Teaching Ideas

Handouts, worksheets and supplementary teaching suggestions for Classes IV-IX

Cross-Curricular
Science ✦ Social Studies ✦ Languages

Karen Haydock
haydock@gmail.com
<table>
<thead>
<tr>
<th>CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to Ask Good Questions ................................................................</td>
</tr>
<tr>
<td>Map Adventures</td>
</tr>
<tr>
<td>Khaja Fish</td>
</tr>
<tr>
<td>How Wet is Wet?</td>
</tr>
<tr>
<td>How Much is Left?</td>
</tr>
<tr>
<td>How Hot is Hot?</td>
</tr>
<tr>
<td>What is a fair way of collecting Income Tax?</td>
</tr>
<tr>
<td>A Lot of Hot Air</td>
</tr>
<tr>
<td>This Place</td>
</tr>
<tr>
<td>Write a New Story</td>
</tr>
<tr>
<td>Car Pollution</td>
</tr>
<tr>
<td>Which Bird is it?</td>
</tr>
<tr>
<td>Beetles!</td>
</tr>
<tr>
<td>Why Don’t Camels Sink into Sand?</td>
</tr>
<tr>
<td>Comparing Bones</td>
</tr>
<tr>
<td>Skin Sensitivity</td>
</tr>
<tr>
<td>Human Body Crossword</td>
</tr>
<tr>
<td>Things made from Crude Oil</td>
</tr>
<tr>
<td>Sprouting in the Dark</td>
</tr>
<tr>
<td>An Ashoka Edict</td>
</tr>
<tr>
<td>Population Density</td>
</tr>
<tr>
<td>An Ancient Timeline</td>
</tr>
<tr>
<td>What is Freedom?</td>
</tr>
<tr>
<td>Light and Mirrors</td>
</tr>
<tr>
<td>What is Soil Made of?</td>
</tr>
<tr>
<td>Hominoid skeletons</td>
</tr>
<tr>
<td>Laws of the Jungle</td>
</tr>
<tr>
<td>Kinds of Food</td>
</tr>
<tr>
<td>Vitamins and Minerals Prevent Illnesses</td>
</tr>
<tr>
<td>Leaf Arrangement</td>
</tr>
<tr>
<td>Sayings from Buddha</td>
</tr>
<tr>
<td>Foods of India</td>
</tr>
<tr>
<td>Leaves for Identification</td>
</tr>
<tr>
<td>आलू निची चाय जी</td>
</tr>
<tr>
<td>Hunter-Gatherers</td>
</tr>
</tbody>
</table>
How to Ask Good Questions

Instead of making a statement, Ask a question.
Asking questions is fundamental to teaching. It is much more important to ask questions and to encourage students to ask questions than it is to give answers. Students can be encouraged to find their own answers by observing, analysing, sharing knowledge with each other, logically reasoning things out, reading books, doing research, doing experiments, and discussing with other people - in addition to listening to their teachers.

Before making a statement to the class, ask yourself whether you can instead ask a question that will result in a student making the same (or similar) statement. Check to see if some student in the class already knows what you are about to state. Often the best answer to a student’s question is another question that might get the student to think of the answer themselves.

Knowing how to ask good questions is also important for assessment, or evaluation. Assessment is formally done through tests and examinations, but can also be a continuous, informal process. Teaching and assessment should go hand in hand.

Assessment can be used for students, teachers, and parents to find out how much a student has learned, which areas they need to concentrate on, what skills they need to improve, what misunderstandings they may have, and what skills and areas they are good at. Assessment lets teachers and parents know how effective their teaching is – it can guide the choice of methods as well as content. Assessment should be encouraging, not discouraging.

Try to think of questions that will require the students to think at higher levels - to understand, apply, compare, classify, analyse, synthesise, evaluate, predict, make judgements, be creative, and have fun and become more interested in the subject.

The questions that you ask will depend on the students’ prior knowledge and experience, and the approach that you have taken in class.

Why should a teacher ask questions that go beyond memory?
For example, consider the question:
Does the Ganga flow from Allahabad to Patna, or from Patna to Allahabad?
You could just tell students the answer to this question and ask them to remember it. Or you could let them learn through activities. Ask them to make model mountains, rivers, and seas with sand and water, to understand how water flows from mountains towards the sea. Then look on a map to find the mountains that the Ganga flows from, the sea that it flows to, the positions of Allahabad and Patna (the elevations of each city - for higher classes), and figure out the answer.

The second approach will require a lot more time and energy. But it is likely to: (1) enthuse the students about geography; (2) lead them to understand a useful principle (that rivers flow from higher mountains towards lower seas) that will help them solve many questions; (3) lead them to ask additional questions and find their own answers; (4) lead them to think more deeply; (5) lead them to remember the answer.
Understand rather than just remember
If you ask a question that the students already answered before or have already been told the answer to, you are only asking them to remember something. Try instead to ask completely new questions that the students may not have thought about.

The same question could be either a memory question or a question requiring higher levels of thinking, depending on what the students have already been told. For example, suppose you ask the question, “Why do you think some people, even today, do not farm and get all their food by gathering and hunting?” This would just require memory if you had previously told the class that some people do not need to farm because they have plenty of food available in the forests they live in. But if the class had previously just discussed how hunter/gatherers live, and how farmers live, without discussing why, then the students will have to remember and analyse what they remember to think of reasons.

Compare
Compare physical and political aspects of different parts of the world.
Compare different periods and places throughout history.
Compare different political systems.
Compare different people’s points of view.

Classify
Use the maps in your atlas to find out which countries are mostly desert (or mostly mountainous, or primarily agricultural, etc.)
Use the maps in your atlas to find out in which states cotton and soybeans are grown.
Use the maps in your book to find out which present day states were once a part of the Gupta Empire.

Analyse
Use certain skills in an application to a new problem. For example:
1. Use knowledge of the multiplication table to calculate the product of two large numbers;
2. Measure these objects;
3. Find the latitude and longitude of this city using this map;
4. Find the area of a particular state using graph paper;
5. Why do you think so many different languages are spoken in India?

Why?
Ask why an answer is correct, or why something happens or happened. For example:
1. Why is \((7\times6)+3\) less than \(7\times(6+3)\)?
2. Why did Ashoka decide to stop fighting wars?
3. Why can turtles run faster than snails?
4. Why are trees shorter higher up on mountains?
5. Why is .5 the same as .50?
6. Why are some trees very tall and others not so tall?
7. Why are there rich and poor people?
8. Why do some people believe in a god?

Explain your answer
Instead of just asking students for an opinion or an answer that they may just answer yes or no, be sure to ask for an explanation as well.
What’s the use of learning something?
(1) Why should you learn what a gas is?
(2) Why do you need to know the multiplication table?
(3) What’s the use of studying about the Indus Valley Civilisation?

The purpose of asking this kind of question is not only so that the students realise what the use of learning these things is, but also that you can tell whether they understand the truth of the statement well enough to analyse it’s usefulness.

Can you prove it?
It is not enough just to remember the answer – students should also understand why an answer is correct or incorrect. They should get practice supporting their arguments, giving examples, and justifying their opinions. Even emotional responses can be understood through reasoning.

Explain with a picture or diagram
Make a diagram to show examples of the social, economic, political, religious, and cultural aspects of life in present day Chandigarh (or in Agra 20 years ago).

Make a graph - Use a graph
Look at the following graph and tell what are the main exports of Venezuela.
Make a graph to show how the female/male ratio changed over the last 80 years.
Does the following graph tell you whether India or Pakistan has more Muslims?

Make an outline
Make an outline of this chapter (avoid using any complete sentences).
Before you write a page in answer to the following question, write an outline of the main points you will write about.

Summarise
Write one sentence to summarize the third paragraph in the chapter.
Or:
Read the following paragraph and summarise it in one sentence. [Give an entire paragraph in the exam itself - a paragraph none of them have previously read.]

What if......
What if people were covered with fur like some other animals – how would this have changed the course of history?
What if India still had not gained independence from Britain, how would your life be different?

