

## CLASS IX

## Science

<b>Learning Outcomes</b>	<b>Sources and Resources</b>	<b>Week-wise Suggestive Activities (to be guided by parents with the help of teachers)</b>
<p><b>The learner</b></p> <ul style="list-style-type: none"> <li>classifies materials based on their states, such as, solids, liquids and gases.</li> <li>plans and conducts investigations or experiments to arrive at and verify the facts or phenomena or to seek answers to queries on their own, such as— Is matter continuous or particulate in nature? What is the effect of compression on different states of matter? etc.</li> <li>relates processes and phenomena with causes/ effects, such as, process of evaporation with cooling effect, etc.</li> <li>explains processes and phenomena, such as, some substances change state directly from solid to gaseous state and vice versa without changing into the liquid state; gases are highly compressible as compared to solids and liquids etc.</li> </ul>	<p><b>Chapter 1</b></p> <p>Matter in our Surroundings</p> <p><b>Content</b></p> <p>Discussed in the textbook</p> <p>Physical nature of matter</p> <ul style="list-style-type: none"> <li>Matter is made up of particles</li> </ul> <p>Characteristics of particles of matter</p> <ul style="list-style-type: none"> <li>Particles of matter have space between them</li> <li>Particles of matter attract each other</li> </ul> <p>States of matter</p> <ul style="list-style-type: none"> <li>The solid state</li> <li>The liquid state</li> <li>The gaseous state</li> </ul> <p>Can matter change its state?</p> <ul style="list-style-type: none"> <li>Effect of change of temperature</li> <li>Effect of change of pressure</li> </ul> <p>Evaporation</p> <ul style="list-style-type: none"> <li>Factors affecting evaporation</li> <li>How does evaporation cause cooling?</li> <li>E-Resources developed by NCERT, which are available on NROER and also attached as QR Code in textbooks of NCERT.</li> <li>Live telecast of various science concepts at Swayam Prabha Channel</li> </ul>	<p><b>Theme— Material</b></p> <p><b>WEEK 5</b></p> <ul style="list-style-type: none"> <li>Read the chapter, Matter in Our Surroundings from your textbook carefully. If you do not have hard copy of the textbook, open the link and read from e-book <a href="http://epathshala.nic.in/process.php?id=students&amp;type=eTextbooks&amp;ln=en/">http://epathshala.nic.in/process.php?id=students&amp;type=eTextbooks&amp;ln=en/</a></li> <li>Perform an activity and have fun.</li> </ul> <p>Make your own cloud in a bottle and recap the concept you have studied in your earlier classes.</p> <ul style="list-style-type: none"> <li>Take a 500 ml plastic bottle and pour 5ml water in it.</li> <li>Request any elderly person to light a matchstick and then blow it out so that it gives out smoke and immediately drop it into the bottle.</li> </ul> <p><b>Caution:</b> Do this step in the presence of an elderly person</p> <ul style="list-style-type: none"> <li>Put the cap back on the mouth of the bottle but do not screw it.</li> <li>Place the bottle between your hands and squeeze it as much as possible.</li> <li>Now close the mouth of the bottle by screwing the cap.</li> <li>Shake the bottle, squeeze it and then release it.</li> <li>Repeat the above step several times and observe.</li> </ul> <p>This activity will help you to understand the concept of condensation of water vapour and the formation of clouds.</p> <ul style="list-style-type: none"> <li>Open the given link. This is an interactive quiz and try to self-assess your learning <a href="https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/5b3e062816b51c01d90bcc38">https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/5b3e062816b51c01d90bcc38</a></li> </ul>



