CM IMPACT
Meghalaya Learning Enhancement Programme

IMPACT
CHIEF MINISTER'S INITIATIVE TO MAXIMIZE PASS ACHIEVEMENT
AND CLASSROOM TRIUMPH

CLASS 09

Module 1 (March – August)

Achieving grade-appropriate learning levels

Class 9: Module 1

INDEX

Note for Teachers

Dear Teacher,

The **Meghalaya Class Readiness Programme MCRP**, implemented at the start of this academic year was a **bridge course** which focused on enhancing the learning outcomes and competencies of the previous classes to help achieve the current grade-level outcomes. We sincerely appreciate your dedication, hard work, and commitment to this initiative, ensuring every student moves forward in their learning journey. The MCRP plays a crucial role in ensuring students, particularly those struggling, acquire the necessary competencies to progress through their classes without difficulty.

On completion of the MCRP, in order to assist you in conducting regular classes effectively and to keep the momentum alive, chapter-wise activities will be shared with you throughout the academic year. This will help students attain grade-level learning through experiential, activity-based elements linked to learning outcomes and competencies, and will aid you in reinforcing concepts covered in each chapter. This approach will also encourage students to reflect on and apply what they learn.

While you will be teaching the subject as per your timetable and syllabus, it is suggested that you conduct the given activities along with the chapter you are teaching from the NCERT textbook.

The following are some important points that will help you understand the usage of the modules in a better manner:

- The modules provide **suggestive activities** you can undertake while teaching a chapter. These activities are aligned with the theme/concepts of the chapter and have experiential learning at their core. These are also aligned to specific learning outcomes and competencies, thus helping your students acquire certain skills.

- At the end of each chapter, a competency-based assessment is included to help you identify your students' learning levels and determine areas that may require additional revision. These assessment activities are **aligned with the formative assessments suggested in the Assessment Blueprint** (revised in February 2025).

- A learning level tracker (as given during MCRP) is provided. Please use this to monitor individual students' achievement of learning outcomes and competencies. This will give you a clear picture of how your students are doing and what areas they need extra support in.

If you have any queries, please contact our helpline number: **6909366037**

Wishing you an engaging and fruitful academic year ahead! Here's hoping your students become independent learners and your classroom interactions remain exciting, learning outcome-driven and without additional burden to you.

Meghalaya Learning Enhancement Programme

UNIT : 1
Chapter : The Road Not Taken

Activity 1 — The Calm of the Early Morning

🕐 **35 mins**

Instructions

- Print out the following paragraph and distribute it in groups. If you are unable to print it, you may write the passage on the board.
- Read out the passage for the students once and if required explain the passage in the local language.
- Next, ask the students to read the passage on their own and answer the questions below.

The Calm of the Early Morning

The early morning is a time of tranquillity, where the world feels calm and peaceful. As the first rays of sunlight peek over the horizon, a soft golden glow spreads across the sky, slowly dispelling the darkness of the night. The air is crisp and cool, filled with the fresh scent of dew on grass and the earth's dampness. Birds begin to sing softly, their melodies echoing in the stillness. The trees stand tall and silent, their leaves gently swaying in the light breeze. As the day awakens, everything seems new, full of promise, and brimming with the quiet beauty of nature.

A. How is the atmosphere described in the passage?
   a) Busy and noisy
   b) Calm and peaceful
   c) Dark and stormy
   d) Warm and dry
B. What spreads across the sky as the first rays of sunlight appear?
   a) Soft golden glow
   b) Thick clouds
   c) A rainbow
   d) A dark shadow
C. How is the scent of the air in the early morning?
   a) Dusty and dry
   b) Fresh and filled with dew
   c) Strong and polluted
   d) Sweet and fragrant
D. According to the passage, what do the birds do early in the morning?
   _____
   _____
   _____
   _____

E. How does the passage describe the trees in the morning?

_____
_____
_____
_____
_____

Activity 2 | Determiners

35 mins

Instructions

- Explain the concept of Determiners through the notes below. Tell the students that in this activity, the focus will be on 4 kinds of Determiners - Articles, Demonstrative, Possessive, and Quantifiers.

  o *Define determiners -* *"Words used before a noun to specify it."*

  Explain their functions with specific examples. - "This book" specifies a particular book. "Some pens" indicate an unspecified number.

  o *Introduce the following determiners:*

  <u>*Articles*</u> (a, an, the) - explain the differences between indefinite (a, an) and definite (the) articles. *I need a pencil. (any pencil) I need the pencil. (a specific pencil)*

  <u>*Demonstratives*</u> (this, that, these, those) - show the uses related to distance and number with examples. - *this car (near, singular) those bikes (far, plural)*

  <u>*Possessives*</u> (my, your, his, her, our, their) - relate to ownership. This is my dog.

  <u>*Quantifiers*</u> (some, much, many, a few, any, several, little, all, etc.) - specify quantity.

  I have some money. He does not have any notebooks.

- Write the following sentences on the board, and ask students to rewrite them using the correct determiners:

  A. There is few water in the glass.
  B. He has a oranges in his lunchbox.
  C. I bought much books from the fair.
  D. She found any mistakes in the assignment.
  E. There are little students in the classroom today.
  F. We need an hour to complete this task.
  G. They have many information about the project.
  H. He drank a juice in the morning.
  I. I have some friend in this city.
  J. She put much sugar in her tea.

Activity 3 Writing Formal Letters

35 mins

Instructions

- Begin by explaining the types of formal letters in communication. Discuss scenarios where formal letters are used (e.g., job applications, complaints, requests to authorities, etc.).
- Conduct a class discussion and ask students if they have ever written a formal letter to anybody.
- Discuss situations where enquiry letters are required such as requesting course details or product information. Discuss the following format which is used to write letters of enquiry:

> **Sender's Address** (Your Address):
>
> The sender's address is written at the top left-hand corner of the page.
>
> Do not write your name here, only the address.
>
> Include your **name, address,** and **city/postal code**.
>
> **Date**
>
> Below the sender's address, write the date when the letter is being written.
>
> **Receiver's Address** (Camp Organiser's Address):
>
> Write the full name and address of the camp organisation to which you are writing.
>
> Leave a line after the sender's address and date before starting this section.
>
> **Subject**
>
> **Subject:** A concise statement about the purpose of the letter (e.g., "Inquiry About Summer Camp").
>
> This should be written in bold or underlined for clarity.
>
> **Salutation**
>
> Start with **"Dear Sir/Madam,"** if you do not know the specific person's name.
>
> If you know the name of the recipient, use "Dear Mr./Ms. [Last Name]," instead
>
> **Body of the Letter**
>
> - **Introduction:** Start with a polite opening, stating the purpose of the letter.
>   Example: "I am writing to inquire about the summer camp organised by your organisation."
> - **Request for Information:** Politely ask for the details you need, such as:
> - **Duration of the camp**
> - **Activities** offered during the camp
> - **Fees** for participation
> - **Registration process**
>
> **Closing**
>
> Use a formal closing like **"Yours faithfully,"** (since you don't know the name of the recipient).
>
> Leave space for your signature and then type your name below.

A. You are interested in attending a summer camp organised by a reputed organisation in your city. Write an inquiry letter to the camp organisers requesting detailed information about the camp, such as the duration, activities, fees, and registration process.

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UNIT: 1 | Assessment

35 mins

Section A (Literature)

Choose the correct answer from the given options:

1. What was the condition of the two roads in the poem?
   a) One was more worn and the other was clean.
   b) Both roads were equally travelled.
   c) Both roads were covered with leaves, meaning no one had taken the roads.
   d) One road was blocked, and the other was clear.

2. Why did the speaker feel sorry in the poem?
   a) Because both roads seemed equally travelled.
   b) Because the two roads were the same.
   c) Because the speaker could not travel both roads.
   d) Because the roads were blocked by undergrowth.

3. What is the significance of the road that the speaker chooses in the poem?
   a) It was the road that was more travelled.
   b) It was the road that appeared less worn and more inviting.
   c) It was the road that led to the destination.
   d) It was the road that looked like it had fewer obstacles.

4. What does the phrase "I took the one less travelled by" signify?
   a) The speaker chose the more popular path.
   b) The speaker chose a difficult path that few people had taken.
   c) The speaker followed a well-known path.
   d) The speaker chose to return to the first path.

Read the following extracts and answer the questions:

Extract 1

"Two roads diverged in a yellow wood,
And sorry I could not travel both
And be one traveler, long I stood
And looked down one as far as I could
To where it bent in the undergrowth."

5. Why does the poet feel sorry in these lines?
   _____
   _____
   _____

Extract 2

"I shall be telling this with a sigh
Somewhere ages and ages hence:
Two roads diverged in a wood, and I—
I took the one less travelled by,
And that has made all the difference."

6. What does the poet mean by "that has made all the difference"?

    _____
    _____
    _____

Answer the following questions:

7. According to you, discuss what these phrases mean in the poem:
    (i) a yellow wood (ii) it was grassy and wanted wear

    _____
    _____
    _____
    _____
    _____

8. What does the speaker mean by "I shall be telling this with a sigh"?

    _____
    _____
    _____
    _____
    _____

9. What do you think the last two lines of the poem mean? Looking back, does the poet regret his choice or accept it?

    _____
    _____
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10. Have you ever had to make a difficult choice (or do you think you will have difficult choices to make)? How will you decide which option to pick? What will be your reasons?

    _____
    _____
    _____
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Section B (Grammar)

The following paragraph has not been edited. There is one error in each line related to determiners. The table shows the line number and the error in each line. Write its correction against the correct blank number. The first one has been done for you.

A scientist experimented to test much theories about plant growth (1). She collected data from a plants grown in different conditions (2). Many information was gathered, but some results were inconsistent (3). She concluded that little adjustments in the environment could lead to significant changes (4).

Line	Error	Correction
(1)	much	several_____
(2)	A	_____
(3)	many	_____
(4)	little	_____

Section C (Writing)

You have noticed that there is an increasing amount of plastic waste in your locality, and it is affecting the environment. Write a letter to the editor of a local newspaper, expressing your concern about the issue and suggesting measures that can be taken to reduce plastic waste.

Ensure that you:

o   Use the formal letter format.

o   Mention specific points of concern, such as the environmental impact of plastic waste.

o   Suggest practical solutions like reducing the use of plastic bags, organising awareness campaigns, etc.

o   Write the letter in a polite, clear, and concise manner.

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UNIT: 1   Answer Key

Section A (Literature)

1. c) Both roads were covered with leaves, meaning no one had taken the roads.
2. c) Because the speaker could not travel both roads.
3. b) It was the road that appeared less worn and more inviting.
4. b) The speaker chose a difficult path that few people had taken.
5. The poet feels sorry because he can only choose one of the two roads, meaning he cannot experience both paths in life.
6. The poet means that his choice of the less-travelled road has significantly influenced his life and shaped his experiences.
7. (i) **"A yellow wood"**:

   This phrase creates an image of a forest in autumn, where the leaves have turned yellow. It suggests a moment of change or transition, setting the tone for the choices the speaker must make.

   (ii) **"It was grassy and wanted wear"**:

   This phrase describes a road that is less travelled, with grass growing on it, indicating that fewer people have chosen it. It symbolises an unconventional or less popular choice that the speaker decides to make.
8. By "I shall be telling this with a sigh," the speaker implies that, in the future, they will reflect on their choice with a sense of nostalgia or contemplation, possibly feeling both content and regretful about the path they took.
9. The last two lines of the poem, suggest that the speaker reflects on their choice in the future. The sigh indicates that the speaker may feel a mix of emotions—perhaps a sense of regret or wonder about how their choice shaped their life. However, the line *"And that has made all the difference"* reveals that the speaker ultimately accepts their decision, acknowledging that the choice, though difficult, has led them to a unique and significant path in life. The poet doesn't outright regret the choice but instead values the impact it had on their journey.
10. The answer to this question will be completely subjective, based on student's experiences.

Section B (Grammar)

(1) The
(2) Much
(3) Few

Section C (Writing)

Since creative writing tasks are subjective in nature, the answers will vary from student to student. Some aspects to consider while evaluating letter writing are:

- Does it follow the format of a formal letter (date, first-person narration, formal tone)?
- Is the content relevant to the given prompt or theme?
- Does the body of the letter have a clear beginning, middle, and end?
- Are the sentences complete and grammatically, correct?
- Does the paragraph avoid excessive repetition?
- Does the student use a range of vocabulary instead of repeating the same words?
- Are common words spelled correctly?
- Is proper punctuation used (capital letters, commas, periods, etc.)?
- Is the paragraph coherent?
- Is there a personal touch or unique perspective in the writing?

Learning Level Tracker

Keep a record of unit/chapter assessment results in the tracker.

As you conduct assessments based on the activities suggested, put a tick mark as per the following:

Level 1: Not able to solve problems and having difficulty comprehending the problem

Level 2: Solves most of the problems with external support

Level 3: Solves problems independently

Name of the School:		UDISE:
Block:		District:
Name of the Teacher:		Assessment Date:

Class: 9		Subject: English		
Roll No.	Name of the Student	Unit: 1		
		Chapter: The Road Not Taken		
		Level 1	Level 2	Level 3

UNIT : 2
Chapters : The Sound of Music, Wind

Activity 1 Literacy Rates in India

35 mins

Instructions

- Print out the following passage and distribute them in groups or write the passage on the board.
- Read out the passage for the students once and if required explain the passage in the local language.
- Ask the students to read the passage and answer the questions below.

Literacy rates in India

India, one of the world's most populous countries, has made significant strides in improving literacy rates over the past few decades. However, challenges remain, particularly in rural areas and among marginalised communities. The Indian government, through various initiatives such as the "Sarva Shiksha Abhiyan" and "Rashtriya Madhyamik Shiksha Abhiyan," has focused on increasing access to education, improving school infrastructure, and reducing dropout rates.

Despite these efforts, literacy rates in India still vary widely across states, regions, and social groups. According to the 2011 Census, the national literacy rate stood at 74.04%. However, some states like Kerala have achieved near-universal literacy, while others, particularly in the northern and eastern regions, continue to face challenges. For instance, Bihar and Uttar Pradesh have relatively lower literacy rates compared to states like Goa and Tamil Nadu.

Gender disparity is also a significant concern, with the literacy rate for women being considerably lower than that for men. Social and cultural barriers, early marriages, and lack of access to education have contributed to this gap. In rural areas, girls often face more difficulties in accessing education due to socio-economic conditions and gender norms.

To address these disparities, the government has launched several programs focusing on women's education, such as Beti Bachao Beti Padhao, and initiatives to improve the literacy rate in backward regions. Additionally, NGOs and community-based organizations have played a crucial role in promoting literacy through adult education programs, vocational training, and awareness campaigns.

Technology has also contributed to promoting literacy, with initiatives like digital classrooms, online learning platforms, and mobile apps providing educational content to remote areas. The advent of mobile learning has opened up new opportunities for both children and adults to improve their literacy skills.

Despite the progress made, there are still significant hurdles in achieving complete literacy in India. Factors like poverty, illiteracy among adults, lack of infrastructure, and poor teacher training continue to pose challenges. However, the focus on inclusive education, government initiatives, and the use of technology has been a beacon of hope for improving literacy rates and ensuring that every Indian has access to quality education.

Choose the correct answer from the options given:

A. Which of the following is NOT mentioned as a government initiative to improve literacy in India?

    a) Sarva Shiksha Abhiyan

b) Rashtriya Madhyamik Shiksha Abhiyan

c) Beti Bachao Beti Padhao

d) Pradhan Mantri Jan Dhan Yojana

B. According to the passage, which state in India has achieved near-universal literacy?

a) Uttar Pradesh

b) Bihar

c) Kerala

d) Tamil Nadu

C. What is a major factor contributing to the gender disparity in literacy rates in India?

a) Lack of educational institutions

b) Socio-economic conditions and early marriages

c) Lack of digital platforms

d) The low number of teachers

D. What role has technology played in promoting literacy in India?

a) Replacing traditional schools with online classes

b) Providing educational content through mobile apps and online platforms

c) Reducing the number of teachers

d) Limiting access to education in rural areas

E. Which of the following is one of the challenges mentioned in the passage that still affects literacy in India?

a) A reduction in government funding

b) Lack of digital infrastructure

c) Poor teacher training and lack of infrastructure

d) No government initiatives

Answer the following questions:

F. What challenges do rural areas and marginalised communities face in improving literacy rates in India?

_____
_____
_____
_____
_____

G. How has technology contributed to improving literacy rates in India, particularly in remote areas?

_____
_____
_____
_____
_____

Activity 2 Tenses

35 mins

Instructions

o   Begin by revising the concept of tenses and explaining key rules for using tenses.

Teachers' Notes			
	Past	**Present**	**Future**
Simple	Describes an action that is now complete. E.g.: I played football.	Describes a repeated action. E.g.: I play football.	Describes an action which is planned to take place in the future. E.g.: I will play football.
Continuous	Describes an action that happened in the past over a length of time. E.g. I was playing football.	Describes an action that is happening now. E.g.: I am playing football.	Describes an action that will be happening for a length of time. E.g.: I will be playing football.
Perfect	Describes an action that had happened before another action took place. E.g.: I had played football.	Describes an action that has happened. E.g.: I have played football.	Describes an action that will be finished before another action takes place. E.g.: I will have played football.
Perfect ontinuous	Describes an action that had been happening before another action. E.g.: I had been playing football.	Describes an action that has started in the past and is continuing. E.g.: I have been playing football.	Describes an action that happens over time before another future action takes place. E.g.: I will have been playing football.

• Draw a large timeline on the blackboard. The timeline should be divided into three sections: **Past, Present, and Future with the classifications for each tense**

• Label each section clearly and explain to the students that the goal is to match sentences to the correct tense section on the timeline.

• Divide the students into 3-4 teams. Distribute a set of sentences with all types of tenses among the groups.

• Prepare a list of sentences in different tenses. Here are some example sentences:

   o   She writes in her journal every day.

   o   I am reading a book now.

   o   We will be watching a movie at 8 PM.

   o   He played football yesterday.

   o   They will visit the museum tomorrow.

   o   She was cooking dinner when I arrived.

- I have been studying for two hours.
- They have finished their homework.
- By next year, they will have been living in this city for a decade.
- She had been working there for five years before she quit.
- I had eaten before the guests arrived.
- He will have completed the project by Friday.
- Once they agree on the correct tense, a member of the team will come up to the board and write the sentence in the correct section of the timeline.
- Other teams will share their feedback.
- Share your feedback and help the teams to write the sentences in the correct places.

Activity 3 | Article Writing

🕐 **35 mins**

Instructions

- Divide the class into small groups of 4-5 students.
- Start by introducing the topic to the class: "Exercise and Fitness in Our Daily Lives" and briefly explain that physical exercise is essential for maintaining overall health, particularly for teenagers, who experience rapid growth and development.
- Ask each group to discuss the following questions:
  - What kind of physical exercise do you do in your daily routine?
  - Why do you think it's important to exercise regularly?
  - How does exercise make you feel (both physically and mentally)?
  - What are some challenges you face in staying physically active?
  - Can you share any specific benefits you've experienced from regular exercise? Encourage students to actively participate in the discussion, share their personal experiences, and listen to others' points of view.
- Ask them to note down key points from the discussion that they can use later in their writing.
- After the group discussion, ask students to reflect on the conversation and write an article on the topic: "Importance of Physical Exercise for Teenagers." in 150-200 words.

_____
_____
_____
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_____

UNIT: 2 Assessment

35 mins

Section A (Literature)

Choose the correct answer from the given options-

1. Where did Evelyn audition and score the highest marks in the history of the academy?
   a) Royal Academy of Music
   b) Trinity College of Music
   c) Royal College of Music
   d) Guildhall School of Music & Drama

2. In 1991, Which award was presented to Evelyn?
   a) International Classical Music Awards
   b) Billboard Music Awards
   c) Brit Awards
   d) Royal Philharmonic Society's prestigious Soloist of the Year

3. What does the poet imply about the wind's relationship with weakness?
   a) The wind helps the weak to grow stronger.
   b) The wind destroys weak things and challenges the frail.
   c) The wind is indifferent to both strong and weak.
   d) The wind is kind to weak bodies and frail hearts.

4. According to the poem, what is the key to making the wind our friend?
   a) Keeping the windows closed to prevent the wind from entering.
   b) Building strong homes, firming the body, and making the heart steadfast.
   c) Ignoring the wind and letting it blow freely.
   d) Always trying to control the wind and its actions.

Read the following extracts and answer the following questions-

Extract 1

The young boy took to music early in life. At the age of three when his mother took him to his maternal uncle's house in Benaras (now Varanasi), Bismillah was fascinated watching his uncle practise the shehnai. Soon Bismillah started accompanying his uncle, Ali Bux, to the Vishnu temple of Benaras where Bux was employed to play the shehnai. Ali Bux would play the shehnai and Bismillah would sit captivated for hours on end. Slowly, he started getting lessons in playing the instrument and would sit practising throughout the day. For years to come the temple of Balaji and Mangala Maiya and the banks of the Ganga became the young apprentice's favourite haunts where he could practise in solitude. The flowing waters of the Ganga inspired him to improvise and invent raagas that were earlier considered to be beyond the range of the shehnai.

5. How did the environment of Benaras influence Bismillah Khan's musical development?

   _____
   _____
   _____
   _____
   _____

Extract 2

Wind, come softly.
Don't break the shutters of the windows.
Don't scatter the papers.
Don't throw down the books on the shelf.
There, look what you did — you threw them all down.
You tore the pages of the books. You brought rain again.

6. In the poem, what is the speaker's reaction to the wind's actions?

    _____
    _____
    _____
    _____
    _____

Answer the following questions:

7. Why did Aurangzeb ban the playing of the pungi?

    _____
    _____
    _____
    _____
    _____

8. What does the poet say about the wind god winnows?

    _____
    _____
    _____
    _____
    _____

9. How does Evelyn hear music?

    _____
    _____
    _____
    _____
    _____
    _____

Section B (Grammar)

Fill in the blanks with the correct form of the verb:

1. By the time you arrive, I _____ (finish) my homework.
2. She _____ (read) a book when I called her yesterday.
3. Right now, they _____ (watch) a movie in the theatre.

Section C (Writing)

Write an article in 150-200 words on the importance of time management for students. Discuss how effective time management can improve academic performance, reduce stress, and help maintain a healthy balance between school and personal life.

UNIT: 2 Answer Key

Section A (Literature)

Choose the correct answer from the given options:

1. a)
2. d)
3. b)
4. b)
5. The environment of Benaras had a profound influence on Bismillah Khan's musical development. The city's rich cultural and spiritual atmosphere, particularly the Vishnu temple and the banks of the Ganga, provided him with a tranquil and inspiring setting for his practice. The peaceful surroundings allowed him to practice in solitude, while the flowing waters of the Ganga inspired him to experiment and improvise. This connection to the sacred and serene environment helped him develop new raagas and expand the range of the shehnai, shaping his unique musical style.
6. The poet's reaction to the wind's actions is one of frustration and disappointment. At first, the speaker pleads with the wind to be gentle — asking it not to break the shutters, scatter papers, or knock down books. But then, as the wind ignores the plea and causes destruction, the tone shifts to one of reproach: "There, look what you did." The speaker seems upset by the wind's chaos, especially as it brings more rain and tears pages from the books. It shows a sense of helplessness in the face of nature's uncontrollable power.
7. Aurangzeb banned the playing of the pungi because it produced a harsh and unpleasant sound. He found the sound of the pungi disturbing and unfit for royal courts and formal occasions.
8. This means that the wind god destroys or weakens fragile things, whether they are physical structures like houses and doors, or intangible things like people's health, lives, and emotions. The wind symbolises the force of nature that tests the strength of everything it encounters.
9. Evelyn Glennie hears music through vibrations. Despite being deaf, Evelyn has developed the ability to sense and interpret sound through the vibrations that reach her body. She feels the vibrations in the floor, the seats, and even the instruments she plays, allowing her to experience music uniquely and profoundly. Her sensitivity to these vibrations helps her perform music with great skill and emotion, proving that one can still connect with music even without hearing it in the conventional sense.