Predict
Make a prediction based on past experience, established laws, or theories. Explain the reasons for your prediction. [When feasible, students can also do experiments to test their predictions.]

(1) What will happen to a page of your notebook if you immerse it in a container of water?
(2) What will tomorrow’s weather be like?
(3) What will your mother say if you tell her that you had a fight at school?
(4) What will happen if the Women’s Reservation Bill is passed in Parliament?

Use maps
Instead of just memorising or copying maps, use maps to answer questions and find information.
Invent
(1) Invent a way to tell a young child to how clean some utensils without using words.
(2) Invent a way to make your enemy your friend.
(3) Design a machine to automatically turn off a tap when a tank is full.
(4) Invent a computer program to put names in alphabetical order.

Observe
Carefully observe – draw and describe what you observe
(1) Carefully look at this leaf and draw exactly what it looks like.
(2) Build a model town with blocks, and draw a map of it as you look at it from above.
(3) Look at this picture and tell what the people are doing (or wearing, or what tools they are using, or what kinds of houses they live in, or how much money you think they have, etc.)

Ask questions
Ask the students to ask questions.
(1) Ask five questions about Akbar - questions for which you do not know the answers.
(2) If you could ask Ashoka 3 questions, what would you ask him?
(3) If you could ask a child living 500 years ago in Indore five questions, what would you ask?

Question answers
Even if you think an answer to a question is correct, question it. Think more deeply about it. Encourage students to question answers. Question your own answers. Keep asking why.

Ask open-ended questions
Ask questions that have more than one correct answer, or that don’t have any correct answer. Let students know that you don’t know the answers to many questions. This will make the subject seem more interesting to them.

Atlas based questions
Most questions that require students to refer to their atlas will require more than just memory, and will be more interesting.

Open book questions
An easy way to avoid asking questions that are just memory questions is to let students refer to their books and notes when they answer questions. The aim should not just be to make them search for the ready-made answer in the text. Think of questions that do not have ready-made answers in the text.

Use the Index and the Table of Contents
Find information in a book by using its Index and Table of Contents. Ask each student to bring a book from home that has both an Index and a Table of Contents. Pairs of students can take turns asking each other to search for information in the books, and then they can compare notes to see what they found. Students should write down the source of each citation using the proper format.

Write rough drafts and final drafts
Students need lots of practice writing and rewriting. They need to be able to proof read their own writing: finding errors, making improvements, explaining ambiguities, and rewriting. Students can be marked on how well they mark their own papers. (Three marks could be assigned: one for the rough draft, one for finding errors, and one for the final draft.)
**Work in a group**

Students can be marked for how well they cooperate with each other and work together in a group. Instead of doing an assignment individually, have students work in pairs or small groups of up to 6 students. All the students in the group should get the same grade for the paper.

**Follow directions - practice listening**

Before you give the directions, warn the students that you will not repeat yourself, so they must listen very carefully. You must speak loud and clear, and slowly, allowing enough time in between each step so that all students can follow.

1. Give each student a photocopied map. Ask them to draw an X at a particular place. Ask them to trace a route that you describe. You may describe the route in terms of landmarks, using roads, railways, waterways, in terms of directions (turning right or left - or turning N, E, S, W), and/or in terms of distances.

2. Describe a geometric figure or a geometric scene in words as the students try to draw what you are describing.

3. Orally ask mathematics sums like, “Subtract 4 from 17, then add 23, then multiply by 3. What do you get?”

**Do not ask leading questions**

Instead of asking, “Is X true?”, ask, “Is X true or false?”

Instead of asking, “Do you agree with X?”, ask “Do you agree or disagree with X?”

This is most important in oral discussions when students may think a leading question implies that the teacher expects a certain answer. For example, if a teacher asks, “Did you drink a glass of milk this morning?” the answer will be more likely to be yes, than if the teacher asks, “Did you drink a glass of milk this morning, or did you drink something else?” If a teacher asks “Was Ashoka a good king?” the answer will be more likely to be yes than if the teacher asks, “Was Ashoka a good or bad king?” By phrasing the questing in the second way, the students will be more apt to realise that they have more than one option for an answer.

**Personalise multiple choice questions**

When giving a list of multiple choice answers to a question, it is often a good idea to include an answer like, “(e) none of the above. I think ____________.”

**Give enough choices**

Give at least four choices in a multiple choice question. If you only give two choices, the students have a 50% chance of answering correctly just by guessing - then if 50% of the students get the answer correct, can you assume that you have been a successful teacher?

**Look at things from a different perspective**

Suppose you were the king, what would you think? – Suppose you were the peasant, what would you think? Students should realise that often their answer will depend on their point of view. They should be aware of their own point of view, and why they have that point of view, and why other people will have different points of view.

**Analyse original sources**

Read the following three paragraphs and tell which one was written by a British ruler, which one was written by an Indian ruler, and which one was written by a cotton mill worker. Explain your reasoning in each case. [The three paragraphs are given from original sources.]

**Questions and sub-questions**

Students often forget to answer all the parts of a question if it includes a number of sub-questions. It may be better to break such a question up into separate questions, or list them out as 4(a), 4(b), 4(c), etc.
Analyse and compare newspaper reports
Collect accounts of one incident from a number of different newspapers and list the similarities and differences. Analyse why they are similar or different. Ask what is the point of view of the reporter and why the reporter has that point of view.

Analyse song lyrics
Lyrics to any kind of songs can be analysed after students listen to the song. (Hand out written copies of the lyrics beforehand.)

Analyse TV shows and films
Make sure all the students have seen whatever is being discussed - preferably you should show it in school and discuss immediately afterwards.

Look for inherent opposing forces
In everything and every event, there are opposing forces that are pulling in different directions. Students can better understand things by analysing these opposing forces. For example:

1. A piece of paper is lying on a table in a locked room in an abandoned house. Describe the opposing forces that will act upon the paper as it lies there for hours, days, months, and years.

2. Suppose a servant cleans a house while the owner of the house relaxes on a chair. Describe the opposing forces that have led to this circumstance. Include social, political, economic, cultural, psychological, and other kinds of forces.

Look for inherent contradictions
For each of the following statements, give reasons why it is true, and also give reasons why it is false:

1. The sun always rises in the east.
2. Water always flows down.
3. Heavy objects fall faster than light objects.
4. A seed is a living thing.
5. A rose is a rose. [Hint: When is a rose not a rose? Before it opens? Afterwards?]

Everything changes
1. How did the plot of land on which your school is built change during the past 50 years?
2. How has your hair changed over the past few minutes? How has your hair changed over the past few hours? How has your hair changed over the past few days? How has your hair changed over the past few months?
3. How have the relations between you and your parents changed since you were 2 years old?
4. Look closely at the set of stones your teacher will give you and analyse how the stones may have changed over time.
5. Discuss what has possibly happened to the glass of water you drank last night.

Reason and emotion
Students should realise the difference between an answer based on emotion and an answer based on reason. Encourage students to let their emotion be guided by reason, rather than letting their reason be guided by emotion.

Thus, it will not be acceptable to answer “Because I like it.” The reasons for liking or disliking must be analysed.
Map Adventures

(1) Find Bapu and Cheenu in the southwest corner of the map. Bapu is going to take Cheenu for a walk. They go east until they come to the first chauk, then they go north for one block. Then they go east until they come to the first chauk. At this chauk they go northeast for one block, then they go west until they come to the first turn to the north. Where are they? Trace their entire route on the map with a pencil. Cheenu feels tired and wants to go home. Is there a shorter route to go back home? If so, trace it on the map with a dashed line.

(2) Colour all the rivers and lakes blue.

(3) Find the girl standing in the street near the horse. Circle her. Make up a story about a walk she takes. Does something exciting happen along the way? Draw the route she takes in your story with a red line.

(4) Mr. Gobiwala is taking a rickshaw home. Can you spot him? He lives in the house in the southeast corner of the map. Using a blue pencil, trace the shortest route for the rickshawala to get there.

(5) The three children in the southwest corner of the map want to go to the book store to buy a book. Tell in words how they should go.