<ul style="list-style-type: none"> <li>draws labelled diagrams/ tables/ flow charts about the setup of the activities / experiments.</li> <li>calculates using the data given, such as, conversion of Celsius scale to Kelvin scale and vice versa by solving problems</li> <li>uses scientific conventions or symbols to represent various quantities and units, such as, SI units.</li> <li>measures physical quantities using appropriate apparatus such as, measuring the volume of liquids using various measuring devices.</li> <li>applies scientific concepts in daily life by solving problems, such as, particles of matter are very small; particles of matter are continuously moving; cooling is caused by evaporation etc.</li> <li>draws conclusion, such as, matter is made up of particles; particles of matter are continuously moving.</li> </ul>	<p><a href="https://www.youtube.com/channel/UCT0s92hGjqLX6p7qY9BBrSA">https://www.youtube.com/channel/UCT0s92hGjqLX6p7qY9BBrSA</a></p> <p><b>Laboratory Manual in Science for Class IX Links for various experiments are given below</b></p> <ul style="list-style-type: none"> <li><a href="http://epathshala.nic.in/QR/books/desm/NCERT_Science_Lab_Manual_IX%20_Expt_05.pdf">http://epathshala.nic.in/QR/books/desm/NCERT_Science_Lab_Manual_IX%20_Expt_05.pdf</a></li> <li><a href="http://epathshala.nic.in/QR/books/desm/NCERT_Science_Lab_Manual_IX%20_Expt_06.pdf">http://epathshala.nic.in/QR/books/desm/NCERT_Science_Lab_Manual_IX%20_Expt_06.pdf</a></li> <li><a href="http://epathshala.nic.in/QR/books/desm/NCERT_Science_Lab_Manual_IX%20_Expt_07.pdf">http://epathshala.nic.in/QR/books/desm/NCERT_Science_Lab_Manual_IX%20_Expt_07.pdf</a></li> <li><a href="http://epathshala.nic.in/QR/books/desm/NCERT_Science_Lab_Manual_IX%20_Expt_08.pdf">http://epathshala.nic.in/QR/books/desm/NCERT_Science_Lab_Manual_IX%20_Expt_08.pdf</a></li> </ul>	<ul style="list-style-type: none"> <li>Perform this activity and find out - Is matter continuous or particulate in nature?</li> <li>Take a clean glass tumbler and fill half the tumbler with water.</li> <li>Taste this water</li> </ul> <p><b>Caution :</b> you will take water which you use only for drinking purpose at home.</p> <ul style="list-style-type: none"> <li>Now add one tea spoon full of salt/sugar in it and stir it with spoon</li> <li>What do you think has happened to the salt/ sugar?</li> <li>Taste this water from anywhere in the glass</li> <li>Why it is evenly distributed throughout the solution?</li> <li>Think and reflect on it.</li> <li>Perform this activity and share your findings with your classmates on WhatsApp Group, through email, etc.</li> <li>Learn by doing this activity</li> <li>Take an incense stick and place it in a corner of your room.</li> <li>How close do you have to go near it to get its smell?</li> <li>Now light the incense stick and place it at the same place</li> </ul> <p><b>Caution:</b> Do this step in the presence of some elderly person</p> <ul style="list-style-type: none"> <li>Do you get the smell sitting at a distance?</li> </ul> <p>Record your observations and share your findings with your friends on WhatsApp Group. etc.</p> <p>(Remember we are not moving out of home due to COVID19. So, you are requested whatever material is available at home, try to do these activities / experiments accordingly).</p> <ul style="list-style-type: none"> <li>Open the given link. This is an interactive quiz based on the concept of sublimation. Solve this quiz and have fun.</li> </ul> <p><a href="https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/5b3ef32c16b51c01da83d1cc">https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/5b3ef32c16b51c01da83d1cc</a></p>
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- takes initiative to know about scientific discoveries such as, discovery of five states of matter.
- exhibits values of honesty, objectivity, and rational thinking while taking decisions, such as, records and reports experimental data honestly etc.
- communicates the findings and conclusions effectively, such as, those of experiment/ activity/ project orally and in written form using appropriate figures/ tables/ graphs/ digital form, etc.
- makes efforts to conserve environment by keeping surroundings clean, making judicious use of materials.

#### **Exemplar Problems in Science for Class IX**

- Matter in our surroundings  
<http://ncert.nic.in/ncerts/l/ieep101.pdf>  
Link to find out the answers to the questions  
<http://ncert.nic.in/ncerts/l/ieep1an.pdf>

- Time to relax!

After doing a couple of activities, do some work out at home. For example, breathing exercises, stretching exercises, skipping, dance, yoga, indoor games, etc. Parents must motivate their children. Have a balanced diet. This you should follow even when your schools reopen.

Remember health is wealth.

#### **WEEK 6**

- Let us try this activity. Note your observations at the end of each activity in your notebooks.
- Collect some solid materials within your home, such as, pen, book, steel spoon, plate, sponge, rubber band, etc., and observe their shape.
- Try compressing them by applying force. Are you able to compress them?
- Are these objects capable of diffusing into each other?