Section B (Grammar)

1. By the time you arrive, I will have finished my homework.
2. She was reading a book when I called her yesterday.
3. Right now, they are watching a movie in the theatre.

Section C (Writing)

Since creative writing tasks are subjective in nature, the answers will vary from student to student. Some aspects to consider while evaluating article writing are:

- Are ideas logically organized and connected?
- Are vocabulary and expressions varied and suited to the topic?
- Are the grammar, punctuation, and spellings mostly, correct?
- Are examples or personal opinions used to make it more interesting?
- Are linking words and phrases (e.g., however, moreover, therefore) used to guide the reader?
- Does it reinforce the purpose or message of the article?
- Is the ending memorable, thoughtful, or thought-provoking?

Learning Level Tracker

Keep a record of unit/chapter assessment results in the tracker.

As you conduct assessments based on the activities suggested, put a tick mark as per the following:

Level 1: Not able to solve problems and having difficulty comprehending the problem

Level 2: Solves most of the problems with external support

Level 3: Solves problems independently

Name of the School:		UDISE:
Block:		District:
Name of the Teacher:		Assessment Date:

Class: 9		Subject: English		
Roll No.	**Name of the Student**	Unit: 2		
		Chapters:	1. The Sound of Music	
			2. Wind	
		Level 1	Level 2	Level 3

UNIT : 3
Chapter : The Little Girl

Activity 1 A Morning in the Garden

🕐 **35 mins**

Instructions

- Print out the following passage and distribute them in groups or write the passage on the board.
- Read out the passage for the students once and if required explain the passage in the local language.
- Ask the students to read the passage on their own and answer the questions.

A Morning in the Garden

The morning sunbathed the garden in a warm, golden light, casting long shadows on the dewy grass. The air was fresh, carrying the sweet scent of blooming roses and jasmines. Birds chirped melodiously from the trees, while butterflies fluttered around the colourful flowers. The gentle breeze rustled the leaves, and the soft hum of bees added a peaceful soundtrack to the serene scene. As I stood there, the beauty of the garden filled me with a sense of calm, making it a perfect start to the day.

A small squirrel darted across the path, pausing now and then to nibble on a nut. It seemed as if even the animals were enjoying the morning. In the distance, the gardener moved quietly between the rows of plants, trimming overgrown branches and watering thirsty flowers. The soft splash of water mixed with the rustling leaves, creating a rhythm that matched the peaceful mood of the place.

I took a deep breath, trying to take in every detail—the colours, the scents, the sounds. It felt like time had slowed down, letting me appreciate nature's gentle gifts. For a moment, all worries faded away, and I felt deeply connected to the world around me. The garden wasn't just a place; it was a reminder to slow down and find joy in the simple things.

Choose the correct answer from the options given:

A. What filled the garden with golden light in the morning?
   a)   The moon
   b)   The stars
   c)   The morning sun
   d)   The lanterns

B. What scents were carried by the fresh air?
   a)   Lilies and lavender
   b)   Roses and jasmines
   c)   Mangoes and peaches
   d)   Grass and leaves

C.   Who was working in the garden?

   a)   A farmer

   b)   The narrator

   c)   A gardener

   d)   A child

Answer the following question:

D.   Describe the sound that added to the peaceful atmosphere of the garden.

   _____
   _____
   _____
   _____

E.   How does the narrator describe the overall atmosphere of the garden, and how does it affect their mood?

   _____
   _____
   _____
   _____

F.   What role do the bees, gardener and squirrel play in the garden to enhance the beauty of the garden?

   _____
   _____
   _____
   _____

Activity 2   Subject Verb Concord

35 mins

Instructions

• Begin the class by defining Subject-verb concord and explaining the key rules with examples.

Teachers' Notes

Rules for Subject Verb Agreement
Rule 1:
Singular Subject = Singular Verb
A singular subject takes a singular verb. ('s' or 'es' is added after the verb when it is Present Tense.
   • **Example:** The cat runs fast
Rule 2:
Plural Subject = Plural Verb
A plural subject takes a plural verb.
   • **Example:** The dogs **bark** loudly
Rule 3:
Words Joined by 'And' = Plural Verb
When two subjects are joined by **and**, use a plural verb.
   • **Example:** My friend and I **are** going to the market.

Exception: If the subjects refer to the same person or thing, use a singular verb.
- **Example:** Bread and butter is my favourite breakfast.

Rule 4 :

Words Joined by 'Or' or 'Nor' = Closest Subject Rule

When subjects are joined by or or nor, the verb agrees with the subject closest to it.
- **Example:** Either the teacher or the students are responsible.
- **Example:** Neither the students nor the teacher is responsible.

Rule 5 :

Collective Nouns = Singular or Plural

A collective noun (e.g., team, jury, group) takes a singular verb if it acts as a single unit but a plural verb if members act individually.
- **Singular:** The team is ready for the match.
- **Plural:** The team are arguing among themselves.

Rule 6:

Indefinite Pronouns = Singular

Indefinite pronouns like **everyone, someone, nobody, each, anyone** take singular verbs.
- **Example:** Everyone **enjoys** the game.

Exceptions: Both, few, many, others, several take plural verbs.
- **Example:** Few know the answer

Rule 7:

Titles, Names, or Quantities = Singular Verb

Titles, names of books, and quantities take a singular verb even if they look plural.
- **Example: "The Chronicles of Narnia" is a great book.**
- **Example: Ten dollars is enough.**

Rule 8 :

Subjects with 'Each' or 'Every' = Singular

When each or every precedes the subject, use a singular verb.
- **Example: Each student has a book.**
- **Example : Every teacher and student is present**

Rule 9:

Subjects Starting with 'There' or 'Here' = Verb Matches Real Subject

When a sentence begins with "there" or "here," the verb agrees with the subject that follows it.
- **Example: There is a book on the table.**
- **Example: Here are the keys you lost.**

Rule 10 :

Subjects Separated by Words = Ignore Interrupting Phrases

Ignore phrases or clauses between the subject and the verb.
- **Example: The bouquet of flowers is beautiful.**

Rule 11 :

Gerunds or Infinitives = Singular

Gerunds (verbs ending in -ing) or infinitives (to + verb) used as subjects take singular verbs.
- **Example: Running is good for health.**
- **Example: To read books is my favorite hobby.**

Rule 12 :

Plural Nouns That Are Singular in Meaning = Singular Verb

Nouns like mathematics, news, physics take singular verbs.
- **Example: Mathematics is my favourite subject.**

Rule 13 :

Some Words Are Always Plural

Words like scissors, trousers, glasses take plural verbs.
- **Example: These scissors are sharp.**

- Divide the class into small groups.
- Write down a list of subjects on separate cards or slips of paper and on other cards, write corresponding verbs.
- Give each group a set of subject and verb cards.
- Ask the groups to match the subject cards with the correct verb cards.
- After matching, groups should read aloud their pairs and explain why the subject and verb match.

   Example Subject Cards:
   - o   The dog
   - o   They
   - o   My sister
   - o   The children
   - o   The teacher

   Example Verb Cards:
   - o   is
   - o   are
   - o   enjoys
   - o   have
   - o   was

Activity 3   Story Writing

35 mins

Instructions

- Divide the students into small groups (4-5 students per group).
- Read aloud the story beginning provided to the students and write it on the board.

   "One day, Jessie was walking home from school when he found a small, abandoned puppy on the side of the road. The puppy looked lost and scared. Jessie decided to take it home, but he wasn't sure what to do next."

- Ask each group to discuss what happens next in the story. Encourage them to brainstorm different ideas, such as:
   - o   Where will Jessie take the puppy?
   - o   What challenges will Jessie face?
   - o   How will she take care of the puppy?
   - o   Will there be any surprises in the story?
- After the discussion, ask each student to individually write their own version of the story based on the group's ideas.
- Encourage them to add details, describe the puppy and Jessie's emotions, and create a resolution for the story.
- Once the students have finished writing, allow them to share their stories with the class.

UNIT: 3 Assessment

35 mins

Section A (Literature)

Choose the correct answer from the given options-

1. Why did the little girl's grandmother send her down on Sunday afternoons?
   a) to have a "nice talk with Father and Mother
   b) to clean the area
   c) to find grandmother's books
   d) to sleep on the sofa

2. Why was there a hue and cry in the house that night?
   a) Kezia had misplaced her father's speech.
   b) Kezia had torn up important papers for her surprise.
   c) The servants had lost some valuable documents.
   d) Kezia had forgotten to complete her homework.

3. What did the little girl observe while looking through the gap in the fence?
   a) The MacDonalds were having a family dinner.
   b) The Macdonald children were playing tag.
   c) The father was scolding the children.
   d) The father was gardening with the children.

4. Why did the little girl wake up shivering?
   a) The child had a bad dream about a butcher with a knife and a rope.
   b) The child was afraid of the dark and wanted to sleep with Grannie.
   c) The child was lost and couldn't find her father.
   d) The child was hungry and needed food.

Read the following extracts and answer the following questions-

Extract 1

She never stuttered with other people — had quite given it up — but only with Father, because then she was trying so hard to say the words properly. "What's the matter? What are you looking so wretched about? Mother, I wish you taught this child not to appear on the brink of suicide... Here, Kezia, carry my teacup back to the table carefully." He was so big — his hands and his neck, especially his mouth when he yawned. Thinking about him alone was like thinking about a giant.

4. Why did the little girl stutter when speaking to her father?
   _____
   _____
   _____
   _____
   _____

Extract 2

Crying too much to explain, she lay in the shadowed room watching the evening light make a sad little pattern on the floor. Then Father came into the room with a ruler in his hands. "I am going to beat you for this," he said. "Oh, no, no", she screamed, hiding under the bedclothes. He pulled them aside. "Sit up," he ordered, "and hold out your hands. You must be taught once and for all not to touch what does not belong to you." "But it was for your b-b-birthday." Down came the ruler on her little, pink palms.

6. *Why was the little girl being punished by her father?*

_____
_____
_____
_____
_____

Answer the following questions:

7. Who were the people in Kezia's family?

_____
_____
_____
_____
_____

8. In what ways did Kezia's grandmother encourage her to get to know her father better?

_____
_____
_____
_____
_____

9. How does Kezia begin to see her father as a human being who needs her sympathy?

_____
_____
_____
_____
_____
_____
_____
_____
_____

Section B (Grammar)

Fill in the blanks with the correct form of the verb-

1. The students _____ (is/are) excited about the upcoming trip.
2. She _____ (go/goes) to the library every afternoon.
3. Either the teacher or the students _____ (has/have) to bring the materials.
4.   My brother _____ (like/likes) to play football on weekends.
5. The news _____ (is/are) very shocking today.

Section C (Writing)

"You are walking in the park when you suddenly hear a faint sound coming from behind a large tree. Curious, you go closer and find a small bird with a broken wing. What do you do to help the bird, and what happens next?" Complete the story in 100-120 words.

UNIT: 3 Answer Key

Section A (Literature)

Choose the correct answer from the given options-

1. a)
2. b)
3. b)
4. a)
5. The little girl, Kezia, stuttered when speaking to her father because she was trying so hard to say the words properly. Her nervousness and effort to please or avoid making mistakes likely made her more anxious, which caused her to stutter, especially in front of her father.
6. The little girl was being punished by her father because she had taken something that did not belong to her. She had apparently taken an item, related to her father's belongings, and her father was teaching her not to touch things that weren't hers, even though she had intended it for his birthday.
7. Kezia's family consisted of her father, mother and grandmother.
8. The grandmother suggested that Kezia should try to talk to her father and get to know him by having a conversation, instead of being afraid of him.
9. Kezia's observation of her father's tiredness and her realization that he works hard every day without anyone to look after him makes her see him as a human being. She notices that he is not a giant or a strict figure, but a person with feelings and a big heart. This realization changes her perspective, and she begins to feel sympathy for him. She sees him not just as a strict father, but as someone who needs her care and love.

Section B (Grammar)

1. The students **are** excited about the upcoming trip.
2. She **goes** to the library every afternoon.
3. Either the teacher or the students **have** to bring the materials.
4. My brother **likes** to play football on weekends.
5. The news **is** very shocking today.

Section C (Writing)

Since creative writing tasks are subjective in nature, the answers will vary from student to student. Some aspects to consider while evaluating story writing are:
- The plot is the sequence of events that make up the story. It includes an introduction, rising action, climax, falling action, and conclusion.
- Characters are the people or beings that drive the story forward.
- The setting is where and when the story takes place.
- The conflict is the central problem or challenge the characters face.
- The theme is the central idea or message the story conveys.
- The point of view is the perspective from which the story is told.
- Dialogue is the conversation between characters.
- Style and Language - the way the story is written affects its tone and impact.
- Pacing refers to how quickly or slowly the events unfold in the story.
- Often, stories have a deeper moral or lesson for the reader.

Learning Level Tracker

Keep a record of unit/chapter assessment results in the tracker.

As you conduct assessments based on the activities suggested, put a tick mark as per the following:

Level 1: Not able to solve problems and having difficulty comprehending the problem

Level 2: Solves most of the problems with external support

Level 3: Solves problems independently

Name of the School:		UDISE:	
Block:		District:	
Name of the Teacher:		Assessment Date:	

Class: 9		Subject: English		
Roll No.	**Name of the Student**	Unit: 3		
		Chapter: The Little Girl		
		Level 1	Level 2	Level 3

UNIT : 4
Chapters : A Truly Beautiful Mind, The Lake Isle of Innisfree

Activity 1 Conservation of Wetlands in Meghalaya

35 mins

Instructions

- Print out the following passage and distribute them in groups or write the passage on the board.
- Read out the passage for the students once and if required explain the passage in the local language.
- Ask the students to read the passage and answer the questions.

Conservation of Wetlands in Meghalaya

Meghalaya, known as the "Abode of Clouds," is home to a rich biodiversity, with numerous wetlands, forests, and rivers that support a wide variety of plants and animals. One of the most significant wetlands in Meghalaya is the **Umiam Lake***, located near the state capital, Shillong. The lake and surrounding wetlands are crucial for the local ecosystem, serving as a habitat for many species of birds, fish, and plants. However, over the years, the lake has faced environmental challenges due to pollution, encroachment, and climate change.*

In 2017, the government of Meghalaya, in collaboration with local communities, launched a conservation initiative aimed at preserving the Umiam Lake and other wetlands across the state. The project focused on reducing pollution, restoring the natural vegetation around the lake, and ensuring sustainable use of resources by local communities. Special efforts were made to educate the public about the importance of wetlands in maintaining the balance of the ecosystem.

One of the key steps in the project was the creation of **wetland conservation zones** *around the lake, where human activity is regulated to prevent further damage to the environment. The local communities were also encouraged to participate in the project, with a focus on promoting eco-friendly tourism and sustainable agricultural practices.*

These efforts have shown positive results, with improved water quality, a rise in bird populations, and an increase in the number of tourists visiting the lake to witness its natural beauty. Local fishermen, who once struggled due to declining fish stocks, have benefited from the restored ecosystem, as fish populations began to thrive again.

Choose the correct answer from the options given below:

A. What is the primary purpose of the conservation initiative launched in Meghalaya in 2017?
   a) To increase agricultural production around Umiam Lake
   b) To preserve the Umiam Lake and other wetlands in the state
   c) To encourage deforestation for urban development
   d) To build more tourist facilities around the lake

B. Which of the following was one of the key actions taken in the conservation project around Umiam Lake?
   a) Introducing industrial activities near the lake
   b) Establishing wetland conservation zones to regulate human activity
   c) Encouraging overfishing to boost the local economy
   d) Promoting the construction of new buildings around the lake

C. What positive result came from the conservation efforts around Umiam Lake?
   a) Decrease in bird populations
   b) Decline in fish stocks
   c) Improvement in water quality and a rise in bird populations
   d) Increase in industrial pollution

Answer the following questions:

D. How did the government and local communities collaborate to conserve the wetlands?

   _____
   _____
   _____
   _____

E. How has eco-friendly tourism helped the local communities around the wetlands?

   _____
   _____
   _____
   _____

Activity 2 Modals

35 mins

Instructions

- Start by introducing Modals to the class.
- Explain the common Modals used.

Teachers' Notes

Introduce modals: Modals are helping verbs that add meaning to the main verb by expressing ability, possibility, permission, necessity, or advice.

• Modal	• Purpose	• Examples
• *Can/cannot*	• ability or permission	• I can speak French. • You cannot park your bike here.
• *Could*	• past ability or polite request	• I could read when I was three. • Could you help me, please?
• *May/might*	• possibility or permission	• It may rain today. • You may leave early.
• *Must/mustn't*	• necessity or prohibition	• You must wear a helmet. • You mustn't use your phone during the class.
• *Should/ought to*	• advice or obligation	• You should exercise daily. • We ought to respect our elders.
• *Will/would*	• future certainty or polite request	• I will call you tomorrow. • Would you like some tea?

- **Explain key rules to use modals**
  o Modals are always followed by the base form of the main verb.
    Correct: She can sing.
    Incorrect: She can sings.
  o Modals do not change form for different subjects.
    Correct: He must go. / They must go.
    Incorrect: He must goes.
  o Modals do not take "-s", "-ed", or "-ing" forms.

- Ask students to pair up. In each pair, students will take turns asking and answering questions using different modals. Each pair will get a scenario to role-play.
  Example - Planning a Group Project
- **Student 1**: You are a team leader. Ask your team members about their roles, deadlines, and expectations for the project.
- **Student 2**: You are a team member. Ask about the project goals, your responsibilities, and any support you need.

Example Questions:

Team Leader: "Can you complete the research by Friday?"

Team Member: "I should be able to do that. What do you need me to focus on?"

Team Leader: "You must submit the draft by the end of the week."

Team Member: "Should I include the background research in my part?"

Scenarios:
  o **Scenario 1**: You are at a restaurant. One person is the waiter, and the other is the customer. Use modals for asking about the menu and making requests.
  o **Scenario 2**: You are a teacher and a student. The student asks for permission to leave early, and the teacher gives advice on how to improve study habits.
  o **Scenario 3**: You are the store cashier and customer at a grocery store. Ask about prices, discounts, and the total amount.
  o **Scenario 4**: You are the librarian and customer. Help the customer find books, check if the books are available, and offer information about the library's services.
  o **Scenario 5**: You are the patient and doctor. Ask the doctor about your symptoms, possible treatments, and what you should do to recover.
  o **Scenario 6**: You are the technician and customer. Ask the technician to fix your computer and how much time repair will take because it is not turning on.
  o **Scenario 7**: You are the job interviewer and candidate. Ask the candidate about previous job experience.
  o **Scenario 8**: You are hotel receptionist and guest. Ask if there are any rooms available with sea view and cost per night.
  o **Scenario 9**: You are parent and child. Ask the parent if you can go out to play after finishing homework.
  o **Scenario 10**: You are teacher and student. Ask the teacher to help you with a math problem.

Activity 3 Analytical Paragraph Writing

35 mins

Instructions

- The following table shows details about the internet activities for six categories for different age groups. Write an analytical paragraph for the table given in around 150-200 words.

Internet Activities by Age Group

Activity%	Teens	20s	30s	40s	50s	60s	70+
Get News	76	73	76	75	71	74	70
Online games	81	54	37	29	25	25	32
Downloads	52	46	27	15	13	8	6
Product research	0	79	80	83	79	74	70
Buying a product	43	68	69	68	67	65	41
searching for people	5	31	23	23	24	29	27

UNIT: 4	**Assessment**	35 mins

Section A (Literature)

Choose the correct answer from the given options-

1. What did the headmaster of Einstein's school tell his father?
   a) Einstein would never make a success at anything.
   b) Einstein would be a successful musician.
   c) Einstein would become a teacher.
   d) Einstein would be a great success.

2. What was Einstein highly gifted in?
   a) Literature and history
   b) Mathematics and physics
   c) Music and art
   d) Philosophy and economics

3. What is the speaker planning to do in the poem "The Lake Isle of Innisfree"?
   a) Go on a vacation
   b) Start a farm
   c) Go to the city for work
   d) Build a small cabin in Innisfree and live there

4. What does the speaker hear when standing on the roadway or pavements in the poem "The Lake Isle of Innisfree"?
   a) The sound of birds chirping
   b) The sound of the lake water lapping by the shore
   c) The sound of people talking
   d) The sound of wind blowing through the trees

Read the following extracts and answer the following questions-

Extract 1

At the urging of a colleague, Einstein wrote a letter to the American President, Franklin D. Roosevelt, on 2 August 1939, in which he warned: "A single bomb of this type . . . exploded in a port, might very well destroy the whole port together with some of the surrounding territory." His words did not fail to have an effect. The Americans developed the atomic bomb in a secret project of their own and dropped it on the Japanese cities of Hiroshima and Nagasaki in August 1945.

5. What was the result of Einstein's letter to President Roosevelt?

_____
_____
_____
_____
_____
_____
_____

Extract 2

And I shall have some peace there, for peace comes dropping slow
Dropping from the veils of the morning to where the cricket sings;
There midnight's all a glimmer, and noon a purple glow,
And evenings full of the linnet's wings.

6. What is full of the linnet's wings in the poem?

    _____
    _____
    _____
    _____

7. What did Einstein call his desk drawer at the patent office? Why?

    _____
    _____
    _____
    _____
    _____

8. Why does the world remember Einstein as a "world citizen"?

    _____
    _____
    _____
    _____
    _____
    _____
    _____

9. Do you think Innisfree is only a place, or a state of mind? Does the poet actually miss the place of his boyhood days?

    _____
    _____
    _____
    _____
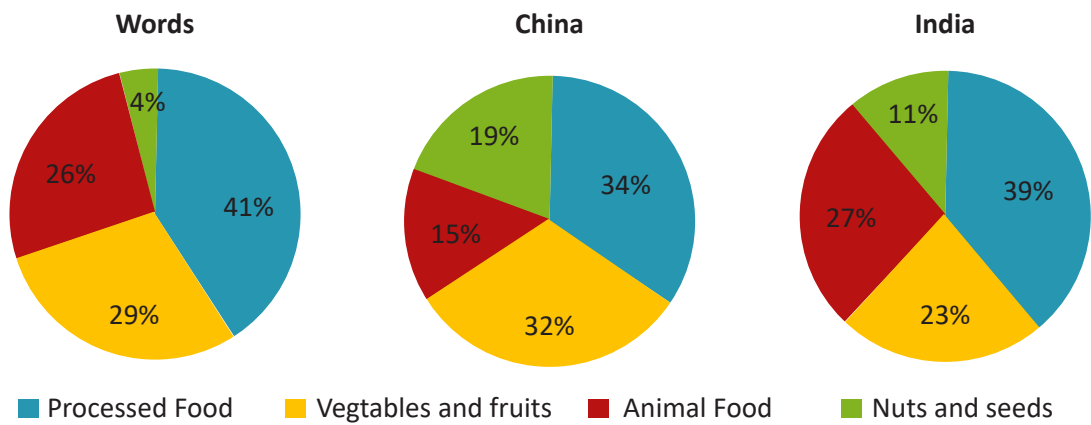   _____
    _____
    _____

Section B (Grammar)

Fill in the blanks with the correct modal verb (can, could, will, would, should, may, might, must):

1. You _____ study harder if you want to pass the exam.
2. She _____ speak three languages fluently.
3. _____ you please help me with this project?
4. He _____ be at the office right now; I saw him leave earlier.
5. You _____ bring your umbrella, it looks like it might rain.