(6) How many four wheeled vehicles on the map are going west?

(7) How many two wheeled vehicles on the map are going east?

(8) You see that pig? Her name is Sulita. Write a story called, “New Shoes for Sulita Suwar”. Don’t forget to include her adventures when she meets Kalita Kutta, the dog in the northwest part of the map. Mark the route Sulita takes throughout your story with a red dashed line.

(9) Dadima is taking Moti to visit Chachi. They are in the northeast part of the map. They go southeast until they come to the end of the street. Then they go east until they come to the first street going south. They keep going south for two blocks. Then they go east and Chachi’s house is the second one on their left. Mark it with an X.
Long, long ago, before there were any cities or towns or even villages or farms, there were two sisters named Prinu and Ginu. For the last few months they had been living with their tribe in a cave by the edge of a river. Everyday when most of their parents went off hunting and gathering, the children would stay near the camp. Prinu would go fishing with her friends, leaving Ginu behind because she was too little.

But today, Ginu quietly followed them down the steep bank to the river. When Prinu turned and saw Ginu, she decided to let her stay, rather than take her back home.

Ginu stood watching the children as they hid behind bushes, looking for fish in the river. They stood motionless, with their spears ready in their hands. Then suddenly a child would jab the spear into the water and, if they were lucky, there would be a fish wriggling on the end of the spear. Usually it was a kind of fish they called Khaja fish - they were rather small, with lots of bones, but delicious. But today, the children weren't having much luck.

"Let me try!" begged Ginu. But she had no spear, and none of the other children would listen to her.

Finally Prinu had to let her try. After many attempts, she gave up and gave the spear back to her sister. This was more difficult than she had thought.

By the end of the day the children had only a small pile of fish. They hoped the others had had better luck in their hunting trip. They brought the Khaja fish home to the cave, where Uncle made a fire to cook it.

Just then the children heard a commotion in the valley below the cliff. Some shouting and talking. But they couldn't make out what was going on. Then they saw their parents coming up to the cave. They didn't seem to be carrying anything - apparently the hunt had not been successful.

But who was that? There was a stranger with them!

It was a man - he had that strange red paint on his forehead, and his hair was braided with beads. He must be from the Motami tribe. Some of the older children remembered one time when they had met this distant tribe as they were on the move down the river.

As they walked with the stranger towards the cave, everyone was trying to talk to him. But he could only understand a few words of their language, and they could understand none of his language.

Uncle had just finished cooking the Khaja fish the children had caught, and it was lying on a banana leaf, ready to eat. Today, since the hunt had not been successful, everyone would have to be satisfied by sharing this small amount of Khaja.

The stranger saw the fish and asked something, pointing to the fish. No one could understand what he was saying, but Uncle thought he must be asking the name of the fish. So he told him, 'Khaja'.

In the stranger's language, 'Khaja' meant only one thing, 'Eat!' So the stranger sat down and got to work, grabbing handfuls of fish, and gobbling them up with pleasure.

Ginu was alarmed - everyone was hungry, and soon all the Khaja would be finished. "Save some for us!" she called out to the stranger.

But he could not understand her. He continued eating.

There was so much fish, the stranger could hardly believe they were asking him to eat it all. He asked them why they had given him so much fish.

But no one could understand what he was saying. Uncle thought he must be asking if it really was Khaja or some other kind of fish. So Uncle said, 'Ha, Khaja! Khaja!'

So the stranger continued eating. He was afraid they might think he was rude if he left anything. Soon the Khaja was finished, and only a pile of bones remained.

The stranger got up to go, thanking everyone for the delicious feast.

When he got back to his own tribe, he told them where he had been. They asked him what this other tribe was like.

"Fantastic!" he answered, "It's a wonderful place. Those people are so kind and generous! And they have so much fish over there, one person gets to eat as much as 6 of us get!"
Khaja Fish Activities

1. Take a partner, and pretend you can’t understand each other’s language. Try to tell your partner not to eat an imaginary fish. How will you explain it? Try.

2. Now secretly pick one of the following words and try to ‘say’ it to your partner without using words. Let your partner guess what you are trying to ‘say’. Then switch roles and let your partner pick a word for you to guess.

(a) Hot
(b) Cold
(c) Far away
(d) Fast
(e) Look
(f) Hide
(g) Dead
(h) Splash
(i) Sneeze
(j) Dangerous
(k) ___________ [think of your own words]

3. In your group of 4-5 students, make a list of all the things that you use in your everyday life that you would not use if you were hunter-gatherers. Make another list of things that you would use if you were a hunter-gatherer - although maybe in a different form. Discuss what the differences would be.

4. Discuss in your group of 4-5 students what life would be like if you were all hunter-gatherers. Write an account of how you might spend your day if you lived in those times without any of the things you now use in your everyday life.

5. Draw some pictures to illustrate the story, Khaja Fish. Use only materials that would have been available to hunter-gatherers to draw your pictures.
Use this Graph to answer the following questions:

(1) About how much does it usually rain in June in Delhi? ________
(2) Which is usually the rainiest month in Delhi? ____________
(3) Which month gets the least rainfall in Delhi? ____________
(4) When is the rainy season in Delhi?

____________________________________________________________________________________________________________

(5) Could it ever rain 100 mm in June in Delhi? _________________
(6) Does it usually rain more in August or in September in Delhi?

____________________________________________________________________________________________________________

(7) What is the average rainfall in January in Delhi?

__________________

(8) How many centimetres of rain usually fall in January in Delhi?

__________________

(9) About how many centimetres of rain does Delhi get in a year? ______

(10) In which month would you expect to get the worst floods in Delhi?

Explain. ________________________________
**How Much is Left?**

Every morning Rahul filled a bucket with clean drinking water. Some mornings he noticed that the family had drunk almost all the water in the bucket. Other times there was more water left. One week he counted the number of mugs of water left in the bucket each day and recorded his data in this table.

Make a bar graph, using the data in the Table. Don’t forget to fill in the dates.

<table>
<thead>
<tr>
<th>Date</th>
<th>No. of mugs of water left in the bucket</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 May</td>
<td>4</td>
</tr>
<tr>
<td>13 May</td>
<td>3</td>
</tr>
<tr>
<td>14 May</td>
<td>8</td>
</tr>
<tr>
<td>15 May</td>
<td>5.5</td>
</tr>
<tr>
<td>16 May</td>
<td>0</td>
</tr>
<tr>
<td>17 May</td>
<td>3.5</td>
</tr>
<tr>
<td>18 May</td>
<td>5</td>
</tr>
</tbody>
</table>

Remember: Each full square you shade stands for one full mug left in the bucket!

1. How many mugs of water did Rahul find on 13 May? _________

2. On one of the days Rahul, his sister, and her 3 friends came to play cricket and everyone stayed for lunch. Guess which day this was. ____________

3. On one of the days they were gone all day at the mela. Guess which day this was. ______

4. On which day did they drink the most water from the matka? _______

5. Now make up your own story about measuring water. Make a graph to go with the story. Complete your graph, including labels on each axis.
How Hot is Hot?

Use the graph below to answer the following questions:

1. What is the maximum temperature in August in Shimla? ________
2. What is the maximum temperature in January in Delhi? ________
3. What is the maximum temperature in October in Jaisalmer? _______
4. In which places and in which month or months is the maximum temperature about 24 °C?

________________________________________________________________________
________________________________________________________________________

5. For which months does the maximum temperature remain about the same in Delhi? ________________________________

6. Which city is hottest of all the cities that are shown in the graph?__________

7. Which of all the in the graph has the coolest summer?__________

8. Which is the warmest month in Delhi? __________________________

9. Which is the warmest month in Leh? __________________________

10. Which city has the least change in maximum temperatures throughout the year? __________________________

<table>
<thead>
<tr>
<th>Maximum Temperatures in four Cities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leh</td>
</tr>
<tr>
<td>Shimla</td>
</tr>
<tr>
<td>Delhi</td>
</tr>
<tr>
<td>Jaisalmer</td>
</tr>
</tbody>
</table>

KEY

Leh
Shimla
Delhi
Jaisalmer
What is a fair way of collecting INCOME TAX?