- Now collect water, cooking oil, milk, juice, butter milk, containers of different shapes, such as, cup, bowl, tumbler, plate, etc.
- Transfer these liquids one by one into different containers. Does the shape of the liquid remain the same? Does it flow easily from one container to another?
- What will happen if these liquid are spilt on the floor?
- You can also take a syringe (if it is available at your home). Try to press its piston by closing its nozzle with your thumb.
- Remove its piston and fill it with water and insert the piston back. Try to press its piston.
- Take out water from this syringe and dry it. Now fill it with some common salt and insert the piston back. Try to press its piston again.
- In which case was the piston easily pushed in?
- What do you conclude from this activity?

Compile the results in the form of table/ flow chart and share your findings with your classmates and teacher on the group created by her/him. Clear your doubts, if you have any.

- Open the given link. This is an interactive quiz based on the concept of states of matter. Solve this quiz and have fun.

[https://nroer.gov.in/55ab3\\_4ff81fcb4f1d806025/file/5c98b63316b51c01e5c5772b](https://nroer.gov.in/55ab3_4ff81fcb4f1d806025/file/5c98b63316b51c01e5c5772b)

- Perform this activity and explore the young scientist in you. With this activity you can recall the concepts which you have studied in your earlier classes too.
- Take containers of same size such as, patila, plate, bowl, thali, etc., and pour equal amount of water in each one of them.
- Place these containers at different places such as in balcony under sun, in balcony under shade, inside a wardrobe, under the fan inside room, etc.
- Record the time or days taken for the evaporation process in all the above situations. What was your inference?



<ul style="list-style-type: none"> <li>differentiates between uniform and non-uniform motion; distance and displacement/ speed and velocity</li> </ul>	<p><b>Chapter 8- Motion</b></p>	<p>You can repeat this activity by taking containers of different sizes with equal amount of water and place them at different places under different conditions.</p> <ul style="list-style-type: none"> <li>Observe them carefully and share your findings in the form of a project report. You can click or draw photographs or shoot videos. Project report you can also share with your classmates when your school will reopen.</li> <li>Collect information and pictures about scientists who are talking about the five states of matter by surfing net. Compile it in the form of report. Share it with your teacher and classmates on Google Group / WhatsApp Group / e-mail. With the help of your teacher you can also disseminate this report by publishing it in your school magazine.</li> <li>Open the given link. This is an interactive quiz based on the concept of evaporation Learn more and have fun. <a href="https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5c9af65416b51c01e5c592bf">https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5c9af65416b51c01e5c592bf</a></li> <li>Open the given link and solve problems in your note book. If you have any doubts, discuss with your teacher or classmates <a href="http://ncert.nic.in/ncerts/1/ieep101.pdf">http://ncert.nic.in/ncerts/1/ieep101.pdf</a> You can self-evaluate answers by clicking on the given link <a href="http://ncert.nic.in/ncerts/1/ieep1an.pdf">http://ncert.nic.in/ncerts/1/ieep1an.pdf</a></li> <li>Time to relax! After doing a couple of activities, do some work out at home. For example, breathing exercises, stretching exercises, skipping, dance, yoga, indoor games, etc. Parents must motivate their children. Have a balanced diet. This you should follow even when your schools reopen.</li> </ul> <p>Remember health is wealth.</p> <p><b>WEEK 7</b></p> <p><b>Theme: Moving Things, People and Ideas</b></p> <p>Some of the activities given in the textbook can be done at home. Observation and conclusion can be discussed with peers and Teacher.</p>
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- classifies different types of motion as uniform-non uniform; linear-circular that s/he sees in everyday life
- plans and conducts investigations/ experiments to arrive at and verify the facts/ principles/ phenomena to seek answers to queries on their own, such as—  
How does speed of an object change?; How can we find difference between distance and displacement?
- explains processes and phenomena such as effect of force on the state of motion of objects
- calculates using the given data, such as distance, velocity, speed.
- draws graphs, such as distance-time and velocity-time graph
- analyses and interprets graphs/ figures etc., such as distance-time; velocity-time graphs, to compute distance/ speed/ acceleration of objects in motion
- uses scientific conventions/ symbols/ equations to represent various quantities/units

<https://youtu.be/z8Q2YYYY0QtU>

<http://ncert.nic.in/textbook/textbook.htm?iescl=8-15>

<http://ncert.nic.in/ncerts/l/ieep108.pdf>

Chapter 9: Force and Laws of Motion

### Activity 8.1

- Discuss whether the walls of your room are at rest or in motion.

