NCF ALIGNED

Snapshot

A Book on Computer Science

5

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PREFACE

The computer has become an integral part of our society. It has influenced almost every aspect of our lives; be it work or leisure. It is only through computers that we are able to organise and execute even the simplest of tasks.

Snapshot is a series of five books for classes 1 to 5, which brings together 'knowledge' as well as 'knowledge application'. Each book is based on Windows 10 and MS Office 2016. The books are integrated with National Curriculum Framework (NCF) 2022.

In classes 1 and 2, students will gain basic knowledge of computer and its devices. They will also get to implement their creativity in Tux Paint and MS Paint.

In classes 3, 4 and 5, students will enhance their skills by gaining knowledge about MS Word, MS Excel, MS PowerPoint, LOGO, Scratch, E-mail, Internet, Artificial Intelligence and Logical Reasoning.

Through this book, we want to promote modern ways of teaching in which the student gets to comprehend and implement knowledge as well as technical skills. Rather than restricting the inflow of knowledge to verbal teaching, we have included all kinds of activities to further add to the independence of students so that they can learn better.

Each chapter is introduced in a systematic manner. The illustrations, application screenshots, activities and exercises are curated in simple language to assist the teaching-learning process.

—Author

Integrated with NCF 2022

PLAY-BASED LEARNING	Inclusion of word puzzles such as word search, crosswords, word jumbles PL
ETHICS and VALUES	Ethics and values like empathy, respect for others, equality, and justice EV
SOCIAL and EMOTIONAL LEARNING (SEL)	Self-awareness, Self-management, Decision-making, Social awareness, Relationship skills SEL
COMMUNICATION	Exchange of information, thoughts, and ideas CM
EXPERIENTIAL LEARNING	Hands-on approach, learning through experience EL
CREATIVITY	Imagination, organization, problem-solving, innovation CR
TECHNOLOGY and EDUCATION	Extensive use of technology in teaching and learning TE
CRITICAL THINKING	Application of logic and reasoning in decision-making CT

DIGITAL AID

Student's Assist

Audio and Video eBook

- ◊ Features of a computer
- Student Worksheets

Teacher's Assist

Test Paper Generator

- ◊ Random and Manual Question Paper
- ◊ Download papers in Word format
- Lesson Plans
- Worksheets
- Answer Key

Salient Features

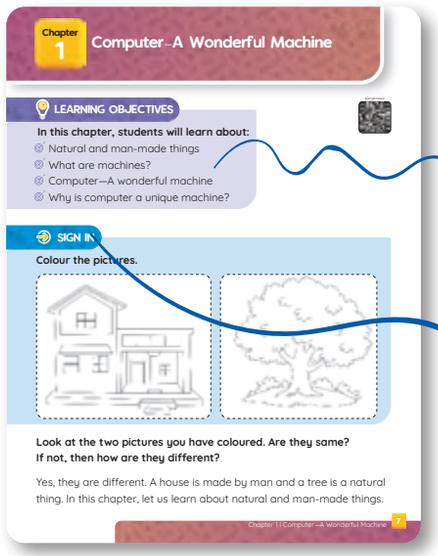
News Feed
(Additional Information)

Learning Objectives
(Lesson Outline)

Activity Time
(Creative Learning)

Sign In
(Link to the Concept)

Refresh
(Summary of the Lesson)


Chapter 1 Computer–A Wonderful Machine

LEARNING OBJECTIVES

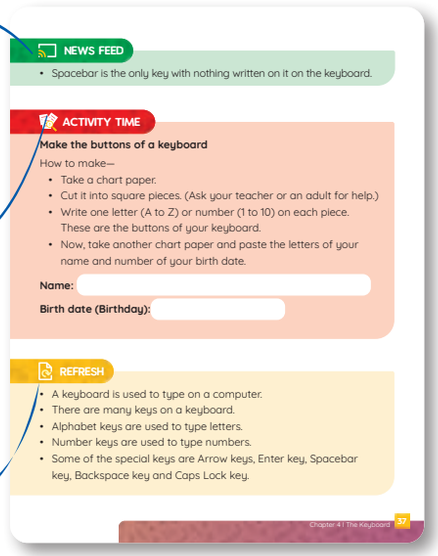
In this chapter, students will learn about:
- Natural and man-made things
- What are machines?
- Computer–A wonderful machine
- Why is computer a unique machine?

SIGN IN

Colour the pictures.

Look at the two pictures you have coloured. Are they same? If not, then how are they different?

Yes, they are different. A house is made by man and a tree is a natural thing. In this chapter, let us learn about natural and man-made things.


NEWS FEED
- Spacebar is the only key with nothing written on it on the keyboard.

ACTIVITY TIME

Make the buttons of a keyboard

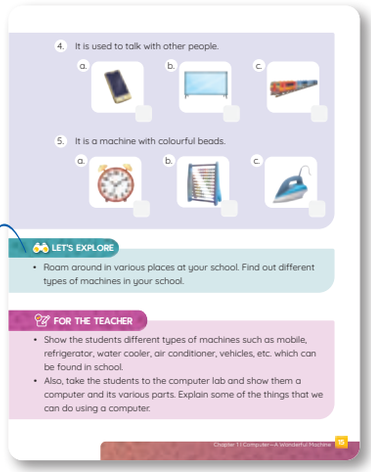
How to make—
- Take a chart paper.
- Cut it into square pieces. (Ask your teacher or an adult for help.)
- Write one letter (A to Z) or number (1 to 10) on each piece. These are the buttons of your keyboard.
- Now, take another chart paper and paste the letters of your name and number of your birth date.

Name:

Birth date (Birthday):

REFRESH
- A keyboard is used to type on a computer.
- There are many keys on a keyboard.
- Alphabet keys are used to type letters.
- Number keys are used to type numbers.
- Some of the special keys are Arrow keys, Enter key, Spacebar key, Backspace key and Caps Lock key.

Let's Explore
(Practical Implementation)

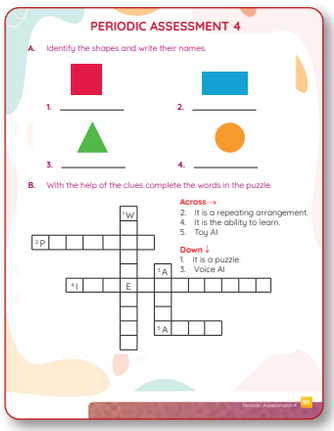

4. It is used to talk with other people.

5. It is a machine with colourful beads.

LET'S EXPLORE
- Roam around in various places at your school. Find out different types of machines in your school.

FOR THE TEACHER
- Show the students different types of machines such as mobile, refrigerator, water cooler, air conditioner, vehicles, etc. which can be found in school.
- Also, take the students to the computer lab and show them a computer and its various parts. Explain some of the things that we can do using a computer.

Periodic Assessments
(Revision of Lessons)


PERIODIC ASSESSMENT 4

A. Identify the shapes and write their names.

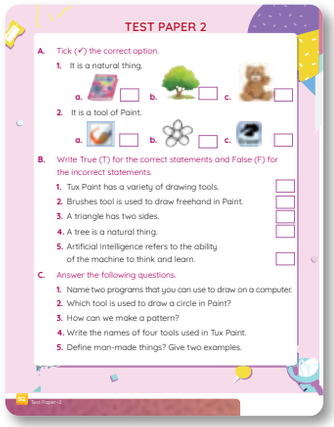
1. _____ 2. _____ 3. _____ 4. _____

B. With the help of the clues complete the words in the puzzle.

Across →
2. It is a repeating arrangement.
4. It is the ability to learn.
5. Toy AI

Down ↓
1. It is a puzzle.
3. Voice AI

Test Papers
(Evaluation of Knowledge)


TEST PAPER 2

A. Tick (✓) the correct option.

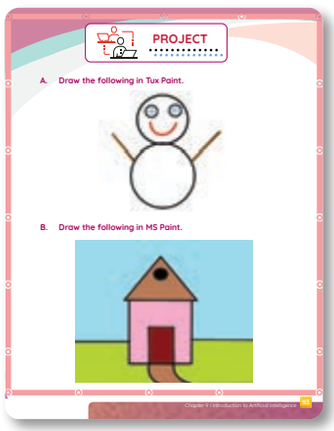
1. It is a natural thing.
a. b. c.

2. It is a tool of Paint.
a. b. c.

B. Write True (T) for the correct statements and False (F) for the incorrect statements.
1. Tux Paint has a variety of drawing tools.
2. Brushes tool is used to draw freehand in Paint.
3. A triangle has two sides.
4. A tree is a natural thing.
5. Artificial Intelligence refers to the ability of the machine to think and learn.

C. Answer the following questions.
1. Name two programs that you can use to draw on a computer.
2. Which tool is used to draw a circle in Paint?
3. How can we make a pattern?
4. Write the names of four tools used in Tux Paint.
5. Define man-made things? Give two examples.

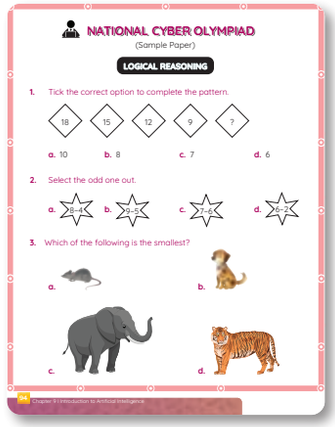
Project
(Application of Knowledge)


PROJECT

A. Draw the following in Tux Paint.

B. Draw the following in MS Paint.

National Cyber Olympiad
(Preparation for Cyber Competition)


NATIONAL CYBER OLYMPIAD
(Sample Paper)

LOGICAL REASONING

1. Tick the correct option to complete the pattern.
18 15 12 9 7
a. 10 b. 8 c. 7 d. 6

2. Select the odd one out.
a. b. c. d.

3. Which of the following is the smallest?
a. b. c. d.

CONTENTS

Chapter 1

Computer History and Development

LEARNING OBJECTIVES

Scan QR Code to watch a video

In this chapter, students will learn about:

- Early counting devices
- Generations of computer

SIGN IN

CT

Solve the word problems given below.

1. The library near Reema's house has 1,260 books in English; 1,120 books in Hindi; 750 books in Tamil; 300 books in Korean and 560 books in French. How many books does the library near Reema's house have?

2. Sana has ₹ 5000. She spends ₹ 1,200 on Monday on books. She spends another ₹ 2,100 on school supplies on Wednesday. How much is she left with on Thursday?

3. The cost of 20 books is ₹ 4,000. What will be the cost of one book?

4. The cost of one bag is 825. What will be the cost of 15 bags?

Counting has been a part of human life since the early years. Even before the computer was developed, people have invented tools for calculations to count and perform simple calculations.

EARLY COUNTING DEVICES

In ancient times, people used stones, pebbles, sticks, fingers, toes, etc. for counting.

Fingers

Pebbles

Sticks

Abacus

It is the first calculating device. The invention of the **Abacus** in China around 3000 years ago can be considered the first step toward computing. It is made up of a wooden frame with beads on rods. It is used for performing simple calculations such as addition and subtraction. It is also used to calculate numbers at a fast speed.

Nowadays, abacus is used for teaching number system in school. It is also used as an aid in teaching calculation to virtually challenged students.

Abacus

Napier's Bones

It was invented by **John Napier**, a Scottish mathematician and scientist. It was a manual calculating machine in which numbers were carved on bones or on strips of wood. It was used for performing calculations such as addition, subtraction, division and multiplication.

Napier's Bones

Pascaline

Pascaline is the first mechanical calculator in the world. It was invented by **Blaise Pascal,** a French mathematician in 1642. It consisted of a rectangular box with movable wheels. The numbers were fed by dialing the wheels. It was used for addition and subtraction only. It is also called **Arithmetic Machine**.

Pascaline

Blaise Pascal

Step Reckoner

Step Reckoner is a digital mechanical calculator invented by mathematician, **Gottfried Wilhelm Leibniz** in 1972. It could perform all four arithmetic operations—addition, subtraction, multiplication and division.

