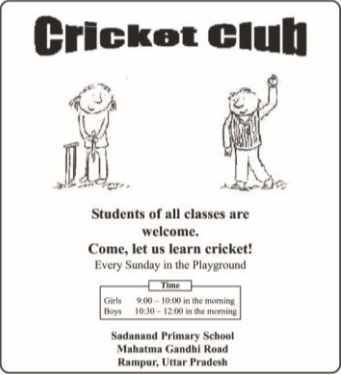
**Grasp Ideas/Interpret**

State/UT	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Andhra Pradesh	76	12.7	21	11.5
Assam	78	13.3	21	12.4
Bihar	77	12.7	19	12.2
Chhattisgarh	82	14.3	18	11.3
Delhi	79	12.6	20	12.3
Goa	78	13.0	20	11.9
Gujarat	77	11.9	19	12.4
Haryana	79	12.6	20	11.6
Himachal Pradesh	80	12.6	20	12.1
Jammu & Kashmir	79	13.1	18	12.3
Jharkhand	79	12.2	17	12.5
Karnataka	80	13.3	20	11.6
Kerala	80	12.5	23	12.4
Madhya Pradesh	81	13.2	19	11.7
Maharashtra	80	12.5	21	11.6
Meghalaya	78	13.9	22	12.0
Mizoram	79	12.1	24	11.1
Nagaland	82	13.5	21	12.2
Orissa	82	13.2	22	12.7
Punjab	78	13.4	18	12.3
Rajasthan	78	13.4	21	11.0
Sikkim	75	13.0	21	11.9
Tamil Nadu	83	14.5	20	12.4
Tripura	77	13.3	20	12.0
Uttar Pradesh	83	12.6	17	12.4
Uttarakhand	78	12.3	18	12.4
West Bengal	79	13.0	19	11.4
A & N Islands	78	12.4	20	11.8
Chandigarh	77	11.8	20	11.9
Puducherry	78	12.9	19	12.0
Daman & Diu	80	12.6	23	12.3

**Infer/Evaluate**

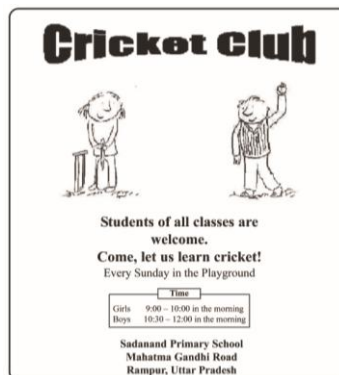
State/UT	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Andhra Pradesh	87	18.8	23	23.9
Assam	87	18.7	19	21.9
Bihar	88	18.8	19	23.2
Chhattisgarh	87	18.2	17	23.3
Delhi	87	20.4	21	23.9
Goa	83	20.8	18	22.0
Gujarat	92	16.2	25	26.5
Haryana	88	18.1	25	26.2
Himachal Pradesh	89	17.9	22	24.5
Jammu & Kashmir	90	16.9	20	23.6
Jharkhand	86	20.7	17	22.5
Karnataka	90	17.3	23	23.9
Kerala	87	19.8	19	23.0
Madhya Pradesh	90	16.1	22	25.5
Maharashtra	88	18.0	26	26.5
Meghalaya	89	17.6	21	23.8
Mizoram	91	16.3	28	25.6
Nagaland	88	18.5	21	23.2
Orissa	87	19.8	20	24.1
Punjab	87	19.1	23	24.9
Rajasthan	89	18.1	24	24.5
Sikkim	85	21.2	24	24.7
Tamil Nadu	89	19.3	23	23.2
Tripura	89	18.0	18	22.6
Uttar Pradesh	89	18.1	16	21.1
Uttarakhand	85	19.9	19	23.1
West Bengal	88	18.4	23	23.4
A & N Islands	84	21.5	20	23.3
Chandigarh	83	21.0	23	23.6
Puducherry	87	18.2	24	25.2
Daman & Diu	93	15.1	22	23.1

## Reading Comprehension Test Items

Q.No. 16	Scale Score	217
<p><b>16-20. Read the following carefully. Then answer the questions that follow. For each question encircle the number of the correct answer.</b></p> <p>The above piece is _____ .</p> <ol style="list-style-type: none"> <li>a notice</li> <li>a story</li> <li>an order</li> <li>an essay</li> </ol>	Missing	5
	Option - 1	63
	Option - 2	11
	Option - 3	11
	Option - 4	8
	Multi. Resp.	1
		
Q.No. 17	Scale Score	231
<p>Who are asked to come to the Cricket Club?</p> <ol style="list-style-type: none"> <li>boys only</li> <li>girls only</li> <li>all students</li> <li>students and their friends</li> </ol>	Missing	3
	Option - 1	17
	Option - 2	6
	Option - 3	59
	Option - 4	14
	Multi. Resp.	1
Q.No. 18	Scale Score	279
<p>Which of the following is true?</p> <ol style="list-style-type: none"> <li>The girls' practice is earlier than the boys' practice.</li> <li>The girls' practice is longer than the boys' practice.</li> <li>The boys and girls learn cricket on different days.</li> <li>The boys' practice is on Sunday afternoon.</li> </ol>	Missing	5
	Option - 1	40
	Option - 2	14
	Option - 3	22
	Option - 4	18
	Multi. Resp.	2
Q.No. 19	Scale Score	252
<p>For how long will the boys be taught cricket?</p> <ol style="list-style-type: none"> <li>thirty minutes</li> <li>one and a half hours</li> <li>two hours</li> <li>three hours</li> </ol>	Missing	3
	Option - 1	14
	Option - 2	49
	Option - 3	19
	Option - 4	14
	Multi. Resp.	1



Q.No. 20	Scale Score	279
In which town is this cricket club located?	Missing	3
1. Sadanand	Option - 1	16
2. Mahatma Gandhi	Option - 2	18
3. Rampur	Option - 3	42
4. Uttar Pradesh	Option - 4	20
	Multi. Resp.	1



Q.No. 21	Scale Score	244
21-25. Read the following passage carefully. Then answer the questions that follow. For each question encircle the number of the correct answer.	Missing	3
<b>Passage</b>	Option - 1	17
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.	Option - 2	15
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.	Option - 3	52
	Option - 4	11
	Multi. Resp.	2

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

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

Q.No. 22	Scale Score	265
Aam Panna can be called a health drink because _____	Missing	4
1. it has a lot of spices.	Option - 1	12
2. it is tasty.	Option - 2	20
3. it is refreshing.	Option - 3	18
4. it contains iron and vitamins.	Option - 4	44
	Multi. Resp.	1

Q.No. 23	Scale Score	246
Aam Panna is useful when a person suffers from _____ .	Missing	4
1. high fever	Option - 1	23
2. excessive cough	Option - 2	10
3. excessive sweating	Option - 3	52
4. intense headache	Option - 4	11
	Multi. Resp.	1

Q.No. 24	Scale Score	264
What do you do first to make Aam Panna?	Missing	4
1. Peel the mangoes.	Option - 1	28
2. Mix mint leaves.	Option - 2	11
3. Boil some mangoes.	Option - 3	44
4. Make a pulp of mangoes.	Option - 4	12
	Multi. Resp.	1

Q.No. 25	Scale Score	285
Aam Panna looks refreshing because _____	Missing	5
1. it is made of raw mangoes.	Option - 1	26
2. it is a light green colour.	Option - 2	40
3. it contains salt and iron.	Option - 3	19
4. it has roasted cumin seed powder.	Option - 4	9
	Multi. Resp.	1

Q.No. 26								Scale Score	203																																																								
<p>This is Rohit’s school time table. Use it to answer the questions given below it.</p> <table><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></tr><tr><th>Days</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><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><tr><td>Tuesday</td><td>Hindi</td><td>English</td><td>Soc. Stu.</td><td>Art</td><td>Maths</td><td>Science</td><td>Phy. Edu.</td></tr><tr><td>Wednesday</td><td>Soc. Stu.</td><td>English</td><td>Hindi</td><td>Phy. Edu.</td><td>Science</td><td>Maths</td><td>Library</td></tr><tr><td>Thursday</td><td>Science</td><td>Maths</td><td>Hindi</td><td>SUPW</td><td>English</td><td>Soc. Stu.</td><td>Phy. Edu.</td></tr><tr><td>Friday</td><td>Soc. Stu.</td><td>Maths</td><td>Science</td><td>English</td><td>Art</td><td>Hindi</td><td>Phy. Edu.</td></tr></table>								Periods	1	2	3	4	5	6	7	Days								Monday	English	Hindi	Hindi	Science	Art	Maths	SUPW	Tuesday	Hindi	English	Soc. Stu.	Art	Maths	Science	Phy. Edu.	Wednesday	Soc. Stu.	English	Hindi	Phy. Edu.	Science	Maths	Library	Thursday	Science	Maths	Hindi	SUPW	English	Soc. Stu.	Phy. Edu.	Friday	Soc. Stu.	Maths	Science	English	Art	Hindi	Phy. Edu.	Missing	3
								Periods	1	2	3	4	5	6	7																																																		
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								Thursday	Science	Maths	Hindi	SUPW	English	Soc. Stu.	Phy. Edu.																																																		
Friday	Soc. Stu.	Maths	Science	English	Art	Hindi	Phy. Edu.																																																										
Option - 1	71																																																																
Option - 2	7																																																																
Option - 3	10																																																																
Option - 4	8																																																																
Multi. Resp.	1																																																																

What does Rohit learn in the sixth period on Wednesday?

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

<b>Q.No. 27</b>	<b>Scale Score</b>	<b>213</b>
On which day does Rohit go to Library?	<b>Missing</b>	3
1. Monday	<b>Option - 1</b>	14
2. Tuesday	<b>Option - 2</b>	7
3. Wednesday	<b>Option - 3</b>	68
4. Thursday	<b>Option - 4</b>	7
	<b>Multi. Resp.</b>	1

<b>Q.No. 28</b>	<b>Scale Score</b>	<b>244</b>
Which subject does Rohit study for two periods together?	<b>Missing</b>	3
1. English	<b>Option - 1</b>	21
2. Science	<b>Option - 2</b>	9
3. Maths	<b>Option - 3</b>	13
4. Hindi	<b>Option - 4</b>	52
	<b>Multi. Resp.</b>	2

<b>Q.No. 29</b>	<b>Scale Score</b>	<b>250</b>
Which subject does Rohit have most often in a week?	<b>Missing</b>	3
1. Hindi	<b>Option - 1</b>	50
2. English	<b>Option - 2</b>	15
3. Maths	<b>Option - 3</b>	14
4. Social Studies	<b>Option - 4</b>	16
	<b>Multi. Resp.</b>	1

<b>Q.No. 30</b>	<b>Scale Score</b>	<b>274</b>
How many art classes does Rohit have in a week?	<b>Missing</b>	4
1. Two	<b>Option - 1</b>	21
2. Three	<b>Option - 2</b>	40
3. Four	<b>Option - 3</b>	13
4. Five	<b>Option - 4</b>	20
	<b>Multi. Resp.</b>	1

Q.No. 31	Scale Score	228
<p><b>Read the following passage carefully. Then answer the questions that follow. For each question encircle the number of the correct answer.</b></p> <p style="text-align: center;"><b>Passage</b></p> <p>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.”</p> <p>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.”</p> <p>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.”</p> <p>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.”</p> <p>On hearing Jadbharat’s words, the king immediately got off the palanquin.</p> <p>The bearers put down the palanquin near the well because _____</p> <ol style="list-style-type: none"> <li>the king wanted to rest.</li> <li>they wanted to drink water.</li> <li>the road ahead was very bad.</li> <li>they didn’t want to go any further.</li> </ol>	Missing	5
	Option - 1	15
	Option - 2	59
	Option - 3	12
	Option - 4	8
	Multi. Resp.	1

Q.No. 32	Scale Score	231
<p>One bearer left the palanquin and went away because he was</p> <ol style="list-style-type: none"> <li>very sleepy.</li> <li>feeling hot .</li> <li>very tired.</li> <li>very hungry.</li> </ol>	Missing	5
	Option - 1	9
	Option - 2	13
	Option - 3	58
	Option - 4	15
	Multi. Resp.	1

Q.No. 33	Scale Score	258
<p>What problem came up in lifting the palanquin?</p> <ol style="list-style-type: none"> <li>One of the poles broke.</li> <li>The bearers were thirsty.</li> <li>The road was bad.</li> <li>One bearer had run away.</li> </ol>	Missing	6
	Option - 1	13
	Option - 2	19
	Option - 3	15
	Option - 4	47
	Multi. Resp.	1

Q.No. 34	Scale Score	259
Why did the king scold his bearers?	Missing	6
1. The king could not look out of the palanquin.	Option - 1	11
2. The king wanted to reach his destination soon.	Option - 2	19
3. The king's head was hitting the sides of the palanquin.	Option - 3	47
4. The bearers refused to carry the palanquin.	Option - 4	16
	Multi. Resp.	1

Q.No. 35	Scale Score	255
Why was Jadbharat asked to lift the palanquin?	Missing	7
1. Jadbharat was very strong.	Option - 1	18
2. One bearer had run away.	Option - 2	47
3. Only Jadbharat knew the road ahead.	Option - 3	15
4. The king liked Jadbharat.	Option - 4	12
	Multi. Resp.	1

Q.No. 41	Scale Score	242
Read the following passage carefully. Then answer the questions that follow. For each question encircle the number of the correct answer.	Missing	6
<b>Passage</b>	Option - 1	17
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.	Option - 2	14
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.	Option - 3	53
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.	Option - 4	9
	Multi. Resp.	1

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.

Q.No. 42	Scale Score	249
“Still they worked far into the night”. What quality of monks does this sentence show?	Missing	6
1. carefulness	Option - 1	16
2. hard work	Option - 2	50
3. cleverness	Option - 3	15
4. devotion to god	Option - 4	13
	Multi. Resp.	1

Q.No. 43	Scale Score	247
The monks wrote for many hours. What was the effect on them?	Missing	5
1. Their books were beautiful.	Option - 1	18
2. They worked in the dark.	Option - 2	13
3. They didn't prepare any books.	Option - 3	12
4. Their fingers and eyes grew tired.	Option - 4	51
	Multi. Resp.	1

Q.No. 44	Scale Score	305
"With its help .....". Here, 'its' refers to	Missing	6
1. a clever man	Option - 1	28
2. the printing press	Option - 2	30
3. Belgium	Option - 3	15
4. a monk	Option - 4	19
	Multi. Resp.	1

Q.No. 45	Scale Score	313
Which of the following is the best title for this passage?	Missing	6
1. Books, Our Friends	Option - 1	23
2. Importance of Books	Option - 2	23
3. Invention of the Printing Press	Option - 3	32
4. Suffering of the Monks	Option - 4	15
	Multi. Resp.	1

Q.No. 46	Scale Score	247
Read the following passage carefully and answer the questions given below it. Encircle the number of the correct answer.	Missing	7
<b>Passage</b>	Option - 1	14
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.	Option - 2	18
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.	Option - 3	52
	Option - 4	8
	Multi. Resp.	1

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.

<b>Q.No. 47</b>	<b>Scale Score</b>	<b>293</b>
The blindness can be removed through	<b>Missing</b>	5
1. nutritious diet.	<b>Option - 1</b>	31
2. eye transplant.	<b>Option - 2</b>	38
3. higher education.	<b>Option - 3</b>	16
4. some training.	<b>Option - 4</b>	9
	<b>Multi. Resp.</b>	1

<b>Q.No. 48</b>	<b>Scale Score</b>	<b>292</b>
The blind can become scholars by	<b>Missing</b>	5
1. taking nutritious diet.	<b>Option - 1</b>	16
2. getting back their eyesight.	<b>Option - 2</b>	18
3. eye transplant.	<b>Option - 3</b>	20
4. studying hard.	<b>Option - 4</b>	41
	<b>Multi. Resp.</b>	1

<b>Q.No. 49</b>	<b>Scale Score</b>	<b>234</b>
What can a doctor do to prevent blindness?	<b>Missing</b>	5
1. Provide medical care.	<b>Option - 1</b>	54
2. Train blind people.	<b>Option - 2</b>	11
3. Provide nutritious diet.	<b>Option - 3</b>	21
4. Turn the blinds into scholars.	<b>Option - 4</b>	8
	<b>Multi. Resp.</b>	1

<b>Q.No. 50</b>	<b>Scale Score</b>	<b>279</b>
What did people think about blinds in the past?	<b>Missing</b>	6
1. There is no cure for blindness.	<b>Option - 1</b>	24
2. Blind can get training.	<b>Option - 2</b>	13
3. Blind cannot do anything.	<b>Option - 3</b>	40
4. Blind can donate their eyes.	<b>Option - 4</b>	16
	<b>Multi. Resp.</b>	1

# Mathematics



## Overview of the Mathematics tests

The mathematics achievement survey given to Class V students consisted of three test booklets, each containing 40, four-option multiple-choice items. Twenty items were common across all test forms. These served as ‘anchors’ so that the different test booklets could be linked together and, hence, all items could be placed on a common scale. In total, the Mathematics assessment instrument comprised eighty unique items.