### Activity 8.2

- Have you ever experienced that the train in which you are sitting appears to move while it is at rest?
- Discuss and share your experience.

### Activity 8.3

- Take a metre scale and a long rope.
- Walk from one corner of your room to the opposite corner along its sides.
- Measure the distance covered by you and magnitude of the displacement.
- What difference would you notice between the two in this case?
- Plot graphs using the data given in Tables 8.2, 8.3, 8.4, and 8.5 of Chapter 8.

## WEEKS 8 AND WEEK 9

Some of the activities given in the textbook can be done at home. Observation and conclusion can be discussed with peers and Teacher. Do the Activity shown in Fig 9.4. Try to push a heavy object with small force. Does it move? What force is acting in a direction opposite to your push? Discuss.

### Activity 9.1

- Make a pile of similar to Fig. 9.6 with carom coins on a table.
- Attempt a sharp horizontal hit at the bottom of the pile using another carom coin or the striker. If the hit is strong enough, the bottom coin moves out quickly. Once the lowest coin is removed, the inertia of the other coins makes them 'fall' vertically on the table.



<ul style="list-style-type: none"> <li>derives formula such as equation of motion</li> <li>applies scientific concepts in daily life and records &amp; reports experimental data objectively and honestly</li> <li>exhibits values of honesty/objectivity/rational thinking</li> <li>communicates the findings and conclusions effectively, such as, those of experiment/activity/project orally and in written form using appropriate figures/ tables/ graphs/ digital form, etc.</li> <li>differentiates between balanced and unbalanced force</li> <li>plans and conducts investigations/ experiments to arrive at and verify the facts/ principles/ phenomena to seek answers to queries on their own, such as force can be used to change the magnitude of velocity of an object, or to change its direction of motion.</li> </ul>	<p><a href="https://youtu.be/IQUkUFBK61w">https://youtu.be/IQUkUFBK61w</a></p> <p><a href="https://youtu.be/YZx_x72s08s">https://youtu.be/YZx_x72s08s</a></p> <p><a href="https://youtu.be/hUVmCA_eiyA">https://youtu.be/hUVmCA_eiyA</a></p> <p><a href="https://youtu.be/JA-mw8zlWmY">https://youtu.be/JA-mw8zlWmY</a></p> <p><a href="http://ncert.nic.in/textbook/textbook.htm?iescl=9-15">http://ncert.nic.in/textbook/textbook.htm?iescl=9-15</a></p> <p><a href="http://ncert.nic.in/ncerts/l/ieep109.pdf">http://ncert.nic.in/ncerts/l/ieep109.pdf</a></p> <p><a href="https://youtu.be/VCsetKxKEfo">https://youtu.be/VCsetKxKEfo</a></p>	<p><b>Activity 9.2</b></p> <ul style="list-style-type: none"> <li>Set a five-rupee coin on a stiff card covering an empty glass tumbler standing on a table (see Fig. 9.7).</li> <li>Give the card a sharp horizontal flick with a finger. If we do it fast then the card shoots away, allowing the coin to fall vertically into the glass tumbler due to its inertia.</li> <li>The inertia of the coin tries to maintain its state of rest even when the card flies off.</li> <li>Some of the activities, given in the textbook can be done at home. Observation and conclusion can be discussed with peers and Teacher.</li> </ul> <p><b>Activity 10.1</b></p> <ul style="list-style-type: none"> <li>Take a piece of thread. Tie a small stone at one end. Hold the other end of the thread and whirl it round, (see Fig.10.10).</li> <li>Note the motion of the stone.</li> <li>Release the thread.</li> <li>Again, note the direction of motion of the stone.</li> </ul> <p><b>Caution:</b> Be careful of the surroundings while performing this activity.</p> <p><b>Activity 10.6</b></p> <ul style="list-style-type: none"> <li>Take a transparent vessel filled with water.</li> <li>Take a piece of cork (or some lighter material) and an iron nail of approximately equal mass.</li> <li>Place them on the surface of water.</li> <li>Observe what happens. The cork floats while the nail sinks. This happens because of the difference in their densities. The upthrust of water on the cork is greater than the weight of the cork, so it floats (See Fig. 10.5).</li> <li>Solve the numerical problems given in Chapter 10.</li> </ul>