1. **Fixed Amount:** You might think it would be fair for everyone to pay the same amount of tax. Would it really be fair if each of the following three people has to pay the same amount?

<table>
<thead>
<tr>
<th>Person</th>
<th>Work</th>
<th>Earning (per month)</th>
<th>Tax as fixed amount (per month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jyoti</td>
<td>Daily wage labourer</td>
<td>1000</td>
<td>50</td>
</tr>
<tr>
<td>Asif</td>
<td>School teacher</td>
<td>6000</td>
<td>50</td>
</tr>
<tr>
<td>Jatinder</td>
<td>Business person</td>
<td>20,000</td>
<td>50</td>
</tr>
</tbody>
</table>

If Jyoti cannot even afford to feed her children properly is it fair for her to pay rupees 50 as tax?

2. **Fixed Proportion:** You might think it would be more fair to ask each person to pay a certain percentage of what they earn. Supposing everyone paid 10% in taxes. Calculate how much each person would pay.

<table>
<thead>
<tr>
<th>Person</th>
<th>Earning (per month)</th>
<th>Tax as a fixed proportion (per month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jyoti</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Asif</td>
<td>6000</td>
<td></td>
</tr>
<tr>
<td>Jatinder</td>
<td>20,000</td>
<td></td>
</tr>
</tbody>
</table>

Would this be fair? Still Jyoti may not have enough to live on. Asif may not have enough to repair house. But even after paying 10% in taxes, Jatinder would have plenty of money for all the basic necessities.

3. **Variable proportion:** To make taxes more fair you might then say that only people earning more than a certain amount, say 4000 per month, have to pay taxes. You might also say that the richest people should pay a greater proportion of their earnings.

<table>
<thead>
<tr>
<th>If you earn</th>
<th>You will pay as tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 4000</td>
<td>0%</td>
</tr>
<tr>
<td>4000 to 5000</td>
<td>10%</td>
</tr>
<tr>
<td>5000 to 15000</td>
<td>20%</td>
</tr>
<tr>
<td>More than 15000</td>
<td>30%</td>
</tr>
</tbody>
</table>

For example:

Use the above Table to calculate how much each person would then pay.

<table>
<thead>
<tr>
<th>Person</th>
<th>Earning (per month)</th>
<th>Tax as a variable proportion (per month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jyoti</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Asif</td>
<td>6000</td>
<td></td>
</tr>
<tr>
<td>Jatinder</td>
<td>20,000</td>
<td></td>
</tr>
</tbody>
</table>

Would this be fair?
A Lot of Hot Air

The scientist Professor Kharipata lay awake one afternoon wondering, "Is the air temperature under a fan cooler than elsewhere in the room?" She had a thermometer, and since she couldn’t sleep, she decided to get up and find out the answer to her question.

First she held the thermometer up in the air under the fan for about two minutes, and read the thermometer. Then she left the thermometer on a chair in a corner away from the fan for two minutes, and took another reading. Here are her results:

<table>
<thead>
<tr>
<th>Position</th>
<th>Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 metres high, under fan</td>
<td>24.5</td>
</tr>
<tr>
<td>On chair, away from fan</td>
<td>23.8</td>
</tr>
</tbody>
</table>

When Prof. Kharipata saw the results, she was puzzled. She had expected that the temperature under the fan would be either the same or less than the temperature away from the fan. But it was actually higher!

(1) Do you think there could have been some mistake in this experiment, or did the results prove that a fan makes the temperature warmer? Explain.

(2) Design another experiment to find the answer to the question, "Is the air temperature under a fan cooler than elsewhere in the room?". Think of a different kind of experiment. Explain in detail how you would do it, step by step. Also list all the materials you would need for your experiment.

(3) Do you think your method would give the same results as the method Dr. Kharipata used? Why or why not?

(4) List all the possible reasons for mistakes and inaccuracies in these kinds of experiments.

(5) List 3 reasons why the air temperature under a fan might be different than it would be elsewhere in the room.

(6) List 3 reasons why the air temperature under a fan might be the same as it would be elsewhere in the room.

(7) Do you think the air temperature under a fan is cooler than elsewhere in the room? Explain the reasons for your belief in detail.
This Place

A poem by Eloise Greenfield

There is this place I know
where children go to find
their deepest feelings
they look behind the trees
for hiding wants and angers
bashful joys
this place is quiet
no shouts may enter
no rolling laughter
but only silent tears
to carry the feelings
forward in waves
that wash the children
whole

Have any of you ever been in the kind of place that is
described in this poem? Tell us about it – where was it, and
how did you feel there?

Have any of you never been in such a place?

Have any of you ever been in the opposite sort of place to
the one described in this poem?

Write a poem about a place you have been in that was
opposite to the place described in this poem. Make sure your
poem is not like this one – your poem should also be
opposite to this one. You don’t have to worry about spelling
and punctuation when you write your poem. Take the
freedom to write any way you like. But, there is one rule you
should follow for this assignment – make sure your poem
does not rhyme!
1. Write an imaginative story that has never been written before in which the following picture illustrates an event that occurs at the beginning of the story.

The story must:

- have a beginning, a middle, and an end;
- be entirely in the past tense;
- include a lot of direct speech;
- be at least 2 pages long (include extra sheets if needed).

2. Write a different story in which the above picture illustrates an event that occurs at the end of the story.

The story must:

- have a beginning, a middle, and an end;
- be entirely different from the first story you wrote (with different characters and places);
- be entirely in the present tense.
- be at least 2 pages long (include extra sheets if needed).
(1) Which car gives off the highest level of pollutants?
(2) Which car gives off the lowest level of pollutants?
(3) Which 2-wheeler gives off the highest level of pollutants?
(4) Which 2-wheeler gives off the lowest level of pollutants?
(5) How many tonnes of emissions come out of the tail pipe of a Qualis each year?
(6) How much pollution does a Bajaj Chetak produce each year?
(7) Which vehicle produces 2.33 tonnes of emissions per year?
(8) Which pollutes more: two 2-wheelers or one car?
(9) What is the approximate average level of emissions from all these cars?
(10) What is the approximate average level of emissions from all these 2-wheelers?
(12) Suppose you are going to buy one of these vehicles. Which one would you choose? Explain what factors you consider in making your choice.
Which Bird is it?

Use the pictures on this chart to identify the birds you see around your school, around your locality, or at a nearby field, park or water body. Try to find as many of these birds as you can. Record the date, time, and place where you find them. If you find any other birds you can identify, add them to the list as well. Also note whatever interesting observations you can make about the birds' looks, sounds, behaviours, or locations.

**RECORD OF THE BIRDS I SAW**

<table>
<thead>
<tr>
<th>Name of Bird</th>
<th>Date</th>
<th>Time</th>
<th>Place</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>cattle egret</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>grey heron</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kite</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Beetles!

(1) Insects have six legs and three body parts: a head, a thorax, and an abdomen. Are all of these insects? Explain.

(2) Carefully measure each of these beetles. Record their sizes, and tell how you measured them (Length? Width? Of which part? From where to where?). Measure in as many ways as you like (the more the better!):

a: 

b: 

c: 

d: 

e: 

f: 

g: 

h: 

i: 

(3) Which is the smallest beetle? How do you define smallest?
(4) Which is the largest beetle? How do you define largest?

(5) Sort the beetles into sets on the basis of any characteristics you like. You can put the same beetle in more than one set if you want, but try to put each beetle in at least one set. Describe in detail the characteristics of each set you make, and write the letter of each beetle in the set:

**SET 1**
Characteristics: ______________________________________________
Beetles: ____________________________________________________

**SET 2**
Characteristics: ______________________________________________
Beetles: ____________________________________________________

**SET 3**
Characteristics: ______________________________________________
Beetles: ____________________________________________________

(6) Find a real beetle. Draw a picture of it. Label the parts of its body. Which of the pictured beetles is it most similar to? In what ways is it different from all the pictured beetles?