The items in each text booklet were chosen to cover the following range of mathematical domains from the Mathematics curriculum: the number system, basic operations, measurement, geometry and patterns. In addition to the content domains listed above, items were constructed to test a range of cognitive processes or skills in a variety of contexts. These were classified as Knowing ‘Skill 1’, Applying ‘Skill 2’ and Reasoning ‘Skill 3’ as described below:

### **Skills classification for test construction in Mathematics**

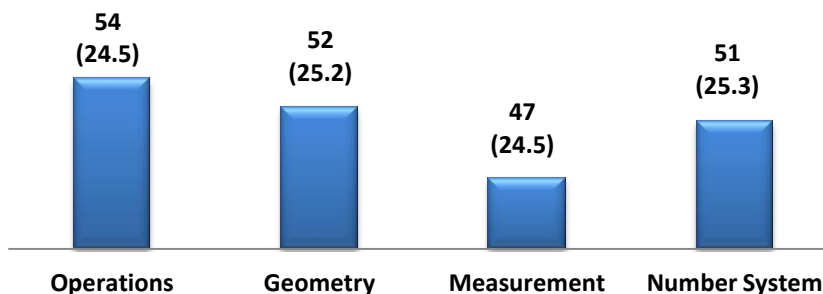
**Knowing (Skill 1):** In items testing this process, students are expected to answer using simple knowledge (recall) or recognition of terms and/or concepts familiar from their lessons. This skill also includes the application of basic operations in straightforward tasks.

**Applying (Skill 2):** In items testing this process, students are expected to solve non-complex problems set in familiar situations by way of simple application of the operations/concepts learned in Class V.

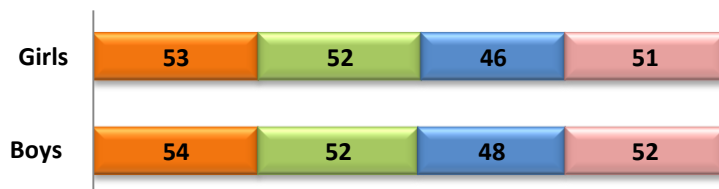
**Reasoning (Skill 3):** In items testing this process, students are expected to use mathematics concepts, principles, facts, etc. learned in the class in new or less familiar situations. In particular, students are expected to apply their mathematical abilities to solving real-world problems.

## Overall

- Performance of students on all the content areas of Mathematics was more than fifty percent except measurement.



Operations Geometry Measurement Number System

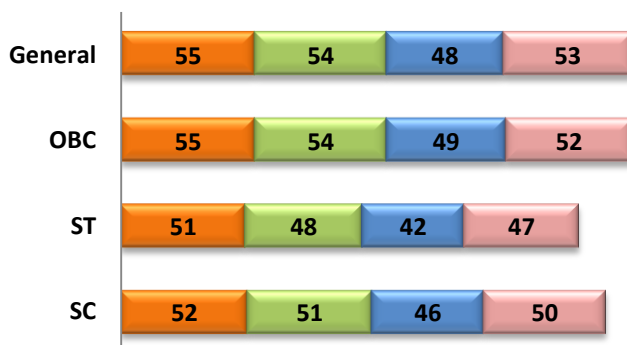
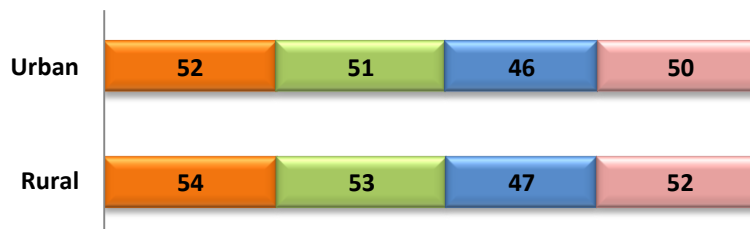


## Gender

- Average score of boys on each content area was higher than girls except on 'Geometry'.

## Area

- Performance of rural students was higher than urban students on all the content areas of Mathematics.



## Social Groups

- Performance of General category students was higher as compared to other social groups on 'Number System'.
- OBC category students scored higher than the other social groups on 'Measurement'.

## What Students Can't Do?

### Items responded correctly by less than 50% Students in Mathematics

Item No.	Scale Score	Content Area	Item Description	% Correct
3	262	<b>Operations</b>	Largest three digit number from given numbers	44
28	304		Difference between two decimal numbers	34
33	254		Using measure of unit as per suitability of situation	48
53	307		Equivalent fractions	35
63	290		Equivalent and non equivalent fractions	34
2	252	<b>Geometry</b>	Part of a geometrical figure (rectangle)	49
16	265		Locating object which is interior to some and exterior to some	44
26	261		Relationship between radius and diameter	44
27	260		Computation of diameter of a circle with given radius	45
32	285		Number name of a given number	38
38	267		Radius of a circle and relation thereof	43
48	257		Smallest angle in the given angles	47
58	250		Computation of degree measure of an angle	49
62	323		Largest angle from given angles	26
68	318		Triangles embedded in the figure	30
78	298		Computation area of a square of a given side	34
10	278	<b>Measurement</b>	Computation of value multiplying fractional numbers	38
24	274		Matching values given in two different measuring units	40
25	268		Computation of length given in the different measurement scales/units	43
30	283		Computation of time using time scale	37
40	271		Computation of difference in weights and expression greater than	41
47	266		Computation of time after a given time period	44
50	422		Computation of least fractional value	22
57	260		Conversion of different units of time	45
60	289		Difference of two numbers expressed in different units	35
67	266		Perimeter of a given square	44
80	321		Perimeter of a given figure	35
4	252	<b>Number System</b>	Computation of remainder after division	48
5	258		Difference of two (four digit numbers) with carry	46
9	292		Smallest number divisible by two given number	34
22	258		Difference between two numbers with carry (5/6 digit numbers)	46
34	261		Computation of value using information given in chart form	44
35	254		Recognising the appropriate operation in given situation	47
39	277		Computation of divisor using dividend, remainder and relationship	38

Item No.	Scale Score	Content Area	Item Description	% Correct
45	261		Computation of how much a number is greater/smaller than other	45
49	280		Computation of difference in place values digits of number are interchanged	39
55	276		Denominator of equivalent fraction	39
56	271		Computation of time after a given time period	42
59	275		Average of given data	40
65	278		Relationship between divisor and dividend	39
74	261		Sum of a simple multiplication of numbers	44
75	325		Sum of the fractional number with different denominator	26
76	257		Days in week after days interval	48
79	271		Using fundamental operation in conditional situation	41

### SAMPLE ITEM

**Sample Item :** Difference between two decimal numbers

**Mental Process:** Reasoning

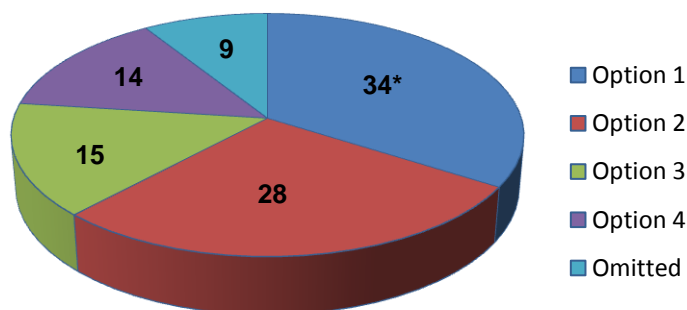
**Scale score :** 304

Item 28. What is the difference between 500.2 and 499.101?

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

This item requires student to calculate difference between two decimal numbers. A total of 34% students have identified the correct answer as (1). Besides, 28% students subtracted only non-decimal part of the given numbers.

Percentage of students in each response category (Item 28)



**Sample Item** : Perimeter of a given figure**Mental Process:** Reasoning**Scale score** : 321

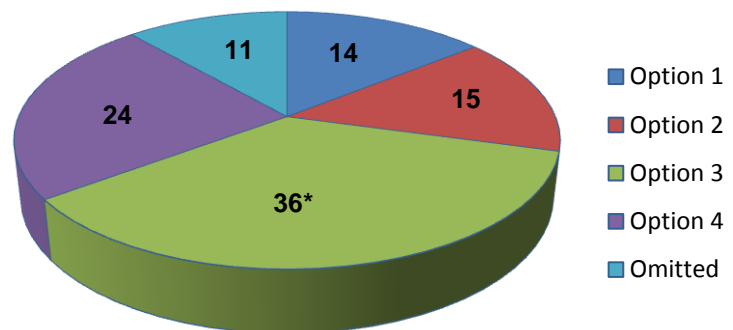
Item 80. In the figure given here, there are four equal squares each of perimeter 24 cm, joined together. What is the perimeter of the shaded part of the figure?



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

This item requires students to calculate perimeter of a rectangle formed by a number of squares of known perimeter. About 36% chose the correct option (3) and 24% chose incorrect option (4) in this item. This suggests that they might have included the two internal edges that do not constitute part of the perimeter. The pie graph shows the response pattern of remaining 40% students.

Percentage of students in each response category (Item 80)

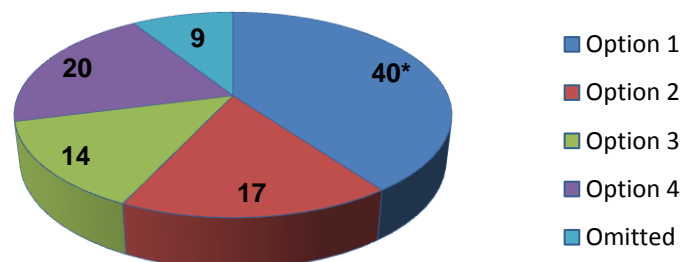
**Sample Item** : Computation of difference in place values if digits are interchanged**Mental Process:** Reasoning**Scale score** : 280

Item 49. The digits 3 and 4 of the number 354 are inter-changed 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

This item requires student not only transformation of given number, but also some calculation simple difference of numbers. A total of 40% students have identified the correct answer as option (1). The pie graph shows the distribution of remaining 60% responses.

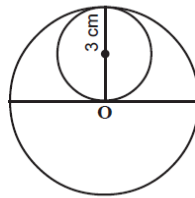
Percentage of students in each response category (Item 49)



**Sample Item** : Radius of a circle and relation thereof**Mental Process:** Applying**Scale score** : 267

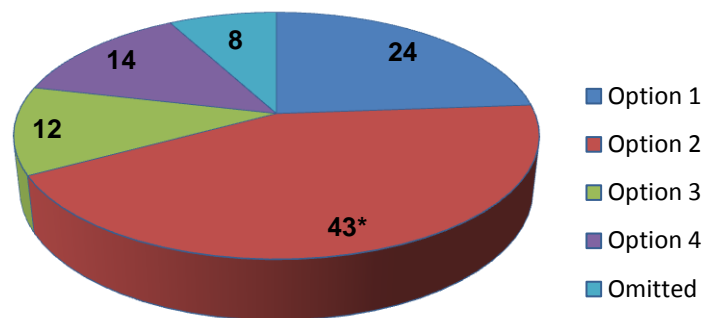
Item 38. In the figure, given here, the radius of the smaller circle is 3 cm. What is the radius of the larger circle having centre O ?

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



This item requires student to find the radius of a circle from information given in the diagram. About 43% of students chose the correct answer (2). Note that 24% chose incorrect option (1) which suggests that they read the *diameter* of the smaller circle to be 3 cm.

Percentage of students in each response category (Item 38)

**Sample Item** : Largest three digit number from given numbers**Mental Process:** Applying**Scale score** : 262

Item 3. Renu has the following three number cards:

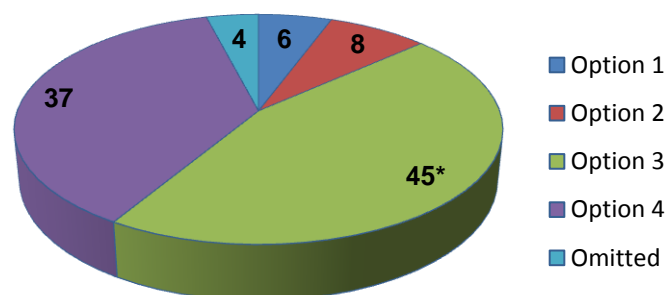


Which is the largest 3-digit number she can make using all cards?

1. 578
2. 857
3. 875
4. 999

This item requires students to form largest three digit number using all three numbers written in cards. In this item 45% of students chose the correct answer as option (3). Note that 37% chose incorrect option (4) which is the largest three digit number but is not made by using the given numbers.

Percentage of students in each response category (Item 3)



**Sample Item :** Computation of how much a number is greater/smaller than other

**Mental Process:** Applying

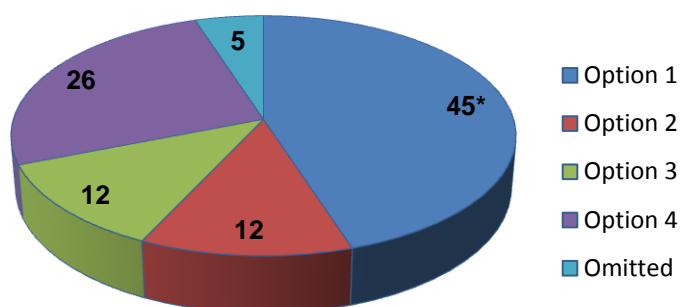
**Scale score :** 261

Item 45. How much greater is 555 than 198 ?

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

This item requires students to calculate the difference satisfying the given condition. In this item, 45% of students chose the correct answer (1). Note that 26% chose incorrect option (4) which is the sum of 555 and 198 rather than the difference of given numbers.

Percentage of students in each response category (Item 45)



## What Students Can Do?

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

Item No.	Scale Score	Content Area	Item Description	% Correct
1	241	Operations	Place value of a digit in the given number	53
11	247		Differentiating two numbers (4 digit) using the less than property of numbers	51
17	245		Computation of difference of place value of a digit in a given number	51
18	205		Matching two values given in different measuring units (length)	69
19	224		Place value of a digit in given 6 digit number	62
31	211		Number name of a given number	66
41	216		Number and its number name	63
43	242		Numbers in increasing and decreasing numbers	53
51	210		Smallest four digit number	67
61	224		Recognising two digit number from given number	61
71	223		Place value of the number	61
73	233		Uses more than a number to find value	57
8	179	Geometry	Sides of a given geometrical figure	79
14	168		Figure of a triangle	84
15	237		Angle of specific measure (in a range)	54
42	208		Recognising geometrical figures	67
52	235		Geometrical figures by its sides	56
72	223		Dots lie inside/outside a figure	62
6	248	Measurement	Computation of time period from given time points	50
7	249		Computation of area of a rectangle of given dimensions	50
13	224		Matching the value represented in different measuring units (capacity)	59
23	246		Matching values given in two different measuring units	51
37	227		Reading time in a watch	60
46	214		Reading the time in a clock	67
66	232		Computation of number given in less than expression	57
70	229		Sum of decimal number (more than these items)	58
77	239		Computation of value using different units of time	55
12	239	Number System	Computation of difference of two (4 digit numbers) with borrowing	54
20	237		Computation of difference of two numbers with property of borrowing in simple format	55
21	192		Sum of two digits with carry	72
29	227		Simple multiplication of numbers	61
36	244		Relationship between two measures of time	52
44	184		Sum of two four digit numbers	76
54	240		Computation of multiplicative sum of two numbers	54
64	228		Simple multiplication sum in simple format	58
69	229		Computation of value given in different units	58



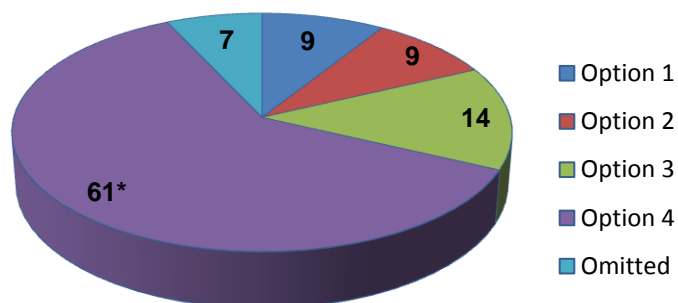
**SAMPLE ITEM****Sample Item :** Place value of the number**Mental Process:** Knowing**Scale score :** 223

Item 71. The place value of 4 in 294301 is...

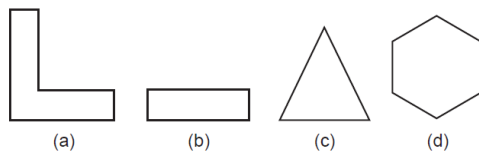
- |        |         |
|--------|---------|
| 1. 4   | 2. 40   |
| 3. 400 | 4. 4000 |

This item requires students to find out place value of a digit in a given number. A total of 61% students have identified the correct answer as option (4). The pie graph shows the distribution of remaining 39% responses.