Step Reckoner

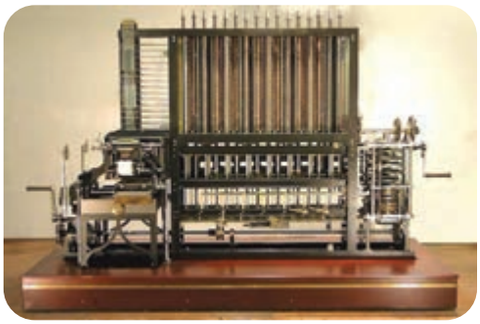
Analytical Engine

In 1822, Charles Babbage, a British mathematician invented a stream-driven calculating machine. He called the machine **'The Different Engine'** and it was the size of a room. But this machine never became a reality even after working for 10 years.

He also invented the first ever working model of the mechanical computer called the **Analytical Engine** in 1833. It has the same basic elements as in today's computer—input, output, control, etc.

Charles Babbage is considered the **father of computers**.

Charles Babbage



Analytical Engine

Lady Ada Lovelace's Programs

Lady Ada Lovelace is known as the **first computer programmer**. She is known for her work on Babbage's Analytical Engine. She introduced the concept of storing data in the form of 0's and 1's.

Lady Ada Lovelace

Herman Hollerith's Tabulating Machine

A tabulating machine is a machine that can read and store data from punched cards. It was built by **Herman Hollerith,** an army engineer in 1890. He formed a company called **Computing Tabulating Recording Company** to sell his machines. Hollerith's

company became a part of **International Business Machines Corporation** in 1924. Today this corporation is popularly known as **IBM**.

Herman Hollerith

Hollerith's Tabulating Machine

NEWS FEED

CM

A **banknote counter or bill counter** is a device designed primarily to accurately count the number of banknotes.

GENERATIONS OF COMPUTER

The computer has come a long way to reach this stage. Over the years, the initial computer has developed, improving in terms of size, accuracy, speed and price. This development of computers is divided into five subsequent phases called computer generations. Let us learn about these generations of computers.

First Generation Computers (1940s)

The first generation of computers started in the early 1940s. These computers use thousands of **vacuum tubes** which were often huge and it takes up a large amount of space.

Vacuum Tubes

Some common features of first-generation computers are:

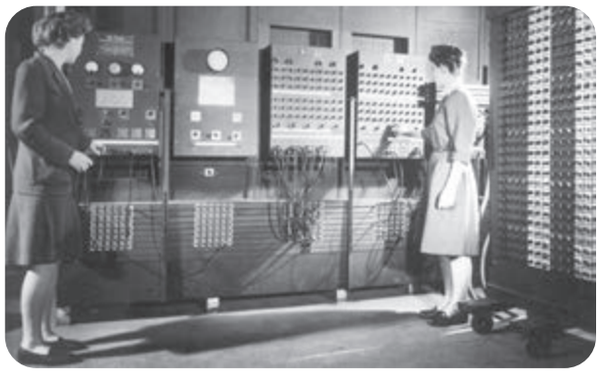
- They were a large size.
- They were very expensive to build.
- A large amount of power was required for these computers.
- They were very slow.
- They could solve just one problem at a time.

These are some of the computers that were a part of first generation computers.

MARK-I

It was the First Electro-Mechanical Powered Computer. It was built by **Prof. Howard Aikens** in **1943**. It used punched cards and a typewriter for input and output.

Mark-I



ENIAC

ENIAC

ENIAC stands for Electronic Numerical Integrator And Computer. It was the first electronic computer. It was built by **John Mauchly** and **Presper Eckert** in **1946**. It was 1000 times faster than Mark-I. It has over 18,000 vacuum tubes.

UNIVAC

John Mauchly and **Presper Eckert** invented **UNIVAC (Universal Automatic Computer) in 1951**. It could handle both numeric and textual information. It had 5200 vacuum tubes.

UNIVAC

Second Generation Computers (1950s)

Second generation computers were introduced in the late 1950s. They used transistors instead of vacuum tubes. Major computer manufacturers started offering a range of accessories such as page printers, cathode-ray-tube displays and card feeders, etc. during this phase.

Transistor

IBM 600 and IBM 1401 are some examples of second generation computers.

Some common features of second generation computers are:

- They were smaller and less expensive than the first generation computers.
- They were faster and more reliable than the first generation computers.
- They used magnetic tapes to store data.

Third Generation Computers (1960s)

The third generation computers used Integrated Circuits or ICs. It is also known as chip.

Some common features of third generation computers are:

- They used Integrated Circuits (ICs).
- They had more storage capacity than the second generation computers.

- They were smaller in size and the speed increased because of the use of ICs.
- They consumed less power.
- They were more affordable and dependable.

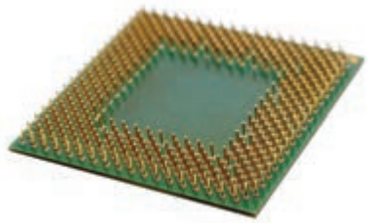
Integrated Circuits

Fourth Generation Computers (1970s)

The fourth generation computers use microprocessors which is a type of Very Large Scale Integration (VLSI). A microprocessor contains a large number of ICs.

Some major developments of this time are:

- IBM released their first line of desktop PC.
- Microsoft released the first version of Microsoft Windows.



Microprocessor

Some common features of fourth generation computers are:

- Use of the microprocessor made the computers small which can be placed on a table.
- They use hard disks to store data.
- They are very powerful and reliable.
- Introduction of GUI operating system made the computers easy to use.

Fifth Generation Computers (Present)

Fifth generation computers use powerful microprocessors which are developed using VLSI technology. Intel introduced the MMX microprocessors in 1997. It was designed to improve gaming and multimedia performance. Another major development is the introduction of Artificial Intelligence (AI), i.e. developing computers with thinking power.

NEWS FEED

CM

The first personal computer, the **Altair 8800**, was created by MITS in 1974.

Some common features of fourth generation computers are:

- Advanced versions of GUI operating systems are developed.
- Introduction of Artificial Intelligence (AI) which makes a computer do some of the things like humans do such as reorganizing voice, identifying human faces, making decisions, being able to understand different languages, etc.

ACTIVITY TIME

CT CM

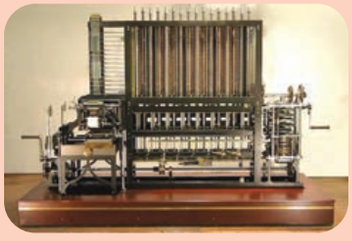
Match the machines with their inventors.

1. 

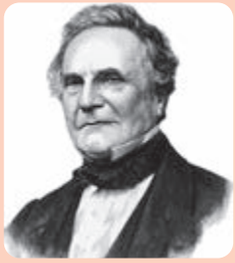
2. 

3. 

4. 

5. 

a. 

b. 

c. 

d. 

e. 

REFRESH

- In ancient times, people used stones, pebbles, sticks, fingers, toes, etc. for counting.
- Abacus is the first calculating device and it was invented in China.
- Pascaline is the first mechanical calculator in the world.
- Charles Babbage invented the first ever working model of the mechanical computer called the Analytical Engine.
- Lady Ada Lovelace is known as the first computer programmer.
- The development of computers is divided into five subsequent phases called computer generations.
- The first generation of computers used thousands of vacuum tubes.
- The second generation of computers used transistors.
- The third generation of computers used Integrated Circuits.
- The fourth generation of computers uses microprocessors.
- The fifth generation of computers uses powerful microprocessors which are developed by VLSI technology.

BROWSE

A **Choose the correct option.**

1. _____ is the first computing device.

   a. Napier's Bones ☐ b. Abacus ☐ c. Pascaline ☐

2. The device invented by Gottfried Wilhelm Leibniz in 1972 is _____.

   a. Step Reckoner ☐ b. Analytical Engine ☐ c. Tabulating Machine ☐

3. There are _____ generations of computers.

   a. 6 ☐ b. 4 ☐ c. 5 ☐

4. Who build Mark-I?

   a. John Mauchly ☐ b. Prof. Howard Aiken ☐ c. Presper Eckert ☐

5. This is a second generation computer.

   a. IBM 1401 ☐ b. ENIAC ☐ c. UNIVAC ☐

B Fill in the blanks using the words given below.

Step Reckoner Napier's Bones transistors
Charles Babbage Vacuum Tubes

1. _____ was invented by John Napier.
2. _____ could perform all arithmetic inventions.
3. _____ is considered the father of computers.
4. First generation of computers used thousands of _____.
5. Second generation of computers used _____.

C Write T for true statements and F for false statements.

1. Abacus was invented 2500 years ago. _____
2. Pascaline invented the Arithmetic Machine. _____
3. Gottfried Wilhelm Leibniz invented the Tabulating Machine. _____
4. ENIAC stands for Electronic Numerical Integrator And Computer. _____
5. Fifth generation of computers introduced AI. _____

D Answer the following questions in one word or one sentence.

1. Give two examples of early counting devices.

2. What is the other name of Pascaline?

3. What did Lady Ada Lovelace introduce?

4. What is MARK-I?

5. What does ENIAC stand for?

E Answer the following questions.

1. How was calculation done in ancient times?
2. Write a short note on Herman Hollerith's Tabulating Machine.
3. Write four differences between first generation computers and second generation computers.
4. Write the common features of third generation computers.
5. How were the fourth generation computers different from the fifth generation computers? Write any three differences.

ACTIVITY TIME

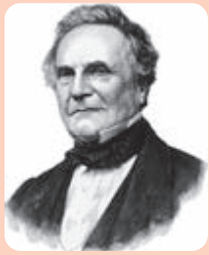
CT

Identify the pictures given below and write the correct names. Choose from the help box.

Mark-I | Charles Babbage | Napier's Bones | Vacuum tubes | UNIVAC | Pascaline

1. 

2. 

3. 

4. 

5. 

6. 

LET'S EXPLORE

EL TE

- Using the Internet, search for information and pictures of fourth and fifth generation of computers.
- On a chart paper, paste the pictures and write the information.

FOR THE TEACHER

- Show Abacus and demonstrate its uses to the students.
- Explain the different calculating machines that were invented.
- Elaborate how the computer evolved through different generations.
- Discuss the unique features of each generations of computer.

Chapter 2

Advanced Features of Word 2016

LEARNING OBJECTIVES

Scan QR Code to watch a video

In this chapter, students will learn about:

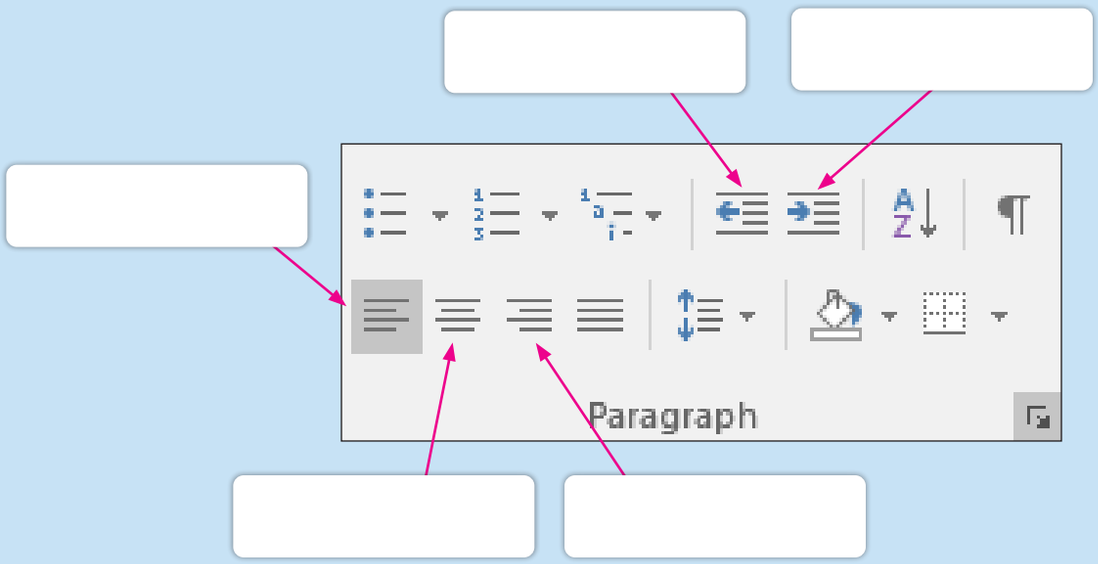
- Thesaurus
- Find and Replace text
- Formatting a page
- Formatting a paragraph
- Mail Merge

SIGN IN

CT

Label the picture using the words given below.