(7) Find another real insect that is not a beetle. Tell why you think it is an insect but is not a beetle.

(8) Based on your observations of the pictures and of real beetles, guess what is the definition of a beetle. Then find out the definition from books and dictionaries and compare to your definition.

(9) Are beetles harmful or helpful to people? Do research to find out. Make a list of ways that they are harmful and ways that they are helpful.

(10) Design an experiment that someone could do to find out whether or not beetles carry diseases. Predict the results from your experiment. Think of possible problems that you might have if you were to try out your experiment, and ways you might overcome these problems.
Why don’t camels sink into sand?

Did you ever notice how large the hooves of camels are?

Make two models of camels – one with small pointed feet, and the other with large, flat feet. The models don’t have to look exactly like camels – they could look like the ones shown here. Put them on soft, dry sand and see which one sinks in further. (Make sure both models are the same weight.) Then write down what you did, what happened, and why you think it happened the way it did.

**small feet**

**big feet**

1. Write a report about your experiment, using the headings:
   - **Question:**
   - **Hypothesis:**
   - **Materials:**
   - **Procedure:**
   - **Results:**
   - **Conclusion:**
2. Draw pictures to show your results.
3. Make a Table or graph to show your results.
4. What problems did you encounter as you designed and carried out your experiment?
5. Analyse how your experiment could be improved to give more reliable or more accurate results.
Comparing Bones

(a) Label the following bones in the human and in the pig skeleton:
    skull, hip bone (pelvis), backbone, ribs

(b) Label **all** the bones in the pig skeleton that are labelled in the human skeleton.

(c) Label one example of each of the following joints in the pig skeleton:
    hinge joint
    ball and socket joint
    pivot joint
You can feel a pin prick because your skin contains sensory neurons. The area covered by each sensory neuron (its ‘sensory field’) varies. On some parts of the skin there are a large number of sensory neurons, and in other parts there are fewer neurons covering an equal area. Maybe our skin doesn’t need to be so sensitive in some areas, so it has fewer neurons there. Which parts do you think need to have more sensation?

How large an area does a sensory neuron cover?

You can experiment to find out:

Ask your friend not to look while you gently prick her with a pair of dividers. Ask her whether she felt two pricks or one. If the dividers are too close together, she may only feel one prick although she is being pricked in two places at once! Try it and find out how far apart the dividers need to be in order to be felt as two pricks.

Fill in the Table and analyse the results.

<table>
<thead>
<tr>
<th>Body region</th>
<th>Minimum distance that can be distinguished (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper arm</td>
<td></td>
</tr>
<tr>
<td>Palm of hand</td>
<td></td>
</tr>
<tr>
<td>Fore finger</td>
<td></td>
</tr>
<tr>
<td>Thumb</td>
<td></td>
</tr>
<tr>
<td>Big toe</td>
<td></td>
</tr>
<tr>
<td>Sole of foot</td>
<td></td>
</tr>
<tr>
<td>Calf</td>
<td></td>
</tr>
<tr>
<td>Back</td>
<td></td>
</tr>
</tbody>
</table>

One point felt

Two points felt

neurons with large sensory fields

neurons with small sensory fields
(1) Do you ever get different results if you try the same thing twice? Explain.

(2) Do different students get different results? Explain.

(3) In which region of the body do you think the skin has the least number of sensory neurons / area?

(4) In which region of the body do you think the skin has the greatest number of sensory neurons / area?

(5) What difference does it make if your friend has her eyes open or closed when you prick her skin? Explain.

(6) Can you think of any other factors besides the size of the neural field that may have affected the results you got?
Human Body Crossword

This crossword puzzle has already been filled up, but some of the clues are missing. Read the clues that are given and write the missing ones. The clues need not be definitions, but they should somehow be related to the human body.

ACROSS
1 This is the hardest part of your body.
9 Without this it’s difficult to hold things.
10 Your muscles are ______ your skin.
12 Can you make your heart beat faster?
14 If you know the circumference of a bone, you could use this number to calculate its diameter.
15 These body parts get smaller when you exhale air.
18 According to this process, new kinds of life have appeared on earth.
19 Some people want to be doctors so that they can ___ a lot.
20
22
23
25
26
27
28
29
30
31
32
33
34
36
37
38
39

DOWN
1 What protects your brain?
2 Your rectum is at the ___ of your intestines.
3 You should never shout into someone’s ____.
4 All your cells need this to live.
5 This helps you to chew your food.
6 If you are not a she, you are probably a ___.
7 It’s fun to ___ your brain.
8 I think this is the most complicated part of your body.
11 Your liver is on the ____ of your intestines.
13
14
16
17
20
21
22
23
24
25
26
27
28
29
30
31
32
33
35
1. Look at the diagram and explain (in as much detail as you can) each step in the production of kerosene from crude oil.

2. Write a story explaining how jet fuel is obtained.

3. If the tax on crude oil increases, will a trader in a market in Bhopal have to increase the prices of the cotton, wool, and terricot cloth she sells? Explain.

4. If the tax on crude oil increases, how will this affect a family that buys vegetables in Chandigarh? Explain.

5. Explain all the ways in which a village family that lives by growing wheat in Punjab may be affected if the price of crude oil in western Asia rises.

6. Which would hurt more people in India: an increase in the sales tax on plastic items, an increase in the sales tax on jet fuel, or an increase in the tax on crude oil? Explain.

7. How might an increase in the production of crude oil affect the tourism industry in Goa?
Ankur and Bankur had heard that seeds sprout better in the dark than in the light.

But they wanted to find out if this is really true.

So they took two jars, and in each jar they put some wet cotton and 10 rajma. One jar they kept in light and the other jar they kept in a dark cupboard.

Each day Ankur and Bankur checked the jars to see how many seeds had sprouted. They wrote what they found in this Table:

<table>
<thead>
<tr>
<th>Date</th>
<th>Seeds in the dark</th>
<th>Seeds in the light</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Feb</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5 Feb</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>6 Feb</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7 Feb</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>8 Feb</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>9 Feb</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>10 Feb</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>11 Feb</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>12 Feb</td>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>

1. Make a line graph to show these results. Label both axes.

Look at your graph to answer the following questions:

2. Was the first seed to sprout in the dark or in the light? ____________________

3. How many seeds had sprouted in the dark by 6 Feb? ____________________

4. On Feb 13 had more seeds sprouted in the dark or in the light? _____________

5. At the end of the experiment had more seeds sprouted in the dark or in the light? ____________________
6. Does the line on the graph that shows seeds sprouting in the dark ever cross the line that shows seeds sprouting in the dark? Explain why or why not.

7. If Ankur and Bankur had kept the jars longer, what do you think would have happened on 13, 14, 15, . . . Feb?

8. If Ankur and Bankur did the same experiment again, do you think they would get exactly the same results? Explain.

9. Suppose Ankur and Bankur repeat the same experiment with mustard seeds. What will happen? will they get the same results?

10. Do these results give a clear and definite answer to the question Ankur and Bankur wanted to answer? If so, what is the answer? If not, why not? Explain.

11. Do you think Ankur and Bankur made any mistakes or did anything wrong in the way they did this experiment?

11. Can you think of a better way to find the answer to their question?
Here is a message Ashoka had inscribed on a pillar:

People follow various religious rituals and customs at different times – when someone falls ill, when boys and girls marry, when a child is born, when they undertake a journey, etc. Women, especially, observe many such meaningless rituals.

These religious rituals can doubtless be performed, but one cannot expect to gain much from them. But there are other rituals and customs that are more beneficial. What are these? Respect for elders, behaving kindly towards slaves and labourers, treating all living creatures well, and giving alms to brahmans and shramanas.

(1) List as many **rituals** as you can that are followed by yourself or members of your family or friends (describe each one):

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

(2) Do you think any of these rituals are less meaningful than the others? If so which ones, and why are they less meaningful?

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________
(3) Which rituals do you or your family or friends perform that you think are more meaningful? Explain why. What can you hope to gain from these rituals?


(4) Do you think it is true that women perform more meaningless rituals than men? Explain.