Section C (Writing)

Below given are three pie charts showing consumption habits of India, China and World overall in 2008. Write an analytical paragraph describing the pie charts (100-120 words).

Words

4%

26%

41%

29%

China

19%

34%

15%

32%

India

11%

39%

27%

23%

■ Processed Food   ■ Vegtables and fruits   ■ Animal Food   ■ Nuts and seeds

| UNIT: 3 | Answer Key | 39 |

Section A (Literature)

1. a)
2. b)
3. d)
4. b)
5. The result of Einstein's letter to President Roosevelt was that it helped spur the development of the atomic bomb by the United States. After receiving the letter, Roosevelt took the warning seriously and initiated the secret Manhattan Project, which ultimately led to the creation of the atomic bomb. This bomb was dropped on the Japanese cities of Hiroshima and Nagasaki in August 1945, contributing to the end of World War II.
6. In the poem, "evenings full of the linnet's wings" refers to the peaceful and serene atmosphere of the evening, as imagined by the speaker. The image of "linnet's wings" suggests a sense of freedom, tranquility, and natural beauty, enhancing the calmness of the evening described in the poem.
7. In the story "A Truly Beautiful Mind," Einstein referred to his desk drawer at the patent office as his "thinking desk." He did so because, despite working at the patent office, he often used this time to think about scientific ideas.
8. The world remembers Einstein as a "world citizen" because of his strong belief in global peace, his support for the rights of individuals, and his advocacy for democracy and human rights. Despite his fame as a scientist, Einstein was deeply concerned with social and political issues. He spoke out against nationalism, militarism, and injustice, and worked towards the betterment of humanity. He also supported the establishment of the League of Nations and later, the United Nations. His humanitarian efforts and commitment to global well-being earned him the title of "world citizen.
9. In "The Lake Isle of Innisfree," Innisfree can be interpreted as both a place and a state of mind. While it is a real place in the poet's boyhood memories, it also represents an idealised space of peace and solitude that the poet yearns for. The poet expresses a deep desire to escape the noise and busyness of urban life and seeks the tranquil haven of Innisfree, which symbolises inner peace and harmony. The poet does indeed miss the place of his boyhood days. He longs for the simplicity and serenity he associates with Innisfree, where he imagines living in harmony with nature, surrounded by the peaceful sounds of the natural world.

Section B (Grammar)

1. You **should** study harder if you want to pass the exam.
2. She **can** speak three languages fluently.
3. **Could** you please help me with this project?
4. He **can't** be at the office right now; I saw him leave earlier.
5. You **may** bring your umbrella; it looks like it might rain.

Section C (Writing)

Since creative writing tasks are subjective in nature, the answers will vary from student to student. Some aspects to consider while evaluating analytical passage writing are:

10. Does the paragraph start with a clear and focused topic sentence?
11. Does the paragraph go beyond summary and show critical thinking?
12. Does the paragraph stay focused on one main idea?
13. Are linking words or phrases used effectively to connect ideas (e.g., furthermore, in contrast, this shows that)?
14. Is there a variety of sentence structures and vocabulary?
15. Does the paragraph end with a sentence that summarizes or reinforces the main point?
16. Does it offer a concluding thought or insight based on the analysis?

UNIT : 5
Chapters- The Snake and the Mirror, A Legend of the Northland

Activity 1 Life in a Hill Village

35 mins

Instructions

- Print out the following passage and distribute them in groups or write the passage on the board.
- Read out the passage for the students once and if required explain the passage in the local language.
- Divide the class into 4-5 groups.
- Ask them to read the passage and then discuss in their groups about their daily routine in the village. What do they do in the morning, afternoon, and evening? The discussion can be based on the following questions-
  o What time do you wake up?
  o What chores or work do you help with?
  o How do you go to school?
  o What do you do after school?
  o How do you spend your evening?

Life in a Hill Village

Nestled among the green hills of Meghalaya, the village wakes up slowly with the first light of dawn. The air is fresh and crisp, carrying the scent of wildflowers, wet soil, and burning firewood. Small wooden houses with tin roofs stand neatly along narrow, winding paths. Smoke rises gently from chimneys as families begin their morning chores. In the distance, the sound of a cock crowing echoes across the valley, followed by the gentle hum of life beginning.

Children walk to school along stone paths lined with moss, greeting elders with respectful smiles and soft "khublei" wishes. Women in jainkyrshahs tend to work in kitchen gardens, picking fresh herbs and vegetables, while men head out to the fields or forests. The hills around the village are thick with pine and bamboo, and crystal-clear streams flow nearby, their water as cold as the morning air. Though life is simple here, it is peaceful, connected to nature, and rich with tradition—a place where community matters and every sunset paints the sky in quiet beauty.

- Now ask them to write a short paragraph (about 50–60 words) about their daily life in the village.
- At the end, ask the groups to read out the paragraphs and correct them wherever needed.

Activity 2 · Reported Speech Chain

35 mins

Instructions

- Discuss with the students on Direct and Indirect Speech.
- Give some examples.

	Direct Speech	Indirect Speech
Example 1	"I am going to the market," said Priya.	Priya said that she was going to the market.
Example 2	"Can you help me with my homework?" asked Rahul.	Rahul asked if I could help him with his homework.

- Explain the rules for transforming sentences from direct to indirect speech.
- You may refer to the note given below.

Teachers' notes

- **Change of Pronouns**
  - Pronouns in direct speech often change to match the perspective of the reporting speaker.
    Direct: She said, "I am happy."
    Reported: She said (that) she was happy.
- **Tense Shift**
  - When the reporting verb is in the past tense, the tense in the reported speech usually shifts back.

Change in Tense	Direct Speech	Reported Speech
Present Simple → Past Simple	*He said, "I eat apples."*	*He said (that) he ate apples.*
Present Continuous → Past Continuous	*She said, "I am working."*	*She said (that) she was working.*
Present Perfect → Past Perfect	*He said, "I have finished my homework."*	*He said (that) he had finished his homework.*
Past Simple → Past Perfect	*She said, "I visited Paris."*	*She said (that) she had visited Paris.*

  - **No Change of Tense** in the following cases:
    - If the reporting verb is in the **present tense** or refers to a universal truth.
      Direct: He says, "The Earth orbits the Sun."
      Reported: He says (that) the Earth orbits the Sun.
- **Changes in Time and Place References**
  - Words indicating time and place may change:
    - **Now →** Then
    - **Today →** That day
    - **Tomorrow →** The next day / Following day
    - **Yesterday →** The previous day

- o **Here → There**
  Example:
  Direct: He said, "I will go there tomorrow."
  Reported: He said (that) he would go there the next day.
- **Reporting Questions**
  - o For **Yes/No questions**, use **if** or **whether**:
    Direct: She asked, "Are you coming?"
    Reported: She asked if I was coming.
  - o For **Wh- questions**, the question word is retained:
    Direct: He asked, "Where do you live?"
    Reported: He asked where I lived.
    Remember! – Word order in reported questions is like a statement (subject + verb), not like a question.
- **Reporting Imperatives**
  - o Imperatives are reported with **to + base verb** for affirmative commands and **not to + base verb** for negatives:
    Direct: She said, "Close the door."
    Reported: She told me to close the door.
    Direct: He said, "Don't shout."
    Reported: He told me not to shout.

- **Modals in Reported Speech**
  - o Some modal verbs change:

    Example:
    Direct: She said, "I can swim."
    Reported: She said (that) she could swim.
  - o Modals like **could**, **might**, **should**, and **would** usually stay the same.
- **No Reporting Changes for Certain Verbs**
  - o Verbs like **say**, **tell**, and **ask** are used with different structures:
    - **Say** doesn't take an object:
      Direct: She said, "I am ready."
      Reported: She said (that) she was ready.
    - **Tell** requires an object:
      Direct: She told me, "I am ready."

- Form a circle or line with the students.
- Begin by whispering a sentence in direct speech to the first student.

Example:
"Riya said, 'I love playing football.'"
- o That student changes it to reported speech and says it aloud to the next student.
  "Riya said that she loved playing football."
- o The next student creates a new direct sentence (based on anything they like) and whispers it to the next person, who then reports it.
- o Keep the chain going around the circle.

Activity 3 Analytical Paragraph

35 mins

Instructions

- Draw both timetables on the board – one for school days and one for holidays.
- Explain the schedules – briefly go over each time slot and activity in both tables, highlighting how students spend their time on school days versus holidays.
- Ask students to observe and analyse – encourage them to focus on the differences in routine, use of time, balance between study and leisure, and overall structure.
- Writing Task: Ask the students to write an analytical paragraph (150–200 words) comparing the two schedules. They should include:
  o Key differences in how time is spent
  o The balance between study, play, and rest
  o Which schedule they find more effective or enjoyable, and why

School days

Time	Activity
5:30 am – 6:00 am	Wake up and freshen up
6:00 am – 6:30 am	Morning exercise
6:30 am – 7:30 am	Study/ Revision
7:30 am – 8:00 am	Breakfast
8:00 am – 2:00 pm	School
2:00 pm – 2:30 pm	Lunch
2:30 pm – 3:30 pm	Rest/Nap
3:30 pm – 5:00 pm	Homework/Study
5:00 pm – 6:00 pm	Outdoor play
6:00 pm – 7:00 pm	Hobbies
7:00 pm – 8:00 pm	Dinner and family time
8:00 pm – 9:00 pm	Reading
9:00 pm	Sleep

Holidays

Time	Activity
6:30 am – 7:30 am	Wake up and freshen up
7:30 am – 8:00 am	Morning walk/Exercise
8:00 am – 8:30 am	Study/Reading
8:30 am – 9:00 am	Breakfast
9:00 am – 11:00 am	Hobbies/Creative work
11:00 am – 1:00 pm	Study/Homework
1:00 pm – 2:00 pm	Lunch & Rest
2:00 pm – 4:00 pm	Watch educational videos/Leisure reading
4:00 pm – 6:00 pm	Outdoor play
6:00 pm – 7:00 pm	Light study
7:00 pm – 8:00 pm	Dinner and family time
8:00 pm – 9:00 pm	Reading
9:00 pm	Sleep

- Encourage the students to draw clear comparisons, thoughtful observations, and proper paragraph structure.

| UNIT: 5 | Assessment | 35 mins |

Section A (Literature)

Choose the correct answer from the given options-

1. What was the homeopath doing before the snake incident occurred?
   a) He was cleaning his room.
   b) He was treating a patient.
   c) He had just returned from a restaurant after having dinner.
   d) He was sleeping in his bed.
2. Why did the narrator want to marry a fat woman doctor?
   a) He admired the medical profession.
   b) He believed a fat woman would be kind and caring.
   c) He thought she wouldn't be able to chase him if he made a mistake and ran away.
   d) He wanted someone who could help him with his studies.
3. What do the children in the Northland look like, according to the poem?
   a) Little snowmen
   b) Eskimos
   c) Bear's cubs
   d) Reindeer riders
4. Why did the woman not give away the tiny cake she baked?
   a) It was not baked properly.
   b) She wanted to eat it later.
   c) She thought it was too small to offer, yet too large to give away.
   d) She forgot about it and put it on the shelf.

Read the following extracts and answer the following questions-

Extract 1

I did not know anything for certain. What sex was this snake, was it male or female? I will never know; for the snake unwound itself from my arm and slowly slithered into my lap. From there it crept onto the table and moved towards the mirror. Perhaps it wanted to enjoy its reflection at closer quarters. I was no mere image cut in granite. I was suddenly a man of flesh and blood. Still holding my breath I got up from the chair. I quietly went out through the door into the veranda. From there I leapt into the yard and ran for all I was worth.

5. Describe the speaker's reaction and actions when the snake moved towards the mirror. What do these actions reveal about his state of mind?

_____
_____
_____
_____

Extract 2

She had a scarlet cap on her head,
And that was left the same;
But all the rest of her clothes were burned
Black as a coal in the flame.

6. What does the condition of the girl's clothes in the poem suggest about what happened to her, and why was only the scarlet cap left unchanged?

_____
_____
_____

Answer the following questions-

7. What two "important" decisions did the doctor make while he was looking into the mirror?

_____
_____
_____
_____

8. "The Snake and the Mirror" is a story about a frightening incident but narrated humorously. What makes it humorous?

_____
_____
_____
_____

9.   In the poem, *A Legend of the Northland*, why does the poet say that the children cannot understand the story?

_____
_____
_____
_____
_____

Section B (Grammar)

Change the following direct speech into reported speech:

1. She said, "I am going to the market now."
2. Rahul said, "My brother will help you with the homework."
3. The teacher said, "You must submit your assignment by tomorrow."
4. He asked, "Did you see the movie last night?"
5. Mother said to me, "Don't forget to take your umbrella."

Section C (Writing)

Study the table given below showing the global poverty rate over the years and the key contributing factors. Write an analytical paragraph analysing the global poverty trends and the reasons behind the change.

Year	Global Poverty Rate	Key Contributing factors
1990	36%	Lack of access to education, healthcare, and basic services.
2020	9%	Economic growth, improved education, healthcare reforms, international aid, and better infrastructure.
2023	8.5%	Poverty reduction programs, and investments in education, health, and job creation played a major role.

UNIT: 5	Answer Key

Section A (Literature)

1. c)
2. c)
3. c)
4. c)
5. The speaker's reaction and actions when the snake moves towards the mirror reveal a mixture of fear, confusion, and fascination. When the snake moves towards the mirror, the speaker describes it as if the snake is "enjoying its reflection at closer quarters." This suggests that the speaker is still in a state of shock and bewilderment, not entirely aware of his surroundings.
6. In the poem "A Legend of the Northland", the condition of the girl's clothes suggests that she had been punished for her greed. The poem describes how she was transformed into a woodpecker after she refused to give away her small cake to a poor man, even though she had plenty of food.
7. The two decisions were –
   a. To marry a woman doctor who was rich: The doctor decided that he would marry a woman doctor who had a lot of money and good medical practice.
   b. To avoid marrying a thin woman: The doctor decided that the woman he would marry should be fat, with the reason being that if he made a mistake and needed to run away, a fat woman would not be able to chase him.
8. In "The Snake and the Mirror", the frightening incident of the snake coiled around the doctor's arm is narrated humorously through the contrast between the seriousness of the situation and the doctor's comical reactions. Instead of focusing on the danger, the doctor is preoccupied with his appearance and thoughts about marrying a rich, fat woman to avoid being chased. His absurdly trivial concerns, like wondering about the snake's sex, add to the humour. The delayed, over-the-top reaction of the doctor—finally running away in a panic—creates an ironic and comedic contrast with the deadly situation he faces.
9. In the poem, *A Legend of the Northland*, the poet says that the children cannot understand the story because it is based in a distant, cold land where days are short, and nights are long. This is very different from what most children experience. Also, the story has a deeper moral about greed and generosity, which young children might not fully grasp. The poet may also mean that children are naturally innocent and generous, so they may not understand how someone could be so selfish. However, as people grow older, they often struggle with selfishness, making the poem's lesson more relevant to adults than to children.

Section B (Grammar)

1. She said that she was going to the market then.
2. Rahul said that his brother would help me with the homework.
3. The teacher said that I must submit my assignment by the next day.
4. He asked if I had seen the movie the previous night.
5. Mother told me not to forget to take my umbrella.

Section C (Writing)

Since creative writing tasks are subjective in nature, the answers will vary from student to student. Some aspects to consider while evaluating analytical passage writing are:

- Does the paragraph start with a clear and focused topic sentence?
- Does the paragraph go beyond summary and show critical thinking?
- Does the paragraph stay focused on one main idea?
- Are linking words or phrases used effectively to connect ideas (e.g., furthermore, in contrast, this shows that)?
- Is there a variety of sentence structures and vocabulary?
- Does the paragraph end with a sentence that summarizes or reinforces the main point?
- Does it offer a concluding thought or insight based on the analysis?

Learning Level Tracker

Keep a record of unit/chapter assessment results in the tracker.

As you conduct assessments based on the activities suggested, put a tick mark as per the following:

Level 1: Not able to solve problems and having difficulty comprehending the problem

Level 2: Solves most of the problems with external support

Level 3: Solves problems independently

Name of the School:		UDISE:	
Block:		District:	
Name of the Teacher:		Assessment Date:	

Class: 9		Subject: English		
		Unit: 5		
Roll No.	**Name of the Student**	Chapters:	1.The Snake and the Mirror	
			2. A Legend of the Northland	
		Level 1	Level 2	Level 3

UNIT : 6
Chapters : My Childhood, No Men Are Foreign

Activity 1 — A Decline in Reading Habits Among Students

35 mins

Instructions

- Print out the following passage and distribute them in groups or write the passage on the board.
- Read out the passage for the students once and if required explain the passage in the local language.
- Divide the class into 4-5 groups.
- Ask the students to read the passage.

A Decline in Reading Habits Among Students

A recent study conducted by the National Literacy Survey 2023 has highlighted a sharp decline in the reading habits of students aged 10 to 16 years. The survey covered over 5,000 students across different regions of India. It found that most students prefer spending their free time on screens rather than reading books.

According to the data, in 210, students read for an average of 60 minutes a day, but by 2023, that number had dropped to just 20 minutes. The study also found that only 25% of students read for pleasure, while 75% read only when required for schoolwork. The availability of smartphones, easy access to video content, and social media distractions are believed to be major reasons for this decline.

The decline in reading habits can have serious effects on students' language skills, imagination, and academic performance. Reading helps improve vocabulary, concentration, and critical thinking, all of which are essential for overall development. To reverse this trend, schools and parents should encourage regular reading through reading hours, library visits, and book clubs, helping students rediscover the joy of reading.

- After the reading session, ask the students to engage in a group discussion about a book or story they have read recently.
- Mention that they may choose to talk about the entire book or focus on one particular story from it.
  - Guide them to include the following points in their discussion:
  - The name of the book or story
  - The theme or main idea of the story
  - Why it is their favourite
  - One thing they liked the most about the story (e.g., a character, a twist, the writing style, etc.)
- After the group discussion, ask students to write a short paragraph (100–150 words) on the topic "My Favourite Book / Story."
- Instruct them to include the following points in their paragraph:
  - The name of the book or story
  - A summary of what it is about
  - What makes the story interesting (characters, plot, message, etc.)
  - Why they would recommend it to others

Activity 2 Determiners

35 mins

Instructions

- Begin the class by revising the concept of Determiners.
- Revise the type of Determiners which had already been discussed in the class.
- Introduce the class to the new types of Determiners.
- You can refer to the notes below.

Teachers' notes		
Introduce new types of determiners		
Numbers (one, two, first, second, etc.) - indicate the exact quantity or order.	**Distributives** (each, either, every, neither) - focus on individuals within a group.	**Interrogative determiners** (what, whose, which) - use these determiners in questions.
Example: He stood first in the class	Example: Each student must submit the project work by Monday.	Example: Whose bag is this?

- Divide the students into 4-5 groups.
- Write the four short paragraphs with blanks on the board or take printouts.
- Each group will have one paragraph with them. The group will discuss and fill up the blanks with suitable determiners.

Group 1

There were ____ (1) students who participated in the quiz competition. The ____ (2) round was the most difficult. Only ____ (3) teams made it to the finals. The ____ (4) team that won received a trophy and certificates.

Group 2

____ (1) student must bring their water bottle for the trip. ____ (2) of the two buses will stop for snacks. ____ (3) Students will be given a snack pack. Neither of the students should forget their ID card. ____ (4) student is responsible for their belongings.

Group 3

____ (1) subject do you find most interesting — Science or History? ____ (2) is your notebook with the drawings? ____ (3) student left their bag in the classroom? ____ (4) of the two topics would you like to present?

Group 4

There are ___ (1) reasons why I love this book. The ___ (2) chapter is my favourite. ___ (3) part of the story teaches an important lesson. ___ (4) of the characters do you relate to the most?

- Once they complete the activity, ask the groups to write a short paragraph using Numbers, Distributives and Interrogative Determiners.

- At the end, ask the group to share their activities with the class.

Activity 3 | Article Writing

35 mins

Instructions

- Start by discussing the importance of healthy eating for teenagers, especially in terms of growth, energy levels, and maintaining a balanced lifestyle.
- Highlight key areas like balanced meals, hydration, the importance of fruits and vegetables, limiting junk food, and the role of physical activity.
- Your discussion may include the following points.
  - **Importance of a balanced diet**: Why is it crucial for adolescents to maintain a balanced diet?
  - **Foods to include**: Which foods are essential for growth and development?
  - **Foods to avoid**: What are the harmful effects of junk food, sugary drinks, and processed snacks?
  - **Hydration**: Why is water important for teenagers, and how much should they drink?
  - **Meal planning**: How can teenagers plan meals to ensure they get the right nutrients?
  - **Role of exercise**: How does regular physical activity contribute to healthy eating habits?
- Divide the class into small groups of 3–4 students and ask them to write an article on **The Importance of Healthy Eating Habits for Teenagers**.
- Ask the group to follow the format given below.
  - **Introduction**: Briefly introduce why healthy eating is important for adolescents.
  - **Body**: Discuss the key factors of healthy eating such as a balanced diet, foods to eat and avoid, hydration, and the role of exercise.
  - **Conclusion**: Offer tips or suggestions for how adolescents can improve their eating habits.
- At the end, ask the groups to share their articles with the class.

UNIT: 6 Assessment

53

⏱ **35 mins**

Section A (Literature)

Choose the correct answer from the given options-

1. What quality of Abdul Kalam's father is highlighted in the passage?
   a) He was very wealthy
   b) He was well-educated
   c) He was wise and genero
   d) He was strict and disciplined

2. What was Abdul Kalam's first earning experience during the Second World War?
   a) Selling newspapers with his brother-in-law
   b) Collecting tamarind seeds and selling them at a local shop
   c) Helping his cousin distribute newspapers thrown from a moving train
   d) Working at a provision shop on Mosque Street

3. What does the poet mean by the line *"Is earth like this, in which we all shall lie"*?
   a) People should travel to different countries.
   b) The earth belongs only to the people of one nation.
   c) Everyone shares the same earth and meets the same end—death.
   d) Only soldiers lie on the ground during war.

4. What is the main theme of the poem "No Men Are Foreign**"**?
   a) Patriotism and love for one's own country
   b) The importance of war in defending nations
   c) Universal brotherhood and peace
   d) The glory of ancient civilizations

Read the following extracts and answer the following questions-

Extract 1

The whole country was filled with an unprecedented optimism. I asked my father for permission to leave Rameswaram and study at the district headquarters in Ramanathapuram. He told me as if thinking aloud, "Abul ! I know you have to go away to grow. Does the seagull not fly across the sun, alone and without a nest?" He quoted Khalil Gibran to my hesitant mother, "Your children are not your children. They are the sons and daughters of Life's longing for itself. They come through you but not from you. You may give them your love but not your thoughts. For they have their own thoughts."