Align Left Center Right Align Decrease Indent Increase Indent



We have learnt in the previous class some of the features that help us to edit a document in Word. In this chapter, we will learn about more advanced features of Word that can be used to make changes in a file.

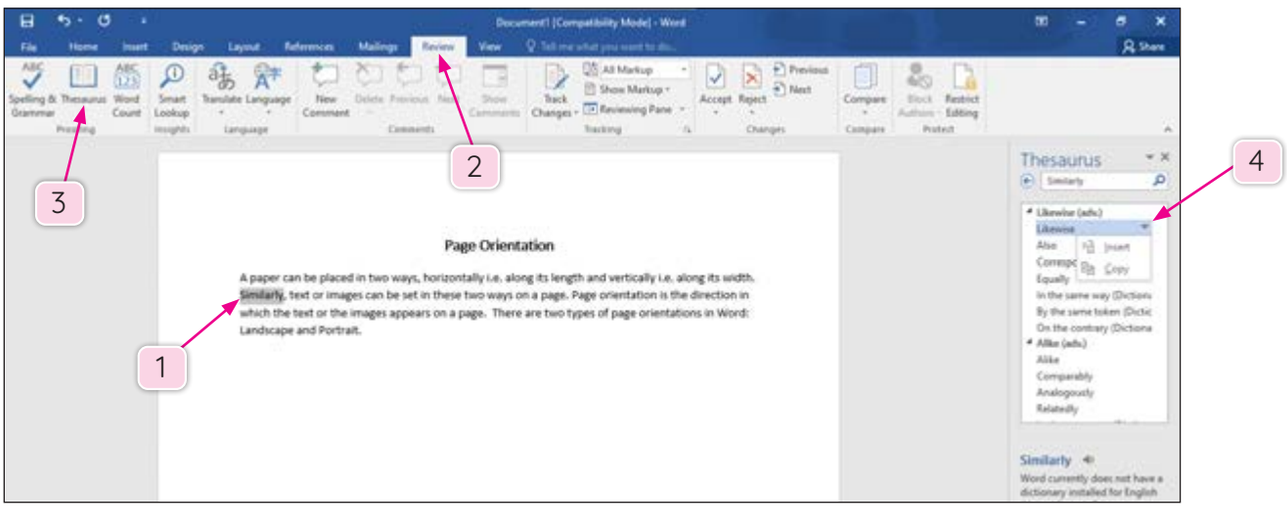
THESAURUS

Thesaurus is a collection of words that have similar meanings, i.e., synonyms. In Word, using the Thesaurus tool we can search for a list of synonyms for a selected word.

Follow these steps to use the Thesaurus tool:

1. Select the word.
2. Click on the **Review** tab.
3. Click on the **Thesaurus** tool in the **Proofing** group.

   The Thesaurus pane will open up on the left side of the window. A list of synonyms for the selected word will open on this pane.
4. To select the synonym, click on the down arrow and select Insert or copy.



QUICK BYTE

CM

The shortcut to Thesaurus: **Shift + F7**

NEWS FEED

CM

The lines of the song 'Scrollin' by the Funny Music Project refer to features of Microsoft Word, with lines such as "Paste in now cut out/Page up now page down".

FIND AND REPLACE TEXT

In Word, we can find a specific word or phrase in a document and replace it with another word or phrase.

Find

If we want to search for a word or phrase in a document, we can find it by using the command **Find.** The **Find** feature in Word helps us to find a word or phrase in the document.

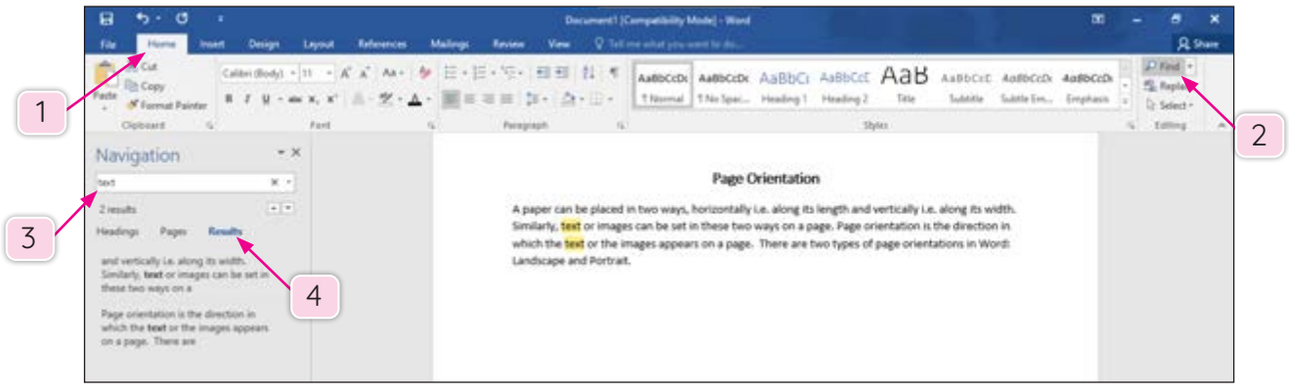
Follow these steps to find a word or a phrase:

1. Click on the **Home** tab.
2. Click on the **Find** tool in the **Editing** group**.**

   A **Navigation** pane will appear on the left side of the window.
3. In the textbox, type the word or phrase that you want to search.

   All the occurrences of the word or the phrase in the document will be highlighted.

   Under **Results** in the **Navigation** pane, you can also see a preview of all the sentences or sections which contain the word or the phrase in the document.
4. Click on the **Results** to see the result.



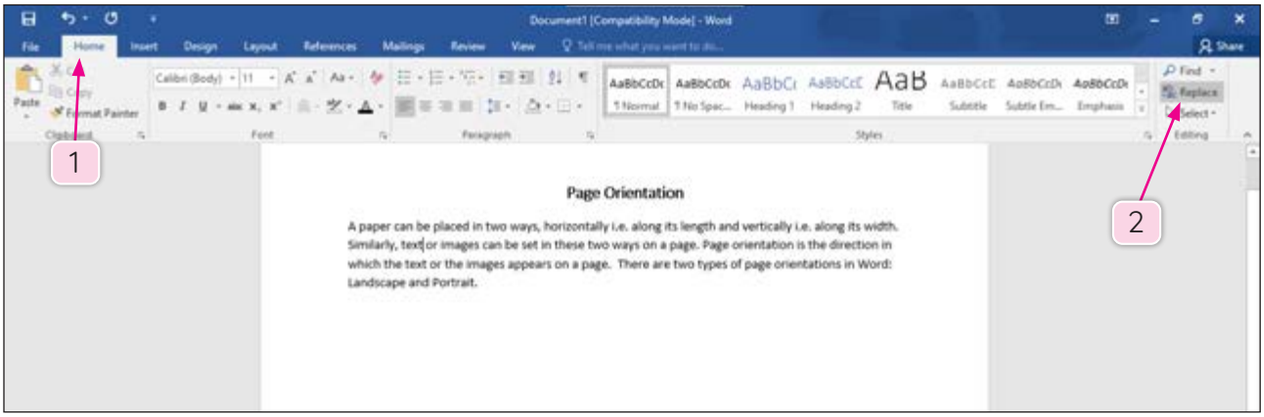
Replace Text

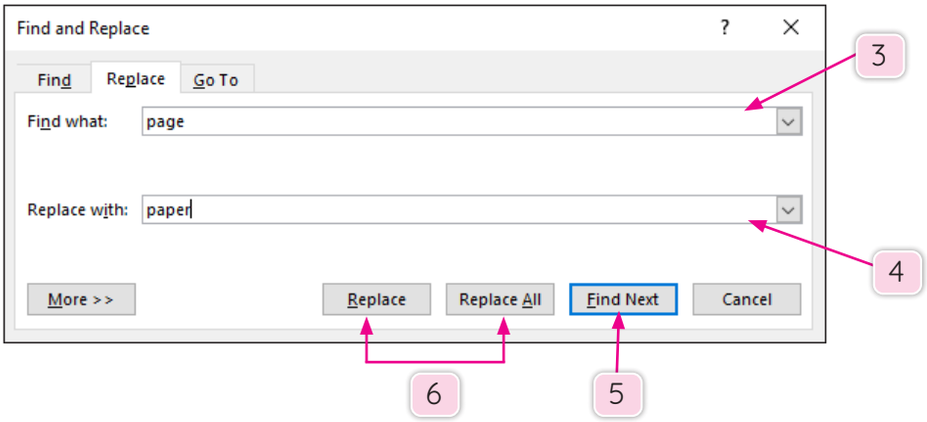
Word also allows to replace a word with other words. This is called the **Replace** feature of Word.

Follow these steps to find a word or a phrase with another word or phrase:

1. Click on the **Home** tab.
2. Click on the **Replace** tool in the Editing group. A **Find and Replace** dialog box will appear.
3. In the **Find what** box, type the word or phrase to be replaced.
4. In the **Replace with** box, type the word or phrase to replace the search word.
5. Click on **Find Next** button. Word will search for it and will be highlighted if the word is there.

6. Click on **Replace** button or **Replace All** button to replace the word.





FORMATTING A PAGE

The way we set the elements on a page can be changed and arranged according to the way we like. **Page formatting** means arranging the elements of a page in a layout that we want. Many page formatting tools are available in the **Layout** tab in Word 2016.

Page Orientation

A paper can be placed in two ways, horizontally i.e., along its length and vertically i.e., along its width. Similarly, text or images can be set in these two ways on a page. **Page orientation** is the direction in which the text or the images appears on a page. There are two types of page orientations in Word—**Landscape** and **Portrait**.

- In **Portrait** orientation shorter edge is on the top. It is taller than it is wide.
- In **Landscape** orientation longer edge is on the top. It is wider than it is tall.

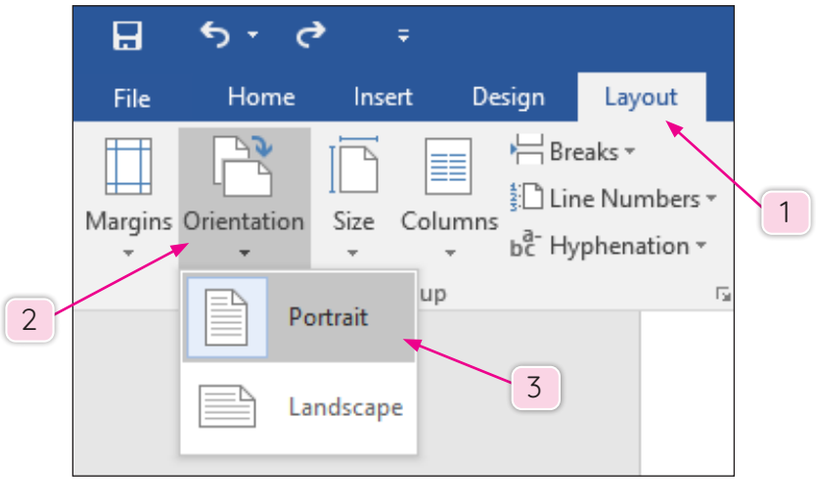
Portrait

Landscape

In Word, portrait is the default orientation. We can change the orientation of a file.

Follow these steps to change or define the orientation of a file:

1. Click on the **Layout** tab.
2. Click on the **Orientation** command in the **Page Setup** group.
3. Click on **Portrait** or **Landscape** as required from the drop-down menu.