Percentage of students in each response category (Item 71)

**Sample Item :** Recognising geometrical figures**Mental Process:** Knowing**Scale score :** 208

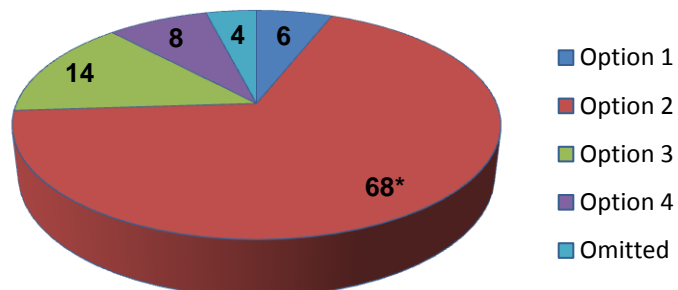
Item 42. Which of the following figures is a rectangle?



- |        |        |
|--------|--------|
| 1. (a) | 2. (b) |
| 3. (c) | 4. (d) |

This item requires students to identify the rectangle from amongst given shapes. A total of 68% students have identified the correct answer as (2). The pie graph depicts the distribution of remaining 32% responses.

Percentage of students in each response category (Item 42)



**Sample Item :** Sum of two four digit numbers**Mental Process:** Applying**Scale score :** 184

Item 44. 7010

+ 2699

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 ?
 

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1. 9799

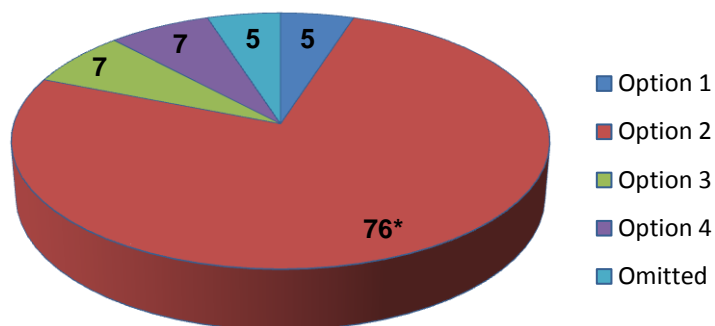
2. 9709

3. 9699

4. 9609

This item requires student simple addition with carrying of two four digit numbers. A total of 76% students have identified the correct answer as (2). The pie graph depicts the distribution of remaining 24% responses.

Percentage of students in  
each response category (Item 44)



## Performance of top 25% and bottom 25% students on different content areas

Content Areas	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Operations	80	14.2	29	15.7
Geometry	80	15.6	28	14.9
Measurement	75	16.2	25	13.9
Number system	80	13.3	24	13.1

It may be observed from the above table that dispersion of scores in both the groups is nearly same. The mean performance of students in top group is lowest on measurement whereas it is lowest on number system in case of bottom group. Besides, there is a large difference in mean performance of two groups of students on all content areas of Mathematics.

### What top 25% students Can't Do?

Performance of top 25% students was below 50% on the following items

Item No.	Content Area	Item Description	% Correct
50	Measurement	Computation of least fractional value	32
75	Number System	Sum of the fractional number with different denominator	49
80	Measurement	Perimeter of a given figure	49

### What bottom 25% Students Can Do?

Performance of bottom 25% students was 50% or more on the following items

Item No.	Content Area	Item Description	% Correct
44	Number System	Sum of two four digit numbers	50
8	Geometry	Sides of a given geometrical figure	54
14		Figure of a triangle	62

## Sum up

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 re teaching 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.

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.

# Appendix

## Performance of top 25% and bottom 25% students on different content areas

### Operations

State/UT	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Andhra Pradesh	78	12.6	29	15.0
Assam	78	14.1	29	15.3
Bihar	79	14.8	25	15.5
Chhattisgarh	82	13.7	26	17.8
Delhi	79	14.4	29	14.5
Goa	77	14.3	32	16.1
Gujarat	77	15.2	30	15.3
Haryana	79	14.7	28	15.7
Himachal Pradesh	77	14.3	27	14.7
Jammu & Kashmir	82	13.1	29	15.6
Jharkhand	80	14.3	25	15.2
Karnataka	82	13.0	33	15.7
Kerala	74	13.4	32	15.3
Madhya Pradesh	81	13.5	32	16.4
Maharashtra	81	13.6	31	15.8
Meghalaya	81	12.3	33	15.4
Mizoram	73	14.3	31	14.7
Nagaland	80	13.7	29	16.2
Orissa	80	12.8	31	15.7
Punjab	78	13.3	26	15.6
Rajasthan	80	13.6	29	15.1
Sikkim	74	13.4	34	16.2
Tamil Nadu	76	14.0	32	14.2
Tripura	81	14.8	25	17.0
Uttar Pradesh	86	13.1	24	17.2
Uttarakhand	77	13.8	28	15.1
West Bengal	78	15.2	27	15.3
A & N Islands	78	14.1	31	15.2
Chandigarh	73	13.8	29	14.8
Puducherry	81	17.1	29	15.3
Daman & Diu	79	12.6	34	14.6

**Geometry**

State/UT	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Andhra Pradesh	70	16.6	24	14.2
Assam	78	14.8	29	15.0
Bihar	77	16.9	24	14.5
Chhattisgarh	80	14.5	26	15.6
Delhi	82	15.3	32	15.3
Goa	75	16.9	31	16.7
Gujarat	78	15.8	30	15.4
Haryana	76	16.0	25	13.8
Himachal Pradesh	77	14.9	27	14.6
Jammu & Kashmir	82	14.2	26	15.3
Jharkhand	81	14.8	27	15.1
Karnataka	79	14.9	31	14.9
Kerala	77	14.1	33	14.7
Madhya Pradesh	77	15.5	27	14.6
Maharashtra	82	15.1	32	15.2
Meghalaya	77	14.8	28	13.9
Mizoram	71	15.3	31	13.8
Nagaland	81	15.2	26	14.5
Orissa	81	14.8	27	14.8
Punjab	75	16.6	26	14.8
Rajasthan	81	14.5	27	14.3
Sikkim	70	14.3	30	13.8
Tamil Nadu	84	13.8	33	15.2
Tripura	78	15.9	23	16.2
Uttar Pradesh	86	13.6	26	16.3
Uttarakhand	78	15.8	28	14.0
West Bengal	75	17.0	30	13.5
A & N Islands	78	15.2	27	14.5
Chandigarh	73	15.8	30	14.8
Puducherry	84	17.5	27	13.8
Daman & Diu	75	15.2	30	15.4

**Measurement**

State/UT	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Andhra Pradesh	72	16.0	28	14.2
Assam	74	15.8	26	14.0
Bihar	76	16.1	22	14.2
Chhattisgarh	76	15.9	21	15.1
Delhi	74	15.1	25	13.8
Goa	73	15.7	26	13.9
Gujarat	74	16.3	25	13.6
Haryana	72	16.3	24	13.7
Himachal Pradesh	71	16.6	26	13.0
Jammu & Kashmir	75	16.0	25	13.2
Jharkhand	76	15.6	21	13.7
Karnataka	74	15.6	25	13.8
Kerala	66	14.8	26	13.7
Madhya Pradesh	76	16.0	26	14.0
Maharashtra	71	17.2	25	13.9
Meghalaya	74	17.0	26	13.1
Mizoram	62	14.0	27	12.9
Nagaland	75	16.1	27	13.8
Orissa	76	15.4	23	13.8
Punjab	69	16.1	22	13.6
Rajasthan	75	15.3	27	13.5
Sikkim	60	16.5	24	12.9
Tamil Nadu	80	14.3	28	13.2
Tripura	79	14.6	21	15.4
Uttar Pradesh	84	15.0	20	15.1
Uttarakhand	71	15.7	23	14.2
West Bengal	75	15.8	25	13.5
A & N Islands	71	15.2	26	13.3
Chandigarh	68	15.4	26	13.5
Puducherry	86	15.7	26	13.6
Daman & Diu	75	13.7	27	13.2



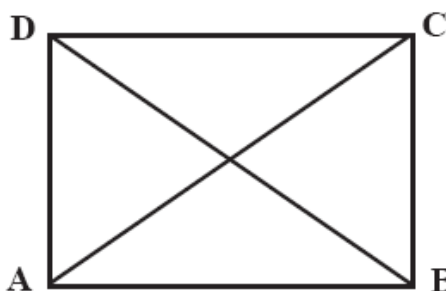
**Number System**

State/UT	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Andhra Pradesh	80	12.7	27	13.2
Assam	77	13.5	21	12.2
Bihar	81	12.4	23	13.6
Chhattisgarh	81	13.2	19	14.0
Delhi	79	12.9	24	13.1
Goa	82	12.2	26	13.8
Gujarat	78	13.5	23	12.3
Haryana	82	12.2	26	13.7
Himachal Pradesh	79	13.0	27	13.1
Jammu & Kashmir	80	13.2	24	13.6
Jharkhand	80	13.8	22	13.0
Karnataka	79	13.2	23	11.6
Kerala	75	13.0	24	12.0
Madhya Pradesh	79	12.9	24	12.5
Maharashtra	81	13.3	22	12.0
Meghalaya	78	12.2	26	13.0
Mizoram	78	11.3	27	12.4
Nagaland	81	13.4	25	12.6
Orissa	81	12.9	23	12.7
Punjab	81	12.0	27	14.1
Rajasthan	77	13.1	25	12.5
Sikkim	77	10.7	26	13.1
Tamil Nadu	80	13.6	27	12.5
Tripura	81	13.5	21	14.8
Uttar Pradesh	85	13.6	20	13.4
Uttarakhand	77	12.7	23	13.5
West Bengal	85	12.1	28	13.8
A & N Islands	80	13.4	25	12.3
Chandigarh	79	11.5	26	12.4
Puducherry	81	17.1	24	12.3
Daman & Diu	77	13.4	25	12.4

## Mathematics Test Items

Q.No. 1	Scale Score	241
The number 107 can be written as...	Missing	3
1. $10 + 7$	Option - 1	15
2. $100 + 7$	Option - 2	54
3. $1 + 0 + 7$	Option - 3	21
4. $1000 + 7$	Option - 4	6
	Multi. Resp.	1

Q.No. 2	Scale Score	252
Which of the following is <b>NOT</b> a side of rectangle ABCD?	Missing	5
1. AD	Option - 1	12
2. AC	Option - 2	47
3. AB	Option - 3	23
4. BC	Option - 4	11
	Multi. Resp.	1



Q.No. 3	Scale Score	262
Renu has the following three number cards:	Missing	3
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px;">7</div> <div style="border: 1px solid black; padding: 2px 5px;">5</div> <div style="border: 1px solid black; padding: 2px 5px;">8</div> </div>	Option - 1	6
Which is the largest 3-digit number she can make using all cards?	Option - 2	8
1. 578	Option - 3	45
2. 857	Option - 4	37
3. 875	Multi. Resp.	1
4. 999		

Q.No. 4	Scale Score	252
When 5205 is divided by 9, the remainder is...	Missing	8
1. one	Option - 1	7
2. two	Option - 2	13
3. three	Option - 3	49
4. five	Option - 4	23
	Multi. Resp.	1

Q.No. 5		Scale Score	258
$\begin{array}{r} 8501 \\ - 7510 \\ \hline ? \\ \hline \end{array}$ <ol style="list-style-type: none"> <li>891</li> <li>991</li> <li>1011</li> <li>1091</li> </ol>		Missing	4
		Option - 1	5
		Option - 2	47
		Option - 3	26
		Option - 4	17
		Multi. Resp.	1

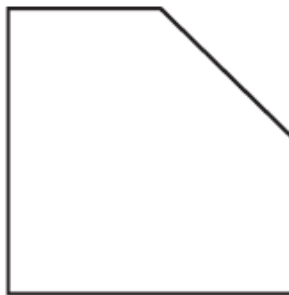
Q.No. 6		Scale Score	248
<p>Rajesh went to sleep at 10 p.m. and woke up at 6:30 a.m. next morning. How many hours did he sleep?</p> <ol style="list-style-type: none"> <li><math>16\frac{1}{2}</math></li> <li><math>4\frac{1}{2}</math></li> <li><math>6\frac{1}{2}</math></li> <li><math>8\frac{1}{2}</math></li> </ol>		Missing	5
		Option - 1	12
		Option - 2	12
		Option - 3	19
		Option - 4	51
		Multi. Resp.	1

Q.No. 7		Scale Score	249
<p>What is the area of a rectangle of length 6 cm and breadth 4 cm?</p> <ol style="list-style-type: none"> <li>10 sq cm</li> <li>20 sq cm</li> <li>24 sq cm</li> <li>100 sq cm</li> </ol>		Missing	6
		Option - 1	23
		Option - 2	12
		Option - 3	50
		Option - 4	8
		Multi. Resp.	1

**Q.No. 8**

How many sides are there in the figure given here?

1. four
2. five
3. six
4. seven



Scale Score	179
Missing	3
Option - 1	7
Option - 2	79
Option - 3	5
Option - 4	5
Multi. Resp.	1

**Q.No. 9**

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

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

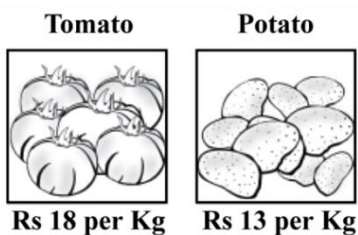
Scale Score	292
Missing	5
Option - 1	15
Option - 2	35
Option - 3	11
Option - 4	33
Multi. Resp.	1

**Q.No. 10**

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



Scale Score	278
Missing	7
Option - 1	19
Option - 2	17
Option - 3	16
Option - 4	39
Multi. Resp.	1

**Q.No. 11**

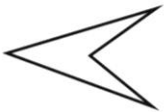
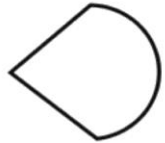
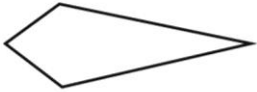
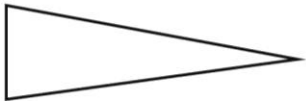
Which one of the following is true ?

1. 2095 is less than 2059
2. 2509 is less than 2059
3. 2002 is less than 2090
4. 2692 is less than 2629

Scale Score	247
Missing	7
Option - 1	11
Option - 2	14
Option - 3	51
Option - 4	15
Multi. Resp.	2

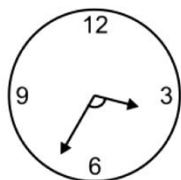
Q.No. 12		Scale Score	239
9607 – 8268 is equal to...		Missing	6
1. 1461		Option - 1	11
2. 1449		Option - 2	14
3. 1439		Option - 3	14
4. 1339		Option - 4	55
		Multi. Resp.	1

Q.No. 13		Scale Score	224
The measure 4 litres 250 millilitres is equal to...		Missing	6
1. 0.4250 L		Option - 1	11
2. 4.250 L		Option - 2	59
3. 4.520 L		Option - 3	11
4. 42.50 L		Option - 4	11
		Multi. Resp.	1

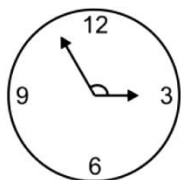
Q.No. 14		Scale Score	168
Which of the following figures is a triangle?		Missing	2
1. 		Option - 1	4
2. 		Option - 2	5
3. 		Option - 3	3
4. 		Option - 4	84
		Multi. Resp.	1

**Q.No. 15****Scale Score****237**

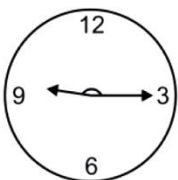
In which clock, the indicated angle between the two hands is less than a right angle?



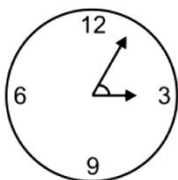
(a)



(b)



(c)



(d)

1. (a)
2. (b)
3. (c)
4. (d)

**Missing**

4

**Option - 1**

9

**Option - 2**

12

**Option - 3**

19

**Option - 4**

54

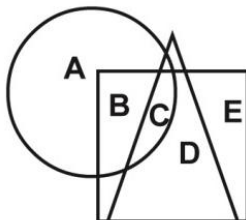
**Multi. Resp.**

1

**Q.No. 16****Scale Score****265**

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

**Missing**

4

**Option - 1**

45

**Option - 2**

14

**Option - 3**

16

**Option - 4**

19

**Multi. Resp.**

2

**Q.No. 17****Scale Score****245**

The difference of the place values of two 5's in the number 35150 is...