5. What does this excerpt tell us about the influence Kalam's parents had on him during his youth?

_____
_____
_____
_____

Extract 2

It is the human earth that we defile.

Our hells of fire and dust outrage the innocence

Of air that is everywhere our own,

Remember, no men are foreign, and no countries strange.

6. What does the poet mean by *"It is the human earth that we defile"* and how does it relate to the theme of the poem?

   _____
   _____
   _____

   Answer the following questions-

7. Who were Abdul Kalam's school friends? What did they later become?

   _____
   _____
   _____

8. How did the Second World War affect Kalam's life?

   _____
   _____
   _____

9. "...whenever we are told to hate our brothers ..." When do you think this happens? Why? Who 'tells' us? Should we do as we are told at such times? What does the poet say?

   _____
   _____
   _____

Section B (Grammar)

Choose the correct determiner and fill in the blanks-

1. ____ (Many / Much) people in our class are preparing for the science exhibition.
2. I have ____ (few / a few) books that can help you with your project.
3. ____ (This / These) apples on the table look delicious.
4. She doesn't have ____ (some / any) friends in her new school.
5. There is ____ (a little / little) water left in the bottle.

Section C (Writing)

Write an article on the topic: "The Importance of Mental Wellness Among Teenagers."

- In your article, discuss the following points:
  - What mental wellness means and why it matters for teenagers
  - Common mental health challenges faced by teens today (e.g., stress, anxiety, peer pressure)
  - How schools, families, and friends can support mental well-being
  - Tips for teenagers to take care of their mental health (e.g., exercise, sleep, seeking help)

UNIT: 6 Answer Key 55

Section A (Literature)

Choose the correct answer from the given options:

1. c)
2. c)
3. c)
4. c)
5. This excerpt shows that Kalam's parents supported his dreams, even if it meant letting him go. His father quoted Khalil Gibran: *"Your children are not your children... They come through you but not from you..."* — meaning children have their own identity and purpose. Parents can guide and love them, but they must allow them to think and grow independently. This belief helped Kalam follow his path with confidence.
6. The line "It is the human earth that we defile" means that when we engage in war, violence, or hatred, we are not harming just our enemies or other nations—we are damaging our own shared planet and humanity. The poet emphasizes that all humans live on the same earth, breathe the same air, and are connected by common experiences.
7. Abdul Kalam's school friends were Ramanadha Sastry, Aravindan, and Sivaprakasan. Ramanadha became the priest of the Rameswaram temple, Aravindan started a transport business for pilgrims, and Sivaprakasan became a catering contractor for Southern Railways.
8. The Second World War affected Kalam's life by creating new opportunities for work. During the war, there was a sudden demand for tamarind seeds, and Kalam began collecting and selling them, which gave him his first earnings. Later, when train services were stopped at Rameswaram, his cousin needed help distributing newspapers. Kalam took up the job and started earning a regular income. These experiences taught him the value of hard work, responsibility, and self-reliance at a young age.
9. This happens during times of war, conflict, or social and political unrest when people are divided by religion, caste, race, or nationality.
   Such hatred is often spread to create divisions and gain power or control. It benefits those who want to create fear or maintain authority.
   Leaders, politicians, the media, or those in power may try to influence us by spreading propaganda or false information.
   No, we should not. We must think for ourselves and choose peace over hatred.
   The poet reminds us that all people are the same — we share the same emotions, needs, and humanity. He urges us to reject hatred and live in harmony.

Section B (Grammar)

1. **Many** people in our class are preparing for the science exhibition.
2. I have **a few** books that can help you with your project.
3. **These** apples on the table look delicious.
4. She doesn't have **any** friends in her new school.
5. There is **a little** water left in the bottle.

Section C (Writing)

Since creative writing tasks are subjective in nature, the answers will vary from student to student. Some aspects to consider while evaluating article writing are:

- Are ideas logically organized and connected?
- Are vocabulary and expressions varied and suited to the topic?
- Are the grammar, punctuation, and spellings mostly, correct?
- Are examples or personal opinions used to make it more interesting?
- Are linking words and phrases (e.g., however, moreover, therefore) used to guide the reader?
- Does it reinforce the purpose or message of the article?
- Is the ending memorable, thoughtful, or thought-provoking?

Learning Level Tracker

Keep a record of unit/chapter assessment results in the tracker.
As you conduct assessments based on the activities suggested, put a tick mark as per the following:
Level 1: Not able to solve problems and having difficulty comprehending the problem
Level 2: Solves most of the problems with external support
Level 3: Solves problems independently

Name of the School:			UDISE:	
Block:			District:	
Name of the Teacher:			Assessment Date:	

Class: 9		Subject: English		
Roll No.	**Name of the Student**	Unit: 6		
		Chapters:	1. My Childhood	
			2. No Men Are Foreign	
		Level 1	Level 2	Level 3

Meghalaya Learning Enhancement Programme

Chapter 1 : Number Systems

Activity 1   Mystery Number Hunt

35 mins

Instructions

- Begin the class by asking students, "Have you ever wondered why some numbers can be written as simple fractions while others cannot?" To describe take an example of the number $\frac{3}{4}$ which is easy to write, but what about √2?
- Prepare small cards with various numbers. Ensure these numbers include examples of rational and irrational numbers (e.g., $\sqrt{2}$, π, $\frac{3}{4}$, 5, -7, 1.414, $\frac{22}{7}$). You may change the numbers.
- Hide these cards in different places around the classroom/school premises.
- Divide the class into small teams of 3-4 students each.
- Ask each team to find as many cards as they can.
- Once they find a card, they must decide whether the number is rational or irrational.
- For an extra challenge, ask them to identify which rational numbers have terminating or non-terminating decimals.
- At the end, discuss the correct answers with the class and explain why each number belongs to a specific category.

Activity 2   Real Number Relay

35 mins

Instructions

- Begin the class by a discussion on "Did you know that real numbers are all around us?"
  To explain you may use some examples like- from measuring distances to calculating time, they play a vital role in our lives. Today, we will learn to add, subtract, multiply, and divide real numbers through a fast-paced Real Number Relay!
- Divide the class into relay teams with 4-5 students in each.
- Each team member will solve one operation involving real numbers (addition, subtraction, multiplication, or division).
- Prepare a set of problems for each operation, such as: (You may change the problem)
  o   Simplify: √3 + 2√3
  o   Multiply: (√5) × (√20)
  o   Add: 2 + $\frac{3}{4}$
- One student from each team will solve the first problem and pass the solution to the next team member.

- The team that finishes solving all problems correctly and the fastest is declared the winner.
- After the activity, review the problems with the class to reinforce correct methods and solutions.
- Conclude by emphasising the importance of accurate calculations in real-life situations. Highlight how operations on real numbers are used in fields like engineering, physics, and daily activities like budgeting or shopping.

Activity 3 — Decimal Detective

35 mins

Instructions

- Ask the class, "Have you ever noticed how some decimals repeat forever while others stop?"

For instance, 0.333... goes on endlessly, while 2.5 stops after one decimal place. Today, we will become Decimal Detectives and learn to identify different types of decimal expansions!

- Write the following numbers on the board: (You may change the numbers)
  - o   0.333...
  - o   1.732...
  - o   2.5
  - o   3.14159...
- Ask the students to observe each number carefully.
- Guide them to classify the numbers as either terminating decimals, repeating decimals, or non-terminating and non-repeating decimals.
- Encourage students to explain their reasoning behind each classification.
- For additional practice, ask students to convert simple fractions (like $\frac{1}{8}$ or $\frac{7}{3}$ into decimal form and classify them accordingly.
- Discuss the answers and explain how these classifications relate to rational and irrational numbers.
- Conclude the activity by highlighting how rational numbers can either terminate or repeat, while irrational numbers have endless, non-repeating decimal expansions. Discuss practical uses, like how these numbers appear in scientific measurements and calculations.

Assessment

60 mins

Answer the following questions:

1. A rational number between $\sqrt{2}$ and $\sqrt{3}$ is:
   a) 1.9
   b) $\frac{(\sqrt{2}.\sqrt{3})}{2}$
   c) 1.5
   d) 1.8

2. An irrational number between 5 and 6 is:
   a) $\sqrt{(5+6)}$
   b) $\sqrt{(5-6)}$
   c) $\sqrt{(5\times6)}$
   d) None

3. Which of the following is an irrational?
   a) $\frac{\sqrt{4}}{\sqrt{9}}$
   b) $\frac{\sqrt{12}}{\sqrt{3}}$
   c) $\sqrt{7}$
   d) $\sqrt{81}$

4. $\sqrt{12} \times \sqrt{15}$ is equal to:
   a) 5
   b) $5\sqrt{6}$
   c) $6\sqrt{5}$
   d) 6

5. The value of $\frac{322}{5}$ is:
   a) 2
   b) 4
   c) 16
   d) 14

6. A square has an area of 72 m². Find the length of its side in decimal form rounded to two decimal places.

7. Find three different irrational numbers between the rational numbers $\frac{5}{7}$ and $\frac{9}{11}$.

8. Evaluate $\frac{271}{3}$

9. If a = $\sqrt{3}$ and b = 4, find the value of:
   a) a² + b²
   b) (a + b) ²

10. Express 0.454545... as a fraction.

Answer Key

1. (c) 1.5
2. (c) √(5x6)
3. (c) √7
4. (c) 6√5
5. (b) 4
6. Length of side = √72 ≈ 8.49 (Approximating the square root to two decimal places.)
7. The given two rational numbers are $\frac{5}{7}$ and $\frac{9}{11}$.

   $\frac{5}{7}$ = 0.714285714…..

   $\frac{9}{11}$ = 0.81818181……

   Hence, the three irrational numbers between $\frac{5}{7}$ and $\frac{9}{11}$ can be:

   0.720720072000…

   0.730730073000…

   0.808008000…

8. $\frac{271}{3}$ = 3 (Since 3 × 3 × 3 = 27.)
9. Solution:

   a) $a^2 + b^2 = (\sqrt{3})^2 + 4^2 = 3 + 16 = 19$

   b) $(a + b)^2 = a^2 + b^2 + 2ab = 3 + 16 + 2(\sqrt{3} \times 4) = 19 + 8\sqrt{3}$
10. Let x = 0.454545…

    100x = 45.4545…

    100x - x = 45

    99x = 45

    $x = \frac{45}{99} = \frac{5}{11}$

Learning Level Tracker

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Level 3: Solves problems independently

Name of the School:		UDISE:
Block:		District:
Name of the Teacher:		Assessment Date:

Class: 9		Subject: Maths		
		Chapter: Number Systems		
Roll No.	Name of the Student	Level 1	Level 2	Level 3

Chapter 2 : Polynomials

Activity 1 — The Mystery of Missing Numbers

30 mins

Instructions

- Begin the class with some ice-breaking questions such as
  "Have you ever thought about how equations describe patterns in the real world?"
- Ask the students to think of a number pattern. Then ask them what if we could represent it using algebra?
- The teacher will write different algebraic expressions on the board, such as:
  - $2x + 3$
  - $5x^2 + 4x - 6$
  - $7xy + 3y$
  - 8
- Each group will receive flashcards containing algebraic expressions. Their task is to classify them as polynomials or not and determine their degree.
- After discussion, each group will present their findings.
- Teacher will correct any misconceptions and highlight key learning points.

Activity 2 — The Zero Hunt

35 mins

Instructions

- Start the class with a brief discussion on 'What if I told you that finding the zeroes of a polynomial is like solving a detective mystery?"
- The teacher will write a few polynomials on the board, such as:
  - $x^2 - 4$
  - $x^2 + 5x + 6$
  - $x^3 - 3x^2 - 4x + 12$
- Students will be asked to work in pairs to determine the zeroes of each polynomial using factorisation or the trial method.
- Discuss the meaning of zeroes in real life, such as where a thrown ball hits the ground.
- Ask them to compare the zeroes to the points where the polynomial graph intersects the x-axis.

Activity 3 — Factorisation Maze

35 mins

Instructions

- Start the class by asking an ice-breaking question, such as
  "Have you ever played a maze game where you have to find the right path?"
- Teacher will provide students with different polynomials that can be factorised using different methods, such as:
  - o $x^2 + 7x + 10$
  - o $x^3 - 2x^2 - x + 2$
- Students will be asked to work through different factorisation techniques in groups, such as:
  - o Splitting the middle term
  - o Using algebraic identities
  - o Factorisation by grouping

  Teacher will support them in this process.
- After factorising, students will be asked to cross-check answers with peers and the teacher.

Assessment

66

🕐 **35 mins**

Answer the following questions:

1. Which of the following is a polynomial?
   a) 3x + 2
   b) √x + 5
   c) $\frac{1}{x}$
   d) 2x³ - x + 7

2. The degree of the polynomial 4x⁵ - 3x³ + 2x² - 7 is:
   a) 2
   b) 3
   c) 4
   d) 5

3. Which of the following is an algebraic identity?
   a) (a - b)² = a² - 2ab + b²
   b) a² + b² = (a + b)²
   c) a³ - b³ = (a - b) (a² - b²)
   d) None of the above

4. If (x - 3) is a factor of the polynomial x² - 7x + 12, then one of its zeroes is:
   a) 2
   b) 3
   c) 4
   d) 5

5. The factorisation of x² - 16 is:
   a) (x + 4) (x - 4)
   b) (x - 4) (x - 4)
   c) (x + 16) (x - 16)
   d) None of the above

6. Obtain an example of a monomial and a binomial having degrees of 82 and 99, respectively.

7. Evaluate the following using suitable identity (102)³

8. Observe the value of the polynomial 5x – 4x² + 3 at x = 2 and x = –1.

9. Compute the perimeter of a rectangle whose area is 25x² – 35x + 12.

10. Factorise 64m³–343n³.

Answer Key

1. (a) 3x + 2

   A polynomial does not contain square roots, negative exponents, or division by variables. √x + 5 and 1/x are not polynomials.

2. (d) 5

   The degree of a polynomial is the highest power of the variable. Here, the highest exponent is 5.

3. (a) $(a – b)^2 = a^2 - 2ab + b^2$

   This is a standard algebraic identity. The others are incorrect or incomplete formulas.

4. (b) 3

   If (x - 3) is a factor, then x = 3 is a root of the polynomial.

5. (a) (x + 4) (x - 4)

   This is a difference of squares:

   $x^2 - 16 = (x–4)(x+4)$

6. An example of a monomial having a degree of 82 = x^{82}

   An example of a binomial having a required degree of 99 = $x^{99} + 7$

7. We can write 102 as 100+2

   Using identity, $(x+ y)^3 = x^3 +y^3 +3xy(x+ y)$ $(100+2)^3 = (100)^3 +2^3 +(3×100×2)(100+2) = 1000000 + 8 + 600(100 + 2) = 1000000 + 8 + 60000 + 1200 = 1061208$

8. Let the polynomial be $f(x) = 5x – 4x^2 + 3$

   Now, for x = 2, $f(2) = 5(2) – 4(2)^2 + 3 => f(2) = 10 – 16 + 3 = –3$

   The value of the polynomial $5x – 4x^2 + 3$ at x = 2 is -3.

   Similarly, for x = –1, $f(–1) = 5(–1) – 4(–1)^2 + 3 => f(–1) = –5 –4 + 3 = -6$

   The value of the polynomial $5x – 4x^2 + 3$ at x = -1 is -6.

9. Area of rectangle = $25x^2 – 35x + 12$

   We know the area of a rectangle = length × breadth

   So, by factoring $25x^2 – 35x + 12$, the length and breadth can be obtained.

   $25x^2 – 35x + 12 = 25x^2 – 15x – 20x + 12$

   $=> 25x^2 – 35x + 12 = 5x (5x – 3) – 4(5x – 3)$

   $=> 25x^2 – 35x + 12 = (5x – 3) (5x – 4)$

   Thus, the length and breadth of a rectangle are (5x – 3) (5x – 4).

   So, the perimeter = 2(length + breadth)

   Therefore, the perimeter of the given rectangle = 2[(5x – 3) + (5x – 4)] = 2(5x – 3 + 5x – 4) = 2(10x – 7) = 20x – 14

   Hence, the perimeter of the rectangle = 20x – 14

10. The expression $64m^3–343n^3$ can be written as

    $(4m)^3– (7n)^3$ $64m^3–343n^3 =(4m)^3–(7n)^3$

    We know that $x^3–y^3 = (x–y)(x^2+xy+y^2)$

    Thus, $64m^3–343n^3 = (4m)^3–(7n)^3$

    $= (4m-7n) [(4m)^2+(4m)(7n)+(7n)^2]$

    $= (4m-7n)(16m^2+28mn+49n^2)$

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Name of the School:		UDISE:	
Block:		District:	
Name of the Teacher:		Assessment Date:	

Class: 9		Subject: Maths		
Roll No.	Name of the Student	Chapter: Polynomials		
		Level 1	Level 2	Level 3

Chapter 3 : Coordinate Geometry

Activity 1 — Human Coordinate Plane

30 mins

Instructions

- Draw a large Cartesian plane on the classroom floor using chalk or tape. Label the **x-axis and y-axis** clearly.
- Mark the **origin (0,0)** at the centre where the two axes meet. Extend the axes with positive and negative markings.
- Divide the students into four groups and assign each group a **specific quadrant**.
- Distribute coordinate cards with different points like (3,4), (-2,5), (-4, -3), etc. to students.
- Ask each group to **walk and stand at their assigned coordinate** on the floor.
- Have students observe patterns in each quadrant by noting the signs of x and y. For example, in Quadrant I, both x and y are positive (e.g., (3,4)), while in Quadrant III, both are negative (e.g., (-4, -3)). Ask them to describe these patterns.
- Now, change one coordinate in their pair and ask them to move accordingly. For instance, change (3,4) to (3, -4) and observe that the point moves from Quadrant I to Quadrant IV, and discuss:
  - o   What happens when only the y-coordinate changes? (The point reflects across the x-axis.)
  - o   What if only the x-coordinate changes? (The point reflects across the y-axis.)
  - o   What if both coordinates change signs? (The point moves diagonally across the origin.)
- Conclude the activity by emphasizing that the Cartesian plane helps in precise positioning, which is crucial in navigation (GPS systems), mapping (city grids), and computer graphics (image transformations).

Activity 2 — Mapping the Classroom

30 mins

Instructions

- Assign the centre of the classroom as the origin (0,0) and mark it clearly with chalk. Use a long scale or tape to extend imaginary x and y axes across the room, adding evenly spaced markings (e.g., every 1 or $\frac{1}{2}$ meter) to help measure distances accurately.
- Ask students to identify objects in the room (e.g., blackboard, teacher's desk, fan, door).
- Students measure distances of objects from the origin and record them as (x, y) coordinates.
- Write these coordinates on the board and ask students to plot them on graph paper.
- Have students compare their graphs and verify accuracy.
- Discuss how this relates to real-world mapping, city planning, and GPS systems.

- Wrap up by explaining how coordinates help locate places precisely. Navigation apps like Google Maps use a global coordinate system called latitude and longitude, similar to our x and y axes. Every place on Earth has a unique coordinate, and GPS devices use satellites to calculate your exact position based on these coordinates, enabling accurate navigation.

Activity 3 — Find Your Partner (Matching Coordinates)

30 mins

Instructions

- Prepare **two sets** of cards:
  o   One set with **coordinate points** written on them (e.g., (3,2), (-1,4), etc.).
  o   Another set with **pre-drawn graphs** marking the same points.
- Distribute one card to each student—half of the students receive a coordinate card (e.g., (3,2)), while the other half receive a graph paper card with a pre-drawn point matching one of the coordinates.
- Students must walk around the classroom to find their matching partner—the student with the graph card that correctly represents their coordinate. For example, if a student has (3,2), they must find the student whose graph has a point plotted at (3,2). If they choose incorrectly, they should recheck and correct their match.
- Once paired, each student must explain **why the coordinate is correct**.
- If a student picks the wrong match, ask them to correct themselves.
- Once all pairs are formed, draw a large Cartesian plane on the floor and ask each pair to stand at their corresponding coordinates. This will help them visualize how every point has a unique location.
- Wrap up the activity and discuss how each point's uniqueness is crucial in fields like astronomy (locating stars in space), architecture (precise building measurements), and robotics (programming movements based on coordinates).

Assessment

71

35 mins

Answer the following questions:

1. The coordinates of a point in the second quadrant are always:
   a) (+, +)
   b) (-, -)
   c) (-, +)
   d) (+, -)

2. The x-coordinate of any point on the y-axis is always:
   a) 0
   b) 1
   c) -1
   d) y - coordinate

3. What is the point of intersection of x-axis and y-axis called?
   a) Axis Centre
   b) Midpoint
   c) Origin
   d) None

4. If a point lies on the x-axis, its y-coordinate is always:
   a) Equal to x
   b) 0
   c) 1
   d) Negative

5. Which quadrant does (-3, -5) belong to?
   a) I
   b) II
   c) III
   d) IV

6. Name each part of the given plane formed by the Vertical and horizontal lines.

7. Write the mirror image of the given Point (2, 3) and (-4, -6) with respect to the x-axis.

8. How will you describe the table lamp position on your study table to another person?

Answer Key

1. (c) (-,+)
2. (a) 0
3. (c) Origin
4. (b) 0
5. (c) III
6. The vertical line is called the y- axis and the horizontal line is called the x-axis. And these form four quadrants.
7. The mirror image of the given Point (2, 3) is (2, -3) with respect to the x-axis. The mirror image of the Point (-4, -6) is (-4,6) with respect to the x-axis.
8. We use two lines, a perpendicular and a horizontal line, to describe the location of the table lamp on the study table. Using the horizontal and perpendicular lines as the X and Y axes of the table, respectively, and the perpendicular line as the Y axis. Consider the intersection of the X and Y axes in one of the table's corners as the origin. The table's length is now its Y axis, and its width is its X axis. Create a point by connecting the line from the origin to the table light. It is necessary to compute the Point's separation from the X and Y axes before expressing the results in terms of coordinates. The table lamp will be in the coordinates (x, y) because the Point is separated from the X- and Y-axis by x and y, respectively.

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Name of the School:		UDISE:		
Block:		District:		
Name of the Teacher:		Assessment Date:		

Class: 9		Subject: Maths		
Roll No.	Name of the Student	Chapter: Coordinate Geometry		
		Level 1	Level 2	Level 3

Chapter 5 : Euclid's Geometry

Activity 1 — Discovering Postulate Through Everyday Observation

⏱ **30 mins**

Instructions

- Begin the class by asking students, "Have you ever noticed that a straight stick, no matter how long or short, remains straight?".
- Distribute different objects like sticks, ropes, books, and sheets of paper.
- Instruct students to:
  o Compare the **edges of books and paper** to see if they are straight.
  o Stretch a rope and observe how it forms a **straight line**.
- Ask students to discuss and **write down observations** about straightness and parallelism.
- Relate findings to **Euclid's First Postulate**: "A straight line can be drawn from any point to any other point."
- By the end of the activity, discuss the importance of **axioms in mathematics and real life**, such as in **construction, engineering, and design**.

