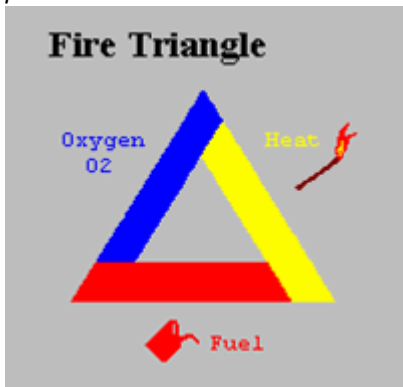


Class: VIII	Subject: Science	Day:1	Time duration:40 min
Name of the lesson/unit	L-6 Combustion and Flame		
Topic/lesson	What is combustion? Introduction to fuels.		
Learning Objective	To discuss and define combustion and fuels.		
Expected learning outcomes:	Students will be able to: - Define combustion and list combustible materials - Discuss and list examples of fuels		
Common misconception (if any):	Fuel is only is solid and liquid form.		
Prerequisite knowledge:	Combustion is a chemical change		
Assessment of qualifying knowledge:	Oral questioning, quiz.		
Transaction methodology			
Starter/ warm up: Demonstration and student inference (Collaborative) (5-7 Min)	Think, pair and share: Teacher demonstrates activity 6.1 NCERT. Students with help of their elbow partners will complete the table given.		
Discussion (5 min), Questioning (2 min) and Explanation(10-12 min)	Teacher: - Define combustion and combustible materials. - Asks the students to categorize the materials in the above activity as fuels. - Asks the students to describe how they have chosen the materials as fuels (5 responses) - Combines the responses and defines fuels. - Draws a flow chart differentiating fuels as solids, liquids and gases. - Asks the students to list out 2 examples each. - Discusses the following major differences between types of fuels.		

	<table><tr><th colspan="4">Comparison of solid liquid and gaseous fuels</th></tr><tr><th>Characteristic property of fuel</th><th>Solid fuel</th><th>Liquid fuel</th><th>Gaseous fuel</th></tr><tr><td>1) Cost</td><td>Cheap</td><td>Costlier than solid fuels</td><td>Costly</td></tr><tr><td>2) Storage</td><td>Easy to store</td><td>Closed container should be used for storing</td><td>Storage space required is huge and should be leak proof</td></tr><tr><td>3) Risk towards fire hazards</td><td>Less</td><td>More</td><td>Very high since these fuels are highly inflammable</td></tr></table>	Comparison of solid liquid and gaseous fuels				Characteristic property of fuel	Solid fuel	Liquid fuel	Gaseous fuel	1) Cost	Cheap	Costlier than solid fuels	Costly	2) Storage	Easy to store	Closed container should be used for storing	Storage space required is huge and should be leak proof	3) Risk towards fire hazards	Less	More	Very high since these fuels are highly inflammable
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Closure/ Plenary(Think Pair and Share) N.B: (5 Min)	<i>Teacher will ask students to book exercise. 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. Materials for activity 6.1																				

Class: VIII	Subject: Science	Day: 2	Time duration:40 min
Name of the lesson/ unit	L-6 Combustion and Flame		
Topic/lesson	What are the conditions necessary for combustion?- supporter of combustion and ignition temperature .		
Learning Objective	To have an understanding of the necessary conditions for combustion		
Expected learning outcomes:	Students will be able to: • Define ignition temperature and inflammable substance. • Discuss the specific cases of ignition temperature. • List out conditions necessary for combustion		
Common misconception (if any):	Relation between inflammable substances and ignition temperature		
Prerequisite knowledge:	Oxygen is the supporter of combustion. Wet objects burn slower than dry objects.		
Assessment of qualifying knowledge:	Oral quiz		
Transaction methodology			
Starter/ warm up: Experiment and Inference (10 Min)	Students will perform activity 6.2 in groups of four/five and will note down the observation in their notebooks.		
Explanation and questioning. (15 min)	Teacher will: • Highlight the key areas of the activity performed. • Asks the students that why the candle might have been extinguished? • Collect responses for experiment (any 3) • Asks- which gases might have been present in the glass? What might be the difference between the amount of oxygen present before burning and after burning of candle? • Streamlines to the conclusion that the candle takes up oxygen in the glass to burn and after the finishing up of oxygen the candle extinguishes. • Concludes that oxygen is the supporter of combustion • Discusses the real life situations – why is the person covered with a blanket if he or she is alighted with fire (to cut off contact with oxygen)		

	why do we see sand buckets in hospitals and hotels? (in case of electrical fires they are used to cut contact of oxygen from combustible materials) • Asks the students that whether a lighted piece of matchstick can burn a log of wood and a piece of paper in similar fashion? • Taking up the responses, relates the amount of heat energy required to the amount of substance present. • Introduces ignition temperature. • Clarifies that a substance catches fire only when the temperature of combustible material is higher than that of ignition temperature.
Closure/ Plenary N.B: (10 Min)	<i>Students to draw the following triangle in notebook and discuss it with their peers</i> 
Home Learning	Assignment will be given from NCERT exemplar. Think line – is the ignition temperature of dry leaves more or less than ignition temperature of wet leaves.
Resources	NCERT Book for Class VIII Flipped video, NCERT exemplar. Materials for activity 6.2