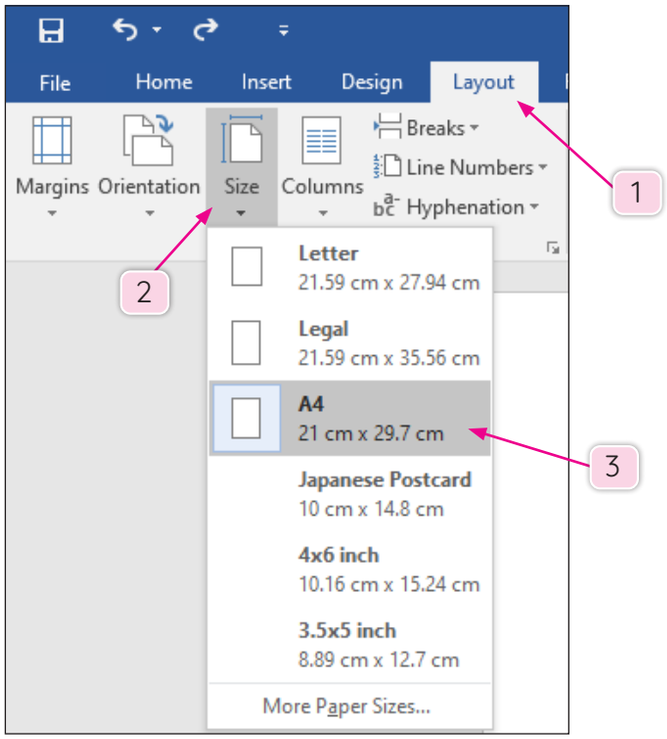
Page Size

Paper size means the actual length and width of the paper. There are different sizes of paper for different types of documents**.** We can choose the page size according to the requirement. **Letter** is the default paper size in Word.

Follow these steps to change the page size:

1. Click on the **Layout** tab.
2. Click on the **Size** command in the **Page Setup** group**.**
3. Choose the paper size you want for your document.

   A4 is the standard Paper size.



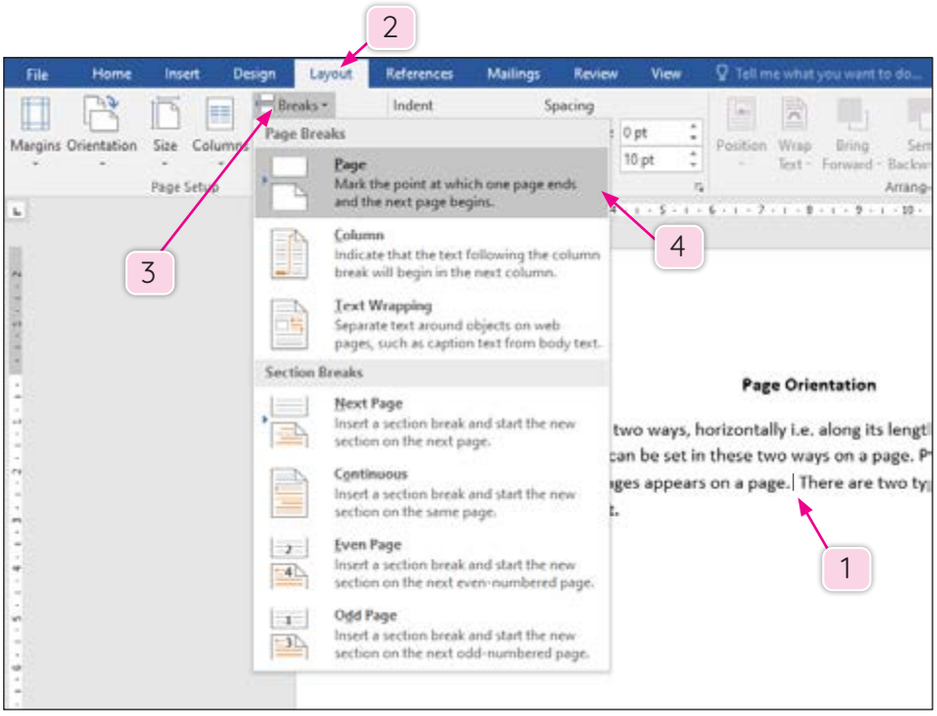
Page Breaks

Page breaks command is used to end a page at a certain point. We can insert a Page Break using the Page Breaks command.

Follow these steps to insert a page break in a document**:**

1. Click where the Page Break is to be inserted.

2. Click on the **Layout** tab.
3. Click on the **Page Breaks** command in the **Page Setup** group.
4. Choose the page size you want to use. A page break will be inserted in the file.



FORMATTING A PARAGRAPH

We can change the appearance of a paragraph. Paragraph formatting is a change in the appearance of the paragraph such as alignments, line and paragraph spacing, highlighting, adding borders, etc.

Let us learn how to format line and paragraph spacing.

Line Spacing

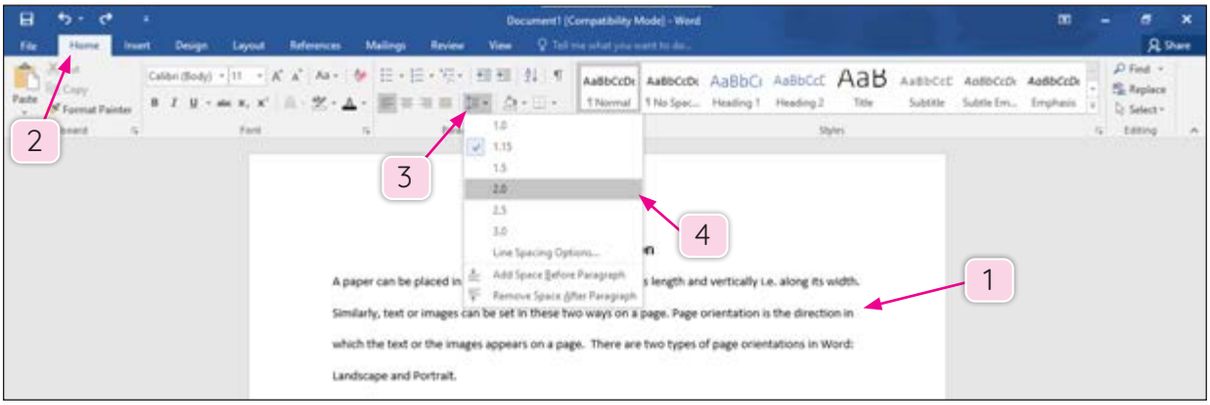
Line spacing refers to the amount of vertical space between each line of text in a paragraph. Word offers multiple options to change the spacing such as 1, 1.15, 1.0, 2.0, etc.

Method 1

Follow these steps to change the line spacing in a paragraph:

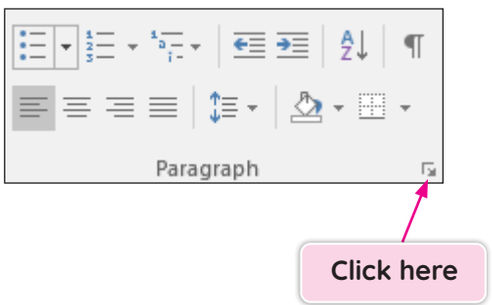
1. Place the cursor where you want to change the line spacing in the paragraph without selecting it.
2. Click on the **Home** tab.
3. Click on **Line and Paragraph Spacing** tool in the **Paragraph** group.

4. Place the mouse pointer on the various line spacing options. You can see the preview of the line spacing. Choose the line spacing you want.



Method 2

Click on the **Paragraph** pull-down arrow of the **Paragraph** group under the **Home** tab. A **Paragraph** dialog box will open**.** Choose a style of line and click on the **OK** button**.**



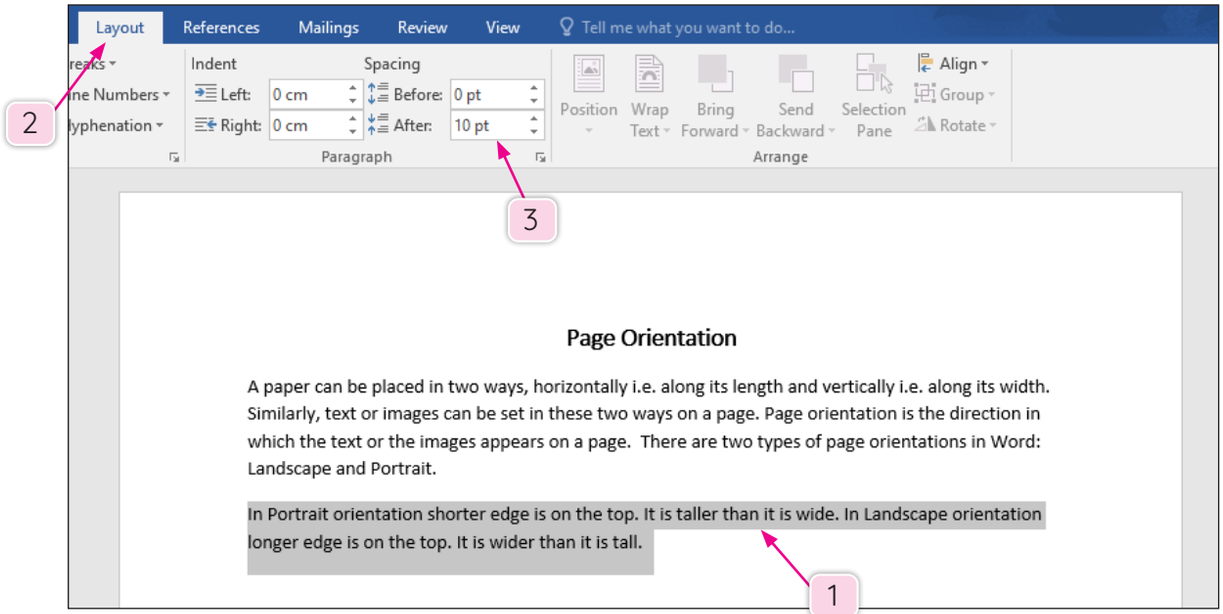
Paragraph Spacing

Paragraph spacing refers to the amount of vertical space between paragraphs.

Follow these steps to change the paragraph spacing:

1. Select the paragraphs for which you want to change the spacing.
2. Click on the **Layout** tab.

3. In the **Spacing** section of **Paragraph** group, either enter the value or use arrow keys for **Before** Before: 0 pt and **After** After: 10 pt to change the space at the beginning and at the end of a paragraph.



MAIL MERGE

Mail merge in MS Word is a feature that helps us to create and send multiple letters and invitations to many people. Using this feature, we can send the same text to different addresses. It is a very helpful feature as we do not need to create the letter or invitation for each person separately.

These are three main steps of the mail merge process:

I. **Creating a main document**

The main document contains the basic text that is same in all the documents. It is the body of the letter or invitation. It contains merge fields with instructions to insert text from a data source such as the addresses or the name of the recipient.

II. **Creating a data source**

Personalized information of the recipients of the letter or the invitation is contained in a data source. The information can be names, addresses, e-mail addresses, phone numbers, etc. This information is inserted in the merge field of the main document.

III. **Merging the documents**

The main document and the data source will be combined.