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<ul style="list-style-type: none"> <li>explains processes / laws such as Newton's laws of motion</li> <li>calculates using the data given, such as force, momentum, acceleration</li> <li>draws figures/ diagram to illustrate Newton's laws of motion; conservation of linear momentum</li> <li>analyses and interprets graphs/ figures etc., such as, velocity-time graphs to compute acceleration</li> <li>uses/ measures physical quantities using appropriate apparatus/ instruments/ such as spring balance</li> <li>uses scientific conventions/ symbols/ equations to represent various quantities/units</li> <li>derives formula/ equation, such as, law of conservation of linear momentum</li> <li>applies scientific concepts such as laws of motion in daily life</li> <li>records &amp; reports experimental data objectively and honestly</li> <li>exhibits values of honesty/ objectivity/ rational thinking</li> </ul>	<p><a href="http://ncert.nic.in/textbook/textbook.htm?iesc1=10-15">http://ncert.nic.in/textbook/textbook.htm?iesc1=10-15</a></p> <p><a href="http://ncert.nic.in/ncerts/l/ieep110.pdf">http://ncert.nic.in/ncerts/l/ieep110.pdf</a></p> <p><a href="https://youtu.be/sMYCMPSKCeg">https://youtu.be/sMYCMPSKCeg</a></p> <p><a href="https://youtu.be/qIcaj83GtI">https://youtu.be/qIcaj83GtI</a></p>	
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<ul style="list-style-type: none"> <li>communicates the findings and conclusions effectively, such as those of experiment/ activity/ project orally and in written form using appropriate figures/ tables/ graphs/ digital form, etc.</li> </ul> <p><b>Theme: Moving Things, People and Ideas</b></p> <p><b>Chapter 10 Gravitation</b></p> <ul style="list-style-type: none"> <li>differentiates between mass and weight; thrust and pressure</li> <li>plans and conducts investigations/ experiments to arrive at and verify the facts/ principles/ phenomena to seek answers to queries on their own, such as to understand the meaning of bouncy; How objects float/ sink when placed on surface of liquid?</li> <li>describes scientific discoveries/ inventions</li> <li>explains processes / laws such as universal law of gravitation; Archimedes' principle; variation of force of gravity with altitude</li> </ul>		
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| <ul style="list-style-type: none"> <li>• calculates using the data given, such as, gravitational force, pressure exerted by an object; density of a material</li> <li>• draws figures or diagrams to illustrate universal law of gravitation</li> <li>• uses measures physical quantities using appropriate apparatus/ instruments, such as, spring balance</li> <li>• uses scientific conventions/ symbols/ equations to represent various quantities/units</li> <li>• applies scientific concepts of gravitation in daily life in solving problems</li> <li>• records and reports experimental data objectively and honestly.</li> <li>• exhibits values of honesty/ objectivity/ rational thinking</li> <li>• communicates the findings and conclusions effectively, such as those of experiment/ activity/ project orally and in written form using appropriate figures/ tables/ graphs/ digital form, etc.</li> </ul> |  |  |
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<ul style="list-style-type: none"> <li>relates processes and phenomena with causes and effects, such as, impact of carbon dioxide and other greenhouse gases on climate change.</li> <li>explains processes and phenomena, such as, global warming, climate change, ozone layer depletion, etc.</li> <li>draws labelled diagrams, flow charts, concept maps, graphs, such as, biogeochemical cycles—carbon cycle, nitrogen cycle, water cycle, etc.</li> <li>applies learning to hypothetical situations, such as, life on earth without atmosphere.</li> <li>analyses and interprets graphs and figures the increase in greenhouse gases over decades, concentration of air pollutants, etc.</li> <li>applies scientific concepts in daily life and solving problems, such as, purification of water.</li> </ul>	<p><b>NCERT/State Textbook</b></p> <p><b>Chapter: Natural Resources</b></p> <p><b>Link 1</b>  <a href="http://ncert.nic.in/textbook/textbook.htm?iesc1=14-15">http://ncert.nic.in/textbook/textbook.htm?iesc1=14-15</a></p> <p><b>Link 2</b>            Live interaction on Air pollution <a href="https://www.youtube.com/watch?v=1hYClwdF5gU">https://www.youtube.com/watch?v=1hYClwdF5gU</a></p> <p><b>Link 3</b>            Live interaction on Air pollution <a href="https://www.youtube.com/watch?v=4XknE275G88">https://www.youtube.com/watch?v=4XknE275G88</a></p> <p><b>Link 4</b>  <a href="https://mausam.imd.gov.in">https://mausam.imd.gov.in</a></p>	<p><b>WEEK 10</b></p> <p><b>Activity 1</b></p> <ul style="list-style-type: none"> <li>Students may read the whole of Activity 14.1 (Link 1) and watch videos on air pollution (Links 2 and 3) in order to have an idea about atmosphere and air pollution.</li> <li>They may describe the hypothetical situation if there is no atmosphere.