1. 0
2. 495
3. 990
4. 4950

**Missing**

7

**Option - 1**

13

**Option - 2**

12

**Option - 3**

18

**Option - 4**

48

**Multi. Resp.**

1

Q.No. 18	Scale Score	205
Rama's height is one metre fifty centimetres. It can be written as...	Missing	5
1. 0.15 m	Option - 1	5
2. 1.05 m	Option - 2	10
3. 1.50 m	Option - 3	68
4. 15.10 m	Option - 4	11
	Multi. Resp.	1

Q.No. 19	Scale Score	224
The place value of five in the number 685300 is...	Missing	5
1. five	Option - 1	8
2. fifty	Option - 2	8
3. five thousand	Option - 3	61
4. five lakh	Option - 4	18
	Multi. Resp.	1

Q.No. 20	Scale Score	237
$\begin{array}{r} 1200 \\ - 972 \\ \hline ? \end{array}$	Missing	5
1. 338	Option - 1	9
2. 238	Option - 2	11
3. 328	Option - 3	19
4. 228	Option - 4	55
	Multi. Resp.	1

Q.No. 21	Scale Score	192
$\begin{array}{r} 1013 \\ + 997 \\ \hline ? \end{array}$	Missing	5
1. 1910	Option - 1	8
2. 2000	Option - 2	10
3. 2010	Option - 3	68
4. 1900	Option - 4	8
	Multi. Resp.	1

Q.No. 22	Scale Score	258
The difference between 939852 and 43234 is...	Missing	5
1. 507512	Option - 1	11
2. 896618	Option - 2	46
3. 896628	Option - 3	15
4. 983086	Option - 4	21
	Multi. Resp.	1

Q.No. 23	Scale Score	246
Which of the following is <b>NOT</b> correct?	Missing	5
1. $2\frac{1}{2}$ m = 250 cm	Option - 1	10
2. $2\frac{1}{2}$ kg = 2500 g	Option - 2	21
3. $2\frac{1}{2}$ hours = 130 minutes	Option - 3	51
4. $2\frac{1}{2}$ rupees = 250 paise	Option - 4	12
	Multi. Resp.	1

Q.No. 24	Scale Score	274
Which of the following is <b>NOT</b> correct?	Missing	6
1. 1.2 m = 120 cm	Option - 1	11
2. 1.2 kg = 1200 g	Option - 2	27
3. 1.2 hours = 120 minutes	Option - 3	41
4. 1.2 rupees = 120 paise	Option - 4	14
	Multi. Resp.	1

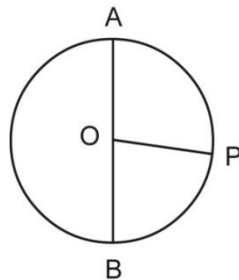
Q.No. 25	Scale Score	268
How many strips of length 30 cm each can be cut out of 6 m long strip?	Missing	6
1. 6	Option - 1	19
2. 14	Option - 2	10
3. 18	Option - 3	21
4. 20	Option - 4	43
	Multi. Resp.	1



**Q.No. 26**

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

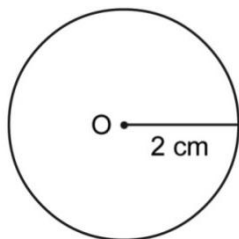
**Scale Score** 261

Missing	5
Option - 1	13
Option - 2	22
Option - 3	15
Option - 4	45
Multi. Resp.	1

**Q.No. 27**

The diameter of the circle given below is...

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

**Scale Score** 260

Missing	4
Option - 1	34
Option - 2	46
Option - 3	7
Option - 4	9
Multi. Resp.	1

**Q.No. 28**

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	8
Option - 1	34
Option - 2	28
Option - 3	15
Option - 4	14
Multi. Resp.	1

**Q.No. 29**

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

$$\begin{array}{r}
 24 \\
 \times \quad \square \\
 \hline
 144
 \end{array}$$

1. 16
2. 11
3. 7
4. 6

**Scale Score** 227

Missing	6
Option - 1	15
Option - 2	9
Option - 3	8
Option - 4	62
Multi. Resp.	1

Q.No. 30	Scale Score	283
<p>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...</p> <ol style="list-style-type: none"> <li>6 hrs.</li> <li>9 hrs.</li> <li>12 hrs.</li> <li>18 hrs.</li> </ol>	Missing	4
	Option - 1	24
	Option - 2	8
	Option - 3	25
	Option - 4	38
	Multi. Resp.	1

Q.No. 31	Scale Score	211
<p>The number name of 5060 is...</p> <ol style="list-style-type: none"> <li>five thousand six</li> <li>five hundred sixty</li> <li>five thousand sixty</li> <li>fifty six</li> </ol>	Missing	4
	Option - 1	8
	Option - 2	16
	Option - 3	66
	Option - 4	6
	Multi. Resp.	1

Q.No. 32	Scale Score	285
<p>Shyam was 75 years old in the year 2001. In which year was he 50 years old?</p> <ol style="list-style-type: none"> <li>1951</li> <li>1976</li> <li>1984</li> <li>1986</li> </ol>	Missing	8
	Option - 1	20
	Option - 2	39
	Option - 3	16
	Option - 4	16
	Multi. Resp.	1

Q.No. 33	Scale Score	254
<p>Which of the following units would be the best to measure the length of a school building?</p> <ol style="list-style-type: none"> <li>Millimetre</li> <li>Centimetre</li> <li>Metre</li> <li>Kilometre</li> </ol>	Missing	6
	Option - 1	7
	Option - 2	21
	Option - 3	48
	Option - 4	17
	Multi. Resp.	1

**Q.No. 34**

The following chart shows the price of some vegetables. Rabiya wants kg tomatoes. How much she will pay?

Rate List	
Items	Price in Rs (Per kg)
Tomatoes	14
Potatoes	20
Onions	10

- Rs 50
- Rs 35
- Rs 34
- Rs 30

**Scale Score** 261**Missing** 8**Option - 1** 15**Option - 2** 44**Option - 3** 19**Option - 4** 12**Multi. Resp.** 1**Q.No. 35**

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?

- $56 + 8$
- $56 - 8$
- $56 \div 8$
- $56 \times 8$

**Scale Score** 254**Missing** 8**Option - 1** 15**Option - 2** 13**Option - 3** 48**Option - 4** 16**Multi. Resp.** 1**Q.No. 36**

Number of hours in a week is...

- 72
- 84
- 144
- 168

**Scale Score** 244**Missing** 7**Option - 1** 11**Option - 2** 13**Option - 3** 15**Option - 4** 53**Multi. Resp.** 1**Q.No. 37**

The time by the clock given here is...

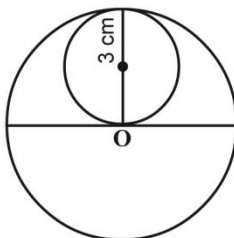
- 4 : 08
- 4 : 40
- 5 : 08
- 5 : 40

**Scale Score** 227**Missing** 5**Option - 1** 10**Option - 2** 60**Option - 3** 11**Option - 4** 13**Multi. Resp.** 1

**Q.No. 38**

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

**Scale Score** 267**Missing** 7**Option - 1** 24**Option - 2** 43**Option - 3** 12**Option - 4** 14**Multi. Resp.** 1**Q.No. 39**

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

**Scale Score** 277**Missing** 10**Option - 1** 12**Option - 2** 20**Option - 3** 19**Option - 4** 38**Multi. Resp.** 1**Q.No. 40**

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...

1. 150 g
2. 1 kg 150 g
3. 1 kg 200 g
4. 4 kg 50 g

**Scale Score** 271**Missing** 8**Option - 1** 13**Option - 2** 42**Option - 3** 21**Option - 4** 15**Multi. Resp.** 1**Q.No. 41**

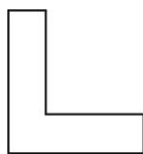
In which of the following, numbers are written in increasing order?

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

**Scale Score** 216**Missing** 2**Option - 1** 13**Option - 2** 62**Option - 3** 10**Option - 4** 13**Multi. Resp.** 1

**Q.No. 42**

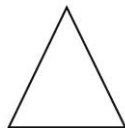
Which of the following figures is a rectangle?



(a)



(b)



(c)



(d)

1. (a)
2. (b)
3. (c)
4. (d)

Scale Score	208
Missing	4
Option - 1	6
Option - 2	68
Option - 3	14
Option - 4	8
Multi. Resp.	1

**Q.No. 43**

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	6
Option - 1	10
Option - 2	9
Option - 3	54
Option - 4	19
Multi. Resp.	2

**Q.No. 44**

$$\begin{array}{r} 7010 \\ + 2699 \\ \hline ? \\ \hline \end{array}$$

1. 9799
2. 9709
3. 9699
4. 9609

Scale Score	184
Missing	4
Option - 1	5
Option - 2	76
Option - 3	6
Option - 4	7
Multi. Resp.	1

**Q.No. 45**

How much greater is 555 than 198 ?

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

Scale Score	261
Missing	4
Option - 1	45
Option - 2	12
Option - 3	12
Option - 4	26
Multi. Resp.	1

**Q.No. 46**

After how many minutes will the clock, given here, show exactly 11 O'clock?



1. 54
2. 45
3. 9
4. 8

**Scale Score** 214

Missing	4
Option - 1	11
Option - 2	67
Option - 3	11
Option - 4	7
Multi. Resp.	1

**Q.No. 47**

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.

**Scale Score** 266

Missing	5
Option - 1	17
Option - 2	21
Option - 3	44
Option - 4	12
Multi. Resp.	1

**Q.No. 48**

Which of the following angles is the smallest?



1.  $\angle A$
2.  $\angle B$
3.  $\angle C$
4.  $\angle D$

**Scale Score** 257

Missing	3
Option - 1	47
Option - 2	21
Option - 3	7
Option - 4	20
Multi. Resp.	1

**Q.No. 49**

The digits 3 and 4 of the number 354 are inter-changed 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

**Scale Score** 280

Missing	8
Option - 1	40
Option - 2	17
Option - 3	14
Option - 4	20
Multi. Resp.	1

Q.No. 50	Scale Score	422
<p>Ram spends <math>\frac{1}{2}</math> of his salary in paying fee, <math>\frac{1}{5}</math> of it in paying house rent and <math>\frac{3}{10}</math> of it in purchasing grocery. In which item does he spend the least?</p> <ol style="list-style-type: none"> <li>Paying house rent</li> <li>Paying fees</li> <li>Purchasing grocery</li> <li>Equal in all the three</li> </ol>	Missing	7
	Option - 1	22
	Option - 2	33
	Option - 3	26
	Option - 4	12
	Multi. Resp.	1

Q.No. 51	Scale Score	210
<p>Which of the following is the smallest number?</p> <ol style="list-style-type: none"> <li>9909</li> <li>9099</li> <li>9009</li> <li>9090</li> </ol>	Missing	4
	Option - 1	8
	Option - 2	8
	Option - 3	67
	Option - 4	12
	Multi. Resp.	1

Q.No. 52	Scale Score	235
<p>Given below are some figures. How many of these have four sides only?</p>  <ol style="list-style-type: none"> <li>one</li> <li>two</li> <li>three</li> <li>four</li> </ol>	Missing	4
	Option - 1	7
	Option - 2	57
	Option - 3	11
	Option - 4	18
	Multi. Resp.	2

Q.No. 53	Scale Score	307
<p>Which of the following is a pair of equivalent fractions?</p> <ol style="list-style-type: none"> <li><math>\frac{2}{9}, \frac{1}{9}</math></li> <li><math>\frac{3}{5}, \frac{15}{25}</math></li> <li><math>\frac{4}{7}, \frac{16}{49}</math></li> <li><math>\frac{3}{8}, \frac{8}{3}</math></li> </ol>	Missing	9
	Option - 1	17
	Option - 2	35
	Option - 3	20
	Option - 4	18
	Multi. Resp.	1

Q.No. 54	Scale Score	240
90 × 305 = ?	Missing	8
1. 3150	Option - 1	16
2. 7470	Option - 2	10
3. 27450	Option - 3	54
4. 270450	Option - 4	12
	Multi. Resp.	1

Q.No. 55	Scale Score	276
If $\frac{3}{8} = \frac{9}{\square}$ , then the number in the $\square$ will be...	Missing	10
1. 8	Option - 1	21
2. 12	Option - 2	15
3. 14	Option - 3	13
4. 24	Option - 4	40
	Multi. Resp.	1

Q.No. 56	Scale Score	271
What will be the correct time exactly 75 minutes after 2:00 p.m.?	Missing	7
1. 2 : 45 p.m.	Option - 1	7
2. 2 : 75 p.m.	Option - 2	34
3. 3 : 15 p.m.	Option - 3	43
4. 3 : 45 p.m.	Option - 4	9
	Multi. Resp.	1

Q.No. 57	Scale Score	260
How many hours make 3600 minutes?	Missing	7
1. 60	Option - 1	46
2. 150	Option - 2	12
3. 300	Option - 3	12
4. 600	Option - 4	23
	Multi. Resp.	1



Q.No. 58	Scale Score	250
What is the measure of half of a right-angle?	Missing	6
1. $30^\circ$	Option - 1	16
2. $45^\circ$	Option - 2	49
3. $50^\circ$	Option - 3	11
4. $180^\circ$	Option - 4	17
	Multi. Resp.	1

Q.No. 59	Scale Score	275
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	Missing	9
1. 2 cm	Option - 1	7
2. 5 cm	Option - 2	15
3. 6 cm	Option - 3	40
4. 11 cm	Option - 4	28
	Multi. Resp.	1

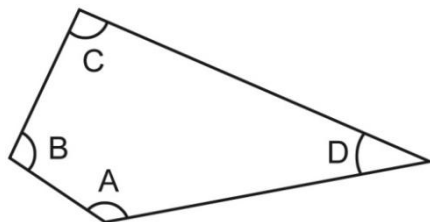
Q.No. 60	Scale Score	289
In the following question, which number will be in the <input type="text"/> ?	Missing	9
$1 \text{ km} - 1 \text{ m} = \text{  m}$	Option - 1	18
1. 0	Option - 2	24
2. 99	Option - 3	11
3. 990	Option - 4	36
4. 999	Multi. Resp.	1

Q.No. 61	Scale Score	224
Which of the following is a 2-digit number?	Missing	2
1. two thousand two	Option - 1	17
2. one thousand two	Option - 2	8
3. one hundred	Option - 3	10
4. ninety nine	Option - 4	62
	Multi. Resp.	1

**Q.No. 62**

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

1.  $\angle A$
2.  $\angle B$
3.  $\angle C$
4.  $\angle D$



Scale Score	323
Missing	3
Option - 1	25
Option - 2	10
Option - 3	13
Option - 4	47
Multi. Resp.	1

**Q.No. 63**

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.  $\frac{5}{3}$

Scale Score	290
Missing	9
Option - 1	12
Option - 2	14
Option - 3	29
Option - 4	35
Multi. Resp.	2

**Q.No. 64**

$$\begin{array}{r} 1089 \\ \times 9 \\ \hline ? \\ \hline \end{array}$$

1. 1701
2. 9801
3. 90801
4. 97281

Scale Score	228
Missing	6
Option - 1	9
Option - 2	58
Option - 3	15
Option - 4	12
Multi. Resp.	1

**Q.No. 65**

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

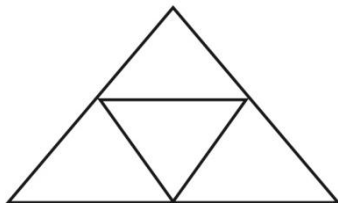
1. 19
2. 100
3. 109
4. 648

Scale Score	278
Missing	6
Option - 1	31
Option - 2	8
Option - 3	40
Option - 4	13
Multi. Resp.	1

Q.No. 66		Scale Score	232
<p>Gaurav collected 422 marbles. His brother collected 100 marbles less than him. How many marbles did his brother collect?</p> <p>1. 312</p> <p>2. 322</p> <p>3. 512</p> <p>4. 522</p>		Missing	4
		Option - 1	5
		Option - 2	58
		Option - 3	6
		Option - 4	26
		Multi. Resp.	1

Q.No. 67		Scale Score	266
<p>What is the perimeter of a square of side 3 cm?</p> <p>1. 6 cm</p> <p>2. 9 cm</p> <p>3. 12 cm</p> <p>4. 1 m 2 cm</p>		Missing	7
		Option - 1	18
		Option - 2	19
		Option - 3	44
		Option - 4	13
		Multi. Resp.	1

Q.No. 68		Scale Score	318
<p>The total number of triangles in the figure, given here, is...</p> <p>1. three</p> <p>2. four</p> <p>3. five</p> <p>4. nine</p>		Missing	4
		Option - 1	21
		Option - 2	30
		Option - 3	31
		Option - 4	13
		Multi. Resp.	1

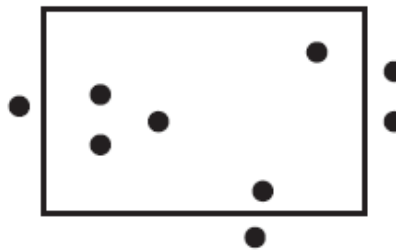


Q.No. 69		Scale Score	229
<p>Five jugs full of water are required to fill up a bucket. If a tank needs 15 bucket full of water to fill it up, total jugs of water required to fill up the tank.</p> <p>1. 15</p> <p>2. 20</p> <p>3. 50</p> <p>4. 75</p>		Missing	4
		Option - 1	10
		Option - 2	16
		Option - 3	9
		Option - 4	59
		Multi. Resp.	1

Q.No. 70	Scale Score	229
<p>Jacob spent Rs 14.95 for a notebook, Rs 1.25 for an eraser and Rs 3.50 for a pencil. In all, how much did he spend?</p> <p>1. Rs 18.70</p> <p>2. Rs 19.00</p> <p>3. Rs 19.70</p> <p>4. Rs 54.50</p>	Missing	5
	Option - 1	13
	Option - 2	13
	Option - 3	56
	Option - 4	12
	Multi. Resp.	1