Activity 2 — The Postulate Challenge (Building Geometry Rules)

⏱ **30 mins**

Instructions

- Ask in the class, '"Have you ever wondered why all bridges or roads follow straight paths?"
- Divide the class into **five groups**, assigning each group **one Euclidean postulate**.
- Provide materials like **graph paper, rulers, and pencils**.
- Each group must:
  o **Draw and demonstrate their postulate** with real-life examples.
  o **Explain why their postulate is necessary** for geometry.
- Allow groups to **present their findings** to the class.
- Conclude by explaining how **Euclid's postulates laid the foundation for modern geometry and mathematics**. Discuss:
  o **Universality**: Euclid's postulates apply to all geometric constructions, from simple shapes to complex structures.
  o **Logical Deduction**: They form the basis for proving theorems and solving geometric problems systematically.
  o **Real-World Applications**: Roads, bridges, buildings, and even computer graphics rely on Euclidean principles for precise design and construction.
  o **Advancements in Mathematics**: Euclidean geometry paved the way for non-Euclidean geometries, which are essential in understanding space, relativity, and advanced physics.

Activity 3 | The Equal Weight Experiment

30 mins

Instructions

- Start with asking a situation in the class,
  "Imagine you have three bags of rice. If the first and second bag weigh the same, and the second and third bag also weigh the same, what can we conclude about the first and third bag?"
- **Provide three weighing scales** (or digital balances) and three identical objects. Label them as A, B, and C.
- **Ask students to weigh A and B together**. If they balance, it means A = B.
- **Now weigh B and C**. If they balance, it means B = C.
- **Finally, weigh A and C**. They will balance, proving that A = C.
- Tell them the activity they performed is nothing but the Euclid's Axiom:
  "Things which are equal to the same thing are equal to one another."
- Wrap up the activity by discussing:
  - o On how to relate this axiom to numbers: If 5 = 3+2 and 3+2 = 4+1, then 5 = 4+1.
  - o On how we can connect this to logical reasoning in algebra and daily life (e.g., money transactions, equal rankings in exams).

Assessment

76

35 mins

Answer the following questions:

1. Euclid's geometry is based on:
   a) Experiments
   b) Axioms and Postulates
   c) Calculations
   d) Measurement

2. A line segment has:
   a) Infinite length
   b) Two endpoints
   c) No endpoints
   d) One endpoint

3. The number of Euclid's postulates is:
   a) 3
   b) 4
   c) 5
   d) 6

4. The fifth postulate states that if a line meets two lines such that the sum of interior angles is less than 180°, then the two lines:
   a) Are perpendicular
   b) Will meet on the same side
   c) Will never meet
   d) Are parallel

5. A plane is defined as:
   a) A flat surface extending infinitely in all directions
   b) A closed shape
   c) A 3D figure
   d) A line with endpoints

6. What is an axiom?

7. How is a postulate different from an axiom?

8. It is known that x + y = 10 and that x = z. Show that z + y = 10.

9. Look at the given figure. Show that length AH > sum of lengths of AB + BC + CD.

10. If point C is called a mid-point of line segment AB. Prove that every line segment has one and only one mid-point.
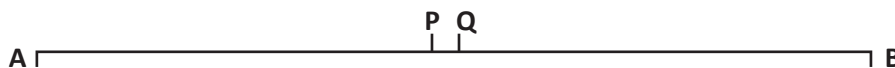
Answer Key

1. (b) Axioms and Postulates
2. (b) Two endpoints
3. (c) 5
4. (b) Will meet on....
5. (a) A flat surface.....
6. An axiom is a self-evident truth that does not require proof.
7. A postulate is an assumption specific to geometry, while an axiom is a general truth applicable to all mathematics.
8. According to the question, we have, x + y = 10 ... (i) and, x = z ...(ii)

   Applying Euclid's axiom, "if equals are added to equals, the wholes are equal"

   We get, From Eq. (i) and (ii) x + y = z + y ....(iii)

   From Eqs. (i) and (iii) we get, z + y=10
9. From the given figure, we have AB + BC + CD = AD [AB, BC and CD are the parts of AD] Since, AD is also the part of AH. AH > AD [∵ The whole is greater than the part]

   So, length AH > sum of lengths of AB + BC + CD.
10. Let, AB be the line segment Assume that points P and Q are the two different midpoints of AB.

    Therefore, AP=PB ....(1) and AQ = QB .....(2)

    Also, PB + AP = AB (as it coincides with line segment AB)

    Similarly, QB + AQ = AB.

    Now, Adding AP to the L.H.S and R.H.S of the equation (1)

    We get, AP + AP = PB + AP (If equals are added to equals, the wholes are equal.)

    ⇒ 2 AP = AB — (3)

    Similarly, 2 AQ = AB — (4)

    From (3) and (4), 2 AP = 2 AQ ⇒ AP = AQ

    Thus, we conclude that P and Q are the same points.

    This contradicts our assumption that P and Q are two different midpoints of AB.

    Thus, it is proved that every line segment has one and only one mid-point.

    Hence Proved.

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Name of the School:		UDISE:
Block:		**District:**
Name of the Teacher:		**Assessment Date:**

Class: 9		Subject: Maths		
		Chapter: Euclid's Geometry		
Roll No.	**Name of the Student**	Level 1	Level 2	Level 3

Chapter 6 : Lines and Angles

Activity 1   The Mystery of Opposite Angles

30 mins

Instructions

- Start with a question:

  "Hey students! Have you ever noticed the crossing of roads or zebra crossings? Or how windscreen wipers move and intersect?

  They form an interesting pattern! Have you ever thought about the angles formed when two lines intersect?"

- After asking the question, draw two intersecting lines on the board, forming four angles. Label them as ∠A, ∠B, ∠C, and ∠D.

- Let students draw the same in their notebook, two straight lines intersecting each other in any orientation they want.

- **Ask Students**: "Can we find any relation between these angles just by looking at them?"

- Give students protractors and ask them to measure all four angles in their notebooks.

- Let students compare the angles, guide them to note that opposite angles (∠A = ∠C and ∠B = ∠D) are always equal.

- Now the activity can be concluded by explaining that this is called the **Vertically Opposite Angles Theorem**, which states that when two lines intersect, the opposite angles are always equal.

- Wrap up by telly that the property is used in **construction, architecture, and even computer graphics** to ensure symmetry.

Activity 2   Human Angle Formation

30 mins

Instructions

- Engage with a Scenario:

  "Imagine you are holding a stick in your hand, and your friend is holding the other end. If you both stretch your arms straight, what angle do you form?"

- Let students form pairs by dividing the class into pairs. Ask each pair to stretch their arms to form different angles.

- Demonstrate a Liner Pair by asking two students to stand side by side with their arms forming two adjacent angles.

- Measure the angles using a protractor to measure the angles they form. Let them note the sum of both angles.

- **Observe the Result**: The sum of two adjacent angles on a straight line is **always 180°**.

- **Explain the Concept**: Highlight that this is the **Linear Pair Axiom**, which states that two adjacent angles on a straight line always add up to 180°.
- Wrap up the activity telling this property helps in **designing bridges, ramps, and even car steering mechanisms**.

Activity 3 | The Secret Code of Parallel Lines

30 mins

Instructions

- Set the scenario:
  " Have you ever looked at staircase railings? The handrails are always parallel! But what happens when the vertical bars (transversal) cut across them?"
- On the board, draw two parallel lines and a transversal cutting across them.
- Let some of the students help in labelling the eight angles formed, then ask students to identify angles that seem equal.
- Use coloured chalks/markers/pens to mark:
  o **Corresponding Angles** (same position on each parallel line)
  o **Alternate Interior Angles** (Z-shaped angles)
  o **Co-interior Angles** (C-shaped angles, adding up to 180°)
- **Confirm with Protractors**: Ask students to verify by measuring angles.
- Explain the rule by introducing the three angle properties:
  o Corresponding angles are **equal**
  o Alternate interior angles are **equal**
  o Co-interior angles **add up to 180°**
- Wrap up by explaining the role of these properties in **map-making, designing railways, and even 3D animation!**

Assessment

Answer the following questions:

1. If two angles form a linear pair, their sum is:
   a) 90°
   b) 180°
   c) 360°
   d) 45°

2. If two lines are cut by a transversal and the alternate interior angles are equal, the lines are:
   a) Perpendicular
   b) Parallel
   c) Intersecting
   d) None

3. In a triangle, if two angles are 45° and 75°, the third angle is:
   a) 60°
   b) 90°
   c) 120°
   d) None

4. The exterior angle of a triangle is always equal to:
   a) Sum of adjacent interior angles
   b) Sum of opposite interior angles
   c) Double the largest interior angle
   d) Half the sum of all interior angles

5. Which angles are equal in parallel lines with a transversal?
   a) Adjacent angles
   b) Alternate interior angles
   c) Co-interior angles
   d) None of these

6. If one angle of the triangle is equal to the sum of the other two angles, then the triangle is?

7. The angles of a triangle are $(x + 10)°$, $(x + 40)°$ and $(2x – 30)°$. Find the value of x.

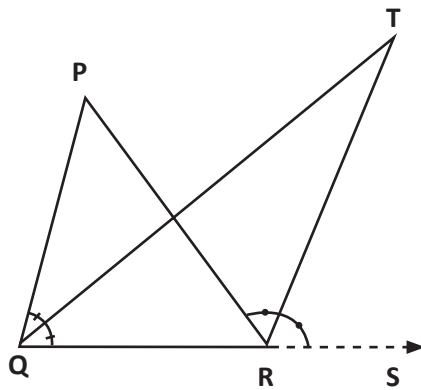8. The angles of the triangle are in the ratio 5: 3: 7. The triangle is?
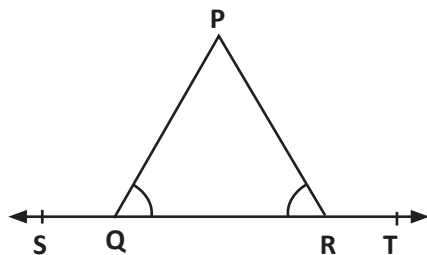
9. In the following figure, if AB || DE, ∠CDE = 53°, find ∠DCE.
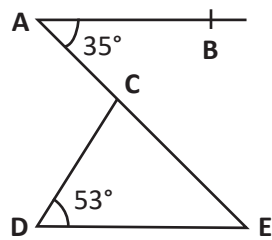
10. In figure, the side QR of ΔPQR is produced to a point S. If the bisectors of ∠PQR and ∠PRS meet at point T, then prove that
∠QTR = $\frac{1}{2}$ ∠QPR.

Answer Key

1. (b) 180°
2. (b) Parallel
3. (a) 60°
4. (b) Sum of opposite interior angles
5. (b) Alternate interior angles
6. We suppose the angles of △ABC be ∠A, ∠B and ∠C

   Given, ∠A= ∠B+∠C …(equation 1)

   But, in any △ABC, Using the angle sum property, we have, ∠A+∠B+∠C=180o …(equation 2)

   From equations (eq1) and (eq2), we get ∠A+∠A=180o ⇒2∠A=180o ⇒∠A=180o/2 = 90o ⇒∠A = 90o

   Thus, we get that the triangle is a right-angled triangle.
7. ∵ The sum of the angles of a triangle is 180°

   ∴ (x + 10)° + (x + 40)° + (2x − 30)° = 180°

   ⇒ (4x + 20)° = 180° ⇒ 4x = 160° ⇒ x = 40°
8. As per the question, The angles of the triangle are in the ratio of 5 : 3: 7

   Let the ratio 5:3:7 be 5x, 3x and 7x

   Using the angle sum property of the triangle, 5x + 3x +7x =180 ⇒15x=180⇒ x=12 Putting the value of x, i.e., x = 12, in 5x, 3x and 7x

   we have, 5x = 5×12 = 60⇒ 3x = 3×12 = 36 7x = 7×12 = 84

   As all the angles are less than 90, the triangle will be an acute-angled triangle.
9. ∵ AB || DE and AE is a transversal.

   ∴ ∠DEC = ∠EAB (Alternate interior angles)

   ⇒ ∠DEC = 35°

   In Δ CDE,

   ∠DCE + ∠CDE + ∠DEC = 180° (∵ The sum of the angles of a triangle 180°)

   ⇒ ∠DCE + 53° + 35° = 180°

   ⇒ ∠DCE + 88° = 180°

   ⇒ ∠DCE = 180° − 88° = 92°
10. ∵ ∠TRS is an exterior angle of ΔTQR.

    ∴ ∠TRS = ∠TQR + ∠QTR ……………… (1)

    [∵ An exterior angle of a triangle is equal to the sum of its two interior opposite angles.]

    ∴ ∠PRS is an exterior angle of ΔPQR.

    ∴ ∠PRS = ∠PQR + ∠QPR ……………. (2)

    (∵ An exterior angle of a triangle is equal to the sum of its two interior opposite angles)

    ⇒ 2∠TRS = 2∠TQR + ∠QPR (∵ QT is the bisector of ∠PQR and RT is the bisector of ∠PRS)

    ⇒ 2(∠TRS − ∠TQR) = ∠QPR ……………… (3)

    From (1),

    ∠TRS − ∠TQR) = ∠QTR …………… (4)

    From (3) and (4), we obtain

    2∠QTR = ∠QPR ⇒ ∠QTR = $\frac{1}{2}$ ∠QPR

Learning Level Tracker

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Name of the School:			UDISE:		
Block:			**District:**		
Name of the Teacher:			**Assessment Date:**		

Class: 9		Subject: Maths		
		Chapter: Lines and Angles		
Roll No.	**Name of the Student**	**Level 1**	**Level 2**	**Level 3**

Chapter 7 : Triangles

Activity 1 Angle Sum Mystery

30 mins

Instructions

- Begin the class by asking students, "Have you ever noticed how pizza slices form a shape? Do you think the angles inside every slice follow a rule?".
- Draw different triangles on the board and ask students to estimate their angles.
- Provide students with a sheet of paper and ask them to draw any **triangle**.
- Using a protractor, they should **measure each interior angle** and write down the values.
- Ask them to **add all three angles**.
- They should repeat this process for at least **three different triangles**.
- Discuss: "Did you all get 180°? What does this tell us?"
  Let students themselves
- Ask students to discuss and **write down observations** about straightness and parallelism.
- Wrap up the activity:
  - o And explain the **Angle Sum Property of a Triangle**: The sum of the interior angles of a triangle is always **180°**.
  - o Emphasizing on real-life applications as this property is used in **carpentry, architecture, and robotics** to ensure correct angle measurements.

Activity 2 Magic inside Congruent Triangles

30 mins

Instructions

- Ask in the class, '"If I tear a piece of paper into two identical parts, can I arrange them to match perfectly?"
- Show two cut-out triangles of different shapes ask them, "Do you think these two are identical?"
- Distribute graph paper and ask students to draw **two triangles of the same size**:
  - o   Instruct them to choose any three points on the graph paper and connect them to form a triangle.
  - o Then, guide them to redraw the exact same triangle by counting the squares and marking the same lengths for sides.
  - o Ensure they use a ruler to keep the dimensions precise.
  - o Once drawn, ask them to cut out both triangles and overlay them to check if they match exactly.
- If they match **exactly**, discuss **why**.
- Now, provide triangles where only **two sides and an angle** match (SAS) and discuss why they are congruent.

- Repeat for **SSS, ASA, RHS**, and ask them to **verify these rules with real drawings**.
- Wrap the activity by:
  - o Highlight the **importance of congruence in bridge-building, spacecraft design, and engineering**.
  - o Linking it to **rigid structures in architecture** where parts must fit perfectly.

Activity 3 The Bridge of Inequality

30 mins

Instructions

- Ask students in the class,
  "If you had three sticks of different lengths, could you form a triangle with any three of them?"
- Give each group **three straws** of different lengths and ask them to try forming a triangle.
  - o Allow students to experiment with different combinations of three straws.
  - o Some combinations will form a triangle, while others won't.
  - o Encourage them to test different sets to observe when a triangle is possible.
- In some cases, they won't be able to form a triangle. Ask them to measure and **add two sides** to check if it's greater than the third side.
- Guide them to conclude the **Triangle Inequality Theorem**.
- Wrap up the activity by:
  - o Discussing how this rule helps in **construction, 3D modelling, and road design**.
  - o Telling how **Google Maps** and GPS rely on this concept to estimate **distances between locations**.

Assessment

87

35 mins

Answer the following questions:

1. A triangle in which two sides are equal is called:
   a) Scalene Triangle
   b) Equilateral Triangle
   c) Isosceles Triangle
   d) None

2. Which of the following is not a criterion for congruence of triangles?
   a) SAS
   b) ASA
   c) SSA
   d) SSS

3. If Δ ABC ≅ Δ PQR, then which of the following is not true?
   a) AC = PR
   b) BC = PQ
   c) QR = BC
   d) AB = PQ

4. In Δ PQR, if ∠R > ∠Q, then:
   a) QR < PR
   b) PQ < PR
   c) PQ > PR
   d) QR > PR

5. In Δ PQR, ∠R = ∠P and QR = 4 cm and PR = 5 cm. Then the length of PQ is:
   a) 2 cm
   b) 2.5 cm
   c) 4 cm
   d) 5 cm

6. In Δ ABC, BC = AB and ∠B = 80°. Calculate ∠A?

7. An angle is 140 more than its complement. Find its measure.

8. ABC is an isosceles triangle in which altitudes BE and CF are drawn to equal sides AC and AB respectively. Show that these altitudes are equal.
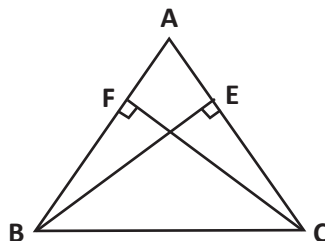
9. AD and BC are equal perpendiculars to a line segment AB. Show that CD bisects AB.
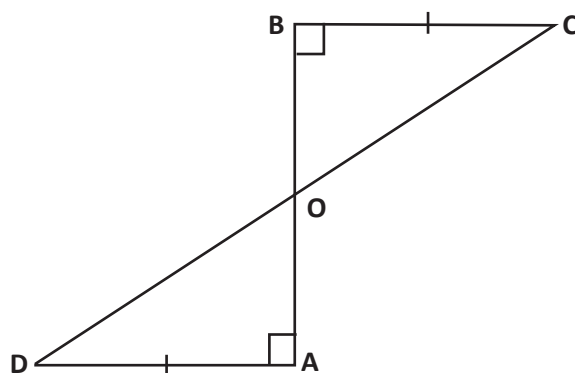
10. In the Figure, PR > PQ and PS bisect ∠QPR. Prove that ∠PSR > ∠PSQ.

Answer Key

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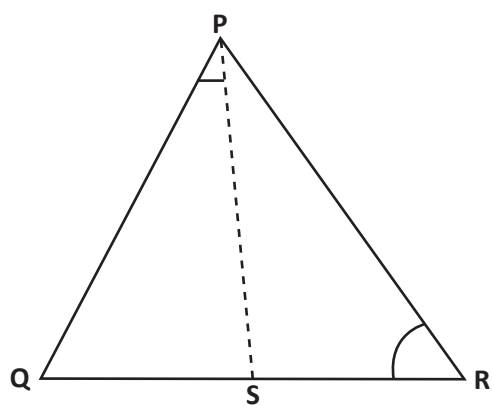
1. (c) Isosceles Triangle
2. (c) SSA
3. (b) BC = PQ
4. (c) PQ > PR (As in a triangle PQR, if ∠R > ∠Q, then PQ > PR, because the side opposite to the greater angle is longer.)
5. (c) 4 cm
6. By using the angle sum property of a triangle, we get

   $\Rightarrow x + 80° + x = 180° \Rightarrow 2x + 80° = 180° \Rightarrow 2x = 180° - 80° \Rightarrow 2x = 100° \Rightarrow x = 100°/2 = 50°$

   Therefore, ∠A = 50°.
7. Two angles whose sum equals 90 degrees are called complementary angles.

   let first angle =x, then it's Complement = 90°−x

   According to the question,

   $\Rightarrow x = 140 + 900 - x \Rightarrow x = 1040 - x \Rightarrow 2x = 1040 \Rightarrow x = 1040/2$

   $\therefore x = 520$
8. Given: (i) BE and CF are altitudes. (ii) AC = AB

   To prove: BE = CF

   Proof: Triangles ΔAEB and ΔAFC are similar by AAS congruency,

   since; ∠A = ∠A (common arm)

   ∠AEB = ∠AFC (both are right angles)

   AB = AC (Given)

   ∴ ΔAEB ≅ ΔAFC and BE = CF (by CPCT).
9. Given, AD and BC are two equal perpendiculars to AB.

   To prove: CD is the bisector of AB

   Proof: Triangles ΔAOD and ΔBOC are similar by AAS congruency Since:

   • ∠A = ∠B (perpendicular angles)
   • AD = BC (given)
   • ∠AOD = ∠BOC (vertically opposite angles)

   ∴ ΔAOD ≅ ΔBOC.

   So, AO = OB (by CPCT).

   Thus, CD bisects AB (Hence proved).
10. Given, PR > PQ and PS bisects ∠QPR

    To prove: ∠PSR > ∠PSQ

    Proof: ∠QPS = ∠RPS — (1) (PS bisects ∠QPR)

    ∠PQR > ∠PRQ — (2) (Since PR > PQ as angle opposite to the larger side is always larger)

    ∠PSR = ∠PQR + ∠QPS — (3) (Since the exterior angle of a triangle equals the sum of opposite interior angles)

    ∠PSQ = ∠PRQ + ∠RPS — (4) (As the exterior angle of a triangle equals to the sum of opposite interior angles)

    By adding (1) and (2) we get:

    ∠PQR + ∠QPS > ∠PRQ + ∠RPS

    Now, from (1), (2), (3) and (4), we get ∠PSR > ∠PSQ.

Chapter 10 : Heron's Formula

Activity 1 — The Lost Land

⏱ 35 mins

Instructions

- Make a scenario, "Long ago, in the mythical kingdom of **Shillong**, all the land was divided into triangular plots. One day, the royal map of Shillong was damaged in a storm, and the areas of many plots were lost."
  The King has called upon the most trusted team of **Royal Team of Mathematicians** (that's your team!) to **help calculate the areas** of these irregular triangular plots using only the **lengths of their sides**. No height is available — only the side measurements.
  Your mission is to use your mathematical skill to find **the lost land** of Shillong using *Heron's Formula*!
- Form the teams: Divide the class into 4–5 teams of "Royal Mathematicians".
- Before the activity, prepare "Plot Cards" with different side measurements (e.g., sides: 7 cm, 8 cm, 9 cm).
- During the activity, each team receives 2-3 of these plot cards.
- Use Heron's Formula: Recall and write the formula on the board; let students calculate the semi perimeter, plug the values into the formula and calculate the area of each triangular plot.
- Once a team finds the area, they write it on the board under their plot number (e.g., Plot 1: Area = 26.83 cm²).
- Bonus Challenge: Give one **"mystery triangle"** with very large or decimal side lengths and let students estimate or check if it can form a triangle (triangle inequality check).
- Wrap up the discussion and ask, "Why can't we use base × height here?"
  Emphasise how Heron's Formula is powerful when height isn't known, such as:
  - In **surveying irregular land.**
  - In **architecture** for triangular facades.
  - In **geography** when analysing maps.

Activity 2 — Market of Triangles – Buy Land, Measure Right!