</li> </ul> <p><b>Activity 2</b></p> <ul style="list-style-type: none"> <li>In order to understand the nature of convection currents, students may perform Activity 14.2 provided in Chapter 14 (Link 1).</li> <li>Repeat the activity at least a few times and write down what they observe.</li> </ul> <p><b>Activity 3</b></p> <ul style="list-style-type: none"> <li>In order to demonstrate some of the factors influencing climatic changes, students may perform Activity 14.3 provided in Chapter 14 (Link 1).</li> <li>Repeat the activity at least a few times and answer the questions as provided in the textbook following the activity.</li> </ul> <p><b>Activity 4</b></p> <ul style="list-style-type: none"> <li>Students may be engaged in Activity 14.4 provided in Chapter 14 (Link 1).</li> <li>They may compile the information they have gathered in their notebook or scrapbook.</li> <li>They may present the data in the form of graph or other presentable form.</li> </ul> <p><b>Activity 5</b></p> <ul style="list-style-type: none"> <li>Using internet, students may find out more about monsoons and cyclones from authentic websites (For example, Link 4).</li> <li>They may try to find out the rainfall pattern of any other country also.</li> <li>They may also find out if the monsoon is responsible for rains the world over.</li> </ul>
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| <ul style="list-style-type: none"> <li>• draws conclusion, such as, soil has different components and it is not homogenous, deforestation can lead to soil erosion, etc.</li> <li>• designs models using eco-friendly resources, such as, water purification system.</li> <li>• exhibits values of honesty, objectivity, rational thinking, freedom from myths, superstitious beliefs while taking decisions, respect for life, etc., such as, records and reports experimental data exactly.</li> <li>• communicates the findings and conclusions effectively, such as, those derived from experiments, activities, and projects both in oral and written form using appropriate figures, tables, graphs, and digital forms, etc.</li> <li>• applies the interdependency and interrelationship in the biotic and abiotic factors of environment to promote conservation of environment, such as, water conservation.</li> </ul> |  |  |
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	<p><b>NCERT/State Textbook</b></p> <p><b>Chapter: Natural Resources</b></p> <p><b>Link 5</b></p> <p><a href="https://cpcb.nic.in/upload/Downloads/AQI_Bulletin_20200427.pdf">https://cpcb.nic.in/upload/Downloads/AQI_Bulletin_20200427.pdf</a></p> <p><b>Link 6</b></p> <p><a href="https://nroer.gov.in/55ab34ff81fc/b4f1d806025/page/5b714d6916b51c01ef583a61">https://nroer.gov.in/55ab34ff81fc/b4f1d806025/page/5b714d6916b51c01ef583a61</a></p> <p><b>Link 7</b></p> <p><a href="https://cpcb.nic.in/index.php">https://cpcb.nic.in/index.php</a></p>	<p><b>WEEK 11</b></p> <p><b>Activity 6</b></p> <ul style="list-style-type: none"> <li>Based on the Air Quality Index provided for different cities in Link 5, students may find out the air quality of different states in general.</li> <li>They may present their findings in the form of an appropriate table, graph, etc.</li> <li>They may make a list of the different prominent air pollutants and find out using internet the possible sources of such pollutants.</li> </ul> <p><b>Activity 7</b></p> <ul style="list-style-type: none"> <li>Students can find out how much they know about water cycle by watching the interactive video provided in Link 6.</li> </ul> <p><b>Activity 8</b></p> <ul style="list-style-type: none"> <li>Using reliable source (e.g., Link 7) students may find out the laws application in India related to air and water pollution.</li> <li>They may write a summary of each of the laws</li> </ul> <p><b>Activity 9</b></p> <p>Students may compile information about water on the following—</p> <ol style="list-style-type: none"> <li>Trace the route of the source of water that you use at home.</li> <li>What is the quality? Is it safe to drink without purification?</li> <li>What are the sources of water pollution in your area? What should be done to reduce such pollutions?</li> <li>Do you use water judiciously and conserve it? What are the steps that you take for that?</li> <li>Prepare a model for water purification.</li> <li>Should water be made available free of cost to everyone? Justify your answer with examples.</li> <li>Suggest ways the government in your district/ state/ country should do to address scarcity of water for domestic, agriculture and industry.</li> </ol>
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**NCERT/State Textbook****Chapter: Natural Resources****Link 8**

