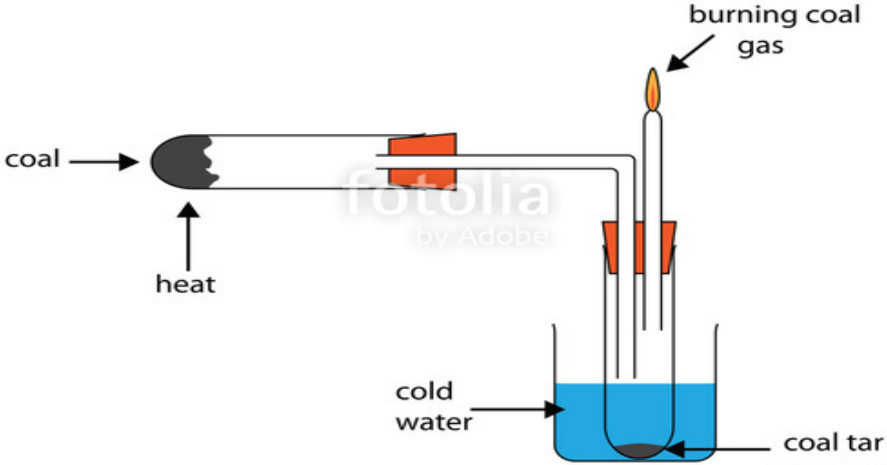


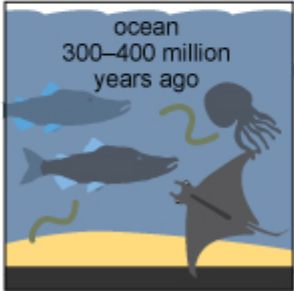
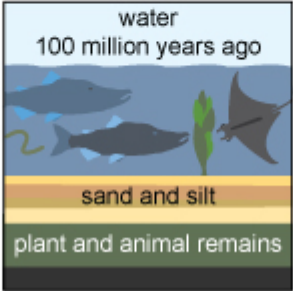
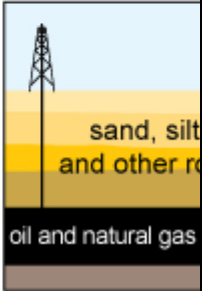
Class: VIII	Subject: Science	Day:1	Time duration:40 min
Name of the lesson/ unit	L-5 Coal and Petroleum		
Topic/lesson	Natural Resources, Coal		
Learning Objective	To be able to describe coal.		
Expected learning outcomes:	Students will be able to: - Recall, define and classify Natural Resources. - Define Inexhaustible and exhaustible natural resources. - Define fossil and fossil fuels - Describe and explain the nature, formation and uses of coal.		
Common misconception (if any):	Forest is an inexhaustible natural resource Indirect impact of burning of coal There is only one type of coal		
Prerequisite knowledge:	Renewable and non renewable resources		
Assessment of qualifying knowledge:	Oral questioning, quiz.		
Transaction methodology			
Starter/ warm up: Questioning(Verbal) (5 Min)	Pass the Parcel: Teacher will ask the questions: What are natural resources? Name two natural resources. Can air, water and coal be exhausted by human activities? Any 2 uses of coal. Which substance is used for metalling roads?		
Explanation using flipped videos (15 min)	Teacher will: - Show flipped videos and discuss about - Coal- (Coal is a hard rock which can be burned as a solid fossil fuel. It is mostly carbon but also contains hydrogen, sulphur, oxygen and nitrogen. It is a sedimentary rock formed from peat, by the pressure of rocks laid down later on top), - its types		

	- formation How coal was formed Before the dinosaurs, many giant plants died in swamps. Over millions of years, the plants were buried under water and dirt. Heat and pressure turned the dead plants into coal. • Discuss the process of carbonisation Carbonization is the conversion of organic matters like plants and dead animal remains into carbon through destructive distillation.
Think, pair and share (10 min)	Students will: • frame 4 questions (in pairs) and will ask from his/her partner.
Closure/ Plenary(Think Pair and Share) N.B: (5 Min)	<i>Teacher will ask students to book exercise.</i> <i>Teacher will collect the responses and discuss the correct answers.</i>
Home Learning	Assignment will be given from NCERT exemplar.
Resources	NCERT Book for Class VIII Flipped video, NCERT exemplar