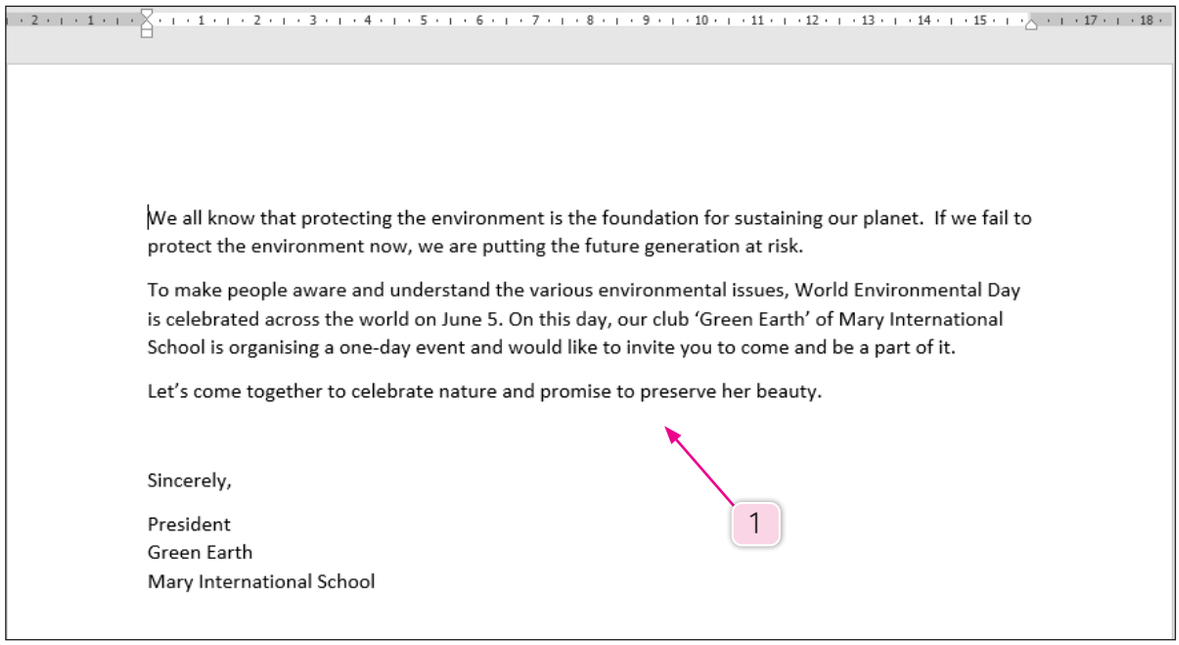
Let us learn how to create these documents and merge them.

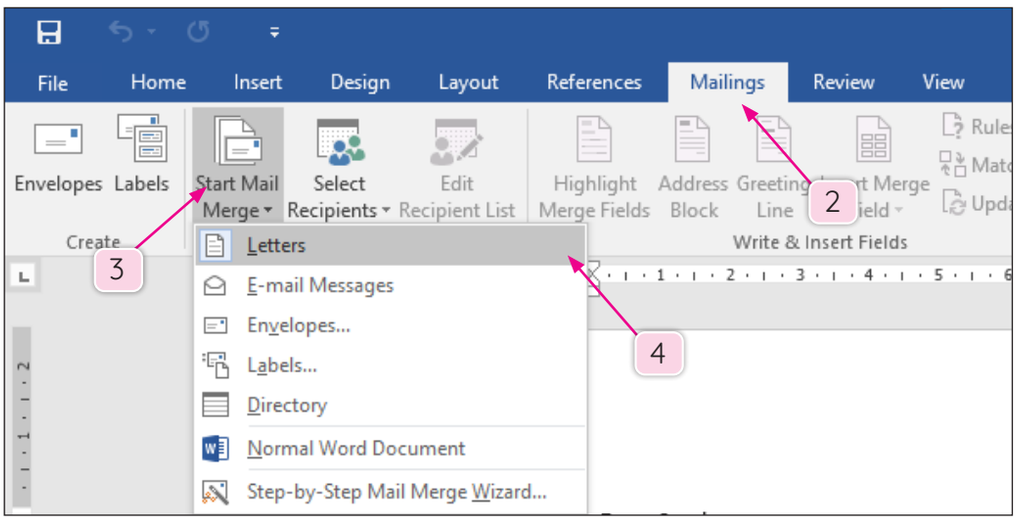
I. Creating a main document

You are the President of the club 'Green Earth' and the club is organizing a one-day event on June 5 to observe World Environment Day. You have to send out the invitation to the students.

Follow these steps to create the main document:

1. Open **Word** and type the invitation.
2. Click on the **Mailings** tab.
3. Click on the **Start Mail Merge** option in the **Start Mail Merge** group. A drop-down menu will appear.
4. Select and click on **Letters** from the drop-down menu.



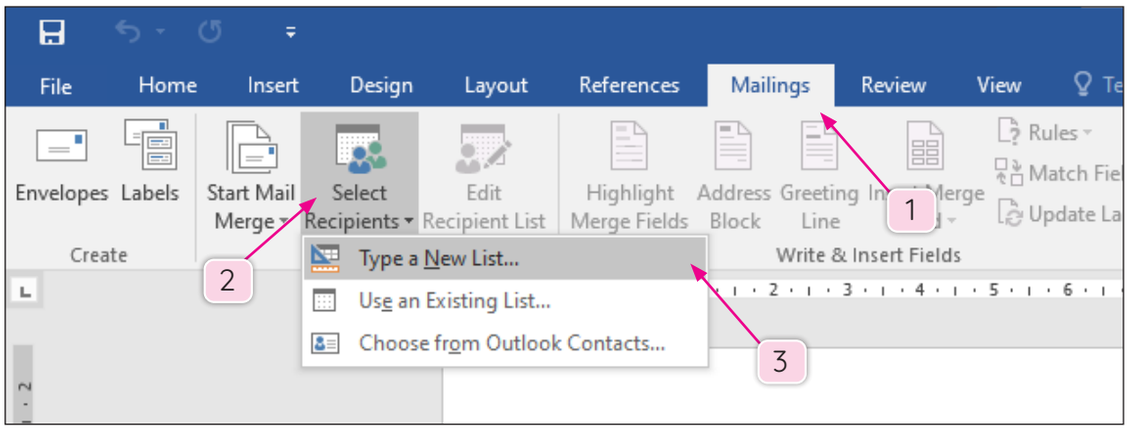


II. Creating a data source

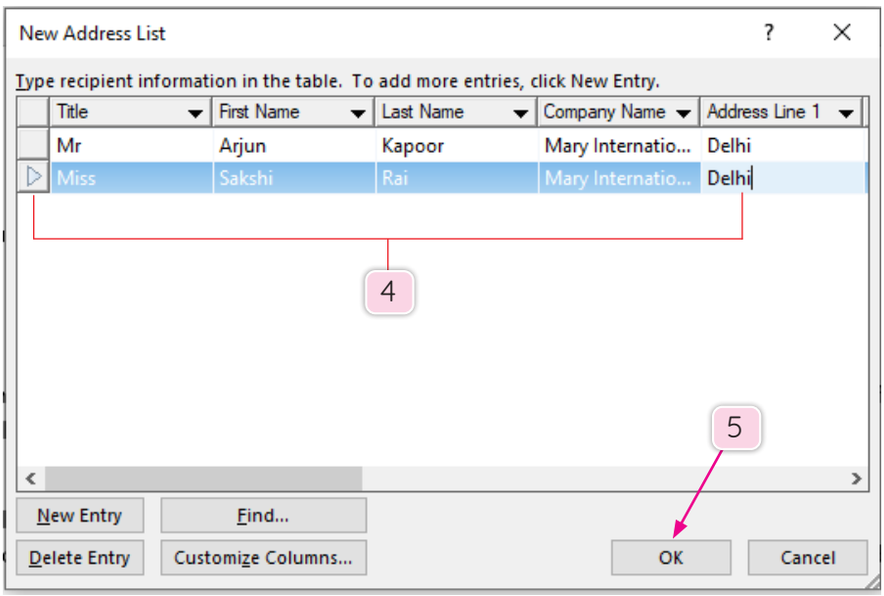
After the main document is ready, we have to select the recipients.

Follow these steps to select the recipients:

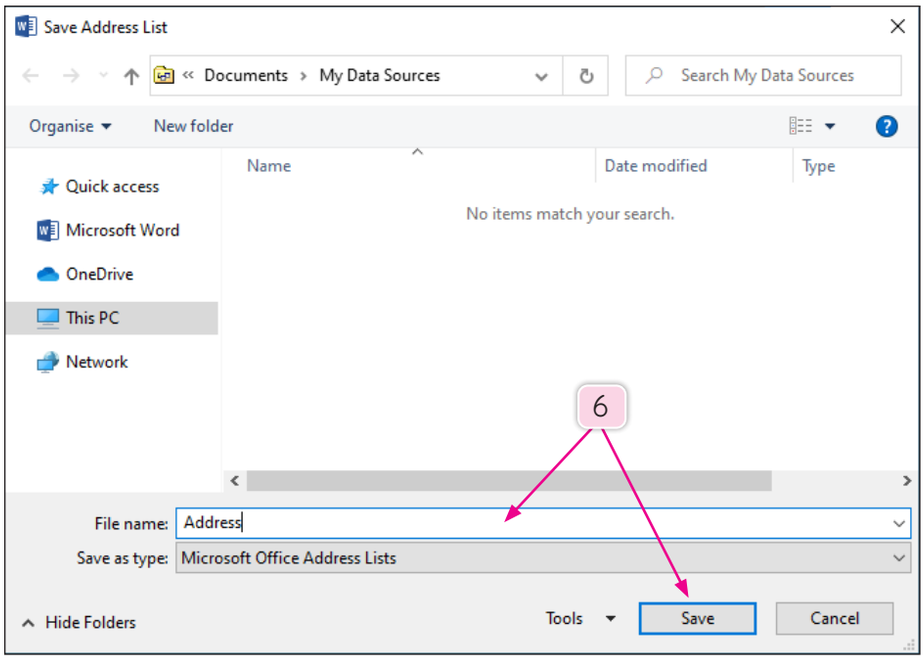
1. Click on the **Mailings** tab.
2. Click on the **Select Recipients** option in the **Start Mail Merge** group. A drop-down menu will appear.
3. Click on **Type a New List** from the drop-down menu. A New Address List box will appear.



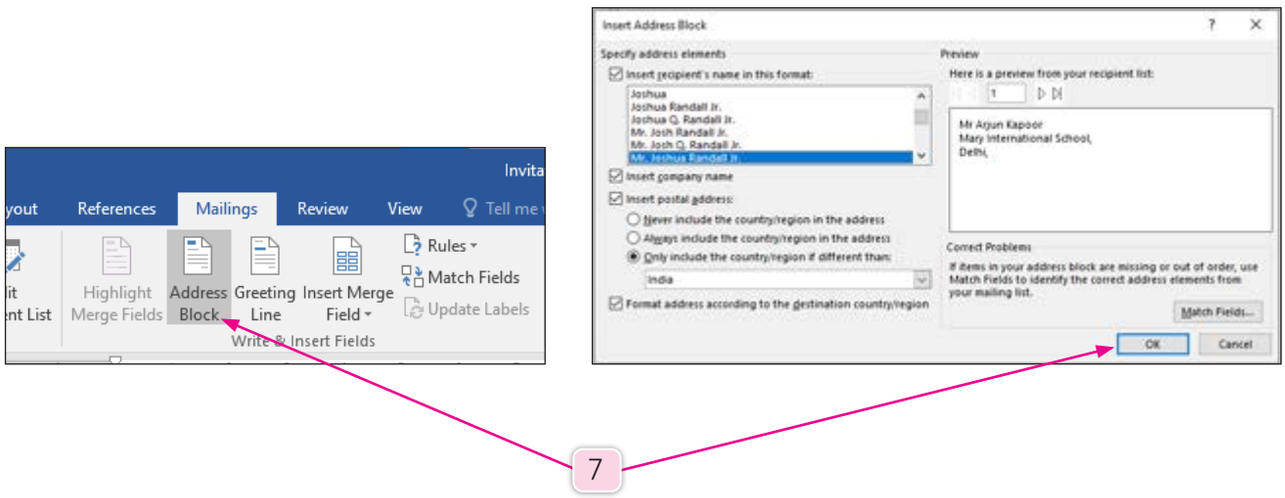
4. Type the details of the recipients in the **New Address List** box.
   a. To add another, select New Entry.
   b. To delete an entry, select Delete Entry.
5. Click on the **OK** button after entering the details. A Save Address List box will appear where the address can be saved.