⏱ 35 mins

Instructions

- Before class, prepare triangle "land deeds" – each a sheet with three side lengths of a triangle written (e.g., 5 cm, 6 cm, 7 cm), and assign each one a name like "Plot A", "Plot B", etc. You can make 6–8 unique cards depending on class size.
- Announce to students that they are **property investors in the Triangle Market**, and today's goal is to **buy land based on best area-to-cost ratio**. The twist: they only know the side lengths, not the area.
- Divide students into groups of 3–4. Distribute one plot deed to each group. Tell them they must calculate the **area using Heron's formula**.

- Remind them step-by-step:
    - Add all three sides, divide by 2 to get 's'.
    - Use Heron's formula: A = √(s(s-a) (s-b) (s-c))
- Give each plot a cost based on perimeter (say ₹10 per cm of perimeter). After calculating area and cost, ask each team to determine **Area per ₹1 spent**.
- Once all teams are done, have a "market discussion" — who got the best deal? Whose plot had the most land for the least cost?
- Wrap up by connecting this to **real estate, land buying, agriculture, and urban planning**, where buyers must decide value based on land area without always knowing the height or exact shape.

Activity 3 Guess the Triangle – A Strategic Game

35 mins

Instructions

- Before class, write 10 triangle descriptions on cards with **two sides and the area** written. The third side is **missing**.
  For example:
    - Triangle X: Side 1 = 5 cm, Side 2 = 6 cm, Area = 12 cm².
    - Triangle Y: Side 1 = 7 cm, Side 2 = 9 cm, Area = 26.8 cm².
- In class, announce: "Today we are **math detectives**! Your mission is to **find the missing side** of each triangle using Heron's Formula — backwards!"
- Divide students into small teams. Give each team one card at a time. Their task:
    - Assume a value for the third side.
    - Calculate the semi-perimeter and apply Heron's formula.
    - If the calculated area matches the given one, they've cracked the case.
- After one successful guess, they exchange the card for a new one. Keep score: teams earn 1 point per correctly "decoded" triangle.
- This will involve reverse logic, pattern observation, and even number sense. Encourage guesses within a realistic range — prompt with "Try values that form a valid triangle" or "What side would balance the triangle?"
- Conclude by discussing how **Heron's formula can be rearranged and used creatively in reverse problems**, just like in real-world fields like **forensics, archaeology, or astronomy**, where part of the data is missing.

Assessment

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1. If the perimeter of an equilateral triangle is 180 cm. Then its area will be:
   a) 900 cm²
   b) 900√3 cm²
   c) 300√3 cm²
   d) 600√3 cm²

2. The sides of a triangle are 122 m, 22 m and 120 m respectively. The area of the triangle is:
   a) 1320 m²
   b) 1300 m²
   c) 1400 m²
   d) 1420 m²

3. The sides of a triangle are in the ratio 12: 17: 25 and its perimeter is 540 cm. The area is:
   a) 1000 cm²
   b) 5000 cm²
   c) 9000 cm²
   d) 8000 cm²

4. The base of a right triangle is 8cm and the hypotenuse is 10 cm. Its area will be
   a) 24 cm²
   b) 40 cm²
   c) 48 cm²
   d) 80 cm²

5. The length of each side of an equilateral triangle having an area of 9√3 cm² is
   a) 8 cm
   b) 36 cm
   c) 4 cm
   d) 6 cm

6. The edges of a triangular board are 6 cm, 8 cm and 10 cm. The cost of painting it at the rate of 9 paise per cm² is?

7. The perimeter of an isosceles triangle is 32 cm. The ratio of the equal side to its base is 3: 2. Find the area of the triangle.

8. A rhombus-shaped field has green grass for 18 cows to graze. If each side of the rhombus is 30 m and its longer diagonal is 48 m, how much area of grass field will each cow be getting?

Answer Key

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1. b) 900√3 cm²
2. a) 1320 m²
3. c) 9000 cm²
4. a) 24 cm²
5. d) 6 cm
6. s = (6 + 8 + 10)/2 = 12 cm

   Hence, by using Heron's formula, we can write:

   A = √[12(12 − 6)(12 − 8)(12 − 10)] = √[(12)(6)(4)(2)] = √576 = 24 cm²

   Therefore, the cost of painting at a rate of 9 paise per cm² = 24 × 9 paise = Rs. 2.16

7. According to the question, The perimeter of the isosceles triangle = 32 cm

   It is also given that, Ratio of equal side to base = 3 : 2

   Let the equal side = 3x

   So, base = 2x Perimeter of the triangle = 32 ⇒ 3x + 3x + 2x = 32 ⇒ 8x = 32 ⇒ x = 4.

   Equal side = 3x = 3×4 = 12 and Base = 2x = 2×4 = 8

   The sides of the triangle = 12cm, 12cm and 8cm.

   Let a = 12, b = 12, c = 8 s = (a + b + c)/2 ⇒ s = (12 + 12 + 8)/2 = 32/2 = 16.

   Area of the triangle = √(s(s-a)(s-b)(s-c)) = √(16(16-12)(16-12)(16-8)) = √(16×4×4×8) = 32√2 cm ²

8. Draw a rhombus-shaped field first with the vertices as ABCD. The diagonal AC divides the rhombus into two congruent triangles which are having equal areas. The diagram is as follows.

   Consider the triangle BCD, Its semi-perimeter = (48 + 30 + 30)/2 m = 54 m Using Heron's formula, Area of the ΔBCD =

   A = √(s(s-a) (s-b) (s-c)) = √(54(54-48) (54-30) (54-30)) m² = √54x6x24x24 = 432m²

   ∴ Area of field = 2 × area of the ΔBCD = (2 × 432) m ² = 864 m ² Thus, the area of the grass field that each cow will be getting = (864/18) m ² = 48 m ²

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Name of the School:			UDISE:		
Block:			**District:**		
Name of the Teacher:			**Assessment Date:**		

Class: 9		Subject: Maths		
Roll No.	**Name of the Student**	Chapter: Heron's Formula		
		Level 1	Level 2	Level 3

Chapter 4 : Linear Equations in Two Variables

Activity 1 — Café XY – Create Your Own Menu Equation

30 mins

Instructions

- Begin the session by telling students they're setting up a small café. Today, they are creating a simple menu with **two items only** — say, sandwiches and juice.
- Before class, prepare slips with **different total bill values and individual prices** (e.g., Sandwich = ₹20, Juice = ₹10, Total Bill = ₹100).
- Divide students into groups. Give each group a card:
  "In your café, sandwiches cost ₹20, juice costs ₹10. A customer paid ₹100. What combinations of items could they have bought?"
- Ask students to let:
  - x = number of sandwiches
  - y = number of juices
- Guide them to form the equation: **20x + 10y = 100**
  Then, ask them to **find at least 3 combinations** (solutions) for the equation.
- Once they find combinations like (x=2, y=6), (x=3, y=4), etc., ask them to **plot those on a graph**. One group member can mark each point and draw the line.
- Have groups present their menu, their equation, and graph.
- Conclude by connecting this to **business and budgeting**, where one needs to **represent situations with equations**, understand constraints, and explore multiple valid combinations.

Activity 2 — Coordinate Walk: Be the Equation!

35 mins

Instructions

- Before class, tape or chalk a **large coordinate grid** on the floor. Label the axes clearly — positive and negative directions too.
- Tell students they're now part of a **GPS navigation system**, where their movement is guided by an equation.
- Call out an equation like **x + y = 4**
  Assign different students the role of (x, y) points — (0,4), (1,3), (2,2), etc.
- As you call each value, the students "walk" to their assigned coordinate on the grid and "stand" on the point. This forms a **line of people** — literally representing the equation!

- Ask the class to observe:
    - o Do they all lie in a straight line?
    - o What's common about all these points?
- Switch to another equation: **2x – y = 0** and repeat the process.
- Reflect by saying:
  "See how each equation is a rule that all these points must follow — and together, they form a line. That's why we call it a **linear equation**."

Activity 3 — Two Variables, One Story

35 mins

Instructions

- Start with storytelling:

  "Aldo is buying notebooks and pens. A notebook costs ₹15, and a pen costs ₹5. He spends ₹60 in total. What did Aldo buy?"

- Write this as:

  15x + 5y = 60, where
  x = number of notebooks,
  y = number of pens

- Ask students to turn this story into a **table of values** — trying combinations like (x=2, y=?), (x=1, y=?), etc., and **filling missing values**.

- Once they have multiple solutions, ask:

    - o What do these combinations mean in real life?
    - o Could Aldo have bought 3 notebooks and 3 pens? Check.

- Extend the challenge: give each group a **new "story"**:

    - o A person buys mangoes and bananas.
    - o A taxi charges a fixed base fare plus per km charge.
    - o A recipe uses a fixed ratio of two ingredients.

- Let students **create their own equations and tables**, then exchange with another group to **interpret and solve**.

- Conclude with the insight that **linear equations in two variables describe real-life transactions, ratios, purchases, and patterns.** They aren't just abstract math!

Assessment

🕐 **35 mins**

Answer the following questions:

1. The linear equation 3x-11y=10 has:
   a) Unique solution
   b) Two solutions
   c) Infinitely many solutions
   d) No solutions
2. The solution of equation x-2y = 4 is:
   a) (0,2)
   b) (2,0)
   c) (4,0)
   d) (1,1)
3. Find the value of k, if x = 1, y = 2 is a solution of the equation 2x + 3y = k.
   a) 5
   b) 6
   c) 7
   d) 8
4. The graph of linear equation x+2y = 2, cuts the y-axis at:
   a) (2,0)
   b) (0,2)
   c) (0,1)
   d) (1,1)
5. Any point on the line x = y is of the form:
   a) (k, -k)
   b) (0, k)
   c) (k, 0)
   d) (k, k)
6. The linear equation 2x – 5y = 7 has _____ solutions?
7. Find four solutions individually for the equation 2x + y = 7.
8. Draw the graph of the linear equation 3x + 4y = 6. At what points, the graph cuts X and Y-axis?

Answer Key

1. c) Infinitely many solutions
2. c) (4,0)
3. d) 8
4. c) (0,1)
5. d) (k, k)
6. The linear equation 2x-5y has infinitely many solutions.

   Because the equation 2x-5y = 7 is a single equation, that involves two variables. Hence, for different values of x, we will get different values of y and vice-versa.

   Therefore, infinitely many solutions.

7. For the four answers of 2x + y = 7, we replace different values for x and y

   Let x = 0 ⇒ 2x + y = 7 (2×0)+y = 7 y = 7 (0,7)

   Let x = 1 ⇒ 2x + y = 7 (2×1)+y = 7 2+y = 7 y = 7 − 2 y = 5 (1,5)

   Let y = 1 ⇒ 2x + y = 7 2x+ 1 = 7 2x = 7 − 1 2x = 6 x = 3 (3,1)

   Let x = 2 ⇒ 2x + y = 7 2(2)+y = 7 4+y = 7 y = 7 − 4 y = 3 (2,3)

   The answers are (0, 7), (1,5), (3,1), (2,3)

8. Given equation,

   3x + 4y = 6.

   We need at least 2 points on the graph to draw the graph of this equation,

   Thus, the points the graph cuts

   (i) x-axis

   Since the point is on the x-axis, we have y = 0.

   Substituting y = 0 in the equation, 3x + 4y = 6,

   We get,

   3x + 4×0 = 6

   ⇒ 3x = 6

   ⇒ x = 2

   Hence, the point at which the graph cuts x-axis = (2, 0).

   (ii) y-axis

   Since the point is on the y-axis, we have, x = 0.

   Substituting x = 0 in the equation, 3x + 4y = 6,

   We get,

   3×0 + 4y = 6

   ⇒ 4y = 6

   ⇒ y = 6/4

   ⇒ y = 3/2

   ⇒ y = 1.5

   Hence, the point at which the graph cuts y-axis = (0, 1.5).

   Plotting the points (0, 1.5) and (2, 0) on the graph.
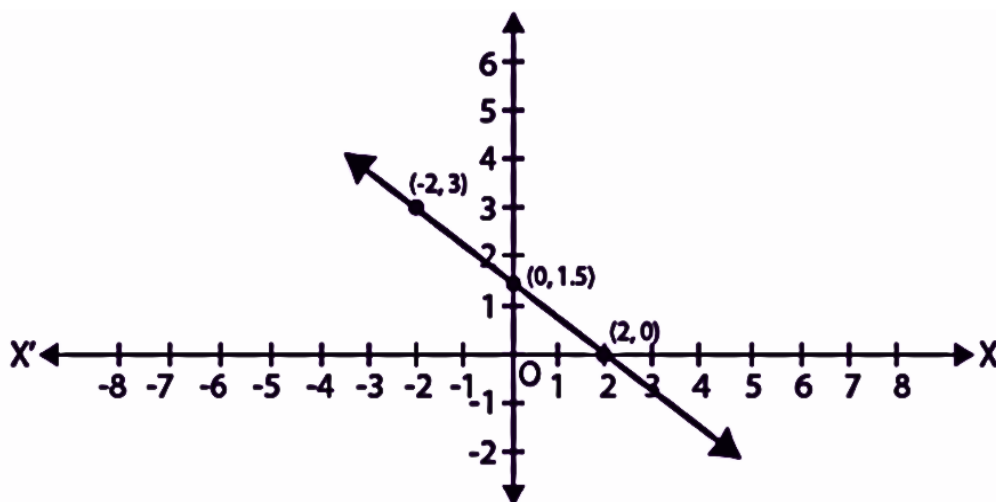
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Class: 9		Subject: Maths		
		Chapter: Linear Equations in Two Variables		
Roll No.	**Name of the Student**	Level 1	Level 2	Level 3

Chapter 8 : Quadrilaterals

Activity 1 — Shape Detective – The Missing Quadrilateral

30 mins

Instructions

- Start the session by saying:

  "Last night, someone stole a quadrilateral from the shape museum! The only clues we have are about the angles and sides… You need to find out which quadrilateral it was."

- Before class, prepare mystery clue cards. Each card gives **properties of a quadrilateral** but not the name. For example:
  - "All sides are equal, opposite angles are equal, but not right angles."
  - "Only one pair of opposite sides is parallel."
  - "Diagonals bisect each other and are equal."

- Divide students into small groups (3-4) and hand one clue to each group.

- Ask them to **read the clues, discuss, and deduce** which quadrilateral is being described.

- Once they guess, they must **draw it accurately** on a sheet and label the key properties.

- Groups present their shape, explain how the clues helped, and verify with other groups.

Conclude by connecting how understanding **properties of sides, angles, and diagonals** helps identify and distinguish different quadrilaterals in both geometry and real-life designs (tiles, windows, signs).

Activity 2 — Angle Architect – Complete the House

30 mins

Instructions

- Tell Students:
  "You've been hired as an architect to complete the design of houses with incomplete shapes. Your job is to use angle knowledge to figure out the missing measurements."

- Before class, prepare half-drawn quadrilaterals on sheets where **only 2 or 3 angles** are given, and students need to **find the missing one** using the property:
  - Sum of all angles in a quadrilateral = 360°

- Distribute sheets and let them work individually or in pairs to calculate the missing angles.

- Encourage them to **explain their thought process**, not just write the number.

- Extend the challenge:
  - Add real-life backstories: "This is the floor plan of a museum room…"
  - Ask: "Why must the final corner angle be what you got?"

Wrap up by reinforcing that in any quadrilateral — whether it's a table, door frame, or building — angles must logically add up to 360°, and each angle depends on the others

Activity 3 Human Quadrilateral – Form it with Friends!

30 mins

Instructions

- Begin with a fun physical setup. Say:
  "Today, you're not just learning quadrilaterals — you'll become one!"
- Take students outside or to an open space. Mark a centre point on the ground with chalk or tape.
- Divide the class into groups of 4. Each student will play the role of a **vertex** of a quadrilateral.
- Assign each group a specific quadrilateral to form: square, rectangle, parallelogram, trapezium, kite, etc.
- Guide them:
  - o Use measuring tapes or strings to make sure the **sides are accurate**.
  - o Use protractors to measure angles between students (this builds practical sense).
  - o Help them stretch strings across from opposite corners to act as **diagonals**.
- Ask each group to freeze in position. Now go group by group asking:
  - o "What's the length of this side?"
  - o "Are opposite sides equal?"
  - o "Do the diagonals bisect?"
- Switch roles and shapes, and rotate tasks so each student plays multiple roles.

Wrap up by showing that a **quadrilateral is not just a drawing but a structure with logic** in sides, angles, and symmetry — just like bridges, rooms, and road signs.

Assessment

1. A diagonal of a parallelogram divides it into two congruent:
   a) Square
   b) Parallelogram
   c) Triangles
   d) Rectangle

2. Which of the following is not true for a parallelogram?
   Opposite sides are equal
   Opposite angles are equal
   Opposite angles are bisected by the diagonals
   Diagonals bisect each other.

3. The quadrilateral formed by joining the mid-points of the sides of a quadrilateral PQRS, taken in order, is a rhombus, if
   a) PQRS is a rhombus
   b) PQRS is a parallelogram
   c) Diagonals of PQRS are perpendicular
   d) Diagonals of PQRS are equal.

4. A rhombus can be a:
   a) Parallelogram
   b) Trapezium
   c) Kite
   d) Square

5. A trapezium has:
   a) One pair of opposite sides parallel
   b) Two pairs of opposite sides parallel to each other
   c) All its sides are equal
   d) All angles are equal

6. What is a quadrilateral? Mention 6 types of quadrilaterals.

7. Is it possible to draw a quadrilateral whose all angles are obtuse angles?

8. Calculate all the angles of a quadrilateral if they are in the ratio 2:5:4:1.

9. A diagonal of a rectangle is inclined to one side of the rectangle at 25º. Find the acute angle between the diagonals.
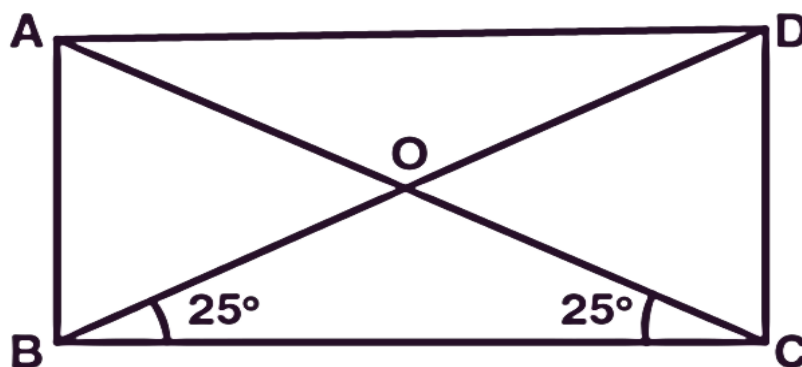
10. If the diagonals of a parallelogram are equal, then show that it is a rectangle.
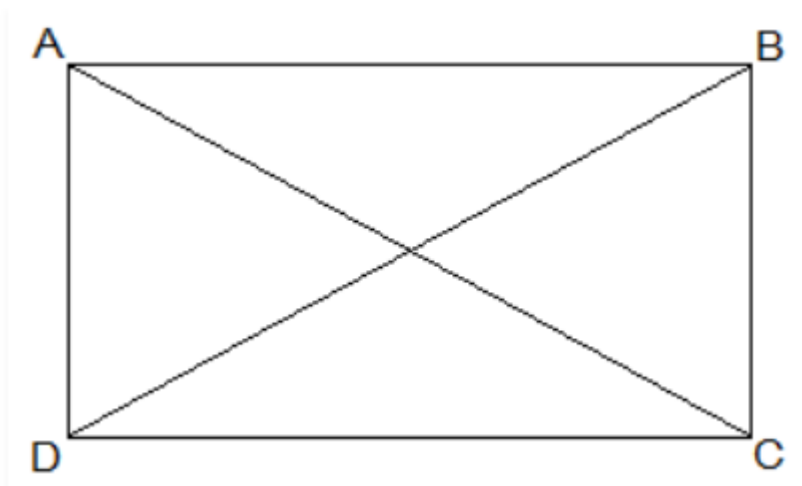
Answer Key

1. c) Triangles
2. c) Opposite angles are bisected by the diagonals
3. d) Diagonals of PQRS are equal.
4. d) Square
5. a) One pair of opposite sides parallel
6. A quadrilateral is a four-sided polygon with a closed shape. It is a two-dimensional geometric figure characterized by having four edges (sides) and four vertices (corners).

   Types: Rectangle, Square, Parallelogram, Rhombus, Trapezium, Kite.
7. It is known that the sum of angles of a quadrilateral is always 360°. To have all angles as obtuse, the angles of the quadrilateral will be greater than 360°. So, it is not possible to draw a quadrilateral whose all angles are obtuse angles.
8. As the angles are in the ratio 2:5:4:1, they can be written as- 2x, 5x, 4x, and x

   Now, as the sum of the angles of a quadrilateral is 360°, 2x + 5x + 4x + x = 360°

   Or, x = 30°

   Now, all the angles will be,

   2x =2 × 30° = 60° 5x = 5 × 30° = 150° 4x = 4 × 30° = 120°, and x = 30°
9. In a triangle BOC,

   ∠OBC = ∠OCB (Opposite angles of isosceles triangle)

   Therefore, ∠OBC + ∠OCB+∠BOC = 180º

   25º+25º + ∠BOC = 180º

   ∠BOC = 180º- 50º

   ∠BOC = 130º.

   By using the linear pair,

   ∠AOB + ∠BOC = 180º

   ∠AOB = 180º − 130º

   ∠AOB= 50º

Hence, the acute angle between the diagonals is 50º.

10. Given that,

AC = BD

To show that ABCD is a rectangle if the diagonals of a parallelogram are equal

To show ABCD is a rectangle, we have to prove that one of its interior angles is right-angled.

Proof,

In ΔABC and ΔBAD,

AB = BA (Common)

BC = AD (Opposite sides of a parallelogram are equal)

AC = BD (Given)

Therefore, ΔABC ≅ ΔBAD [SSS congruency]

∠A = ∠B [Corresponding parts of Congruent Triangles]

also,

∠A+∠B = 180° (Sum of the angles on the same side of the transversal)

⇒ 2∠A = 180°

⇒ ∠A = 90° = ∠B

Therefore, ABCD is a rectangle.

Hence Proved.

Learning Level Tracker

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Level 2: Solves most of the problems with external support

Level 3: Solves problems independently

Name of the School:		UDISE:
Block:		District:
Name of the Teacher:		Assessment Date:

Class: 9		Subject: Maths		
		Chapter: Quadrilaterals		
Roll No.	Name of the Student	Level 1	Level 2	Level 3

Meghalaya Learning Enhancement Programme

SCIENCE

Chapter 1 : Matter in our surroundings

Activity 1 **How small are particles of matter?**

35 mins

Materials Required

Turmeric powder , one glass of water , one large bowl of clear water and a small spoon

Instructions

- Take a glass of water and show it to the students (clear and transparent) and add a pinch of turmeric powder.
- Once the water changes colour, ask the students:
  a) What happened to the turmeric powder?
  b) Why does the colour of the water change to yellow?
- Explain that the colour spreads because tiny particles mix with water.
- Take 10 ml (about a small spoonful) of the coloured water and pour it into a bowl of clear water and stir it.
- Ask the students to observe the water. Ask the students if they see any change.
- Repeat the step once or twice more (taking water from the bowl and adding it to another clear bowl).
- Ask the students:
  a) Why does the water still change colour, even with so little added?
  b) Can we still see the original turmeric powder?
- Conclude by saying that the particles are so tiny that even a small amount spreads throughout the water.
- Further ask the students:
  a) Why does milk mix completely in water?
  b) Why does perfume spread in a room?
  c) Why do we smell bamboo shoot pickles from a distance?
- Guide them to understand that matter is made of tiny particles that are always moving and spreading.