(5) Do you think it is beneficial to give alms to a brahman for religious reasons? Explain why.


(6) Do you think it is beneficial to give money to a beggar? Explain why.


(7) Today in India there is a law against begging. Do you think this is a good law? Give reasons for and against and defend your opinion.
Here is a map of the imaginary country of Majastan:

(1) How many villages are there in Aluda Pradesh? ____________________
(2) How many villages are there in Balu Pradesh? _____________________
(3) How many villages are there in Samu Pradesh? ____________________
(4) The population of a state is the number of people living in that state. Assuming each village has 200 people living in it, which state has the highest population?__________________________________________
(5) Which is the smallest state? __________________________________
(6) Which is the largest state? ___________________________________
(7) The squares are 1 kilometre long and 1 kilometre wide. They are called square kilometres (or km²). How many square kilometres are there in:
   a. Aluda Pradesh ______________________________________________
   b. Balu Pradesh _______________________________________________
   c. Samu Pradesh______________________________________________
(8) In Aluda Pradesh, how many villages do you usually find in each square kilometre (in other words, what is the average number of villages per square km)? _______________ villages/square km
(9) What is the average number of villages per square km in Balu Pradesh? _______________ villages/square km
(10) What is the average number of villages per square km in Samu Pradesh? _______________ villages/square km
(11) Which state is most densely populated (in other words, which state has the highest number of people per square km – assuming all villages have the same number of people)? ________________________________________________
(12) Which state is the least densely populated? ____________________
An Ancient Timeline

We now live in what is called the Common Era, or CE (this is sometimes called AD). Before the year 1 CE, there was the period called Before Common Era, or BCE (sometimes called BC), with the numbers going backwards.

Here is a list of people who lived in the BCE period. Also given is the year each of them died (these years are approximate, since the records are unclear in many cases).

<table>
<thead>
<tr>
<th>Name</th>
<th>Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahavir Jain</td>
<td>468 BCE</td>
</tr>
<tr>
<td>Gautama Buddha</td>
<td>483 BCE</td>
</tr>
<tr>
<td>Chandragupta Maurya</td>
<td>297 BCE</td>
</tr>
<tr>
<td>Alexander of Macedon</td>
<td>323 BCE</td>
</tr>
</tbody>
</table>

(1) Which bar on the following timeline shows the life of which person? Write the person’s name below each bar.

(2) Alexander was living at the same time as:
(a) Chandragupta Maurya
(b) Mahavir Jain
(c) Gautama Buddha
(d) None of the above

(3) Which of these men lived the longest life?
(a) Chandragupta Maurya
(b) Mahavir Jain
(c) Gautama Buddha
(d) Alexander

(4) Which of these men lived the shortest life?
(a) Chandragupta Maurya
(b) Mahavir Jain
(c) Gautama Buddha
(d) Alexander

(5) Was Chandragupta Maurya born before or after Alexander? ______

(6) Was Gautama Buddha born before or after Mahavir Jain? ______
(1) Brainstorm: Make a list describing, in as many ways as possible, what freedom is. (Give examples of what freedom means in different spheres of life like food, clothing, shelter, water, air, people, animals, language, press, speech, thought, sound, feeling, etc)

(2) Now discuss the following question, with reference to the definitions and different aspects of freedom:

*How would my life be different if India had never gotten Independence from Britain?*

(Think about all the different aspects of your life – what you do each day, what you eat, what you wear, how you speak, how you think, the things you use, what your home and city look like, etc.)

Each student should take notes about the group discussion and the important points that were made, and what agreements and disagreements there were between different members of the group.
Gursimran got 5 small mirrors and some cardboard and glue and made a strange device to allow her to see over the wall without being seen. Then a really strange thing happened. A bird sat on her head!

(1) What is Gursimran seeing? _____________________________________________
    Draw a black line to show how light is reaching her eye.

(2) What is the bird seeing? _____________________________________________
    Draw a red line to show how light is reaching its eye.
What is Soil Made of?

In order to see what soil is made of, you can separate it into its different components. Each student should collect soil from a different place for this experiment so that you can also compare different soil samples.

Fill a glass jar half full of soil.

Add enough water so that the jar is almost full.

Put the lid on the jar and shake it vigorously.

Let the jar sit undisturbed overnight.

The next day, without disturbing the jar, look at the soil and water. Write down what you see.

How is the soil at the bottom of the jar different from the soil on top?

If you find layers, count how many layers there are and measure the thickness of each layer.

After you have written a record of what you see, open the jar and carefully pour off the water. Carefully separate each layer into a different pile on a newspaper, noting which layer is which. Even if you can't see layers, put the soil from the top in a different pile from the soil at the bottom.

One by one, spread out the contents of each pile and note what you find. Rub the soil between your fingers. Look at it with a hand lens. Compare the colour, texture, particle size, and other qualities of each layer. Keep good written records of what you see.

EXTRA INFORMATION:

When soil gets mixed in a river it also gets shaken up, just as you shook up the soil in your jar of water. A river also deposits soil in layers that are separated according to the particle size. Sometimes this even happens in small gullies or channels that form when it rains hard. Try to find places where running water has deposited different types of soil.

The particles of rock in soil are classified according to their size: the largest particles are sand, the medium sized ones are silt, and the smallest are clay. The soil in a given place may be named after the size of particles it contains – e.g. it is called sandy soil if it has a lot of sand.

The smallest particles are carried farthest by a river. When a lot of clay and silt are deposited at the mouth of a river, they can build a delta, extending the land out into the ocean.

Besides these particles of rock, soil also contains humus - decaying matter from plants, animals, and other organisms. Humus is what supplies nutrients to growing plants, making the soil fertile. Humus is also carried downstream by rivers.
1. Compare these four skeletons in detail. Make a list of all the similarities and differences you can think of. Use accurate names for the bones in your descriptions.

2. Which one skeleton is the most different from the other two? In what ways is it different?

3. Which two skeletons are most similar to each other?

4. Two of these are skeletons of modern humans, one is of a Neanderthal, and one is of an earlier Homo erectus. Guess which is which and give reasons for your guesses. [Hint: a dictionary definition of Neanderthal is: an extinct subspecies of powerful, physically robust humans.]
TEN years ago Dilip Mahato came to Ghosh babu’s house at midnight. Jumping into the garden, he stuck his head over the courtyard wall and hissed loudly, “Ssssss! Sssss! Ghosh Babu! Wake up! Come out here a minute, will you!”

In a hushed voice, Dilip tried the hard sell. “Look at this piece of timber, master. Just the thing you will need for your verandah roof. Thought I’d help you out a bit, you know. Came here to let you have first chance. For you, I’ll let you have it for just a couple of hundred rupees.”

Rubbing his eyes, Ghosh babu was awake enough to know where Dilip had got his piece of wood from, since there was a huge plot of government forest land next to his village. The tree had been chopped down less than an hour ago, and had to be sold off before morning. Dilip had already done a market survey, and located potential customers, usually villagers who were in the process of building houses — like Ghosh babu. Unfortunately for Dilip, though, his customer declined the opportunity to pick up a real bargain. He quickly disappeared back into the night, for there were plenty of buyers elsewhere, and he had little time at hand.

A few years after this incident, Dilip’s wife helped set up a savings and credit group in her village. She became an energetic and enterprising group leader, and was a regular visitor to Ghosh babu’s house. Last year she helped organise a saplings nursery, both as an income generating activity for women as well as to plant trees on their own land. Both Adori and Dilip were kept busy growing trees instead of chopping them down.

Then one day in the middle of the monsoon, Adori and her gang came to consult Masterin on matters of importance. “Look, Masterin, our saplings are growing too well. None of them has died as we expected, we’ll have several thousands left over this year. Can’t we plant them on the government land in our village? There’s hardly any trees left anymore and we’ll have to go all the way to Koromtanr to bring fuel for our stoves. It’ll take the whole day!” explained Adori.