6. Type the name of the list to save in the **File name** box and click on the **Save** button.

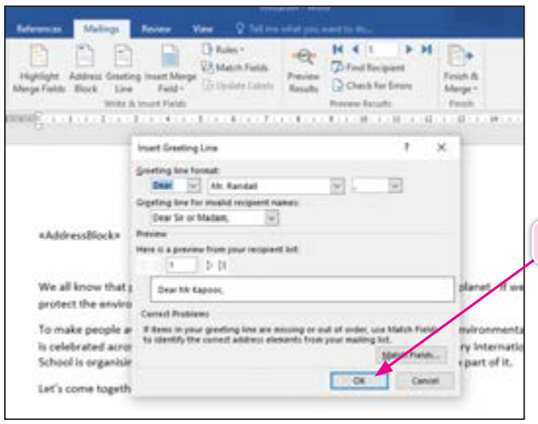


7. Then place the cursor where the addresses of the recipients are to be added and click on the **Address Block** options from the **Write and Insert Fields** group in the **Mailings** tab. A window with a preview of the address will appear. Click on the **OK** button.

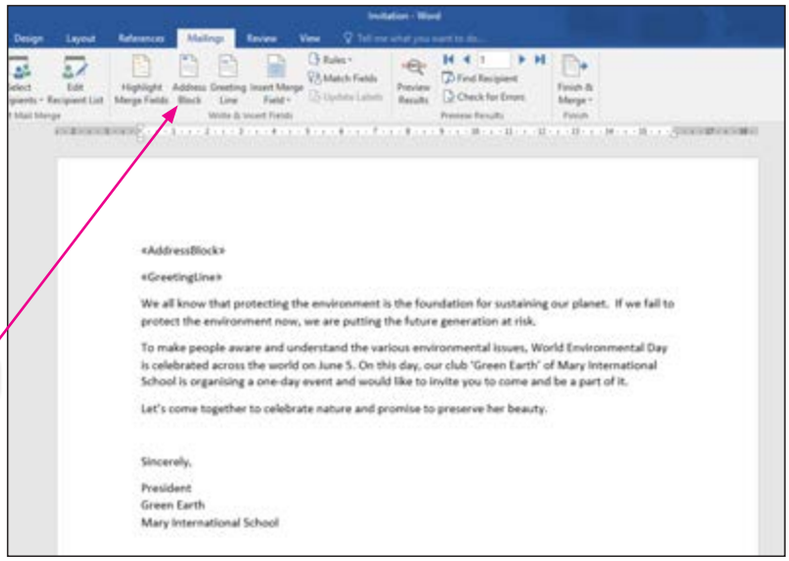


<<Address Block>> will appear in your document. We can also edit the details of the recipients using the option **Edit Recipient List** from the Start Mail Merge group.

8. To add a greeting line for the addressee, click on the **Greeting Line** command. A window with a preview of the greeting line will appear. Click on the **OK** button. <<GreetingLine>> will appear in your document.

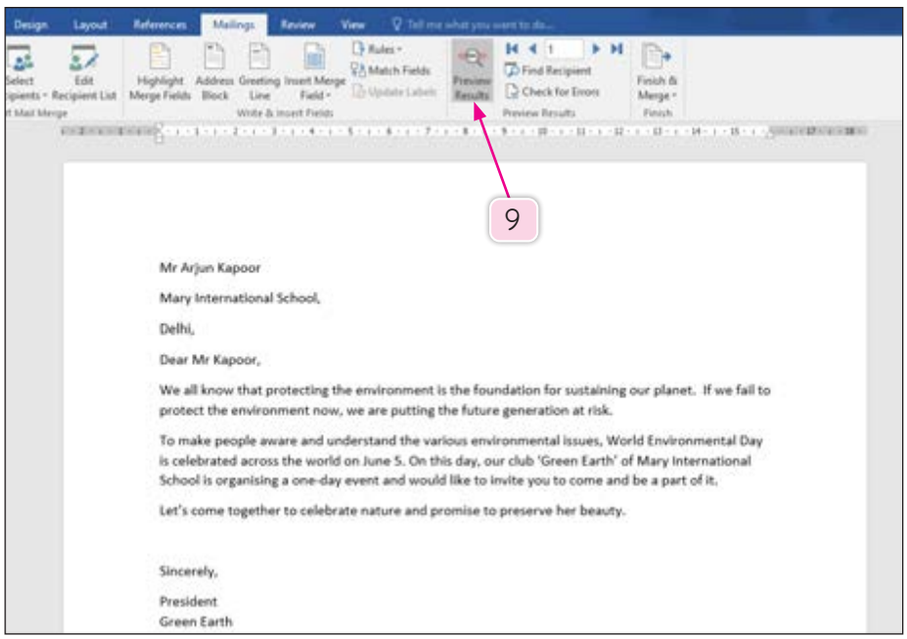


Greeting Line



Fields merged into the invitation

9. To see a preview of the letter, click on the **Preview Results** button from the **Preview Results** group.



Preview of the final invitation

III. Merging the documents

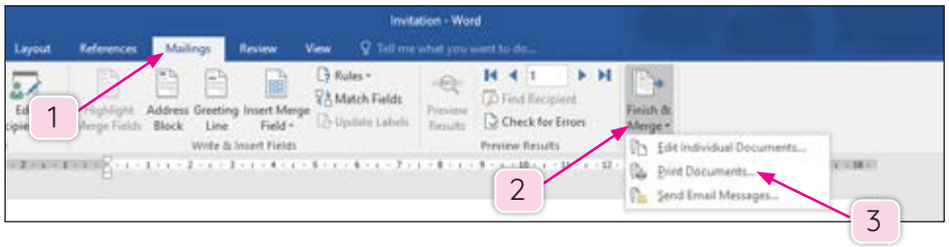
We have to merge the main document and the data source after creating both documents.

Follow these steps to merge the two documents:

1. Click on the **Mailings** tab.

2. Click on **Finish & Merge** command in the **Finish** group. A drop-down menu will appear.

3. Select and click on **Print Documents** from the drop-down menu to print the personalized copies of the letters.



NEWS FEED

CM

The games "Ribbon Hero" and "Ribbon Hero 2," designed by Office Labs, are developed to help users learn the features of Word 2007 and 2010.

ACTIVITY TIME

CM CT

Write the name of the groups where you can find these tools and commands.

1. Find tool
2. Thesaurus tool
3. Orientation
4. Line and Paragraph Spacing tool
5. Page Breaks

REFRESH

- Thesaurus is a collection of words that have similar meanings.
- The Find feature in Word helps us to find a word or phrase and replace it in the document.
- Page formatting means arranging the elements of a page in a layout that we want.
- Page orientation is the direction in which the text or the images appears on a page.
- In Word there are two types of page orientations—Landscape and Portrait.
- Paper size means the actual length and width of the paper.

- Page break is used to end a page at a certain point.
- Paragraph spacing refers to the amount of vertical space between paragraphs.
- Mail merge in MS Word is a feature that helps us to create and send multiple letters and invitations to many people.

BROWSE

A **Choose the correct option.**

1. It is the arrangement of elements of a page in a layout that we want.

   a. Page Formatting ☐ b. Page Orientation ☐ c. Page Breaks ☐

2. It is the length and width of the paper.

   a. Page Orientation ☐ b. Page Breaks ☐ c. Page Size ☐

3. It is to change the appearance of a paragraph.

   a. Page Formatting ☐ b. Paragraph Formatting ☐ c. Page Breaks ☐

4. It is a feature of Word that helps us to create and send multiple letters and invitations.

   a. Start Mail Merge ☐ b. Mailings ☐ c. Mail Merge ☐

5. It is the final step in the mail merge process.

   a. Creating a main document ☐ b. Creating a data source ☐

   c. Merging the documents ☐

B **Fill in the blanks using the words given below.**

two	formatting	Size	page	Thesaurus

1. _____ is a collection of words that have similar meanings.
2. There are _____ types of page orientation in Word.
3. _____ command is found in the Page Setup group.

4. Line spacing and paragraph spacing are parts of paragraph _____.

5. Page breaks is a command to format a _____.

C Write T for true statements and F for false statements.

1. Word has a feature that allows you to find and replace words. _____

2. There is only one size of paper for different types of documents in Word. _____

3. The page orientation is fixed in Word. _____

4. Word has multiple options to change line spacing. _____

5. Paragraph spacing refers to the amount of horizontal space between paragraphs. _____

D Answer the following question in one word or one sentence.

1. What is the default page orientation in Word?

2. What do call a document that is taller than it is wide?

3. What do you call a document that is wider than it is tall?

4. What is the default paper size in Word?

5. Which feature of Word is used to insert a page break?

E Answer the following questions.

1. What is paragraph spacing? Write the steps to change the spacing between paragraphs.
2. How would you define the orientation of a page? Write the steps.
3. Differentiate between portrait orientation and landscape orientation.
4. What are the main steps of the mail merge process?
5. Write the steps to create a data source.

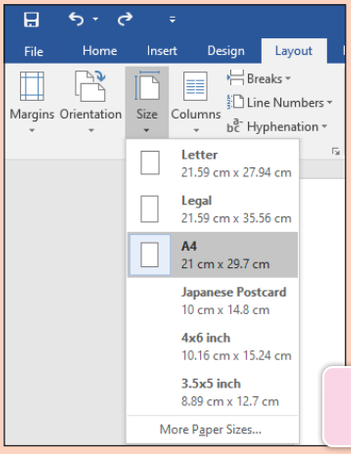
ACTIVITY TIME

CT

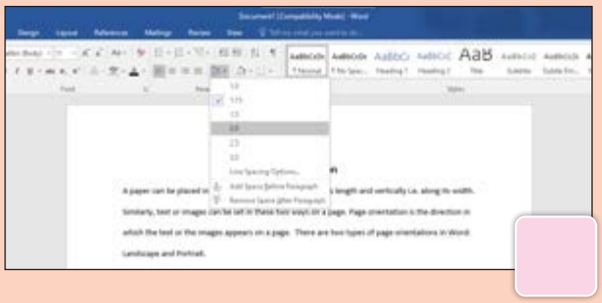
Fill in the boxes with the correct numbers.

1. Changing page orientation
2. Inserting page break
3. Creating data source in Mail merge
4. Changing line spacing

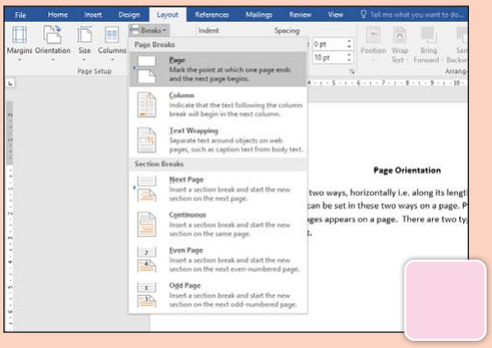
a.



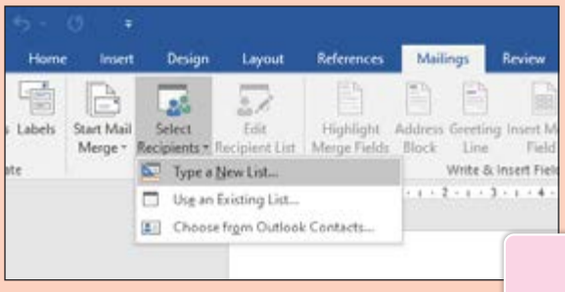
b.



c.



d.



LET'S EXPLORE

EL TE

In the computer lab, perform this task.

- Open MS Word.
- Set the page orientation in Portrait.
- Change the font style to Times New Roman, size 14 point.
- Type the following text.
- Center align the title.

Sharing and Caring

Sharing is an act of kindness where we offer something of ours to someone else who might need it. We can also say sharing is a process of dividing and distributing. It also means joint use of resources or space. Sharing is developed over the years. Since childhood, we are taught to share our toys and play together with friends and siblings.