Q.No. 71	Scale Score	223
<p>The place value of 4 in 294301 is...</p> <p>1. 4</p> <p>2. 40</p> <p>3. 400</p> <p>4. 4000</p>	Missing	6
	Option - 1	9
	Option - 2	9
	Option - 3	14
	Option - 4	61
	Multi. Resp.	1

Q.No. 72	Scale Score	223
<p>How many dots lie inside the rectangle given here?</p> <p>1. 4</p> <p>2. 5</p> <p>3. 8</p> <p>4. 9</p>	Missing	4
	Option - 1	10
	Option - 2	59
	Option - 3	6
	Option - 4	20
	Multi. Resp.	1



Q.No. 73	Scale Score	233
<p>Which number is 10 more than 5237 ?</p> <p>1. 5238</p> <p>2. 5247</p> <p>3. 5337</p> <p>4. 6237</p>	Missing	6
	Option - 1	10
	Option - 2	57
	Option - 3	13
	Option - 4	13
	Multi. Resp.	1

Q.No. 74	Scale Score	261
If $\frac{5}{6} = \frac{\square}{24}$ , then the number in the $\square$ is...  1. 5 2. 18 3. 20 4. 23	Missing	10
	Option - 1	15
	Option - 2	15
	Option - 3	45
	Option - 4	15
	Multi. Resp.	1

Q.No. 75	Scale Score	325
$\frac{2}{3} + \frac{3}{5}$ is equal to...  1. $\frac{2+3}{3 \times 5}$ 2. $\frac{2 \times 3 + 3 \times 5}{3 \times 5}$ 3. $\frac{2+3}{3+5}$ 4. $\frac{2 \times 5 + 3 \times 3}{3 \times 5}$	Missing	11
	Option - 1	17
	Option - 2	18
	Option - 3	27
	Option - 4	26
	Multi. Resp.	1

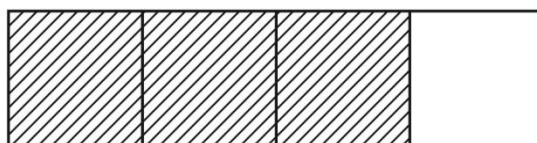
Q.No. 76	Scale Score	257
If today is Tuesday, which day will be 10th day after today?  1. Thursday 2. Friday 3. Saturday 4. Tuesday	Missing	5
	Option - 1	21
	Option - 2	48
	Option - 3	14
	Option - 4	11
	Multi. Resp.	1

Q.No. 77	Scale Score	239
Ganesh sleeps 8 hours a day. How many hours does he sleep in a week?  1. 64 2. 56 3. 48 4. 40	Missing	5
	Option - 1	14
	Option - 2	55
	Option - 3	13
	Option - 4	12
	Multi. Resp.	1

Q.No. 78		Scale Score	298
The area of a square with side 6 cm is...		Missing	7
1. 6 sq cm		Option - 1	13
2. 12 sq cm		Option - 2	21
3. 24 sq cm		Option - 3	23
4. 36 sq cm		Option - 4	35
		Multi. Resp.	1

Q.No. 79		Scale Score	271
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?		Missing	7
1. 21		Option - 1	8
2. 23		Option - 2	42
3. 25		Option - 3	28
4. 27		Option - 4	15
		Multi. Resp.	1

Q.No. 80		Scale Score	321
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?		Missing	10
1. 36 cm		Option - 1	14
2. 42 cm		Option - 2	15
3. 48 cm		Option - 3	36
4. 60 cm		Option - 4	24
		Multi. Resp.	1



# **Environmental Science (EVS)**

## Overview of the Environmental Studies Tests

The Environmental Studies tests given to Class V students consisted of three test booklets, each containing forty multiple-choice items. The items were chosen keeping in view the whole range of the content. Out of forty items, twenty items were common across all test forms. These served as 'anchors' so that the different test booklets could be linked together and, hence, all items could be placed on a common scale. In addition, each test form contained an extra, twenty unique items. Thus, altogether the Environment Studies tests used in the survey comprised eighty items.

The items were designed to test a range of relevant *cognitive processes* or 'skills'. These are

### Cognitive Processes for Environmental Studies

**Knowing (Skill 1):** *In items testing this process, students are expected to recall or recognize terms, facts, symbols, units, and basic scientific/ social concepts. They select appropriate apparatus and measurement devices for conducting experiments/ investigations.*

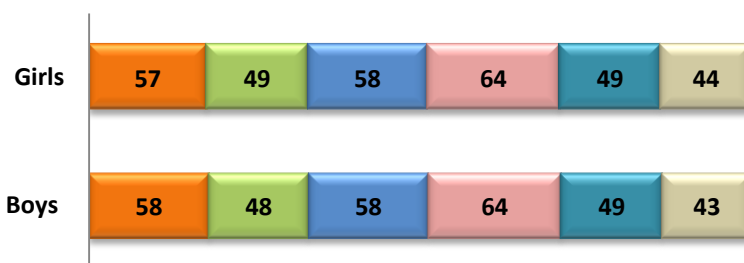
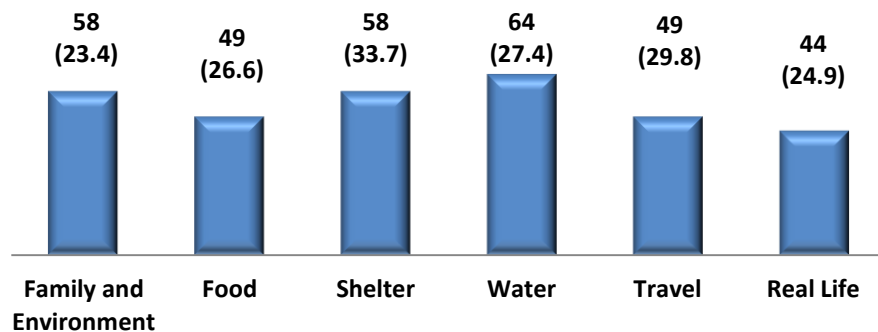
**Applying (Skill 2):** *The items in this cognitive domain are designed to involve the application of knowledge and understanding in straight forward situations. The items testing applying require students to compare, contrast, and classify, and to interpret information in light of a concept. Students are also expected to use and apply their understanding of concepts and principles in the known situations.*

**Reasoning (Skill 3):** *In items testing reasoning, students need to demonstrate their ability to solve problems, draw conclusions and make decisions. For this students are required to analyze a problem (perhaps in new situation), identify relationships, determine underlying principles, devise and explain strategies for problem solving.*



## Overall

- Performance of students was more than fifty percent in content areas of 'Family and Environment', 'Shelter' and 'Water'.

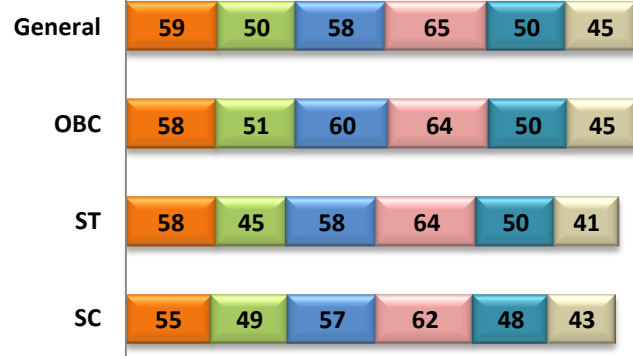
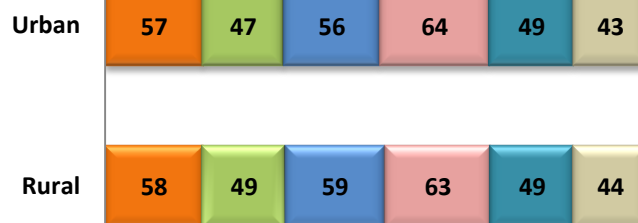


## Gender

- In the content areas, 'Food' and 'Real Life', girls scored slightly higher than boys.
- Boys scored slightly higher than girls in the content area of 'Family and Environment' only.

## Area

- For urban students, average scores on 'Water' were higher than rural students.
- Performance of rural students was slightly higher than the urban students in the content areas of 'Family and Environment', 'Food', 'Shelter' and 'Real life'.



## Social Groups

- General category students performed best in the content areas of 'Family and Environment' and 'Water'.
- Performance of OBC category students was higher than the other social groups in the content areas of 'Food' and 'Shelter'.

## What Students Can't Do?

Items responded correctly by less than 50% Students in EVS

Item No.	Scale Score	Content Area	Item Description	% Correct
26	251	Family and Environment	Importance of team work	49
27	264		Stages of seed germination	44
33	256		Edible part of carrot	48
34	273		Relation between the weather and breathe air	42
36	264		Measuring instruments used to see small organism	45
43	284		Process of breathing	41
58	291		Edible part of sweet potato	39
64	269		Importance of wild animals in eco system	41
70	338		Importance of forest in human life	34
78	253		Interpreting the data given in the graph	48
80	254		Trends of growth	47
21	290	Food	Effect of food items on health	42
41	290		Components of food /diet and their functions	40
48	333		Energy giving nutrient	31
52	270		Deficiency disease due to lack of iron	42
62	289		Areas of tongue for different taste	44
32	251	Shelter	Reason for construction of Dams	49
15	262	Travel	Forms of energy with their relevance to home	44
17	264		Different fuels with their properties	45
37	252		Least polluting mode of transportation	49
44	296		Sources of energy and their by product	35
57	261		Importance of historical monuments	46
65	277		Least polluting fuel	41
10	272	Real life	Interpreting the graph	42
16	351		Phenomena of lunar eclipse	30
23	333		Measuring apparatus with the quantity of water	26
31	260		Neighboring country of India	45
39	272		Co-relating properties of oil with water	42
49	302		Effect of exhaled air on mirror	35
66	263		Instrument for measuring temperature	47
69	263		Direction in the map	44

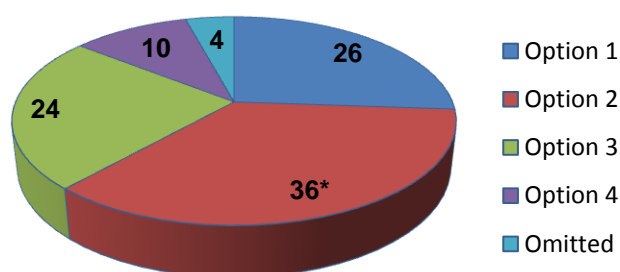
**SAMPLE ITEM****Sample Item :** Sources of energy and their by product**Mental Process:** Knowing**Scale score :** 296

Item 44. Which one of the following sources of energy produces carbon dioxide?

1. Solar energy
2. Energy from coal
3. Wind energy
4. Hydrothermal energy

This item requires students to identify the source of energy which produces carbon dioxide. Only 36% of students in the sample were able to select the correct answer (2). 62% students choose the wrong options. Out of 62%, 26% students selected option '1' i.e., solar energy.

Percentage of students in each response category (Item 44)

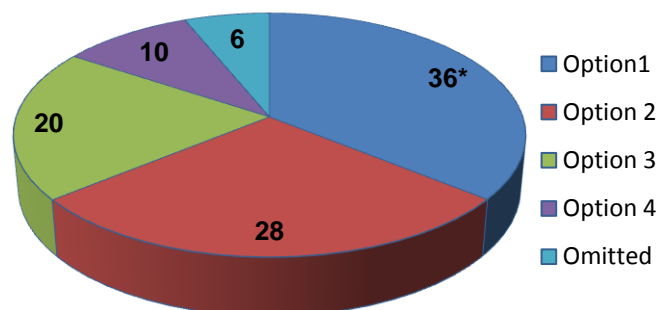
**Sample Item :** Effect of exhaled air on mirror**Mental Process:** Applying**Scale score :** 302

Item 49. A part of the mirror clouds up when you breathe on it because\_\_\_\_\_

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

The item requires students to explain the effect of exhaled air on the mirror. Only 36% of students in the sample were able to select the correct answer (1). It is clear from the chart that options 2nd and 3rd worked as strong distracters. Perhaps, students thought that carbon dioxide and oxygen were also present in the air. Hence, the item was hard in nature.

Percentage of students in each response category (Item 49)



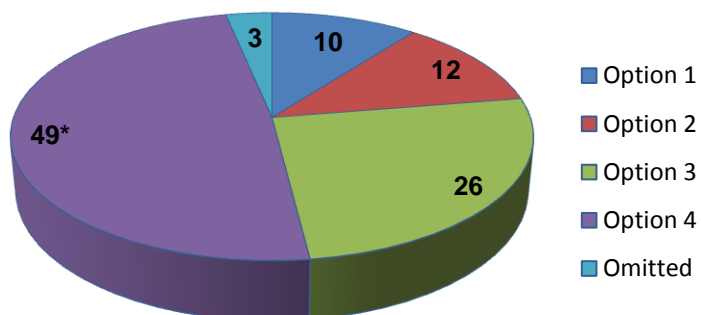
**Sample Item** : Edible part of carrot**Mental Process:** Knowing**Scale score** : 256

Item 33. Which part of the carrot plant are eaten?

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

This item requires students to recall the edible part of carrot. 49% of students in the sample were able to select the correct answer (4). Besides, 26% students understood that stem part of the carrot plant can be eaten.

Percentage of students in each response category (Item 33)



## What Students Can Do?

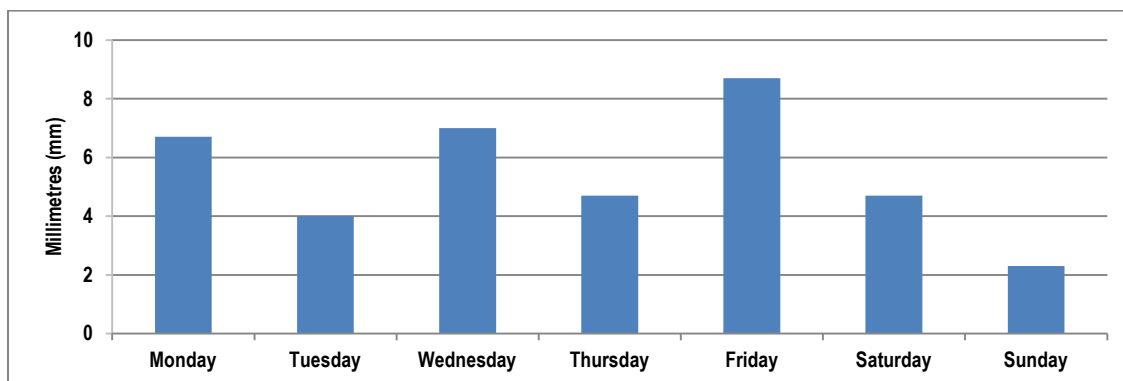
### Items responded correctly by 50% and more Students in EVS

Item No.	Scale Score	Content Area	Item Description	% Correct
2	184	<b>Family and Environment</b>	Habits and habitats of animals.	75
3	182		Classifying animals in different groups	79
5	211		Egg laying animals.	68
11	235		Relating characteristics of plants with their habitat	56
18	197		Role of different parts of the plant.	73
19	185		Footprints of birds.	74
40	249		Effects of cutting down of trees	50
45	240		Relationship in family tree	54
46	234		Establishing relationships on the basis of family tree	57
47	250		Critical analysis of the family tree	50
50	225		Interpret the graph	60
51	209		National game of India.	68
53	228		Animals and their habitat.	60
61	172		Flying birds and their features.	81
63	203		Function of nose	70
71	225		Functions of roots	59
72	225		Animals give birth to babies	59
77	214		Breathing in different conditions	65
79	246		Trends of growth	51
1	230	<b>Food</b>	Richest source of iron	56
12	249		Vitamins and their deficiency causing diseases	50
22	228		Different types of clothes and their properties	58
35	250		Process of preservation of pickles	50
76	237		Animal source of food	54
14	215	<b>Shelter</b>	Finding solution in the given situation.	66
24	240		House roofs in different geographical conditions.	54
28	240		Problems of population explosion	54

Item No.	Scale Score	Content Area	Item Description	% Correct
6	218	<b>Water</b>	Features of aquatic animals.	63
8	211		Interpreting the information given in the graph.	68
9	249		Interpreting the information given in the graph.	50
13	185		Mode of transmission of diseases.	77
20	231		Sources of water and their usage	58
30	250		Cause and effect relationship between climatic conditions and evaporation	50
38	215		Usage of water	66
42	201		Animals and their habitat.	72
55	199		Properties of solutes and solvents.	71
67	218		Suitable conditions for breeding of mosquitoes	63
75	220		Benefits of boiling water	63
4	218	<b>Travel</b>	Sources of energy and their uses.	62
25	238		Interrelate the thing around the earth	55
54	213		Means of transportation causing pollution.	66
7	250	<b>Real life</b>	Neighboring country of India	50
29	242		Relationship between motion and gravity	53
56	237		Dissolving property of kerosene.	55
59	241		Locating Jim Corbett Park in the map	54
60	238		Locating Kaziranga Sanctuary in the map	55
68	224		Direction in the map.	59
73	245		Temperature measuring instrument	51
74	245		Water absorbing substances	51