Activity 2 — Diffusion – How do particles of matter move?

35 mins

Materials Required

Turmeric powder , two glasses/bowls of water (one with cold water, one with warm water) and a spoon

Instructions

- Take two glasses/bowls—one with cold water and one with warm water.
- Add the same amount of turmeric powder to both at the same time. Do not stir.
- Ask students to observe:
    o What do you see in each glass?
    o What is the difference between mixing of turmeric in hot and cold water?
- Discuss:
    o Why does turmeric mix slowly in cold water but quickly in warm water?
    o What do you think will happen if we use hot water?
    o Can you think of other examples where heat helps things mix faster (e.g., making tea or dissolving sugar)?
- Guide them to understand:
- Everything is made of tiny moving particles.
- The particles move because they possess kinetic energy.
- As the particles are continuously moving, intermixing of particles of two different types of matter happens on their own, known as diffusion. They do so by getting into the spaces between the particles.
- Heat increases the kinetic energy, speeding up particle movement, making diffusion faster.

Activity 3 — Compressibility test

35 mins

Materials Required

An empty plastic bottle, a filled water bottle and a solid object like chalk, eraser, or wooden stick

Instructions

- Divide students into small groups if possible.
- Ask students to press the following materials with their hands:
    i. An empty plastic bottle (loosely capped)
    ii. An empty plastic bottle with a tight cap

    iii. A filled water bottle

    iv. A chalk piece or eraser

- Ask students:
  - a) Which material changed shape the most?
  - b) Which material changed the least?
  - c) Which bottle was easier to squeeze?
  - d) Which bottle was harder to squeeze?
  - e) What happened to the water in the bottle?
- Discuss why some materials are easy to compress while others are difficult.
- Start by asking students: What is matter made of?

  Then, guide their thinking: Does compressibility depend on the particles themselves, or does their arrangement play a role?

- Explain that the arrangement of particles determines how easily a material can be compressed.
  - o **Gases** have more space between their particles, allowing them to be compressed easily.
  - o **Solids** have tightly packed particles, making them difficult to compress.
  - o **Liquids** fall in between—though their particles are close together, they can still flow and take the shape of their container.

  This difference in particle arrangement is what defines the **three states of matter**—solid, liquid, and gas.

Assessment

35 mins

Choose the correct answer:

1. Which of the following can be compressed easily?
    a) Water stored in a bamboo container
    b) A tightly closed plastic bottle
    c) Air inside an open plastic bottle
    d) A piece of wood from a Khasi pine tree

2. What happens when water is heated in a kettle?
    a) It evaporates and turns into steam
    b) It turns into ice
    c) It remains the same
    d) It becomes heavier

3. When ice melts, it changes into:
    a) Gas
    b) Water
    c) Solid
    d) Steam

4. Which state of matter has a definite shape and volume?
    a) Solid
    b) Liquid
    c) Gas
    d) Plasma

5. What causes condensation in the air?
    a) Heating of water vapour
    b) Cooling of water vapour
    c) Increase in pressure
    d) Expansion of gases

Answer the following:

6. Why is it easier to squeeze an empty plastic water bottle than a full one?
    _____
    _____

7. Why do gases diffuse faster than liquids?
    _____
    _____

8. What is sublimation? Name two substances that undergo sublimation.
    _____
    _____
    _____

9. Why do we feel cool when we apply acetone or perfume to our skin?

    _____
    _____
    _____

10. A vendor in Meghalaya is selling hot momos on a cold day. As he opens the steaming pot, you notice that water droplets form on the lid of the pot. After a while, the vendor removes the pot from heat, and the steam stops coming out. Explain why this happens using the change of form of matter.

    _____
    _____
    _____
    _____
    _____
    _____

Answer Key

1. c)
2. a)
3. b)
4. a)
5. b)
6. An empty plastic bottle is easier to squeeze because air inside can be compressed. In a full bottle, the water cannot be compressed, making it harder to squeeze. This is because liquids do not change their volume easily like gases.
7. Gases diffuse faster than liquids because their particles are farther apart and move more freely at higher speeds. The weaker intermolecular forces in gases allow them to spread out and mix more rapidly compared to liquids, where the particles are closer and experience stronger intermolecular attraction.
8. Sublimation is the process in which a solid directly changes into a gas without passing through the liquid state. This occurs when the substance has weak intermolecular forces. Examples of substances that undergo sublimation are camphor and ammonium chloride.
9. Acetone and perfume evaporate quickly due to their volatile nature. During evaporation, they absorb heat from the skin, leading to a cooling effect. This happens because the particles with higher energy escape first, reducing the overall temperature of the skin surface.
10. When the vendor opens the steaming pot, the hot steam rises and comes into contact with the cooler lid. As the steam cools down, it loses heat energy and undergoes condensation, turning back into water droplets on the lid. This happens because cooling causes water vapour to change from a gaseous state to a liquid state. When the pot is removed from heat, the temperature inside the pot drops, reducing the formation of steam, and eventually, condensation stops.

Learning Level Tracker

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Name of the School:		UDISE:	
Block:		District:	
Name of the Teacher:		Assessment Date:	

Class: 9		Subject: Science		
Roll No.	**Name of the Student**	Chapter: Matter In Our Surroundings		
		Level 1	Level 2	Level 3

Chapter 2 : Is matter Around us Pure

Activity 1 | Identifying Mixtures

35 mins

Materials Required

Salt, Mud, Small transparent containers, Spoons, Water, Torch

Instructions

- Divide students into small groups and distribute materials, including three transparent containers filled with water, salt, mud, and spoons.
- Instruct each group to mix salt into the first container and stir with a spoon until it dissolves completely.
- Ask students to observe and describe what happens to the salt after mixing.
- Instruct each group to mix mud into the second container and stir with a spoon.
- Ask students to observe what happens to the mud after mixing.
- Ask the following questions to guide observations:
  o What do you notice about the two mixtures?
  o Does the salt remain visible, or does it disappear?
  o Does the mud mix completely or settle down over time?
- Explain that saltwater forms a homogeneous mixture (a clear solution) and muddy water forms a heterogeneous mixture (with visible particles).
- Instruct students to draw labelled diagrams of both mixtures.
- Ask students to describe the visible properties of each mixture in their notebooks.
- Hand out torches to each group and instruct them to shine a light from the side through each container.
- Ask students to observe and discuss:
  o Can you see the light beam clearly inside the liquid?
  o Does the light pass through without scattering?
- Explain that in saltwater, light passes through without scattering because it is a true solution, whereas in muddy water, light scatters due to suspended particles, making it a colloid or suspension depending on particle size.
- Guide students to classify the mixtures based on their observations of light behaviour.

Activity 2 Understanding Saturation

35 mins

Materials Required

Salt, Small transparent containers, Spoons

Instructions

- Divide students into small groups and distribute the materials, including transparent containers, salt, spoons, and water.
- Instruct each group to fill three containers with the same amount of water (about half-full).
- Guide students to gradually dissolve salt in the containers:
  - *Add one spoon of salt to Container 1, stir for 30 seconds, and observe if it dissolves completely.*
  - *Add three spoons of salt to Container 2, stirring after each spoon, and observe if the water remains clear.*
  - *Add five spoons of salt to Container 3, stirring continuously, and note any changes in clarity.*
  - *Continue adding salt one spoon at a time until it no longer dissolves and settles at the bottom.*
- Ask students to classify the solutions based on their observations:
  - ***Unsaturated solution*** *– When the salt dissolves completely.*
  - ***Concentrated solution*** *– When more salt is added but still dissolves.*
  - ***Saturated solution*** *– When no more salt dissolves, and excess salt settles at the bottom.*
- Warm another transparent container of water using a gas burner.
- Add salt to the warm water while stirring and observe that more salt dissolves compared to the room-temperature container.
- Explain that heating increases the movement of water molecules, creating more space for salt to dissolve.
- Reinforce the idea that warm water can dissolve more solute than cold water, showing that solubility depends on temperature.
- Ask students to relate this to everyday examples, such as how sugar dissolves more easily in hot tea or coffee.
- Conclude the activity by explaining that solubility depends on the amount of solute a liquid can dissolve and is influenced by factors like temperature. Warmer water allows more solute to dissolve, demonstrating why substances like sugar dissolve faster in hot tea.

Activity 3   Understanding Tyndall Effect

35 mins

Materials Required

Honey, Milk, Wheat Flour, Spoons, Small transparent containers, Torch

Instructions

- Divide students into groups of 4-5 and provide each group with three transparent containers.
- Instruct each group to fill their containers with equal amounts of water (about half-full).
- Guide students to prepare three different mixtures:
  - o *Container 1 (Homogeneous Solution - No Tyndall Effect): Add one spoon of honey and stir well until it completely dissolves.*
  - o *Container 2 (Colloidal Solution - Shows Tyndall Effect): Add a small amount of milk to water and stir. The solution will appear slightly milky.*
  - o *Container 3 (Suspension - Visible Particles, No Clear Tyndall Effect): Add a spoon of wheat flour to water. Wheat flour does not fully dissolve and forms tiny particles that float around, making the water look cloudy.*
- Shine a torch from the side of **Container 1 (honey-water solution)** and observe how the light passes through without scattering.
- Shine the torch through **Container 2 (milk-water mixture - colloid)** and observe how the light beam is visible as a glowing path inside the liquid.
- Explain that this is the **Tyndall effect**, which happens because tiny milk particles scatter the light.
- Shine the torch through **Container 3 (wheat flour-water suspension)** and observe:
  - o If the torch is shined immediately, some scattering of light may be observed.
  - o However, unlike the colloidal mixture (milk + water), the light beam does not pass through smoothly. Instead, the mixture appears uneven, and the scattering is not uniform.
- Explain that this happens because wheat flour particles are much larger than colloidal particles and do not remain evenly distributed in the liquid.
- Ask students to think about the Tyndall effect and discuss where they have seen this phenomenon in daily life, such as sunlight passing through mist or a beam of light visible in a dark room with dust particles.
- Conclude the activity by explaining that the **Tyndall effect** is a characteristic property of colloids and helps differentiate them from true solutions and suspensions.

Assessment

Choose the correct answer:

1. Which of the following mixtures will show the Tyndall effect?

   a) Salt solution

   b) Sugar solution

   c) Milk

   d) Pure water

2. Which method is used to separate a mixture of salt and water?

   a) Filtration

   b) Sedimentation

   c) Evaporation

   d) Magnetic separation

3. The solubility of sugar in water increases when:

   a) The temperature decreases

   b) More water is added

   c) The solution is stirred and heated

   d) The water is cooled down

4. Which of the following is an example of a colloid?

   a) Soda water

   b) Blood

   c) Copper sulphate solution

   d) Sand in water

5. A student dissolves some solid substance in water, and no residue is left after stirring. This indicates the substance forms:

   a) A suspension

   b) A colloid

   c) A heterogeneous mixture

   d) A true solution

6. What is a heterogeneous mixture? Give one example.

   _____
   _____
   _____

7. Why does a solution of salt in water not show the Tyndall effect?

   _____
   _____
   _____

8. How is an element different from a compound? Give one example of each

   _____
   _____
   _____
   _____

9. How would you differentiate between a physical change and a chemical change? Give one example of each.

    _____
    _____
    _____

10. Lalboi, a student from Shillong, visited a roadside tea stall on a rainy evening. He noticed that when the tea seller added sugar to his black tea, it dissolved completely, making the tea sweet. Later, while walking home, Lalboi saw car headlights illuminating tiny dust particles in the misty evening air. Based on these observations, answer the following:

    a) Why does sugar dissolve completely in tea while wheat flour makes water cloudy?

    b) What scientific phenomenon is responsible for the tiny dust particles being visible in the car headlights? Explain why this happens.

    _____
    _____
    _____
    _____
    _____
    _____
    _____
    _____

Answer Key

1. c)
2. c)
3. c)
4. b)
5. d)
6. A heterogeneous mixture is a mixture in which the components do not mix uniformly and can be seen separately. Example: A mixture of mud and water.
7. A salt solution is a true solution in which the salt particles completely dissolve in water, making the solution transparent. Since the particle size is very small (less than 1 nm), it does not scatter light and hence does not show the Tyndall effect.
8. An element is made of only one kind of atom and cannot be broken down further, like oxygen (O_2). A compound consists of two or more elements chemically combined in a fixed ratio, like water (H_2O).
9. A physical change alters appearance without forming a new substance, like ice melting. A chemical change creates a new substance with different properties, like burning wood, which forms ash and smoke.
10. Lalboi's observations can be summed up as –
    a) Sugar dissolves in tea because it forms a homogeneous solution, while wheat flour forms a suspension, making water cloudy. This is due to differences in solubility and particle size.
    b) The Tyndall effect is responsible for making tiny dust particles visible in the car headlights. It occurs when light is scattered by small particles suspended in air.

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Name of the School:			UDISE:		
Block:			District:		
Name of the Teacher:			Assessment Date:		

Class: 9		Subject: Science		
Roll No.	Name of the Student	Chapter: Is Matter Around Us Pure		
		Level 1	Level 2	Level 3

Chapter 5 : The Fundamental Unit of Life

Activity 1 — Osmosis In Action

🕐 **35 mins**

Materials Required

Potatoes, 2 bowls, Salt, Water and Spoon

Instructions

- Introduce the concept of osmosis by explaining how water moves in and out of cells through a thin membrane.
- Divide the class into groups of 4-5 students and distribute materials.
- Provide each group with one potato cut into two equal halves.
- Instruct students to place one potato half in **Bowl A**, filled with plain water.
- Instruct students to place the other potato half in **Bowl B**, filled with saltwater (prepared by mixing 3-4 spoons of salt in water).
- Allow the potatoes to sit undisturbed for 15 minutes.
- After 15 minutes, ask students to touch and observe the changes in both potato halves.
- Guide students to record their observations:
  o The potato in **plain water (Bowl A)** becomes swollen and firm as water moves into its cells.
  o The potato in **saltwater (Bowl B)** shrinks and becomes soft as water moves out of its cells.
- Facilitate a discussion by asking:
  o Why did the potato in saltwater shrink?
  o Why did the potato in plain water swell?
- Connect osmosis to real-life examples by asking:
  o Why do plants wilt when they do not get water?
  o Why do people feel thirsty after eating salty food?
  o Why do vegetables release water when salt is sprinkled on them?
  o How do pickles shrink when stored in saltwater?
- Conclude the activity by explaining that osmosis is the movement of water through a semi-permeable membrane from a region of lower solute concentration to a region of higher solute concentration, and it plays a crucial role in maintaining water balance in living organisms.

Activity 2 — Cell City – Comparing a Cell to a City

35 mins

Materials Required

Notebook, Pencil, Crayons or Colour Pencils

Instructions

- Ask students:
    - o What are some important places in a city?
    - o Why do we need these places?
    - o Can we match these places' functions to a cell?
- Instruct students to draw a simple city map in their notebooks.
- Guide students to colour different parts of the city:
    - o **City Hall – Blue** (Controls everything)
    - o **City Wall/Gate – Brown** (Decides who enters/exits)
    - o **Power Station – Yellow** (Provides energy)
    - o **Food Factory – Green** (Makes food from sunlight)
    - o **Storage House – Red** (Stores water)
- Ask students to compare these city parts with cell organelles and label them on their city map:
    - o **City Hall → Nucleus** (Controls all functions of the cell)
    - o **City Wall/Gate → Cell Membrane** (Regulates entry and exit of substances)
    - o **Power Station → Mitochondria** (Produces energy for the cell)
    - o **Food Factory → Chloroplast** (Makes food using sunlight, present only in plant cells)
    - o **Storage House → Vacuole** (Stores water, nutrients, and waste)
- Instruct students to write one sentence explaining the function of each part.
- Facilitate discussion by asking:
    - o What is the most important part of the city?
    - o What happens if the Power Station stops working?
    - o What happens if there is no city gate?
    - o Why do only plant cells have a food factory (Chloroplast)?
- Conclude the activity by reinforcing that a cell functions like a city, with different organelles performing specific roles to keep it alive and working efficiently.

Activity 3 — Understanding Cell Structures

35 mins

Materials Required

Notebook and Pencil

Instructions

- Divide the students into groups and assign each student an organelle with a specific action to perform.
    - o **Nucleus (Leader)**: Gives instructions to other students.
    - o **Mitochondria (Energy Provider)**: Walks around clapping hands to "generate energy."
    - o **Cell Membrane (Gatekeeper)**: Decides who can enter or leave the play area.
    - o **Vacuole (Storage Unit)**: Holds a bag filled with objects (representing water and food).
- Instruct the class to work together to "run" as a functional cell, demonstrating how different organelles interact.
- Read out riddles, and ask students to guess the organelle:
    - o *"I am the control centre, like your brain. Who am I?" (Nucleus)*
    - o *"I provide energy, just like food. Who am I?" (Mitochondria)*
    - o *"I store things for later, like a fridge. Who am I?" (Vacuole)*
- Conclude the activity by emphasising that just like in a real cell, each organelle has a specific role, and they must work together for the cell to function properly.

Assessment

Choose the correct answer.

1. Which of the following organelles is known as the 'powerhouse of the cell'?
   a) Nucleus
   b) Mitochondria
   c) Ribosome
   d) Vacuole

2. The cell membrane is _____.
   a) Freely permeable
   b) Selectively permeable
   c) Impermeable
   d) Completely permeable

3. Which of the following structures is found only in plant cells?
   a) Mitochondria
   b) Ribosomes
   c) Chloroplast
   d) Golgi apparatus

4. Which organelle is responsible for packaging and transporting proteins in the cell?
   a) Endoplasmic Reticulum
   b) Golgi Apparatus
   c) Lysosome
   d) Nucleus

5. Which of the following statements about prokaryotic cells is correct?
   a) They have a well-defined nucleus
   b) They do not have membrane-bound organelles
   c) They have mitochondria
   d) They are larger than eukaryotic cells

Answer the following questions in brief.

6. Why is the plasma membrane called selectively permeable?
   _____
   _____
   _____

7. What will happen to a plant cell when placed in a hypertonic solution?
   _____
   _____
   _____

8. Differentiate between prokaryotic and eukaryotic cells with one example of each.

_____
_____
_____

9. Explain the role of lysosomes in a cell. Why are they called 'suicidal bags'?

_____
_____
_____

10. Draw a neat labelled diagram of a plant cell. Explain any three differences between plant and animal cells.

_____
_____
_____

Answer Key

1. a) Mitochondria
2. b) Selectively permeable
3. c) Chloroplast
4. b) Golgi Apparatus
5. b) They do not have membrane-bound organelles
6. The plasma membrane is called selectively permeable because it allows only certain molecules to pass in and out of the cell while preventing others from doing so.
7. When a plant cell is placed in a hypertonic solution, it loses water through osmosis, causing the cell membrane to shrink away from the cell wall. This process is called plasmolysis.
8. Difference between Prokaryotic and Eukaryotic Cells:

Feature	Prokaryotic Cell	Eukaryotic Cell
Nucleus	Absent	Present
Organelles	No membrane-bound organelles	Membrane-bound organelles present
Example	Bacteria	Plant and animal cells

9. Role of Lysosomes:
   - Lysosomes contain digestive enzymes that break down waste materials, old cell parts, and foreign substances.
   - They help in removing harmful materials from the cell.
   - They are called 'suicidal bags' because they can burst and release digestive enzymes, leading to the destruction of the cell when it is damaged or old.
10. Diagram of a Plant Cell: (Students should draw a neat labelled diagram of a plant cell.)

    Differences between Plant and Animal Cells:

Feature	Plant Cell	Animal Cell
Cell Wall	Present	Absent
Chloroplast	Present	Absent
Vacuole	Large and central	Small or absent

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Level 3: Solves problems independently

Name of the School:		UDISE:	
Block:		**District:**	
Name of the Teacher:		**Assessment Date:**	

Class: 9		Subject: Science		
Roll No.	**Name of the Student**	Chapter: The Fundamental Unit of Life		
		Level 1	Level 2	Level 3

Chapter 7: Motion

Activity 1 Map it Out!

35 mins

Materials Required

Measuring tape/Ruler, Stopwatch, Masking tape/Chalk, Chairs/Books/Bottles

Instructions

- Begin this activity after explaining the initial concept of Speed and Velocity.
- Create two tracks in the classroom floor or in any open space. One track will be a Straight Track without any obstacles and the other track will be Zigzag with obstacles like-chairs/books/bottles etc.
- Divide the students in 4-5 groups.
- Ask one student from each group runs through the straight track from start to end while another student runs through the zigzag track.
- Ask other students to measure the distance, displacement and time using a measuring tape and stopwatch for both tracks.
- Instruct each group to calculate and compare the speed and velocity and highlight that the distance travelled is longer for zigzag track, but displacement will be the same, thus speed changes but velocity might be similar.
- Lastly ask each group to discuss and draw a simple map of a town/village showing places like- Home, School, Market, Crossing, Friend's house etc.
- Then ask them to create a Day Journey e.g., Home → School → Market → Friend's House → Home and measure the distance travelled along the roads using ruler. Then find the total distance covered and the displacement.
- Conclude the activity by asking some interesting questions like- if they went Home → Friend's House only what would be the displacement and distance etc.

Activity 2 — Rolling a Race!

⏱ 35 mins

Materials Required

Small balls, Stopwatch, Measuring tape/Ruler, Big Cardboard/Wooden Board

Instructions

- Divide students into 3 groups.
- Distribute the materials (ball, stopwatch, measuring tape/ruler and cardboard/wooden board) to each group.
- Instruct each group to create a simple ramp by placing one end of a cardboard/wooden board on books and other end on the floor.
- Ask each group to mark distances (0.5 m, 1 m, 1.5 m, 2 m etc.) along the ramp using measuring tape/ruler.
- Place a ball at the top of the ramp and ask them to let it roll down, timing how long it takes to reach each marked distance.
- Ask them to repeat the previous step three times for accuracy and create a table to note down all the data.

Distance (m)	Time (s)	Speed (m/s)	Acceleration (m²/s)

- Conclude the activity by discussing is the speed constant or increasing? Highlight that if an object starting from rest and moving- is an Acceleration, also if an object speeding up or slowing down- is an Acceleration. Also explain how acceleration involves in our daily life.

Activity 3 Car on a Circular Track

35 mins

Materials Required

Toy car, Chalk/Rope/Tape, Stopwatch, Measuring Tape/Ruler

Instructions

- Divide the students into 3-4 groups.

- Instruct each group to create a circular track of 2-3 metres in diameter using chalk/rope/tape.

- Ask one student from each group to place a toy car at the starting point and push it so that it travels along the circular path at a constant speed.

- Other students will record the time for 1 complete revolution.

- Ask other students to measure the circumference of the track and calculate the speed.

- Discuss when the car moves at constant speed, it accelerates because the direction changes continuously.

- Conclude the activity by a question- What forces keep the car moving in a circle?