Sharing is an important social-skill. It strengthens social ties. It helps create trust, security and happiness. When we share it not only shows we care for others but also helps in self-development. We learn to be humble and caring. We share not only things but also feelings and knowledge too.

Caring means to do something good for someone. It also means to show kindness and concern for another person. Caring is also supporting someone when he/she goes through tough times. It is also helping someone in times of need.

- Change the line spacing on both paragraphs to 1.5 spacing.
- Right align the first paragraph.
- Justify the second paragraph.
- Left align the third paragraph.
- Find the word **caring** and replace it with **compassionate** in the entire text.
- Find the meaning of the following words using the Thesaurus:

kindness **resources** **humble** **tough**

FOR THE TEACHER

- Explain all the features of Word that can be used to edit a document.
- Demonstrate how to find and replace text, format page, and mail merge.

PERIODIC ASSESSMENT 1

A. Identify the pictures and write their names.

1. _____ 2. _____ 3. _____

B. Name the inventor of these machines.

1. Pascaline: _____
2. Leibnis Step Reckoner: _____
3. Analytical Engine: _____

C. Fill in the blanks.

1. _____ is the first computer programmer.
2. ENIAC is the _____ generation computer.
3. In _____ orientation, shorter edge is on the top.
4. _____ is the default size in Word.
5. Page _____ means arranging elements of a page in a layout that we want.

D. Match the following.

1. Find tool	a. Paragraph Group
2. Landscape	b. Editing Group
3. Size command	c. Start Mail Merge
4. Line and paragraph	d. Page Orientation
5. Select Recipients option	e. Page Setup

Chapter 3

Formatting a Presentation—Adding Special Effects

LEARNING OBJECTIVES

Scan QR Code to watch a video

In this chapter, students will learn about:

- Themes
- Working with Slide Master
- Changing the background
- Inserting SmartArt
- Slide transitions
- Animation effects

SIGN IN

CM CR

Introduce yourself to the class. You can use pictures of you and your family to make it more interesting.

You might want to include:

- facts about you
- facts about your family
- your likes and dislikes
- your thoughts about the school
- your Personality
- your future plan

PowerPoint is a program used to create a presentation. Presentation is a commonly used tool to share information and ideas with a group of people. We can use words, pictures, audio, videos and other multimedia in a PowerPoint presentation. To make a presentation more effective we can format and add special effects.

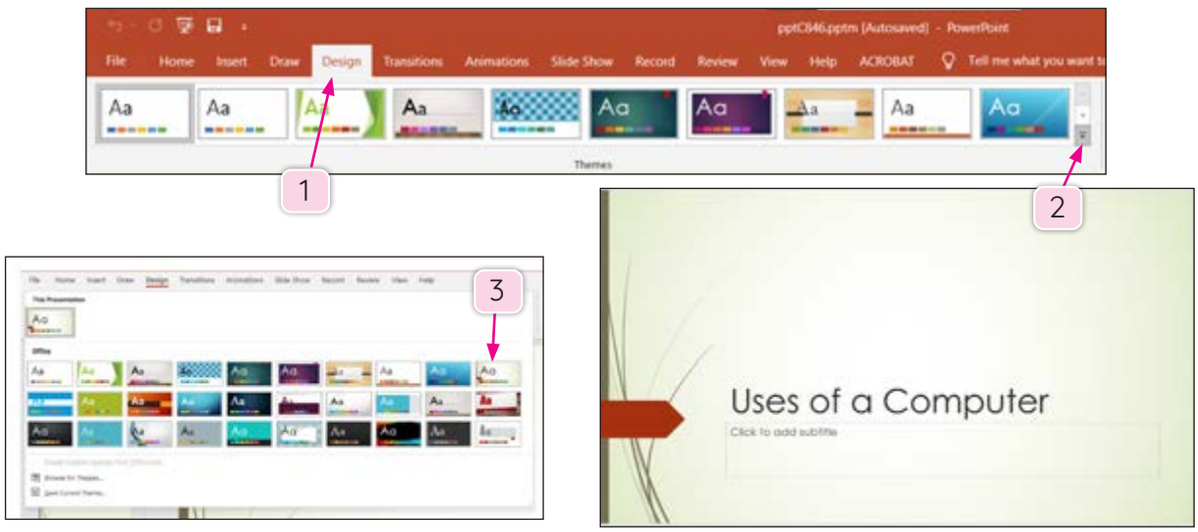
THEMES

We can make a presentation in a blank presentation or use a theme. A theme is a set of colours, fonts and visual effects that the slides in a presentation have in common. Themes offer an easy option to change the look or design of a presentation. The elements in a theme such as colours, fonts and effects are pre-set and different for each theme.

Applying theme

Follow these steps to apply a theme to your presentation:

1. Click on the **Design** tab. A list of available themes will appear.
2. Click on the More drop-down arrow to see all the available themes.
   Hover the mouse pointer over a theme to see a preview of the theme in the presentation.
3. Select and click on the theme you want to apply to your presentation. The theme will be applied to the presentation.



Selected theme of the presentation

MODIFYING THEMES

We can modify the elements of a theme after it is chosen using the variants group. Variants give the option to change colour, font, effect and background for the same theme.

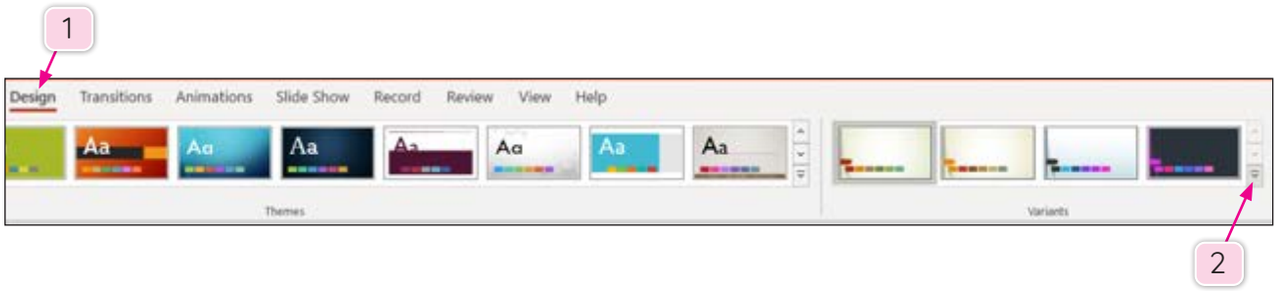
Variants group

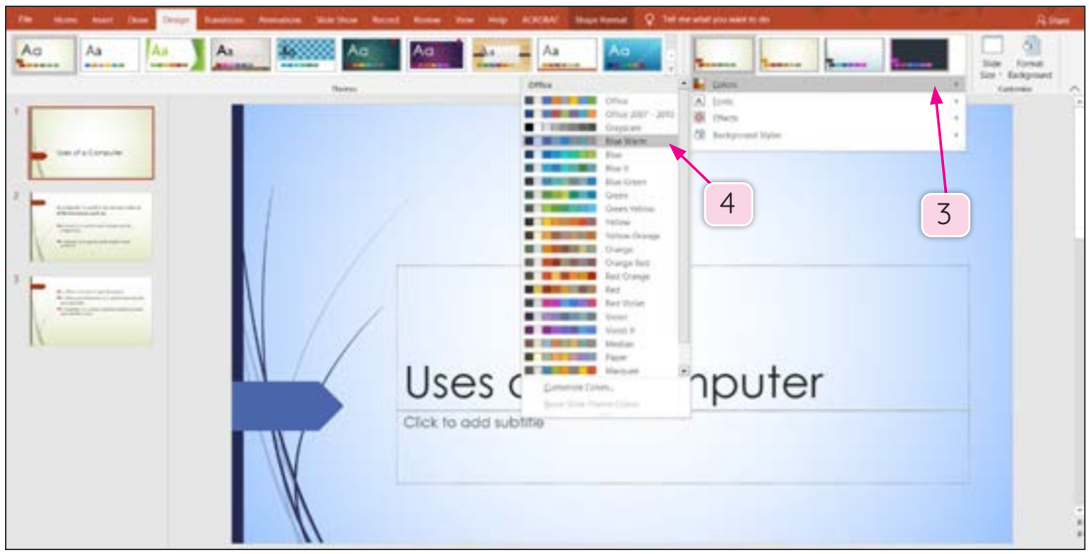
Change Theme Colours

Follow these steps to change the theme colours:

1. Click on the **Design** tab.
2. Click on the **drop-down arrow** in the **Variants group**.
3. Select colours from the options.

   A menu for various colour options will appear. Hover the mouse to see a preview of the colour.
4. Select the colour you want to apply.



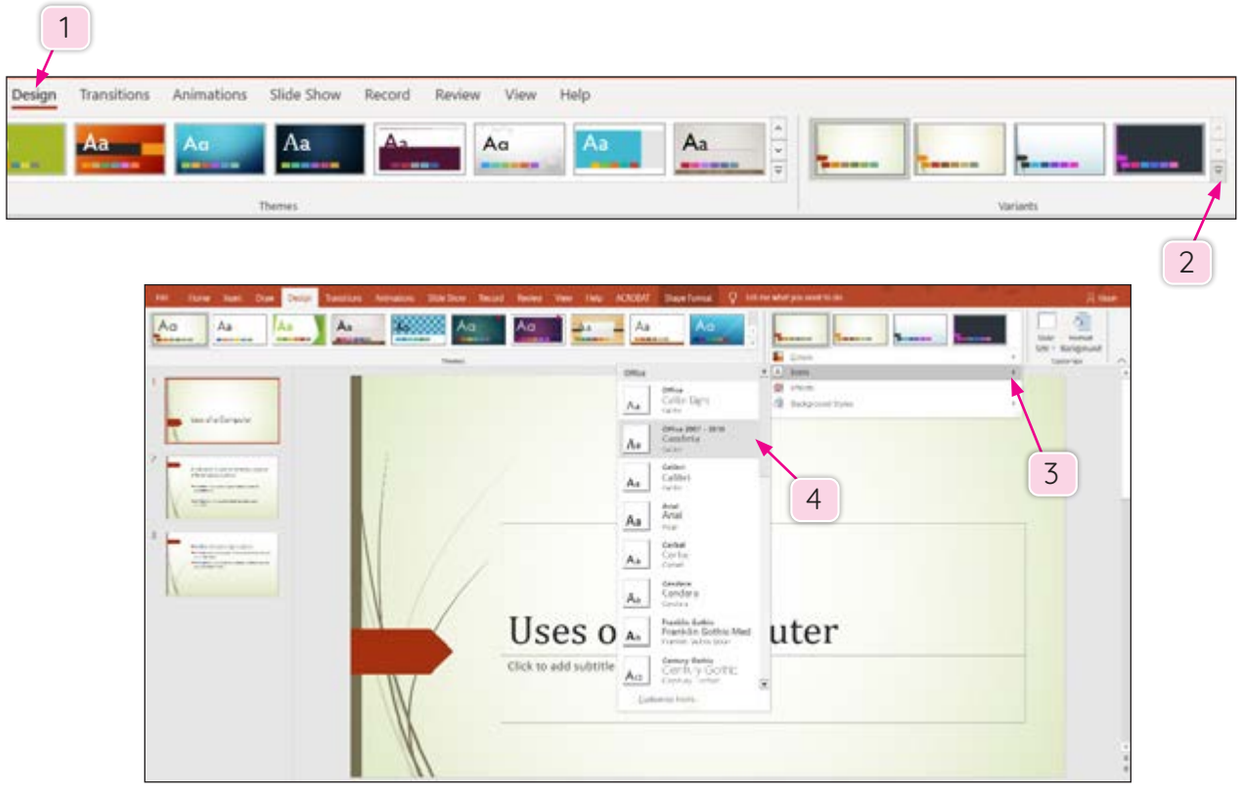


Presentation in different theme colours

Change Theme Fonts

Follow these steps to change the fonts:

1. Click on the **Design** tab.
2. Click on the **drop-down arrow** in the **Variants group**.
3. Select **Fonts** from the options. A menu for various font options will appear.
4. Select the font you want to use.