Class: VIII	Subject: Science	Day: 3	Time duration:40 min
Name of the lesson/unit	L-6 Combustion and Flame		
Topic/lesson	How do we control fires?		
Learning Objective	To be familiar with the ways fires can be controlled		
Expected learning outcomes:	Students will be able to : • Explain different ways of extinguishing fire		
Common misconception (if any):	Water is only used as a fire extinguisher in every fire. Gases heavier than oxygen		
Prerequisite knowledge:	Ignition temperature is the lowest temperature 3 conditions necessary for combustion		
Assessment of qualifying knowledge:	Oral quiz and assessment		
Transaction methodology			
Starter/ warm up: demonstration and Inference (10 Min)	Teacher demonstrates activity 6.4 NCERT and asks students to list out two observations.		
Group discussion: 10 min Explanation by questioning: (15 min)	Teacher : • Ask the students to describe an incident where they have seen a fire • What was done to extinguish a fire • Collates the responses and brings a closure to the discussion. • Discusses the case of : -water as an extinguisher. (lowering of ignition temperature, cutting of supply of oxygen) -Carbon dioxide as a fire extinguisher (cutting of supply of oxygen) • Asks the students that why water cannot be used in electrical fires • Collects responses and highlights he response containing good conductor of electricity • Discusses advantages of carbon dioxide as a fire extinguisher		

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. Materials for activity 6.4



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Class: VIII	Subject: Science	Day: 4	Time duration:40 min
Name of the lesson/ unit	L-6 Combustion and Flame		
Topic/lesson	Types of combustion and Structure of flame		
Learning Objective	To be able to list the type of combustions and understand the structure of flame		
Expected learning outcomes:	Students will be able to: - Describe the types of combustion-rapid, spontaneous, explosion, complete and incomplete combustion. - Describe different zones of flame and distinguish them on the basis of luminosity and temperature.		
Common misconception (if any):	The rate of combustion is the same for every object The middle zone of flame is the hottest		
Prerequisite knowledge:	Chemical change occurs with state change, sound production, etc		
Assessment of qualifying knowledge:	Oral quiz and assessment		
Transaction methodology			
Starter/ warm up: Observation and Inference (10 Min)	Class activity: Students (in groups under the supervision of teacher) will light up a candle in the class and hold a glass slide into the middle zone of flame with tongs for 10 seconds and then remove it. Teacher will ask : Why does the blackish ring appear on slide?		

Explanation using questioning (15 min)	Teacher will : • Explain the reason for the question asked and explain the different types of combustion. Students will underline definitions in their textbooks(NCERT-pg 69) • Ask: why utensils in village areas get a black coating from underneath after cooking? • Categorizes the combustion on the basis of their rate of combustion as rapid, spontaneous and explosive Different Types of Combustions <pre> graph TD A[Different Types of Combustions] --> B[Rapid Combustion] A --> C[Spontaneous] A --> D[Explosion] B --> B1[Combustion is very fast] B --> B2[Example] B2 --> B3[Matchstick near stove] C --> C1[Combustion is on its own] C --> C2[Example] C2 --> C3[Coal Dust in Coal Mines] D --> D1[Combustion causes Heat, Light, Sound] D --> D2[Example] D2 --> D3[Fire Crackers] </pre> • Discusses the structure of flame using fig 6.10 NCERT • Think , pair share: the students with their peers discuss and completes the table 6. 2 • Students list the conditions necessary for producing a flame in their notebook.
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. Candles, glass slides, tongs, matchsticks.

Class: VIII	Subject: Science	Day: 5	Time duration:40 min
Name of the lesson/ unit	L-6 Combustion and Flame		
Topic/lesson	Fuel efficiency , Impact of burning fuel on the environment		
Learning Objective	To be able to understand fuel efficiency and impact of fuel o environment		
Expected learning outcomes:	Students will be able to: • Define an ideal fuel • Define calorific value • Describe impact of burning fuel on environment • Define global warming, acid rain		
Common misconception (if any):	Petrol is an ideal fuel		
Prerequisite knowledge:	Acid rain and global warming		
Assessment of qualifying knowledge:	Oral quiz and assessment		
Transaction methodology			
Starter/ warm up: oral assessment (5 Min)	Quiz: • What substances are burned for cooking purpose in village areas? • Why LPG is preferred for household purpose? • Does LPG produce smoke?		
Discussion and direct teaching (10 min)	• Based on students answers teacher will explain what are the qualities of an ideal fuel and what is calorific value along with its unit. • Teacher will explain the harmful impacts of burning fuel on environment-global warming, acid rain. • Students will underline harmful impacts in their textbook-NCERT pg-73		
Collaborative work (15 min)	Students will be divided into 6 groups and distributed the topics: • Combustion and its type • Fuel and its types • Conditions necessary for combustion • Fuel efficiency • Flame		

	Extinguishing a fire They will design content maps on the topic given on A4 size sheet. Teacher will collate the separate content map on a chart paper in class.
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. Complete q/a
Resources	NCERT Book for Class VIII Flipped video, NCERT exemplar. A4 size sheet, chart papers, colors.