Class: VIII	Subject: Science	Day: 2	Time duration:40 min
Name of the lesson/ unit	L-5 Coal and Petroleum		
Topic/lesson	Destructive Distillation of coal		
Learning Objective	To be able to list the products and discuss the importance of products obtained after destructive distillation of coal.		
Expected learning outcomes:	Students will be able to: - Define and describe destructive distillation of coal - List the products obtained from destructive distillation of coal and their uses		
Common misconception (if any):	Coal obtained from mines is used in day to day life directly		
Prerequisite knowledge:	There are different varieties of coal based on the amount of carbon present in them. Coal is used as a fuel in burning and cooking		
Assessment of qualifying knowledge:	Oral quiz		
Transaction methodology			
Starter/ warm up: 5 min (Collaborative- peer)	Students will create a KWL table listing what they know and want to know (point each) about uses and properties of coal, coal tar and coke. The learnt column will be left blank.		
Direct Explanation using flipped videos (20 min)	Teacher will explain about the destructive distillation of coal through flipped videos. - Definition: A process by which organic substances such as wood, coal, and oil shale are decomposed by heat in the absence of air and distilled to produce useful products such as coke, charcoal, oils, and gases. It is called destructive distillation of coal - Diagram (to be drawn on the board)		

	 The diagram illustrates the process of coal gasification. Coal is fed into a retort where it is heated. The heat causes the coal to break down into coke, coal gas, and coal tar. The coal gas is then burned, and the coal tar is collected in a U-tube. The diagram is labeled with 'coal', 'heat', 'burning coal gas', 'cold water', and 'coal tar'. <table border="1" data-bbox="565 716 1503 898"> <thead> <tr> <th>Name of product</th><th>- Uses</th></tr> </thead> <tbody> <tr> <td>- Coke</td><td>Manufacture of steel and extraction of many metals</td></tr> <tr> <td>- Coal tar</td><td>Synthetic dyes, perfumes, naphthalene balls, etc.</td></tr> <tr> <td>- Coal gas</td><td>As a fuel in many industries</td></tr> </tbody> </table>	Name of product	- Uses	- Coke	Manufacture of steel and extraction of many metals	- Coal tar	Synthetic dyes, perfumes, naphthalene balls, etc.	- Coal gas	As a fuel in many industries
Name of product	- Uses								
- Coke	Manufacture of steel and extraction of many metals								
- Coal tar	Synthetic dyes, perfumes, naphthalene balls, etc.								
- Coal gas	As a fuel in many industries								
Closure/ Plenary(Think Pair and Share) N.B: (10 Min)	Teacher will ask students to attempt questions from book exercise. Teacher will collect the responses and discuss the correct answers.								
Home Learning	Assignment will be given from NCERT exemplar.								
Resources	NCERT Book for Class VIII Flipped video, NCERT exemplar.								

Class: VIII	Subject: Science	Day: 3	Time duration:40 min
Name of the lesson/ unit	L-5 Coal and Petroleum		
Topic/lesson	Petroleum		
Learning Objective	To understand about formation and characteristics of petroleum.		
Expected learning outcomes:	Students will be able to: • Describe the formation of petroleum • Understand the process of obtaining petroleum • Define refining of petroleum and list the products obtained with their uses • Define petrochemicals and their uses		
Common misconception (if any):	Petrol is pure and can be used the way it is obtained. Petrol and Petroleum is exactly same thing.		
Prerequisite knowledge:	Petroleum is a natural resource		
Assessment of qualifying knowledge:	Oral quiz and assessment		
Transaction methodology			
Starter/ warm up: (peer work 5 min)	<u>Brainstorming</u> Teacher will give question to ponder over:- Students will discuss with their elbow partners 1. In the deposits of petroleum and natural gas. Why do we find oil layer above water layer? 2. Can u recall some of the uses of crude oil?		
Explanation using flipped videos (20 min)	Teacher will : • Discuss about Petroleum (Petroleum is a naturally occurring liquid found beneath the Earth's surface that can be refined into fuel.) • its formation		