**SAMPLE ITEM**

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



**Sample Item :** Interpreting the information given in the graph

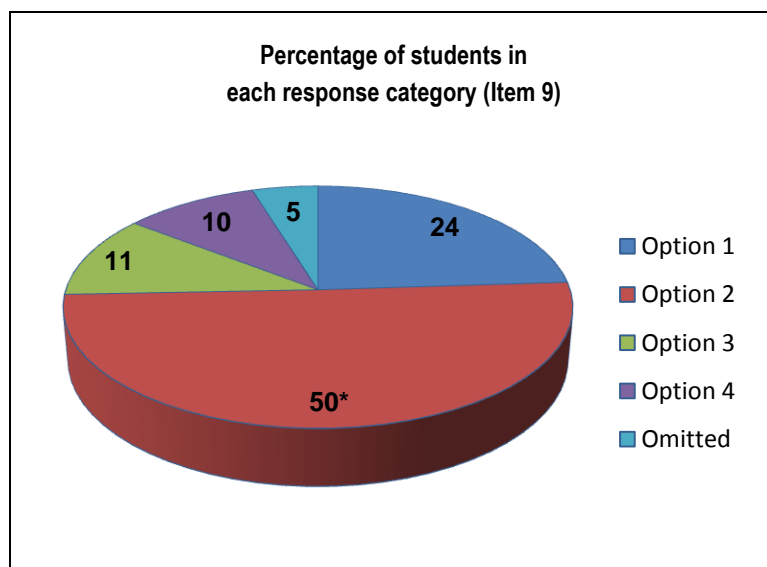
**Mental Process:** Applying

**Scale score :** 249

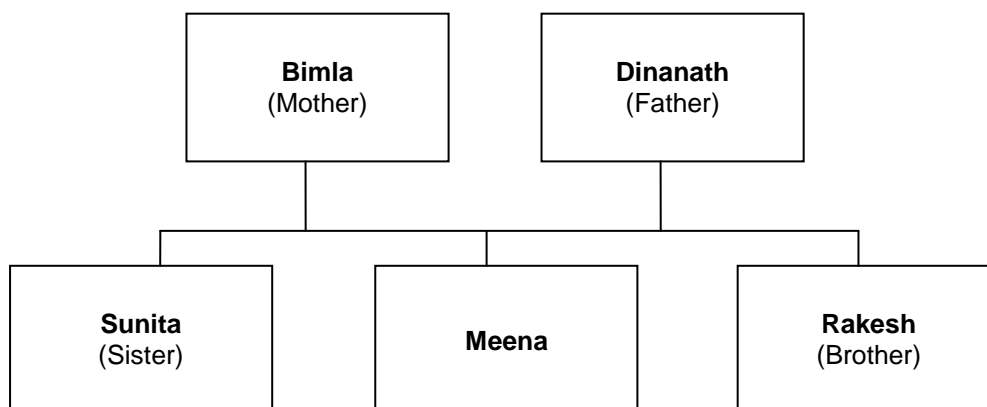
Item 9. What was the rainfall on Wednesday?

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

This item requires students to interpret the given graph and find out the measurement of rainfall on Wednesday. 50% of students in the sample were able to select the correct answer (2).



**Direction :** Family tree of Meena is shown below. Based on the figure answer the question 45, 46 and 47.



**Sample Item :** Critical analysis of the family tree

**Mental Process:** Reasoning

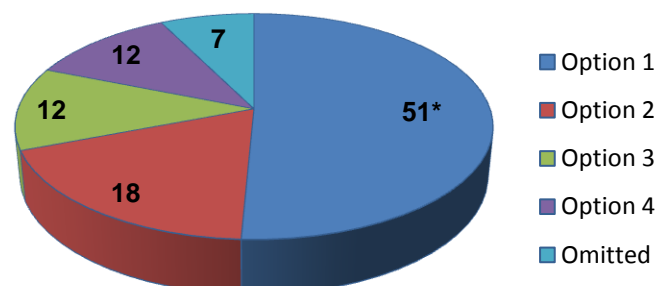
**Scale score :** 250

Item 47. 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

This item requires students to analyze the situation and find out the number of persons in the family. 51% of students in the sample were able to select the correct answer (1). The pie chart shows how the remaining 49% responded.

Percentage of students in each response category (Item 47)



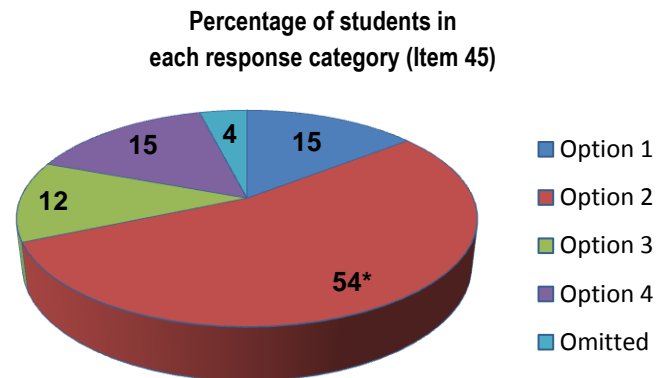


**Sample Item** : Relationship in family tree**Mental Process:** Reasoning**Scale score** : 240

Item 45. 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

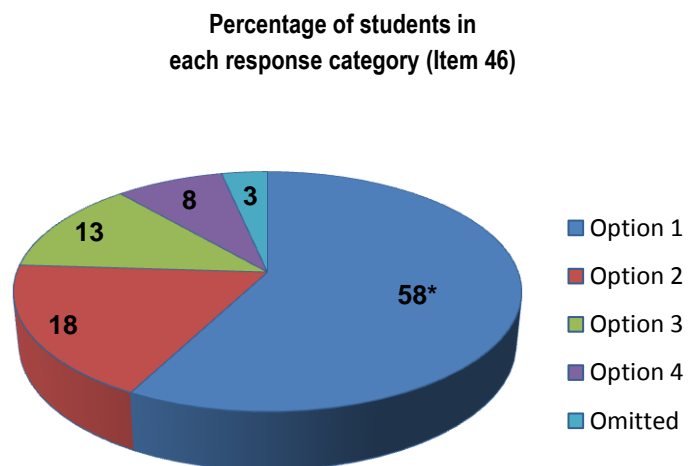
This item requires students to think about the relationship as per information given in the family tree. 54% of students in the sample were able to select the correct answer (2). The pie chart shows how the remaining 46% responded.

**Sample Item** : Establishing relationships on the basis of family tree**Mental Process:** Reasoning**Scale score** : 234

Item 46. Rakesh and his wife are blessed with a son. What will be the son's relationship with Dinanath?

1. Grandson
2. Son
3. Brother
4. Brother-in-law

This item requires students to find out the relationship on the basis of information given in the family tree. 58% of students in the sample were able to select the correct answer (1). The pie chart shows how the remaining 42% responded.



**Sample Item :** Classifying animals in different groups.

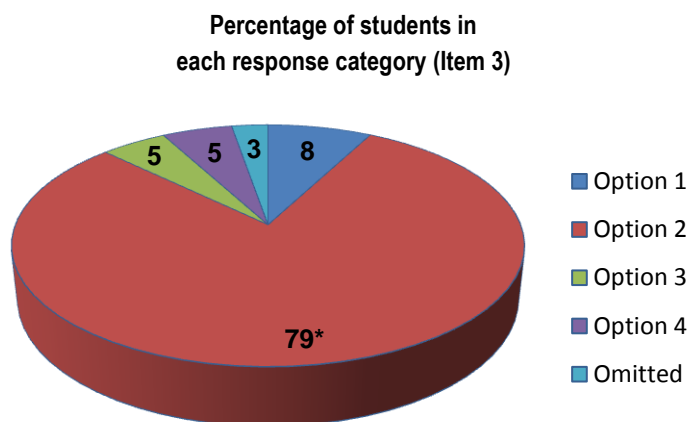
**Mental Process:** Applying

**Scale score :** 182

Item 3. Which of the following groups contains only domestic animals?

1. tiger, lion, leopard
2. cow, dog, cat
3. crow, peacock, owl
4. deer, bear, cheetah

This item requires students to classify the group of domestic animals. 79% of students in the sample were able to select the correct answer (2). The pie chart shows how the remaining 21% responded.



**Sample Item :** Flying birds and their features

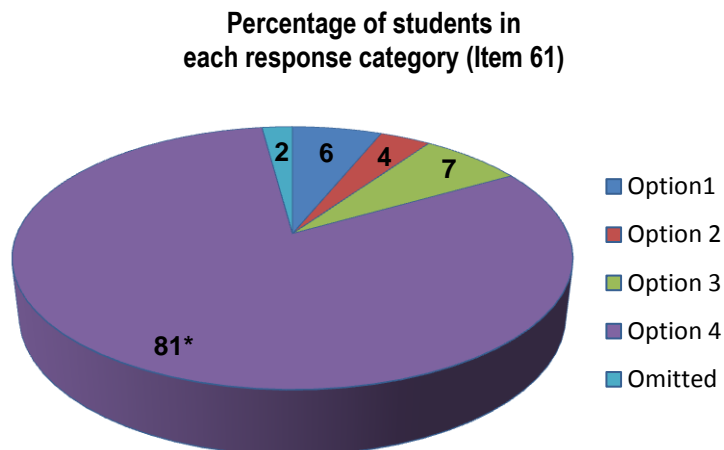
**Mental Process:** Knowing

**Scale score :** 172

Item 61. Which of the following birds can NOT fly?

1. Parrot
2. Crow
3. Eagle
4. Ostrich

The item requires students to recall the bird that cannot fly. 81% of students in the sample were able to select the correct answer (4). The chart shows how the remaining 19% responded.



## Performance of top 25% and bottom 25% students on different content areas

Content areas	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Family and Environment	84	10.4	30	13.5
Food	73	20.6	29	20.3
Shelter	91	15.8	25	23.6
Water	90	12.6	33	20.5
Travel	81	19.3	23	19.0
Real life	71	17.7	22	15.9

Data in the given table shows that mean achievement of both the groups was lowest on the content area 'Real Life'. Besides, dispersion of scores was highest on 'Food' for top 25% group and it was highest on 'Shelter' for bottom 25% group.

### What top 25% Students Can't Do?

Performance of top 25% students was below 50% on the following items

Item No.	Content Area	Item Description	% Correct
70	<b>Family and Environment</b>	Importance of forest in human life	46
16	<b>Real life</b>	Phenomena of lunar eclipse	47

### What bottom 25% Students Can Do?

Performance of bottom 25% students was 50% or more on the following items

Item No.	Content Area	Item Description	% Correct
3	<b>Family and Environment</b>	Classifying animals in different groups	50
61		Flying birds and their features	57

## Sum up

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.

# Appendix

## Performance of top 25% and bottom 25% students on different content areas

### Family & Environment

State/UT	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Andhra Pradesh	84	9.8	32	13.5
Assam	80	9.3	31	13.8
Bihar	83	10.5	27	13.9
Chhattisgarh	86	10.7	26	14.6
Delhi	84	10.6	31	13.3
Goa	85	11.1	34	13.9
Gujarat	82	10.5	31	13.1
Haryana	81	11.0	29	12.4
Himachal Pradesh	84	11.2	30	12.8
Jammu & Kashmir	84	10.2	27	13.2
Jharkhand	84	11.0	26	13.5
Karnataka	84	10.3	30	13.6
Kerala	89	7.8	36	14.8
Madhya Pradesh	83	11.0	29	12.6
Maharashtra	85	10.1	31	12.6
Meghalaya	85	10.2	31	12.4
Mizoram	83	10.1	33	13.2
Nagaland	87	9.7	29	12.9
Orissa	83	10.1	28	13.6
Punjab	83	11.5	32	12.7
Rajasthan	84	10.8	29	12.4
Sikkim	82	9.7	34	12.7
Tamil Nadu	86	10.0	32	13.5
Tripura	84	10.1	27	15.2
Uttar Pradesh	85	10.6	26	14.9
Uttarakhand	82	10.9	27	13.6
West Bengal	84	9.4	33	12.5
A & N Islands	84	9.5	30	12.4
Chandigarh	80	9.3	32	12.3
Puducherry	86	12.8	29	12.7
Daman & Diu	81	11.1	35	13.8

**Food**

State/UT	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Andhra Pradesh	66	21.1	28	19.1
Assam	68	20.2	28	19.5
Bihar	73	18.1	28	20.6
Chhattisgarh	68	17.8	25	18.4
Delhi	75	20.6	27	19.4
Goa	56	22.3	31	20.8
Gujarat	71	22.9	24	20.8
Haryana	71	20.0	30	20.6
Himachal Pradesh	71	19.4	27	19.8
Jammu & Kashmir	76	18.2	29	19.4
Jharkhand	77	16.9	29	20.1
Karnataka	76	19.9	31	20.1
Kerala	58	21.5	32	20.4
Madhya Pradesh	74	18.4	28	19.3
Maharashtra	74	18.9	32	20.8
Meghalaya	66	21.9	34	20.8
Mizoram	49	20.3	29	19.9
Nagaland	63	23.2	31	21.0
Orissa	76	20.7	27	22.1
Punjab	73	18.3	31	20.4
Rajasthan	68	21.1	30	19.4
Sikkim	55	21.5	33	20.1
Tamil Nadu	80	17.0	34	17.4
Tripura	79	16.4	28	21.8
Uttar Pradesh	79	18.2	28	20.4
Uttarakhand	75	20.1	28	20.1
West Bengal	71	20.4	30	19.7
A & N Islands	67	18.8	30	19.1
Chandigarh	62	24.5	29	21.9
Puducherry	75	21.0	31	20.4
Daman & Diu	82	19.7	31	21.6

**Shelter**

State/UT	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Andhra Pradesh	92	14.1	33	24.0
Assam	92	14.7	24	23.2
Bihar	93	13.5	26	24.1
Chhattisgarh	94	12.8	23	22.0
Delhi	91	15.6	22	21.7
Goa	83	22.4	23	24.5
Gujarat	94	13.4	25	23.3
Haryana	93	14.7	24	23.2
Himachal Pradesh	92	14.0	26	24.2
Jammu & Kashmir	91	16.0	26	24.3
Jharkhand	90	16.6	22	22.9
Karnataka	95	12.0	35	25.2
Kerala	87	18.2	26	23.7
Madhya Pradesh	92	14.4	26	23.9
Maharashtra	93	14.8	26	24.1
Meghalaya	90	17.4	33	23.7
Mizoram	85	18.7	30	24.6
Nagaland	92	15.0	26	22.1
Orissa	90	16.3	22	22.4
Punjab	91	14.9	23	23.4
Rajasthan	93	13.9	23	23.4
Sikkim	80	21.1	28	23.7
Tamil Nadu	90	15.8	28	22.0
Tripura	90	17.6	24	22.6
Uttar Pradesh	93	14.7	23	25.2
Uttarakhand	92	14.8	24	24.4
West Bengal	86	19.0	22	22.7
A & N Islands	89	18.5	24	23.3
Chandigarh	84	18.0	23	21.6
Puducherry	87	19.0	30	24.5
Daman & Diu	91	16.0	20	21.1



## Water

State/UT	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Andhra Pradesh	89	13.4	35	20.0
Assam	88	13.2	32	20.6
Bihar	89	12.2	30	20.8
Chhattisgarh	90	13.0	32	19.6
Delhi	89	12.9	36	21.8
Goa	96	10.5	43	24.1
Gujarat	91	12.3	34	19.3
Haryana	89	13.6	36	21.4
Himachal Pradesh	89	12.9	33	21.1
Jammu & Kashmir	89	12.7	27	18.8
Jharkhand	90	12.9	32	20.9
Karnataka	92	11.1	32	20.9
Kerala	84	14.9	30	19.1
Madhya Pradesh	90	12.4	32	20.2
Maharashtra	88	14.3	31	18.9
Meghalaya	90	12.0	35	19.8
Mizoram	89	10.5	39	20.0
Nagaland	92	11.0	33	20.0
Orissa	93	11.1	28	19.1
Punjab	87	13.0	36	19.7
Rajasthan	89	12.8	34	20.5
Sikkim	86	12.5	33	18.2
Tamil Nadu	91	11.8	29	19.4
Tripura	90	13.1	32	21.4
Uttar Pradesh	93	11.6	29	21.5
Uttarakhand	86	13.8	31	20.2
West Bengal	91	11.8	39	19.8
A & N Islands	89	13.6	34	20.0
Chandigarh	89	12.9	37	20.5
Puducherry	92	11.3	34	20.0
Daman & Diu	92	11.6	36	20.2