It seemed an obvious and logical plan to Adori, her gang of women, and to Masterin. The womenfolk gathered leaves and twigs (and uprooted the odd stump too) during the day, to use as fuel. And the men of the village, led by Dilip, chopped down many of the few remaining ones that somehow managed to grow. It sounded an environmentally sound proposition if the villagers that plundered the forest would actually replenish it, without financial assistance.

Still Masterin knew that “government” doesn’t always mean “public”, but off she went, full of optimism, to discuss the plan with the district’s officials. “You’ll have to approach the forest department for this,” advised the Deputy Commissioner. “It might not be so easy though.
I’ve heard that they lodged a case against an organisation for planting trees on their land,” he warned.

Optimism waning, she approached the district’s forest officer. “Now, how can we possibly help? You know we don’t have any money. Our staff are idle and there’s no forest left here any more,” he narrated tiredly. Masterin took pains to point out that the villagers were in need of neither money, nor saplings. The forest officer was even more perplexed by this, it seemed. He seemed to view the idea with suspicion. “But why would they want to plant trees on their own? They might try and capture the land later and build on it. And who will own the trees? And what about the produce from the trees? What about the profits? Will they give some of it to the forest department?”

Masterin explained that all these obstacles could be sorted out, and if necessary they could enter into an agreement between the villagers and his department.

Surely such initiative ought to be encouraged, she argued. Ultimately the officer agreed to consider the plan, “I’ll make enquiries and then I’ll have to get permission from our head office.”

With the monsoon nearing the end, Masterin tried to expedite things by ringing up the head office one week later. “Ah, yes. I’ve heard all about this,” answered the officer over the telephone. “You see, we’ve never heard of such a thing before. We don’t really know how to go about things. I shall have to find out from our office in Hazaribagh. Can you call back next week?”

With fast depleting optimism, Masterin rang back the following week. “Ah, yes. I did talk to our people in Hazaribagh. But they couldn’t give us the go-ahead either. See, planting trees on Forest Department’s land is quite a touchy issue. We’ll have to get permission from Delhi for this,” the officer sympathetically informed Masterin.

By this time Adori’s saplings were over three feet high, and the monsoon — and the tree-planting season — over.

They decided to graze their cows and goats on them, so for a couple of days the cattle ate unusually well. The adjacent plot of “forest” land is now completely barren.

The village women now trek four km to Koromtanr to plunder the next plot of “jungle”. And Dilip’s business has dried up.

1) What questions come to your mind as you read this story? If you were to interview any of the people mentioned in the story, what would you ask them? Is there anything you are confused about, that you would like explained?

2) Should Adori and her group of women have been allowed to plant trees on the government forest land?
   a) Give reasons why they should have been able to do so.
   b) Give reasons why they should not be allowed to do so.
   c) After considering the pros and cons, what do you think? Give reasons.

3) Who was the government trying to protect when they said that people should not be allowed to use government land to plant trees?

4) Why does the government have forests? Should the government have forests?

5) In whose interests does the government make laws?

6) Who is the government?
The most important health problem many people have is that they do not have enough food to eat. Another important problem is that many people do not eat the right kinds of food.

To stay healthy, people need to eat:
- GLOW FOODS for protection from illness (to make us shine!),
- GROW FOODS to help build strong bodies,
- and GO FOODS to help give quick energy,
in addition to their MAIN FOOD.

This FOOD PYRAMID shows the relative amounts of each type of food in a good diet, with the most important foods at the bottom, and the kinds of foods that are not required in such large amounts towards the top.
What Meeta Ate

Meeta Aluwala ate the following things on Thursday. Analyse whether she had a good diet that day. First complete the Table. For example, in the column marked Glow Food, put a tick if the food item contains quite a bit of vitamins and minerals. The breakfast has been done for you.

<table>
<thead>
<tr>
<th>Meal</th>
<th>Food Item</th>
<th>Main Food</th>
<th>Glow Food</th>
<th>Grow Food</th>
<th>Go Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>BREAKFAST</td>
<td>Sweet Dalia</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td></td>
<td>Milk with sugar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 banana</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUNCH</td>
<td>Chole bhatura</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNACKS</td>
<td>9 biscuits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Cold Drink</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DINNER</td>
<td>Alu masala</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 chapati</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kheer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After completing the Table, refer to it to discuss the following questions. Bear in mind that while some of these questions have one correct answer, others do not - there may be more than one correct answer, or there may be no correct answer.

1. Meeta’s lunch did not contain enough
   (a) fat
   (b) vitamins and minerals
   (c) protein
   (d) sugar

2. Meeta’s food on Thursday contained too much
   (a) sugar
   (b) fat
   (c) vitamins and minerals
   (d) protein

3. What could Meeta have added to her lunch to make it more healthy?
   (a) an amrood
   (b) chocolate
   (c) mooli, tomato, carrot, and onion salad
   (d) paneer pakora
   (e) ________________________________________________________________

4. If Meeta eats a diet like this every day, she will be likely to
   (a) get very thin
   (b) get fat because she is not getting enough protein
   (c) get fat because she is getting too much fat and sugar
   (d) be very healthy
   (e) get cavities in her teeth

5. What could Meeta have done to make her food both healthier and better tasting?
   (a) She could have had musambi juice instead of the cold drink.
   (b) She could have eaten palak paneer instead of alu masala.
   (c) She could have had bread and jam instead of the dalia.
   (d) She could have put ghee on the chapati.
   (e) ________________________________________________________________
Vitamins and Minerals
Prevent Illnesses

Shown here are some of the vitamins and minerals that are often not present in sufficient amounts in our diets. If we make sure that we eat enough of the foods shown, we can prevent a number of illnesses.

IRON
Iron is needed for healthy blood. A lack of this mineral causes anaemia. Anaemia can also lead to problems for women during and after childbirth.

The Signs of Anaemia:
- Pale insides of eyelids
- Pale gums, lips, and tongue
- White fingernails
- Also, weakness and fatigue are sometimes the result of anaemia.

Foods that have a lot of Iron:
Dark green leafy vegetables, beans and peas, beet root
Meat (especially red meat and liver, also fish, chicken, etc)
Eggs
Bajra, ragi
Jaggery
Imli

CALCIUM
Calcium is needed for healthy bones and teeth. This mineral is also important for normal functioning of muscles and nerves. Women in particular are prone to bone disease and broken bones if they have not had adequate calcium as girls and throughout their lives.

Foods that have a lot of Calcium:
Mother’s milk (Babies should take nothing but breast milk until they are 5 or 6 months old, then breast milk should be supplemented with semi-soft foods.)
Milk, dahi
Meat, fish, eggs
Ragi
Channa, dal
Green leafy vegetables (also other vegetables and fruit)

VITAMIN C
Vitamin C helps protect against many diseases. It also helps heal wounds and repair tissues. It is also known as ascorbic acid.

Foods that have a lot of Vitamin C:
Amla, papaya, mango, nimbu, orange, amrood, other fruits
Dark green leafy vegetables
Tomatoes, carrots
(Vitamin C gets destroyed when the food is cooked, so you get more vitamin C if you eat the above items raw, or without too much cooking.)
1. Which foods have a lot of both iron and calcium? __________________________________________________________________________

2. Which foods have a lot of vitamin C but not a lot of iron or calcium? __________________________________________________________________________

3. Check your friends and family members to see if they have any sign of anaemia. Make a list the people you check and what you find. __________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. Here is what Swati ate one day. Put a tick to show whether each item has a lot of the given mineral or vitamin.

<table>
<thead>
<tr>
<th>Meal</th>
<th>Food Item</th>
<th>Iron</th>
<th>Calcium</th>
<th>Vitamin C</th>
</tr>
</thead>
<tbody>
<tr>
<td>BREAKFAST</td>
<td>Suji ka Halva Milk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Milk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUNCH</td>
<td>Alu parantha   Dahi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNACKS</td>
<td>Chips Roohafza</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DINNER</td>
<td>3 chapati      Palak paneer Mooli</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Do you think Swati got enough iron, calcium, and vitamin C that day? __________________________________________________________________________
________________________________________________________________________

How could she have improved her diet that day? __________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

5. Make up a list of all the things you would like to eat in one day that would give you a healthy diet with all the iron, calcium and vitamin C that you need.