Assessment

Choose the correct answer:

1. If a car travels 100 km in 2 hours, its average speed is:
   a) 20 km/h
   b) 25 km/h
   c) 50 km/h
   d) 200 km/h

2. An object moving along a circular path has:
   a) Constant velocity
   b) Constant speed but changing direction
   c) Constant acceleration
   d) Uniform motion

3. Acceleration is:
   a) Always positive
   b) A change in position
   c) A change in velocity per unit time
   d) Equal to speed/time

4. An object is thrown vertically upwards. At the highest point, its:
   a) Speed is maximum
   b) Acceleration is zero
   c) Speed is zero
   d) Speed and acceleration both are zero

5. When a body moves with uniform acceleration, its velocity-time graph is:
   a) Curved line
   b) Zigzag line
   c) Horizontal line
   d) Straight line

6. Write the SI unit of speed.

7. What does the area under a velocity-time graph represent?

8. A bus starts from rest and accelerates uniformly at 2 m/s² for 5 seconds. Find its final velocity.

9. An object covers 10 m in the first second, 20 m in the second, and 30 m in the third. Is the motion uniform? Why?

10. A car travels from town A to town B, a distance of 100 km, in 2 hours. It then returns from town B to town A in 3 hours.
    a) What is the average speed of the entire journey?
    b) What is the average velocity of the entire

Answer Key

1. c)
2. b)
3. c)
4. c)
5. d)
6. m/s (metre per second)
7. Displacement or distance
8. $v = u + at = 0 + 2 \times 5 = 10 m/s$
9. No, because equal distances are not covered in equal time intervals.
10. **a)** Total distance = 100 + 100 = 200 km
    Total time = 2 + 3 = 5 hours
    Average speed = 200/5 = **40 km/h**
    b) Total displacement = 0 (start and end point same)
    Average velocity = 0/5 = **0 km/h**

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Class: 9		Subject: Science		
Roll No.	**Name of the Student**	Chapter: Motion		
		Level 1	Level 2	Level 3

Chapter 8: Force and Laws of Motion

Activity 1   Newton's first law with rolling ball

35 mins

Materials Required

Small ball, cardboard/wooden board, smooth and rough surface

Instructions

- Divide students into 4-5 groups.

- Distribute each group a small ball and cardboard/wooden board as a ramp. Instruct students to use classroom floor as a smooth surface and carpet/doormat as rough surface.

- Instruct the groups to set the cardboard/wooden board as a ramp at a small angle.

- Ask each group to place the ball at the top of the ramp and roll it down.

- Encourage all the students to observe how long the ball keeps moving on the smooth surface (classroom floor) after leaving the ramp. Ask the students to write down their observations.

- As a next step, instruct each group to place a rough surface (carpet/doormat) just below the ramp.

- In a similar way, ask each group to roll down the ball from the top of the ramp.

- Encourage all the students to observe how long the ball keeps moving on the rough surface (carpet/ doormat).

- Now ask each group to compare their observations with Newton's first law of motion.

- Highlight that, here on a rough surface, the ball stops sooner than the smooth surface because of the friction (external force). Without friction the ball would keep moving forever.

Activity 2 — Balloon Rocket Race

Materials Required

Balloons (small, medium, large), strong straws, string (3-5 metre), tape, stopwatch

Instructions

- Divide students into 4-5 groups. Maintain at least 5 persons in each group.
- Distribute the materials to each group and explain the role of each student in groups.
    - One student will tie one end of the string to a chair or doorknob and one student will tie the other end tightly with his/her hand.
    - Another student will thread a straw onto the string.
    - One student will blow up a balloon without tying it and tape it firmly to the straw holding the balloon's opening.
    - The remaining student will write down all the observations.
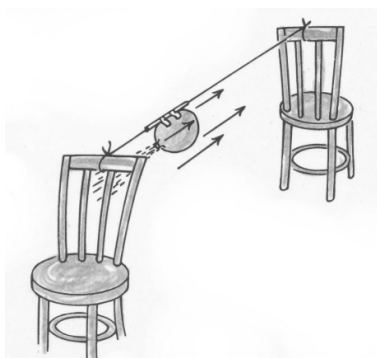
- For the 1st trial, use the small sized balloon and inflate it about half. Ask one student to hold the balloon at the starting line without letting air escape.
- Start the stopwatch and release the balloon. Ask them to measure the time how long it takes to reach the end of the string along with the distance.
- For the 2nd trial, use the medium sized balloon and inflate it fully.
- Repeat the step of release of balloon and record the time and distance covered.
- For the 3rd trial, use the large sized balloon and repeat the steps.
- Ask each group to create a table and record the observation data.

Trial	Balloon size	Distance	Time	Speed
1	Small half air			
2	Medium full air			
3	Large full air			

- Highlight that the air pushing out force causes acceleration. So that more air will be greater force and greater acceleration.
- Conclude the discussion with examples of daily life situations related to Newton's 2nd law.

Activity 3 | Coin Flick Experiment

🕐 **35 mins**

Materials Required

6 identical coins, two rulers

Instructions

- Divide the students into 4-5 groups.

- Distribute 6 identical coins and two rulers to all groups. Otherwise ask students to arrange identical coins.

- Ask students to place five coins in a straight line, touching each other between the two rulers.

- Then ask the groups to place the sixth coin at one end of the line.

- Instruct each group to flick the sixth coin towards the line of five coins and observe the motion of the coins, particularly the one at the opposite end.

- Ask students why the coins move in different direction.

- Conclude the discussion by explaining that the flicked coin transfers its force through the line, causing the last coin to move. This demonstrates that the force exerted on the first coin, i.e. action results in an equal and opposite force on the last coin, i.e. reaction according to the Newton's third law.

- Lastly, if time and circumstances permit, extend the discussion by asking students to toss two or three coins simultaneously and observe the outcomes.

Assessment

1. Force is defined as:
   a) Mass × Volume
   b) Mass × Acceleration
   c) Work / Time
   d) Energy × Time

2. According to Newton's First Law, a body at rest will stay at rest unless:
   a) It is heavy
   b) An unbalanced force acts on it
   c) It changes its mass
   d) It is heated

3. The SI unit of force is:
   a) kg
   b) m/s
   c) N
   d) J

4. The inertia of an object is directly proportional to its:
   a) Volume
   b) Speed
   c) Mass
   d) Weight

5. When the net force on an object is zero, it:
   a) Must be moving
   b) Must be at rest
   c) Has zero acceleration
   d) Will always rotate

6. Define inertia.

7. State Newton's Third Law of Motion.

8. Explain why passengers tend to fall forward when a moving bus suddenly stops.

9. A force of 10 N is applied on a body of mass 2.5 kg. What is the acceleration produced?

10. Why do athletes often run some distance before taking a long jump? Explain the concept involved.

Answer Key

1. b
2. b
3. c
4. c
5. c
6. Inertia is the tendency of an object to resist any change in its state of motion or rest.
7. *For every action, there is an equal and opposite reaction."*

    This means that when one object applies a force on another, the second object applies a force of the same strength in the opposite direction on the first object.
8. Due to inertia, the passengers' bodies tend to continue moving forward even though the bus stops.
9. *a = F / m =* 10 / 2.5 =4 *m/s²*
10. Running adds initial velocity, which increases momentum and thus helps cover a longer distance during jump due to inertia and Newton's First Law.

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Class: 9		Subject: Science		
Roll No.	Name of the Student	Chapter: Force and Laws of Motion		
		Level 1	Level 2	Level 3

Chapter 3: Atoms and Molecules

Activity 1 | Find your Atoms!

35 mins

Materials Required

Name Cards labelled with H, O, C, N, K, S etc., String

Instructions

- Prepare Name Cards labelled with H, O, C, N, K, S etc. Cover all the symbols of elements in the cards and if required seek help from students to prepare.

- Now distribute the Name Cards to each student randomly so that each student becomes an atom!

- Ask students to roam into the classroom/open field holding the Atom Name Cards.

- Now teacher will call out some compounds or statements like- "Water!" or "A Greenhouse gas!" or "Salt!".

- Ask students to find out the right partners and form the Molecule using Name Cards and string to make a "bond"!

- After formation of the Molecule, groups must explain their Molecule- number and types of atoms involved, difference or similarities between the atoms. Teacher will help students in this discussion.

Activity 2 — Simulation with Mass balance

⏱ 35 mins

Materials Required

Cutouts of coloured paper atoms – H, O, C etc., Reaction Cards

Instructions

- Start the activity discussing some interesting facts like- Can you tell us where the sugar actually goes when it dissolves in water? Based on their response extend the discussion.

- Before starting the activity prepare some coloured paper atoms and Reaction Cards. Using coloured chart papers, prepare paper atoms of H, O, C, etc. Ask some students to help in making Reaction Cards.

- Now distribute the coloured paper atoms to each student randomly so that each student becomes an atom!

- Ask students to roam into the classroom/open field holding the coloured paper atoms.

- Then call out some examples and ask students to form this group accordingly:

  4 Hydrogen atoms (2 H_2)
  2 Oxygen atoms (1 O_2)

- Ask students to combine them to form 2 H_2O molecules.

- Ensure that no atoms are left unused or added externally.

- Now draw a Balance Sheet on the blackboard and ask students to copy the same in their notebooks and fill up the data based on their observation.

Atom	Before reaction	After reaction
H	4	4
O	2	2

- Repeat the steps with some other examples of reaction and compounds.

- Conclude the discussion highlighting here Mass is conserved because atoms are conserved! Help students to visualize that molecules can be changed but atoms remain.

- Extend this activity with some real reaction if time and situation permit and ask students to observe and prove the Conservation of Mass concept.

Activity 3 | Tic, Tac, Toe

35 mins

Materials Required

Coloured Chalks

Instructions

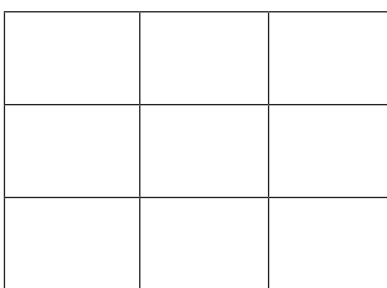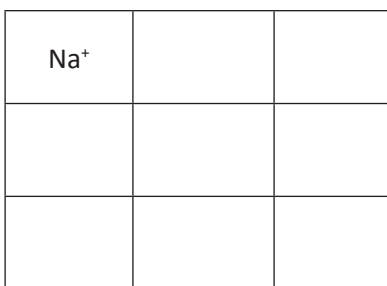- Draw the below figure on the blackboard.

<table>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

- Divide the whole class into two teams and distribute coloured chalk to each team.

- Conduct a toss to decide which team will get the first chance to start the game.

- After toss, ask the team to send one of its members to the board who will write a symbol of an ion in any of the boxes.

<table>
<tr><td>Na^+</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

- Now, ask the other team to send one of its members to the board who will write a symbol of another ion in one of the remaining boxes.

- If first team decides to place a cation, the next team has to add anions.

- The aim of each team is to make a vertical or horizontal or diagonal sequence of three Cations or three Anions!

- Each team will try to prevent the opposite team from doing so.

- Declare the winner who will be able to write a correct sequence. A correct sequence means that the symbols and their charges are correct.

- Conclude the game by highlighting that it will help students to learn and remember the names and symbols of elements along with their charges/valency.

Assessment

Answer the following:

1. The atomicity of phosphorus is:

   a) 1

   b) 2

   c) 4

   d) 4

2. The molecular formula of water is:

   a) H_2
   b) HO
   c) H_2O
   d) H_2O_2

3. Avogadro number is:

   a) 6.022×10^{22}
   b) 6.022×10^{23}
   c) 6.022×10^{24}
   d) 6.022×10^{26}

4. Which of the following is a triatomic molecule?

   a) O_2
   b) N_2
   c) H_2O
   d) He

5. The formula unit mass of NaCl is:

   a) 35.5 u
   b) 58.5 u
   c) 23 u
   d) 60 u

6. What is the chemical formula of ammonia?

7. Write the name of the compound formed by sodium and chlorine.

8. State the law of conservation of mass.

9. What is meant by a mole?

10. Calculate the number of molecules in 36 grams of water (H_2O).

Answer Key

1. d)
2. c)
3. b)
4. c)
5. b)
6. NH_3
7. Sodium chloride (NaCl)
8. Mass can neither be created nor destroyed in a chemical reaction. The total mass of the reactants is equal to the total mass of the products.
9. A mole is the amount of substance that contains 6.022×10^{23} particles (atoms/molecules/ions). It is the SI unit of quantity of substance.
10. Molar mass of H_2O = 18 g/mol

    Number of moles = 36 / 18 = 2 mol

    Molecules = $2 \times 6.022 \times 10^{23}$ = **1.204×10^{24} molecules**

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Class: 9		Subject: Science		
		Chapter: Atoms and Molecules		
Roll No.	**Name of the Student**	Level 1	Level 2	Level 3

Chapter 4: Structure of Atom

Activity 1 — Human Bohr Model

35 mins

Materials Required

Chalks/Quicklime powder, Placards

Instructions

- Before starting the activity, introduce first that "Electrons revolve in discrete orbits around the nucleus. These orbits are labelled as K, L, M, N and each has a fixed energy. Maximum number of electrons can be determined by the formula $2n^2$, where n is the orbit number."
- Draw six circles with chalk or quicklime powder in an open space or classroom.
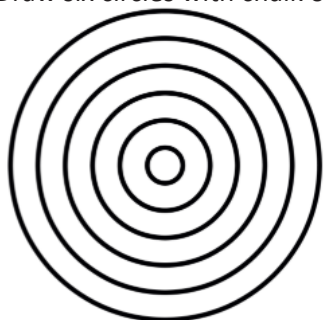
- Prepare 20 placards with 'electron' written on them and mark the innermost circle as 'Nucleus'. Also mark the circles as K, L, M, N representing atomic orbits.
- Divide the class into two teams and a toss will decide which team will play the game first. When first team is playing the game, second team will stand outside the circle.
- Keep all the placards at the nucleus where a student representing nucleus will pick one of the placards.
- Play a music or clap and instruct the students from the first team to run in the outermost circle (not marked as K, L, M, N).
- After some time stop the music or clapping, ask the nucleus to show the placard which he/she picked up representing the atomic number of the atom and announce the number aloud.
- Instruct the students running in the outermost circle to arrange themselves in the circles marked as K, L, M, N according to the electronic configuration of the atomic number announced. Ask the team to name the element.
- Each team need to arrange themselves in correct configuration and name the element properly. If they will not be able to answer correctly the second team will get the chance to respond.
- In the next round, the second team will play, and the rules will remain the same. The placard once used will be removed from the pile.
- Conclude the activity by comparing this human model with Bohr's model that gives an idea of the structure of an atom and the relationship between atomic number and number of electrons.

Activity 2 **Valency Number Line Walk**

35 mins

Materials Required

Chalk, Cards labelled as "Lose" and "Gain"

Instructions

- Before starting the activity, revisit that "Valency is the number of electrons an atom needs to lose, gain or share to become stable. It determines how atoms bond with each other."

- Draw a Number line (1-20) on the classroom floor. Place "Lose" and "Gain" cards at the left and right side of the number line respectively.

- Divide students into two teams and a toss will decide which team will play first.

- Give the first team an atomic number (e.g. 11 for Sodium) and ask a student from that team to walk at the corresponding spot on Number line.

- Ask the team to determine the Valence electron of the element given using shell knowledge.

- If the electrons of outer shell < 4, then ask students to walk towards "Lose" card and if the electrons of outer shell > 4, then ask students to walk towards "Gain" card.

- For example, "If a team get Sodium, which has 1 valence electron, then the student will walk towards "Lose" card, i.e. it will lose 1."

- If time permits, extend the discussion why atoms lose/gain electrons to form compounds.

Activity 3 | Isotope Roleplay

🕐 **35 mins**

Materials Required

Red coloured paper cut (Proton), Green coloured paper cut (Neutron), Yellow coloured paper cut (Electron), Chalk

Instructions

- Before starting the activity, briefly explain that "All atoms of the same element have the same number of protons. Atoms of the same element that have different numbers of neutrons are called *isotopes*. Since the number of neutrons differs, their *mass numbers* are also different."

- Select three students to act as Hydrogen isotopes. Give them name tags of: ^{1}H- Protium, ^{2}H- Deuterium and ^{3}H- Tritium.

- Then assign more students as: Protons (red), Neutrons (green) and Electron (yellow).

- One by one, ask students to build the isotopes with help of other students. Teacher will help students in this process.

  For example, to build ^{1}H- Protium: 1 student (proton) stands in the nucleus (circle), 0 neutrons and 1 electron stands outside the circle (orbit)

- In similar way, ask students to build Deuterium, Tritium and other isotopes of any element.

- Lasty encourage students to discuss the characteristics of each isotope collectively.

Assessment

Answer the following:

1. The maximum number of electrons in the outermost shell of an atom is:

   a) 2

   b) 8

   c) 18

   d) 32

2. The mass of an electron is approximately:

   a) Equal to that of a proton

   b) 1/2000 times that of a proton

   c) Double the mass of a neutron

   d) Same as a neutron

3. Which of the following scientists proposed the nuclear model of the atom?

   a) J.J. Thomson

   b) Neils Bohr

   c) Ernest Rutherford

   d) Dalton

4. Which particle is present in the nucleus of an atom?

   a) Electron

   b) Proton

   c) Neutron

   d) Both b and c

5. Isotopes are atoms of the same element having:

   a) Same atomic mass but different atomic numbers

   b) Same number of neutrons

   c) Different number of electrons

   d) Same atomic number but different mass numbers

6. Who discovered the neutron?

7. Write the electronic configuration of oxygen.

8. Write two postulates of Bohr's model of the atom.

9. Write the number of protons, electrons, and neutrons in Cl-35 and Cl-37, if the atomic number of Cl is

10. What are valency and valence electrons? How is valency determined?

Answer Key

1. b)

2. b)

3. c)

4. d)

5. d)

6. James Chadwick

7. 2, 6

8. Electrons revolve in fixed circular orbits (shells) around the nucleus.

    Electrons do not radiate energy while revolving in these orbits.

9. **Given:**

    - **Atomic number of Chlorine (Cl)** = 17
      $\Rightarrow$ So, **Protons = 17**
      $\Rightarrow$ In a neutral atom, **Electrons = 17**

      For Cl-35 (Mass number = 35):
    - **Protons** = 17
    - **Electrons** = 17
    - **Neutrons** = Mass number − Atomic number = 35 − 17 = **18**

      For Cl-37 (Mass number = 37):
    - **Protons** = 17
    - **Electrons** = 17
    - **Neutrons** = 37 − 17 = **20**

10. **Valence electrons** are electrons in the outermost shell.

    Valency is the combining capacity of an atom.

    Valency = Number of electrons gained, lost, or shared to complete octet.

    Example: Oxygen (2,6) gains 2 electrons → valency = 2

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Class: 9		Subject: Science		
Roll No.	Name of the Student	Chapter: Structure of Atom		
		Level 1	Level 2	Level 3

Chapter 6 : Tissues

Activity 1   Tissue Hunt form local samples

35 mins

Materials Required

Banana stem, coconut husk, soft leafy plant, betel nut stalk

Instructions

- Divide students into 4 groups and ask each group to find out or arrange one sample from their surroundings. For example- Group 1 will carry Banana stem, Group 2 will carry Coconut stem, Group 3 will carry Soft leafy plant and Group 4 will carry Betel nut stalk.

- Ask each group members to touch and bend their sample part and record their observations in an Observation Sheet.

- For example: In Banana stem- soft and spongy → Parenchyma

    In Coconut husk- hard and fibrous → Sclerenchyma

- Guide each group to identify and explain probable tissue types.

- To extend this discussion teacher may ask some questions like- "Which tissue supports flexibility in leaf stalk?", "How does banana stem store water?" etc.

- If time permits, encourage students to write one fact about a tissue on a leaf-shaped cut-out and pin all the cut-outs on "Tissue Tree" chart for revision and visual reinforcement.

Activity 2 — Build a Body!

35 mins

Materials Required

Chart Papers, scissors, glue, Cut-outs/Drawings of animal tissue types

Instructions

- Divide students into 4 groups, naming them as 4 types of Animal Tissues- Epithelial, Connective, Muscular & Nervous.
- Distribute the materials to all groups.
- Ask each group to create a body diagram using the materials and based on their group name.
- For example: Group 1 will mark skin and intestinal lining as Epithelial tissue, Group 3 will show muscles in any local animal's leg as Muscular tissue.
- Encourage the groups to label the tissue collage and connect structure to function.
- If time permits encourage for a group presentation discussing difference between tissues or any other points.

Activity 3 — Tissue Dice Game

35 mins

Materials Required

Two DIY dice (one dice with tissue names only and another dice with terms like- function/location/types etc.)

Instructions

- Begin the activity saying that "Today we'll revise whole the lesson in a different way! We'll play a game and try to revisit the different characteristics and functions of Plant and Animal tissues."
- Before the activity, prepare two DIY dice. In one dice, write Plant & Animal tissue names only and in another dice write their function/location/types etc.
- Divide the students in two teams.
- Call out one team in front of the classroom and ask them to roll both the dice.
- For example: After roll both the dice, one dice shows "xylem" and other shows "function".
- Then ask the team to share and discuss the "function of xylem" with the classroom.
- Similar steps will be followed for the other team and next rounds.
- To consolidate the discussion, assign one or two students from each team to take notes and share with the classroom.

Assessment

154

⏱ 35 mins

Answer the following:
1. The function of Xylem is:
    a) Transport of food
    b) Transport of water
    c) Photosynthesis
    d) None of these

2. Cardiac muscles are:
    a) Involuntary and striated
    b) Voluntary and unstriated
    c) Involuntary and unstriated
    d) Voluntary and striated

3. Which of the following is a simple permanent tissue?
    a) Xylem
    b) Phloem
    c) Collenchyma
    d) Cambium

4. Parenchyma cells are:
    a) Dead
    b) Elongated and thick-walled
    c) Living and thin walled
    d) None of these

5. Which connective tissue connects muscle to bone?
    a) Ligament
    b) Tendon
    c) Cartilage
    d) Areolar

6. Which connective tissue connects bone to bone?

7. Name the tissue responsible for transport of foods in plants.

8. Write two functions of parenchyma tissue.

9. What are guard cells? What is their function?

10. Explain the three types of muscle tissue found in animals.

Answer Key

1. b)
2. a)
3. c)
4. c)
5. b)
6. Ligament
7. Phloem
8. Stores food and water

   In some plants (chlorenchyma), performs photosynthesis
9. Guard cells are specialized epidermal cells surrounding stomata. They regulate the opening and closing of stomata for gas exchange and transpiration.
10. **Skeletal (Striated)**: Voluntary, striated, attached to bones, helps in movement.

    Smooth (Unstriated): Involuntary, found in internal organs like stomach, intestine.

    Cardiac: Involuntary, striated, found only in heart, rhythmic contractions.

Learning Level Tracker

Keep a record of unit/chapter assessment results in the tracker.

As you conduct assessments based on the activities suggested, put a tick mark as per the following:

Level 1: Not able to solve problems and having difficulty comprehending the problem

Level 2: Solves most of the problems with external support

Level 3: Solves problems independently

Name of the School:		UDISE:		
Block:		District:		
Name of the Teacher:		Assessment Date:		
Class: 9		Subject: Science		
		Chapter: Tissues		
Roll No.	Name of the Student	Level 1	Level 2	Level 3