**Travel**

State/UT	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Andhra Pradesh	70	20.9	19	17.6
Assam	75	21.6	24	19.0
Bihar	84	17.9	19	18.4
Chhattisgarh	82	18.9	18	18.5
Delhi	84	17.6	23	17.8
Goa	61	26.0	20	20.7
Gujarat	82	17.4	24	18.9
Haryana	81	18.1	23	19.2
Himachal Pradesh	83	19.2	22	19.3
Jammu & Kashmir	81	18.0	24	18.9
Jharkhand	86	16.3	21	19.5
Karnataka	78	20.9	22	18.8
Kerala	62	20.6	20	17.9
Madhya Pradesh	86	15.8	24	20.1
Maharashtra	82	18.4	24	18.5
Meghalaya	80	19.3	28	19.3
Mizoram	76	19.1	25	19.4
Nagaland	85	17.8	26	19.5
Orissa	81	18.2	23	18.2
Punjab	86	16.8	24	19.4
Rajasthan	83	17.6	21	17.9
Sikkim	77	17.1	28	19.8
Tamil Nadu	81	19.0	27	18.6
Tripura	70	18.8	19	18.6
Uttar Pradesh	88	15.6	22	19.2
Uttarakhand	79	19.6	21	17.6
West Bengal	71	19.5	23	19.2
A & N Islands	81	16.5	26	18.3
Chandigarh	76	20.5	27	19.8
Puducherry	80	19.2	22	18.1
Daman & Diu	85	17.1	23	17.8

**Real Life**

State/UT	Top 25%		Bottom 25%	
	Mean	SD	Mean	SD
Andhra Pradesh	69	17.5	23	15.6
Assam	69	16.0	23	15.2
Bihar	67	16.8	20	15.5
Chhattisgarh	71	17.6	19	14.8
Delhi	73	15.8	26	16.0
Goa	66	15.5	24	16.3
Gujarat	67	15.9	21	15.6
Haryana	67	17.3	22	15.6
Himachal Pradesh	70	18.8	24	15.7
Jammu & Kashmir	70	16.8	24	15.7
Jharkhand	69	18.1	20	16.0
Karnataka	71	18.2	22	15.9
Kerala	66	17.2	25	16.0
Madhya Pradesh	67	17.9	24	16.3
Maharashtra	71	17.0	22	15.6
Meghalaya	71	16.7	23	15.5
Mizoram	55	17.7	20	15.3
Nagaland	72	17.1	23	15.9
Orissa	68	18.0	22	16.2
Punjab	67	17.4	22	16.0
Rajasthan	71	16.6	25	16.0
Sikkim	64	14.9	26	15.4
Tamil Nadu	79	16.6	25	16.1
Tripura	73	16.8	22	16.6
Uttar Pradesh	73	18.4	20	16.1
Uttarakhand	68	17.5	24	15.7
West Bengal	75	16.5	25	16.3
A & N Islands	68	17.2	24	16.4
Chandigarh	68	21.6	22	16.2
Puducherry	69	20.5	24	16.0
Daman & Diu	71	13.5	22	16.6

## Environmental Studies (EVS) Test Items

<b>Q.No. 1</b>	<b>Scale Score</b>	<b>230</b>
Which of these foods is the <b>best</b> source of iron?	<b>Missing</b>	2
1. green leafy vegetables	<b>Option - 1</b>	56
2. milk	<b>Option - 2</b>	17
3. orange juice	<b>Option - 3</b>	11
4. pulses	<b>Option - 4</b>	14
	<b>Multi. Resp.</b>	1

<b>Q.No. 2</b>	<b>Scale Score</b>	<b>184</b>
Which of the following animals is active at night and sleeps during the day?	<b>Missing</b>	1
1. owl	<b>Option - 1</b>	75
2. camel	<b>Option - 2</b>	7
3. deer	<b>Option - 3</b>	6
4. vulture	<b>Option - 4</b>	10
	<b>Multi. Resp.</b>	1

<b>Q.No. 3</b>	<b>Scale Score</b>	<b>182</b>
Which of the following groups contains <b>only</b> domestic animals?	<b>Missing</b>	2
1. tiger, lion, leopard	<b>Option - 1</b>	8
2. cow, dog, cat	<b>Option - 2</b>	79
3. crow, peacock, owl	<b>Option - 3</b>	5
4. deer, bear, cheetah	<b>Option - 4</b>	5
	<b>Multi. Resp.</b>	1

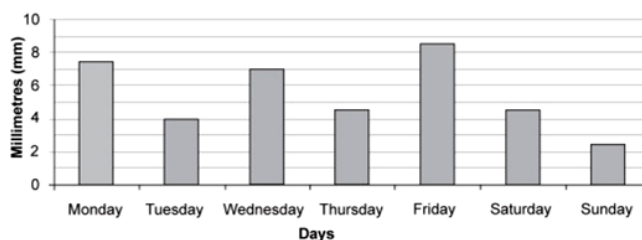
<b>Q.No. 4</b>	<b>Scale Score</b>	<b>218</b>
Which source of energy does <b>NOT</b> pollute our environment when we use it to produce heat?	<b>Missing</b>	3
1. petrol	<b>Option - 1</b>	14
2. sun light	<b>Option - 2</b>	62
3. wood	<b>Option - 3</b>	12
4. coal	<b>Option - 4</b>	9
	<b>Multi. Resp.</b>	1

Q.No. 5	Scale Score	211
In which of the following groups do <b>all</b> the animals lay eggs ?	Missing	3
1. ant, dog, elephant	Option - 1	8
2. cow, tortoise, crow	Option - 2	12
3. ant, crow, tortoise	Option - 3	69
4. dog, tortoise, crow	Option - 4	7
	Multi. Resp.	2

Q.No. 6	Scale Score	218
The common feature of animals found in water is that they <b>all</b> _____ .	Missing	3
1. breathe oxygen dissolved in water	Option - 1	63
2. do not like sun light	Option - 2	12
3. eat animals	Option - 3	11
4. eat plants	Option - 4	10
	Multi. Resp.	1

Q.No. 7	Scale Score	250
Which one of these is our neighbouring country ?	Missing	3
1. Bhutan	Option - 1	51
2. Iran	Option - 2	9
3. U.S.A.	Option - 3	22
4. Australia	Option - 4	15
	Multi. Resp.	1

Q.No. 8	Scale Score	211
<p><b>Direction:</b> Renu's classmates measured rainfall for a week. Based on the chart please answer question 8 and 9.</p> <p>On which day did <b>most</b> rainfall occur?</p>	Missing	2
1. Tuesday	Option - 1	8
2. Wednesday	Option - 2	13
3. Thursday	Option - 3	8
4. Friday	Option - 4	68
	Multi. Resp.	1



**Q.No. 9**

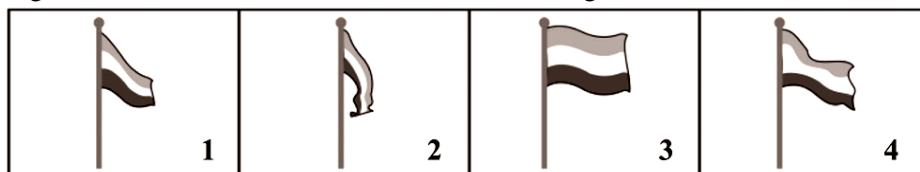
What was the rainfall on Wednesday?

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

Scale Score	249
Missing	4
Option - 1	24
Option - 2	50
Option - 3	11
Option - 4	10
Multi. Resp.	1

**Q.No. 10**

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

Scale Score	272
Missing	8
Option - 1	10
Option - 2	42
Option - 3	29
Option - 4	9
Multi. Resp.	2

**Q.No. 11**

Which of the following plants grows naturally in the desert?

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

Scale Score	235
Missing	3
Option - 1	15
Option - 2	57
Option - 3	11
Option - 4	13
Multi. Resp.	1

**Q.No. 12**

Night-blindness is due to the deficiency of \_\_\_\_\_.

1. proteins
2. vitamin C
3. vitamin A
4. carbohydrates

Scale Score	249
Missing	3
Option - 1	12
Option - 2	20
Option - 3	51
Option - 4	13
Multi. Resp.	1

Q.No. 13	Scale Score	185
Which of the following diseases is spread by mosquitoes?	Missing	2
1. pneumonia	Option - 1	6
2. diarrhoea	Option - 2	5
3. cholera	Option - 3	10
4. malaria	Option - 4	77
	Multi. Resp.	1

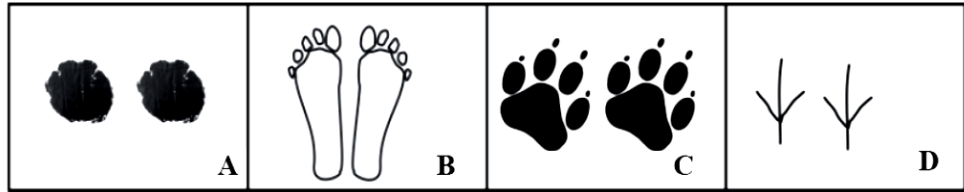
Q.No. 14	Scale Score	215
If there is a cholera patient in your family and doctor is not available, then you should go to a _____.	Missing	3
1. health worker	Option - 1	66
2. political worker	Option - 2	10
3. social worker	Option - 3	10
4. religious worker	Option - 4	10
	Multi. Resp.	1

Q.No. 15	Scale Score	262
Which of the following forms of energy is <b>NOT</b> commonly used at home?	Missing	3
1. wind	Option - 1	22
2. nuclear	Option - 2	45
3. heat	Option - 3	14
4. electrical	Option - 4	15
	Multi. Resp.	1

Q.No. 16	Scale Score	351
Lunar eclipse occurs when	Missing	4
1. the sun is between the moon and the earth.	Option - 1	23
2. the moon is between the sun and the earth.	Option - 2	30
3. the earth is between the sun and the moon.	Option - 3	30
4. the Jupiter is between the sun and the moon.	Option - 4	12
	Multi. Resp.	1

Q.No. 17	Scale Score	264
Which of the following is the <b>least</b> polluting fuel?	Missing	2
1. kerosene	Option - 1	18
2. LPG	Option - 2	45
3. wood	Option - 3	18
4. coal	Option - 4	16
	Multi. Resp.	1

Q.No. 18	Scale Score	197
Which part of the plant absorbs nutrients from soil ?	Missing	2
1. stem	Option - 1	10
2. branches	Option - 2	7
3. flowers	Option - 3	7
4. roots	Option - 4	73
	Multi. Resp.	1

Q.No. 19	Scale Score	185
Which is the footprint of a bird ?	Missing	3
	Option - 1	5
	Option - 2	7
	Option - 3	10
	Option - 4	74
	Multi. Resp.	2

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

Q.No. 20	Scale Score	231
Which of these is <b>NOT</b> drinking water?	Missing	2
1. tube well water	Option - 1	18
2. well water	Option - 2	10
3. sea water	Option - 3	58
4. tap water	Option - 4	12
	Multi. Resp.	1



**Q.No. 21**

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

1. sweets
2. nuts
3. oranges
4. chocolates

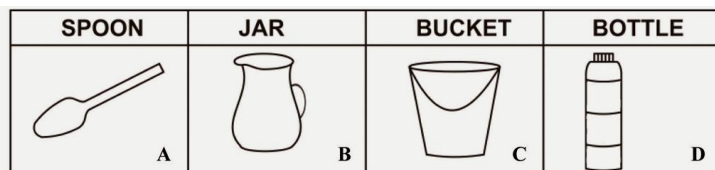
**Scale Score** 290**Missing** 2**Option - 1** 10**Option - 2** 37**Option - 3** 41**Option - 4** 10**Multi. Resp.** 1**Q.No. 22**

While cooking food in the kitchen, it is safer to wear \_\_\_\_\_.

1. silk clothes
2. nylon clothes
3. terricot clothes
4. cotton clothes

**Scale Score** 228**Missing** 2**Option - 1** 12**Option - 2** 12**Option - 3** 14**Option - 4** 59**Multi. Resp.** 1**Q.No. 23**

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



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

**Scale Score** 333**Missing** 3**Option - 1** 27**Option - 2** 17**Option - 3** 27**Option - 4** 25**Multi. Resp.** 1**Q.No. 24**

Houses in areas of heavy rainfall should have \_\_\_\_\_.

1. flat roofs
2. mud roofs
3. sloping roofs
4. thatched roofs

**Scale Score** 240**Missing** 2**Option - 1** 20**Option - 2** 11**Option - 3** 55**Option - 4** 11**Multi. Resp.** 1

**Q.No. 25**

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

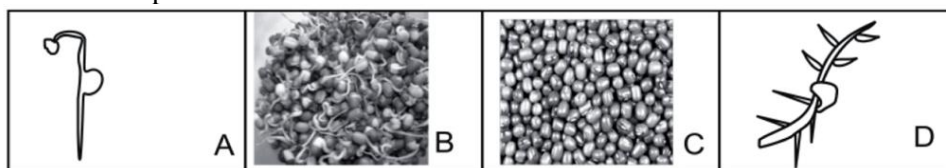
**Scale Score** 238**Missing** 3**Option - 1** 16**Option - 2** 14**Option - 3** 10**Option - 4** 56**Multi. Resp.** 1**Q.No. 26**

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 others

**Scale Score** 251**Missing** 4**Option - 1** 15**Option - 2** 50**Option - 3** 17**Option - 4** 14**Multi. Resp.** 1**Q.No. 27**

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

**Scale Score** 264**Missing** 5**Option - 1** 13**Option - 2** 20**Option - 3** 16**Option - 4** 45**Multi. Resp.** 1**Q.No. 28**

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

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

**Scale Score** 240**Missing** 3**Option - 1** 10**Option - 2** 11**Option - 3** 20**Option - 4** 55**Multi. Resp.** 1

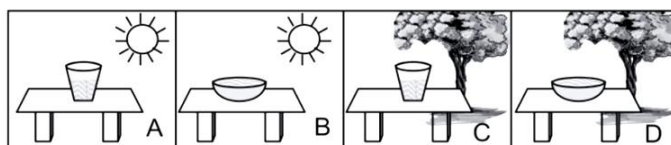
**Q.No. 29**

Which one of the following motions is **only** due to gravity?

1. A train going up to a hill.
2. A train coming down a hill.
3. A mango falling freely from a tree.
4. A football rolling on a plain ground.

**Scale Score** 242**Missing** 3**Option - 1** 11**Option - 2** 14**Option - 3** 54**Option - 4** 17**Multi. Resp.** 1**Q.No. 30**

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

**Scale Score** 250**Missing** 4**Option - 1** 22**Option - 2** 50**Option - 3** 13**Option - 4** 10**Multi. Resp.** 2**Q.No. 31**

Which one of these is **NOT** our neighbouring country?

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

**Scale Score** 260**Missing** 3**Option - 1** 22**Option - 2** 16**Option - 3** 13**Option - 4** 45**Multi. Resp.** 1**Q.No. 32**

Dams are constructed **mainly** for \_\_\_\_\_.

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

**Scale Score** 251**Missing** 4**Option - 1** 13**Option - 2** 14**Option - 3** 51**Option - 4** 18**Multi. Resp.** 1

**Q.No. 33**

Which part of the carrot plant is eaten?

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

Scale Score	256
Missing	3
Option - 1	10
Option - 2	12
Option - 3	26
Option - 4	49
Multi. Resp.	1

**Q.No. 34**

The air coming out of your mouth is felt **hottest** in \_\_\_\_\_.

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

Scale Score	273
Missing	3
Option - 1	36
Option - 2	43
Option - 3	10
Option - 4	7
Multi. Resp.	1

**Q.No. 35**

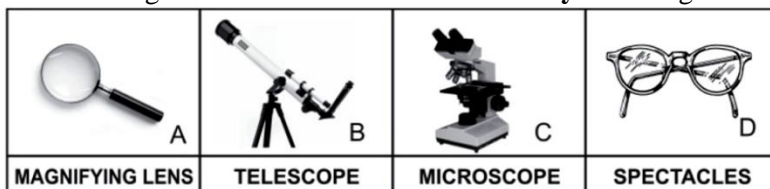
Pickles can be preserved using \_\_\_\_\_.