	Petroleum and natural gas formation Tiny marine plants and animals died and were buried on the ocean floor. Over time, the marine plants and animals were covered by layers of silt and sand.  Over millions of years, the remains were buried deeper and deeper. The enormous heat and pressure turned the remains into oil and natural gas.  Today, we drill down layers of sand, silt, and other rocks to reach the rock formations that contain oil and gas deposits.  how it is obtained. Petroleum refining or Oil refining is an industrial process in which crude oil is extracted from the ground and transformed and refined into useful products like Liquefied Petroleum Gas (LPG), kerosene, asphalt base, jet fuel, gasoline, heating oil, fuel oils etc. Crude Oil consists of hydrocarbon molecules. There are three steps in the Petroleum refining process – Separation, Conversion, and Treatment.		
Closure/ Plenary(Think Pair and Share) N.B: (5 Min) Teacher will share the handout	Fuel fraction uses Write the letter of the correct match next to each problem. <table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 50%; vertical-align: top;"> 1. _____ bitumen 2. _____ refinery gas 3. _____ petrol 4. _____ naphtha 5. _____ kerosene 6. _____ lubricating oil 7. _____ fuel oil 8. _____ hydrocarbons </td> <td style="width: 50%; vertical-align: top;"> a. This fraction has the highest boiling point and is used to make roads b. This fraction has a very high boiling point and is used to power ships or power stations c. This fraction has the lowest boiling point d. This fraction is used to power jet engines e. All fossil fuel fractions contain compounds called _____ f. This fraction has a low boiling point and is used to power cars g. This fraction is similar to petrol and is used to make chemicals h. This fraction has a high boiling point is used to lubricate engines to reduce wear and tear </td> </tr> </tbody> </table>	1. _____ bitumen 2. _____ refinery gas 3. _____ petrol 4. _____ naphtha 5. _____ kerosene 6. _____ lubricating oil 7. _____ fuel oil 8. _____ hydrocarbons	a. This fraction has the highest boiling point and is used to make roads b. This fraction has a very high boiling point and is used to power ships or power stations c. This fraction has the lowest boiling point d. This fraction is used to power jet engines e. All fossil fuel fractions contain compounds called _____ f. This fraction has a low boiling point and is used to power cars g. This fraction is similar to petrol and is used to make chemicals h. This fraction has a high boiling point is used to lubricate engines to reduce wear and tear
1. _____ bitumen 2. _____ refinery gas 3. _____ petrol 4. _____ naphtha 5. _____ kerosene 6. _____ lubricating oil 7. _____ fuel oil 8. _____ hydrocarbons	a. This fraction has the highest boiling point and is used to make roads b. This fraction has a very high boiling point and is used to power ships or power stations c. This fraction has the lowest boiling point d. This fraction is used to power jet engines e. All fossil fuel fractions contain compounds called _____ f. This fraction has a low boiling point and is used to power cars g. This fraction is similar to petrol and is used to make chemicals h. This fraction has a high boiling point is used to lubricate engines to reduce wear and tear		
Home Learning	Assignment will be given from NCERT exemplar.		
Resources	NCERT Book for Class VIII Flipped video, NCERT exemplar. Handout		

Class: VIII	Subject: Science	Day: 4	Time duration:40 min
Name of the lesson/ unit	L-5 Coal and Petroleum		
Topic/lesson	Natural Gas, Limitation of fossil fuels- energy crisis		
Learning Objective	To be able to understand natural gas and limitation of fossil fuels		
Expected learning outcomes:	Students will be able to: • Explain the occurrence and uses of natural gas • Describe limitation and conservation of fossil fuels • Explain energy crisis		
Common misconception (if any):	Natural gas is composed of air.		
Prerequisite knowledge:	Natural gas is obtained from petroleum		
Assessment of qualifying knowledge:	Oral quiz and assessment		
Transaction methodology			
Starter/ warm up: group discussion (5 Min)	Teacher will make groups of students who will discuss upon the need of cleaner fuels in today’s world.		
Explanation (10 min)	Taking the discussion forward teacher will: • Stress upon the need of cleaner fuels • Introduce natural gas an alternative • Compare natural gas in form of CNG to coal or petroleum		
Jigsaw (15 min)	Teacher assigns the paragraphs of natural gas, its advantages and reserves, limitation and conservation of fossil fuels to all students of each group of students for a collaborative discussion. Collects points from each group while adding her explanation.		
Closure/ Plenary(Think Pair and Share) N.B: (5 Min)	Teacher will ask students to attempt questions from book exercise. Teacher will collect the responses and discuss the correct answers.		
Home Learning	Assignment will be given from NCERT exemplar.		
Resources	NCERT Book for Class VIII Flipped video, NCERT exemplar.		