NOAA resource on what is carbon cycle <https://oceanservice.noaa.gov/facts/carbon-cycle.html>

**Link 9**

It's a series of slides about carbon in the atmosphere <https://nroer.gov.in/55ab34ff81fcb4f1d806025/page/5a9e56e116b51cebb41cc4e1>

**Link 10**

Leonardo DiCaprio's documentary movie on climate change <https://www.filmsforaction.org/watch/before-the-flood-2016/>

**Link 11**

Tracking CO2 emission <https://vimeo.com/23539318>

**Link 12**

Shrinking arctic sea <https://vimeo.com/23540634>

**Link 13**

Global climate model <https://www.youtube.com/watch?v=SuZHnqxltKo>

**Link 14**

Quiz on climate <https://cleanet.org/clean/literacy/climate/quiz.html>

**Activity 10**

- Students may perform Activity 14.10 provided in Chapter 14 (Link 1). Note: Instead of beaker they can use any transparent glass, etc.

**WEEK 12****Activity 11**

- Check Link 8 and Link 9 and prepare a well-labeled chart of carbon cycle

**Activity 12**

- Watch Link 10 and write down in your own words what are the challenges of climate change in India and what are the possible solutions.

**Activity 13**

- Watch Links 11, 12 and 13 and explain in your own words how do you know that climate change is real?
- How is climate change related to carbon dioxide?

**Activity 14**

- Take the quiz in Link 14 to find out your knowledge about climate change



	<p><b>NCERT/State Textbook</b></p> <p><b>Chapter: Natural Resources</b></p> <p><b>Link 15</b></p> <p>NOAA Nitrogen cycle  <a href="https://www.esrl.noaa.gov/gmd/education/info_activities/pdfs/CTA_nitrogen_cycle.pdf">https://www.esrl.noaa.gov/gmd/education/info_activities/pdfs/CTA_nitrogen_cycle.pdf</a></p> <p><b>Link 16</b></p> <p>A slide about ozone hole  <a href="https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/5a9e56ec16b51cebb41cc50f">https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/5a9e56ec16b51cebb41cc50f</a></p> <p><b>Link 17</b></p> <p>An article about ozone hole and CFC  <a href="https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/58da80b4472d4a2c0ef2d176">https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/58da80b4472d4a2c0ef2d176</a></p> <p><b>Link 18</b></p> <p><a href="https://www.unenvironment.org/ozonaction/who-we-are/about-montreal-protocol">https://www.unenvironment.org/ozonaction/who-we-are/about-montreal-protocol</a></p> <p><b>Link 19</b></p> <p>It's a quiz on the chapter  <a href="https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/5b3c556116b51c01d82c36c5">https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/5b3c556116b51c01d82c36c5</a></p> <p><b>Link 20</b></p> <p>Reasons for the quiz answer  <a href="https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/5c79607e16b51cc05c05007e">https://nroer.gov.in/55ab34ff81fccb4f1d806025/page/5c79607e16b51cc05c05007e</a></p>	<p><b>Activity 15</b></p> <ul style="list-style-type: none"> <li>• Read the information about nitrogen cycle in Link 15 and complete the task given at the end.</li> </ul> <p><b>Activity 16</b></p> <ul style="list-style-type: none"> <li>• Read the slide in Link 16 and read the article about ozone hole and CFC in Link 17.</li> <li>• Do you agree with the statement “ozone hole is linked to climate change.” Justify your answer based on the resources you have read.</li> </ul> <p><b>Activity 17</b></p> <ul style="list-style-type: none"> <li>• Read information provided in Link 18 about Montreal Protocol.</li> <li>• What is the outcome of the Protocol? Explain.</li> </ul> <p><b>Activity 18</b></p> <ul style="list-style-type: none"> <li>• Take the quiz given in Links 19 and 20 to check your knowledge relevant to the chapter.</li> </ul>
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