1. salt
2. garam masala
3. aniseed (saunf)
4. garlic

Scale Score	250
Missing	3
Option - 1	51
Option - 2	20
Option - 3	13
Option - 4	11
Multi. Resp.	1

**Q.No. 36**

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



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

Scale Score	264
Missing	5
Option - 1	21
Option - 2	15
Option - 3	45
Option - 4	13
Multi. Resp.	1

<b>Q.No. 37</b>	<b>Scale Score</b>	<b>252</b>
Which one of these modes of travelling does <b>NOT</b> cause pollution in the surroundings?	<b>Missing</b>	3
1. travelling in an aeroplane	<b>Option - 1</b>	18
2. sailing in a motor boat	<b>Option - 2</b>	15
3. driving a car	<b>Option - 3</b>	13
4. riding a bicycle	<b>Option - 4</b>	50
	<b>Multi. Resp.</b>	1

<b>Q.No. 38</b>	<b>Scale Score</b>	<b>215</b>
What will be the <b>best</b> usage of water left in your bottle after school?	<b>Missing</b>	3
1. Throw it anywhere.	<b>Option - 1</b>	9
2. Throw it on your friend.	<b>Option - 2</b>	9
3. Play with it.	<b>Option - 3</b>	9
4. Use it for a plant.	<b>Option - 4</b>	68
	<b>Multi. Resp.</b>	1

<b>Q.No. 39</b>	<b>Scale Score</b>	<b>272</b>
Oil is spread on stagnant water to _____.	<b>Missing</b>	4
1. kill fishes	<b>Option - 1</b>	16
2. kill mosquito larvae	<b>Option - 2</b>	43
3. remove smell	<b>Option - 3</b>	17
4. make water layer shining	<b>Option - 4</b>	18
	<b>Multi. Resp.</b>	1

<b>Q.No. 40</b>	<b>Scale Score</b>	<b>249</b>
Rapidly cutting down many trees in a forest leads to _____.	<b>Missing</b>	4
1. increase in soil erosion	<b>Option - 1</b>	51
2. increase in wild life population	<b>Option - 2</b>	15
3. increase in rainfall	<b>Option - 3</b>	16
4. increase in soil fertility	<b>Option - 4</b>	13
	<b>Multi. Resp.</b>	1

<b>Q.No. 41</b>	<b>Scale Score</b>	<b>290</b>
Which of the following promotes body-building and growth ?	<b>Missing</b>	3
1. carbohydrates	<b>Option - 1</b>	27
2. fats	<b>Option - 2</b>	13
3. proteins	<b>Option - 3</b>	40
4. minerals	<b>Option - 4</b>	16
	<b>Multi. Resp.</b>	1

<b>Q.No. 42</b>	<b>Scale Score</b>	<b>201</b>
Which of these animals can live on both land and water?	<b>Missing</b>	1
1. fish	<b>Option - 1</b>	16
2. cat	<b>Option - 2</b>	4
3. rabbit	<b>Option - 3</b>	4
4. frog	<b>Option - 4</b>	72
	<b>Multi. Resp.</b>	2

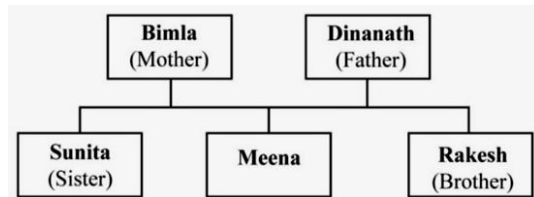
<b>Q.No. 43</b>	<b>Scale Score</b>	<b>284</b>
During breathing when we inhale air our chest _____.	<b>Missing</b>	3
1. contracts	<b>Option - 1</b>	25
2. expands	<b>Option - 2</b>	41
3. vibrates	<b>Option - 3</b>	16
4. heats up	<b>Option - 4</b>	15
	<b>Multi. Resp.</b>	1

<b>Q.No. 44</b>	<b>Scale Score</b>	<b>296</b>
Which one of the following sources of energy produces carbon dioxide?	<b>Missing</b>	3
1. solar energy	<b>Option - 1</b>	26
2. energy from coal	<b>Option - 2</b>	36
3. wind energy	<b>Option - 3</b>	24
4. hydrothermal energy	<b>Option - 4</b>	10
	<b>Multi. Resp.</b>	1

**Q.No. 45**

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



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** 2**Option - 1** 15**Option - 2** 54**Option - 3** 12**Option - 4** 15**Multi. Resp.** 1**Q.No. 46**

Rakesh and his wife are blessed with a son. What will be the son's relationship with Dinanath?

1. grandson
2. son
3. brother
4. brother-in-law

**Scale Score** 234**Missing** 2**Option - 1** 58**Option - 2** 18**Option - 3** 13**Option - 4** 8**Multi. Resp.** 1**Q.No. 47**

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

**Scale Score** 250**Missing** 6**Option - 1** 51**Option - 2** 18**Option - 3** 12**Option - 4** 12**Multi. Resp.** 1**Q.No. 48**

Which one of the following are energy giving nutrients?

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

**Scale Score** 333**Missing** 4**Option - 1** 31**Option - 2** 14**Option - 3** 19**Option - 4** 31**Multi. Resp.** 1

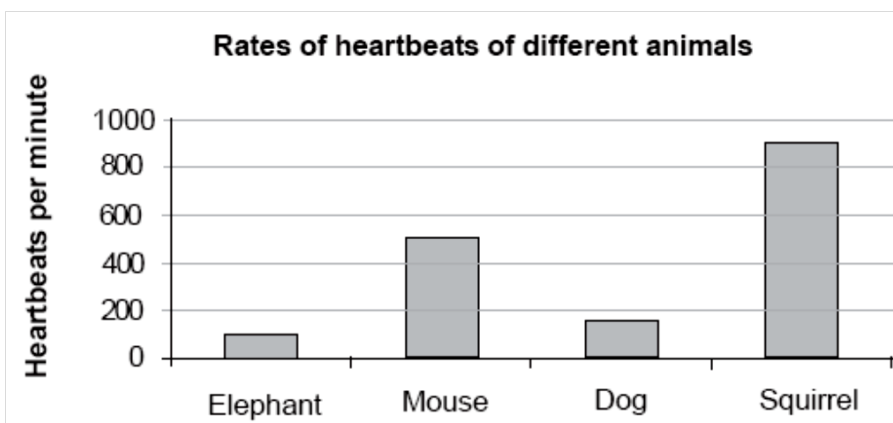
**Q.No. 49**

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

**Scale Score** 302**Missing** 5**Option - 1** 36**Option - 2** 28**Option - 3** 20**Option - 4** 10**Multi. Resp.** 1**Q.No. 50**

Look at the graph and answer the question.

**Scale Score** 225**Missing** 2**Option - 1** 15**Option - 2** 8**Option - 3** 57**Option - 4** 17**Multi. Resp.** 1

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

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

**Q.No. 51**

Which of the following is the **national** game of India?





1. hockey
2. baseball
3. archery
4. volley ball

**Scale Score** 209**Missing** 2**Option - 1** 68**Option - 2** 9**Option - 3** 8**Option - 4** 12**Multi. Resp.** 1



Q.No. 52	Scale Score	270
Lack of iron in human body causes _____.	Missing	3
1. anaemia	Option - 1	42
2. malaria	Option - 2	16
3. rickets	Option - 3	21
4. night blindness	Option - 4	17
	Multi. Resp.	1

Q.No. 53	Scale Score	228
Carefully observe the following figures and classify the animals according to their group.	Missing	5
	Option - 1	13
	Option - 2	60
	Option - 3	10
	Option - 4	11
	Multi. Resp.	1

FISH	STAR FISH	SEA HORSE	OCTOPUS
			

- pet animals
- water animals
- birds
- insects

Q.No. 54	Scale Score	213
Which of the following means of transportation causes <b>most</b> pollution in the surroundings?	Missing	3
1. car	Option - 1	67
2. bicycle	Option - 2	11
3. bullock cart	Option - 3	11
4. horse cart	Option - 4	8
	Multi. Resp.	1

Q.No. 55	Scale Score	199
Which of the following will dissolve in water?	Missing	3
1. salt	Option - 1	72
2. sand	Option - 2	9
3. saw dust	Option - 3	7
4. chalk powder	Option - 4	9
	Multi. Resp.	1

Q.No. 56	Scale Score	237
Ramesh uses kerosene oil to clean paint from his hand instead of water because _____.	Missing	5
1. kerosene is soft	Option - 1	16
2. kerosene smells good	Option - 2	11
3. the paint dissolves in kerosene	Option - 3	56
4. kerosene is easily available	Option - 4	12
	Multi. Resp.	1

Q.No. 57	Scale Score	261
Which is a wrong practice when we visit historical monuments?	Missing	5
1. taking photographs	Option - 1	19
2. singing and dancing in the premises	Option - 2	14
3. writing our names on its walls	Option - 3	46
4. throwing garbage into the dustbins	Option - 4	15
	Multi. Resp.	1

Q.No. 58	Scale Score	291
Which part of the sweet potato plant is eaten?	Missing	4
1. root	Option - 1	39
2. stem	Option - 2	16
3. leaves	Option - 3	8
4. fruit	Option - 4	33
	Multi. Resp.	1

Q.No. 59	Scale Score	241
<p><b>Direction:</b> Use the information in the map to answer the question.</p> <p>In which part of India does the Jim Corbett Park lie?</p>	Missing	4
1. the eastern part	Option - 1	16
2. the northern part	Option - 2	48
3. the southern part	Option - 3	11
4. the western part	Option - 4	19
	Multi. Resp.	1

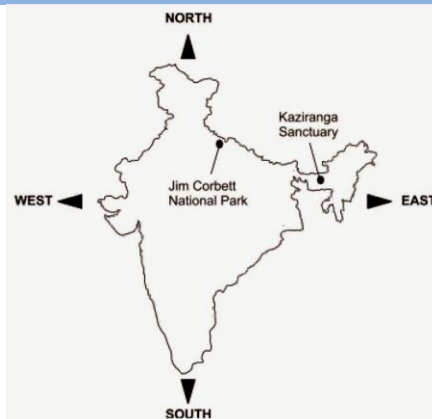


**Q.No. 60**

**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



Scale Score	238
Missing	5
Option - 1	55
Option - 2	17
Option - 3	12
Option - 4	11
Multi. Resp.	1

**Q.No. 61**

Which of the following birds can **NOT** fly ?

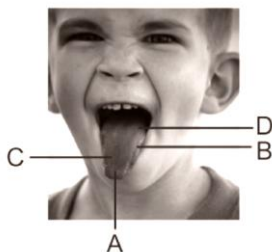
1. parrot
2. crow
3. eagle
4. ostrich

Scale Score	172
Missing	1
Option - 1	6
Option - 2	4
Option - 3	7
Option - 4	81
Multi. Resp.	1

**Q.No. 62**

Which part of the tongue senses sweetness?

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



Scale Score	289
Missing	4
Option - 1	44
Option - 2	16
Option - 3	16
Option - 4	18
Multi. Resp.	1

**Q.No. 63**

Nose helps us to sense \_\_\_\_\_.

1. softness of cloth
2. taste of foods
3. color of paints
4. smell of flowers

Scale Score	203
Missing	2
Option - 1	6
Option - 2	16
Option - 3	5
Option - 4	70
Multi. Resp.	1

<b>Q.No. 64</b>	<b>Scale Score</b>	<b>269</b>
Wild animals should be protected because _____.	<b>Missing</b>	4
1. they are an important part of the eco system	<b>Option - 1</b>	42
2. they live in forests	<b>Option - 2</b>	30
3. children love them	<b>Option - 3</b>	12
4. they do not need houses to live in	<b>Option - 4</b>	12
	<b>Multi. Resp.</b>	1

<b>Q.No. 65</b>	<b>Scale Score</b>	<b>277</b>
When burning, which of the following causes <b>least</b> air pollution?	<b>Missing</b>	3
1. petrol	<b>Option - 1</b>	17
2. biogas	<b>Option - 2</b>	42
3. wood	<b>Option - 3</b>	21
4. coal	<b>Option - 4</b>	16
	<b>Multi. Resp.</b>	1

<b>Q.No. 66</b>	<b>Scale Score</b>	<b>263</b>
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?	<b>Missing</b>	4
1. barometer	<b>Option - 1</b>	17
2. thermometer	<b>Option - 2</b>	46
3. voltmeter	<b>Option - 3</b>	16
4. hygrometer	<b>Option - 4</b>	16
	<b>Multi. Resp.</b>	1

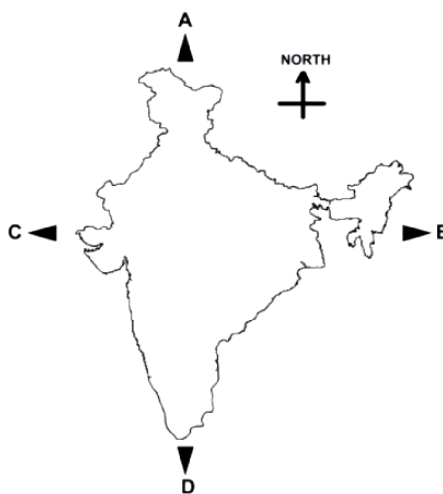
<b>Q.No. 67</b>	<b>Scale Score</b>	<b>218</b>
Mosquito can breed <b>most</b> easily in _____.	<b>Missing</b>	3
1. water collected in pits	<b>Option - 1</b>	64
2. pond with fish in it	<b>Option - 2</b>	13
3. clean and covered tanks	<b>Option - 3</b>	11
4. water flowing in rivers	<b>Option - 4</b>	9
	<b>Multi. Resp.</b>	1

**Q.No. 68**

The diagram shows the outline of India. Use it to answer questions 68 and 69.

Which is the direction shown by **A**?

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



Scale Score	224
Missing	3
Option - 1	20
Option - 2	58
Option - 3	9
Option - 4	9
Multi. Resp.	1

**Q.No. 69**

Which is the direction shown by **B**?

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

Scale Score	263
Missing	3
Option - 1	44
Option - 2	14
Option - 3	17
Option - 4	21
Multi. Resp.	1

**Q.No. 70**

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?




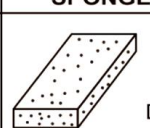



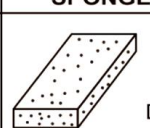



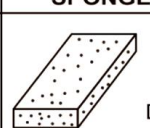
1. A and B only
2. A and C only
3. B and C only
4. A, B and C

Scale Score	338
Missing	7
Option - 1	29
Option - 2	15
Option - 3	13
Option - 4	34
Multi. Resp.	2

Q.No. 71	Scale Score	225
Roots take up _____ from the soil.	Missing	3
1. oxygen	Option - 1	15
2. water	Option - 2	60
3. carbon-dioxide	Option - 3	12
4. sunlight	Option - 4	10
	Multi. Resp.	1

Q.No. 72	Scale Score	225
Which group of animals give birth to babies?	Missing	4
1. lizard, snake, crocodile	Option - 1	13
2. mosquito, honey bee, house fly	Option - 2	11
3. cow, rabbit, whale	Option - 3	59
4. ostrich, hen, crow	Option - 4	13
	Multi. Resp.	1

Q.No. 73	Scale Score	245
What does a doctor use to measure the body temperature?	Missing	4
1. stethoscope	Option - 1	20
2. stopwatch	Option - 2	11
3. lactometer	Option - 3	14
4. thermometer	Option - 4	50
	Multi. Resp.	1

Q.No. 74		Scale Score	245							
Which of the substances given below does <b>NOT</b> absorb water?		Missing	5							
<table border="1"><thead><tr><th>CHALK</th><th>COTTON</th><th>GLASS</th><th>SPONGE</th></tr></thead><tbody><tr><td></td><td></td><td></td><td></td></tr></tbody></table>	CHALK	COTTON	GLASS	SPONGE					Option - 1	15
CHALK	COTTON	GLASS	SPONGE							
										
	Option - 2	16								
	Option - 3	49								
	Option - 4	15								
	Multi. Resp.	1								

1.

A

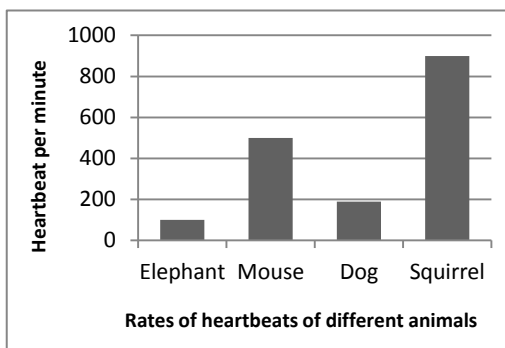
- A
- B
- C
- D

Q.No. 75	Scale Score	220
People boil water to make it fit for drinking because boiling removes _____ .	Missing	4
1. germs and bacteria	Option - 1	63
2. dissolved salt	Option - 2	13
3. suspended particles	Option - 3	9
4. minerals	Option - 4	10
	Multi. Resp.	1

Q.No. 76	Scale Score	237
Asha has a meal of bread, milk and egg. Which foods are from animals?	Missing	4
1. bread and eggs	Option - 1	9
2. milk and bread	Option - 2	16
3. milk and egg	Option - 3	55
4. bread, milk and egg	Option - 4	16
	Multi. Resp.	1

Q.No. 77	Scale Score	214
Breathing is the fastest while you are _____.	Missing	4
1. sleeping	Option - 1	14
2. standing	Option - 2	8
3. running	Option - 3	65
4. sitting	Option - 4	9
	Multi. Resp.	1

Q.No. 78	Scale Score	253
<b>Direction :</b> Look at the graph and answer the question.	Missing	6
What is the rate of heartbeat of a mouse?	Option - 1	19
1. 80 beats per minute	Option - 2	11
2. 150 beats per minute	Option - 3	48
3. 500 beats per minute	Option - 4	15
4. 1000 beats per minute	Multi. Resp.	1



**Q.No. 79**

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

How much does the plant grow each day?

1. 0.5 cm
2. 1.0 cm
3. 1.5 cm
4. 2.0 cm

Day	Heights of the plant (cm)
Day 1	0.5
Day 2	1.0
Day 3	1.5
Day 4	2.0
Day 5	2.5

Scale Score	246
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Missing	6
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Option - 1	52
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Option - 2	13
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Option - 3	14
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Option - 4	15
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Multi. Resp.	1
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**Q.No. 80**

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

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

Scale Score	254
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Missing	6
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Option - 1	19
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Option - 2	11
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Option - 3	15
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Option - 4	48
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Multi. Resp.	1
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## Educational Survey Division

विद्यया ऽ मृतमश्नुते



एन सी ई आर टी  
NCERT

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