<table>
<thead>
<tr>
<th>Meal</th>
<th>Food Item</th>
<th>Iron</th>
<th>Calcium</th>
<th>Vitamin C</th>
</tr>
</thead>
<tbody>
<tr>
<td>BREAKFAST</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUNCH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNACKS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DINNER</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
LEAF ARRANGEMENT

Here are three different possible leaf arrangements on a small plant or tree:

- alternate
- opposite
- whorled

1. Go outside and find 10 to 20 different kinds of plants that have one of these three types of leaf arrangements, observe them carefully, and fill in the following Table. (It is probably not necessary to break a branch off the plant.)

2. On separate pieces of paper, carefully draw a detailed side view and top view of one example of each of these three types of plants.

<table>
<thead>
<tr>
<th>Name</th>
<th>Alternate, opposite, or whorled leaves?</th>
<th>Where I found it</th>
<th>Height of plant</th>
<th>Width of plant</th>
<th>Description, comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Analyse the advantages and disadvantages of each of the three types of leaf arrangement for a plant. (Why is the arrangement good or bad for the plant?) (Hint: think about what the plant needs to live and grow, how it grows, the place and climate in which it grows, etc.)
Sayings from Buddha

Here are 3 sayings from Buddha. Choose one, circle it, and explain what it means to you. In order to explain, give an example from your own life, or from something you may have heard about in the news.

(a) To give your cow or sheep a large, spacious meadow is the best way to control it.

(b) We are not independent but interdependent.

(c) Victory creates hatred, defeat creates suffering. Those who are wise strive for neither victory nor defeat.
Foods of India

Each group of 4-5 students should do the following:

(1) List all the states of India the students in your group have been to. If the list is very small, also include the states that your family members have been to.

_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

(2) Get help from friends and family to answer the following questions:

a) In which parts of India do people seldom eat rice?

_______________________________________________________________________

b) In which parts of India do people seldom eat roti?

_______________________________________________________________________

c) Which place is famous for idli and sambar?

_______________________________________________________________________

d) In which place do people often start their meal with sweat items?

_______________________________________________________________________

e) In which places is fish an important part of the diet?

_______________________________________________________________________

f) In which parts of India do people usually not add coconut to vegetables?

_______________________________________________________________________

g) Which are some spices that are used more in the south than in the north?

_______________________________________________________________________

(3) Ask a family member to help you prepare a food item from a different state. Bring it to class and share with your friends. Taste the different kinds of preparations that your friends have brought.

The name of the food item we made: __________________

How we made it: ____________________________________

_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
LEAVES FOR IDENTIFICATION (1)

Silver Oak
(Grivillea robusta)

Oleander

Ashoka

Amaltas
(Cassia fistula)

Oleander

fruit of Oleander
(poisonous)

Mahua
(Madhuca indica)

fruit of Mahua
seed
LEAVES FOR IDENTIFICATION (2)

Mango
(Mangifera indica)

Kazorina

Acacia
(Acacia auriculiformis)

Guava
(Mangifera indica)

Mulberry
(Morus indica)

Bottlebrush
(Callistemon viminalis)
LEAVES FOR IDENTIFICATION (3)

Gulmohar
(Delonix regia)
गुलमोहर

Poplar
(Populus nigra)

Eukalyptus

Alstonia
(Alstonia scholaris)
चयनन
1. Sing the song several times together with your friends.
2. Label the continents on the map.
3. Make a list of all the foods listed in the song. List their names in both Hindi and English. Also tell which country and continent each one comes from.
4. On the maps, draw pictures or symbols to show where each food came from.
5. Get one of the foods mentioned in the song. Set it in front of you and look at it closely. Draw a picture of it while you keep looking at it to be sure you draw exactly what it looks like.
(1) Supriya wanted to find out whether people living 20,000 years ago were vegetarians or non-vegetarians. She looked in some books, but she found some statements that she thought did not make sense and some that did make sense. Which of the following statements do you think make sense? Tick the ones that make sense and put a cross over the ones that don’t make sense.

(a) We know this tribe was non-vegetarian because we found deer bones near ashes from fires they had made.
(b) Since we found deer bones near some human bones by the side of the river, we know they were definitely non-vegetarians.
(c) Since we found no animal bones, but some grains and seeds near the places where they built fires, the second tribe may have been vegetarian.
(d) Some buffalo bones were found that looked like they had been cut by tools, indicating that people may have eaten buffalo meat.
(e) We found beads made from wild boar bones, which indicates the people were non-vegetarians.
(f) Since there are no 20,000 year old books mentioning people hunting, the people at that time must have been vegetarians.
(g) Since we find pictures of wild boars on the walls of certain caves, the people who lived there were non-vegetarian.
(h) We find pictures of people shooting arrows at cows on the walls of caves, so we know the people lived there were non-vegetarian.
(i) Since we found sharp arrow heads made of stone near the first cave, we know the people hunted and ate animals.
(j) We think the people living in this area 20,000 years ago may have been non-vegetarian because there is a primitive tribe of hunters living today nearby.

(2) Suppose people had fur like some other animals. How might this have changed history?

(3) List all the things hunter-gatherers may have used stones for. Think of all the things people need to live, and whether any of these things could have been made of stone.
(4) Assuming there were hunter-gatherers living 20,000 years ago in the area around what is now your home, tell:

a. What kinds of clothes you think the women, men and children might have worn?

b. Why did they wear what they wore? List several possible reasons.

c. How might their clothing have been different from that of people living in other areas? Explain.

(5) There are two theories about why a group of hunting and gathering people may have settled down and started living in villages:

I. The people found plenty of food in one place, so they didn’t need to travel around.

II. The people could not find enough food, so they started to grow food, and for this they had to spend time in the same place.

a. Give two reasons why the first theory may be correct.

b. Give two reasons why the second theory may be correct.

c. Which of these theories do you think makes the most sense? Explain why.

d. What kind of evidence could we find to tell which theory is true?

(6) Explain how each one of the following could cause a village, town, or city to decay and disappear:

a. food

b. water

c. another event in nature (something not caused by people)

d. religion

e. an invention

f. trade

g. money

h. something else of your choice

(7) Now explain how each one of the above could cause a settlement to prosper.
You will be given 12 cards showing the ways people were dressed in artworks from 321 BCE to 185 CE. Lay out the cards on the table so that you can see them all. Then answer the following questions.

(1) Sort the cards into the two sets given below. Put the cards for the first set on the left and the second set on the right. When you are finished, write the numbers of the cards that came into each set in the blanks.

SET 1: Indian style without Greek influence

____________________________________________________________

SET 2: Greek influence

____________________________________________________________

(2) How are the clothes that show Greek influence different from the others? Write as long a list as you can of the differences.

(3) Now sort all the costumes into these two sets:

SET 1: Costumes without sewing _______________________

SET 2: Costumes with sewing __________________________

(4) Why do you think clothes are made without sewing? Why are they made with sewing? Explain.

____________________________________________________________

____________________________________________________________

____________________________________________________________

____________________________________________________________

(5) Sort all the costumes into these three sets:

SET 1: Costumes of royalty and rich people

____________________________________________________________

SET 2: Costumes of warriors

____________________________________________________________

SET 3: Costumes of ordinary people

____________________________________________________________
(6) Explain why you think the clothing of the three sets of people in the previous question are different.

____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________

(7) Now sort all the costumes into sets according to how many pieces of cloth each costume is made from:

SET 1: One piece of cloth _____________________________
SET 2: Two pieces of cloth _____________________________
SET 3: Three pieces of cloth ___________________________
SET 4: Four pieces of cloth ____________________________

(8) Identify which piece of cloth is the:
- antariya (lower)
- uttariya (upper)
- kayabandh (waist band)

Draw a picture of any one costume that has all three parts, and label the three parts.

(9) Which costumes have a long antariya?

____________________________________________________________
____________________________________________________________

(10) Which costume has a long patka of woven beads that falls down to the ground (in addition to the kayabandh)?

____________________________________________________________