Similarly, we can change to new theme effects and background styles using the **Effects and Backgrounds** option in the **Variants group**.

WORKING WITH SLIDE MASTER

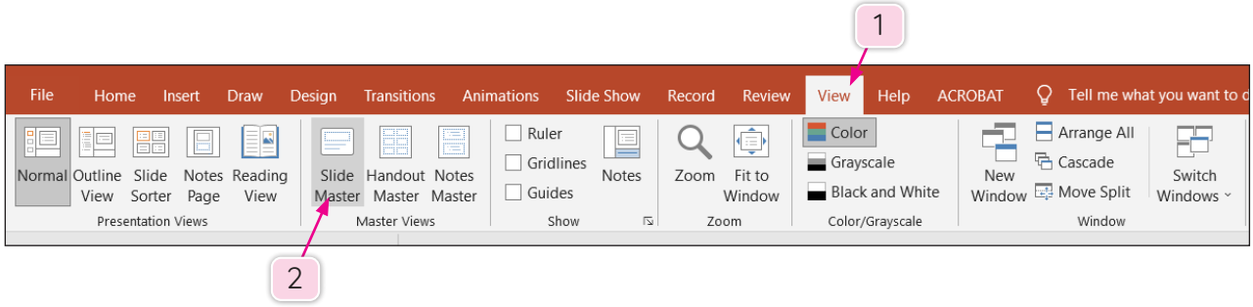
In PowerPoint, the slide which is used to create the default layout and the appearance of the presentation is the **Slide Master**. When new slides are added to the presentation and slide layout is applied, the slides are automatically formatted according to the slide master.

We can use slide master to make these changes in all the slides at the same time:

- Rearrange the placeholders
- Modify and customize the background
- Edit and format text such as font, font color, etc.

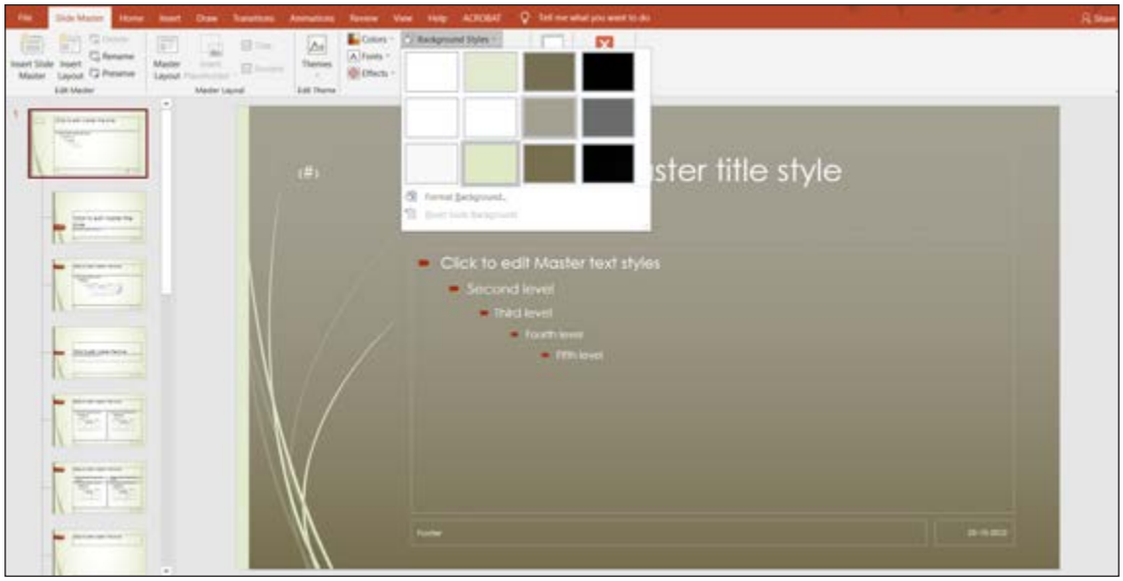
Follow these steps to create and modify slide masters:

1. Click on the **View** tab.
2. Click on **Slide Master** command in the **Master Views** group.

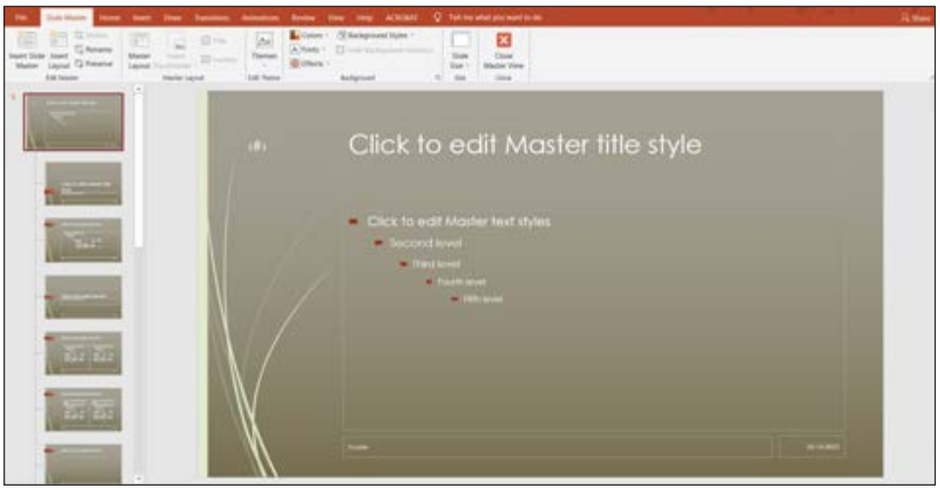


The **Slide Master Task** pane will appear on the left side of the PowerPoint. The first slide on the task pane is the **Slide Master**. It appears as the active tab on the ribbon. Make the required changes in the **Slide Master**. In this presentation, we will change the background style. Changes we make in the Slide Master will affect in each slide layout.

3. To edit the background style, click **Background Style** in the **Background** group of the **Slide Master** tab. A drop-down menu will appear, showing the background options. Select the one you want to use.



The Slide Master will take on the selected background style and it will reflect on all the slides.



4. When all the changes are made, click on the **Close Master View** command to close the **Slide Master**.

NEWS FEED

CM

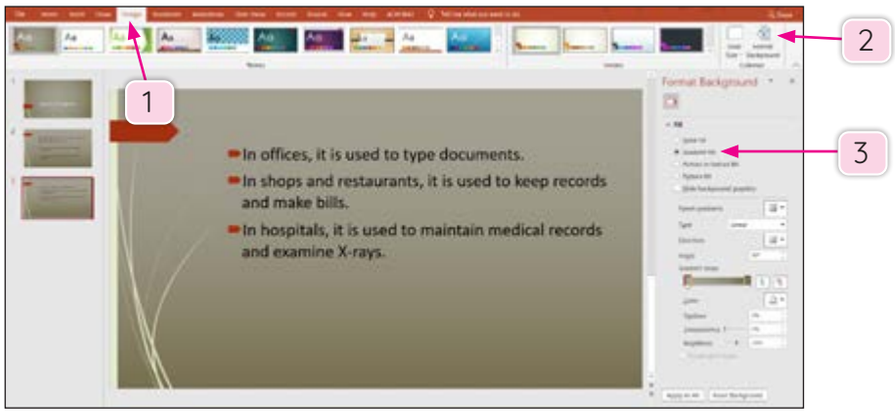
PowerPoint was created in 1987 by a company called Forethought Inc. and was originally called 'Presenter'.

CHANGING THE BACKGROUND

Follow these steps to change the background of the slides:

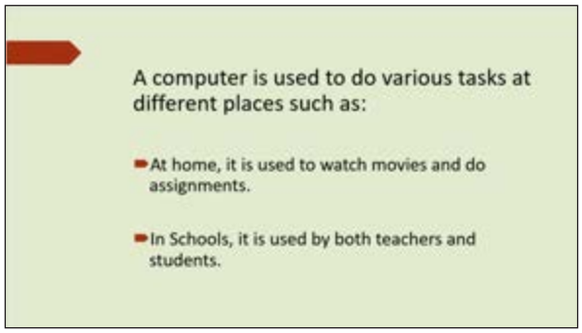
1. Click on **Design** tab.
2. Select **Format Background** command in Customize group. On the right side of the window, a **Format Background** task pane will open.

3. Choose and click on the radio button of the fill option you want.



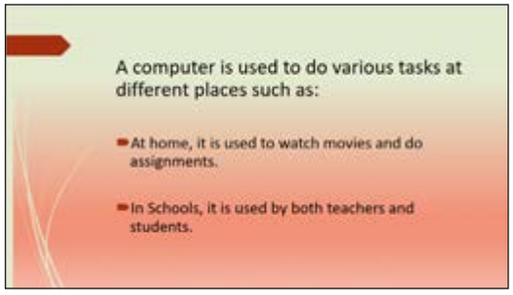
Format Background has four fill effects—

- **Solid Fill:** It is used to add one solid colour background to the slides. Click on the down arrow of Color option to choose any colour.

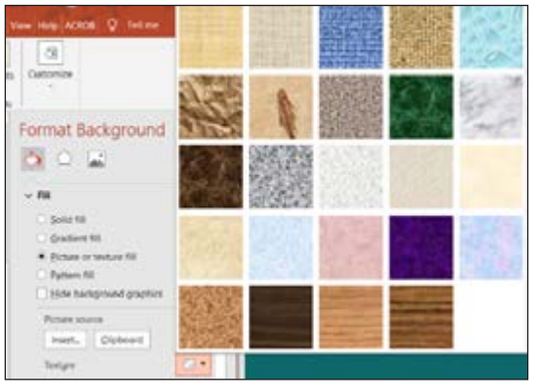


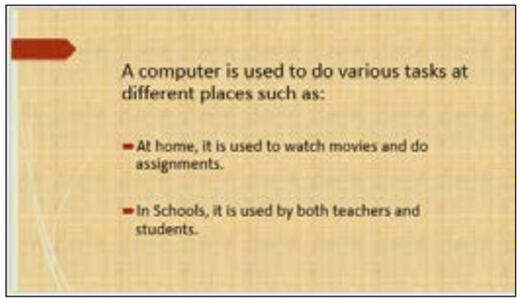
A slide with the selected colour

- **Gradient Fill:** It is used to change the background of the slides with two or more colours. In gradient fill, there is a gradual change from one colour to another. Click on the down arrow of Preset Gradients to choose the gradient you want and to choose colour, click on the Color option.

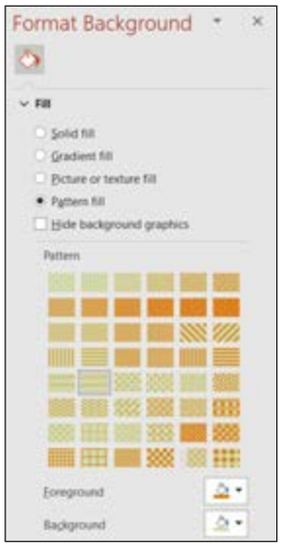


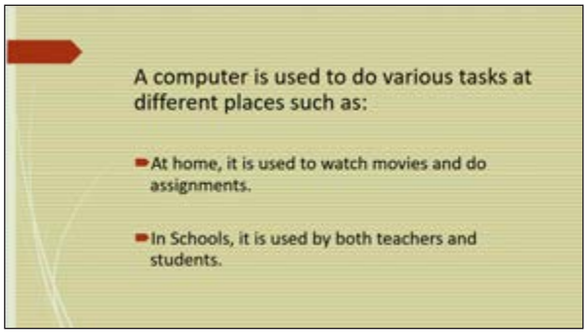
- **Picture or Texture Fill:** It is used to add a picture or a texture to the background of a slide. Click on the **Insert** button in **Picture** source section to add a picture. Click on the drop-down of the **Texture** option to add a texture. Here we have added a texture to the background.





- **Pattern Fill:** It is used to add a pattern of two colours to the background of a slide. Choose the pattern of your choice from the available patterns. The foreground and background colours can also be changed.





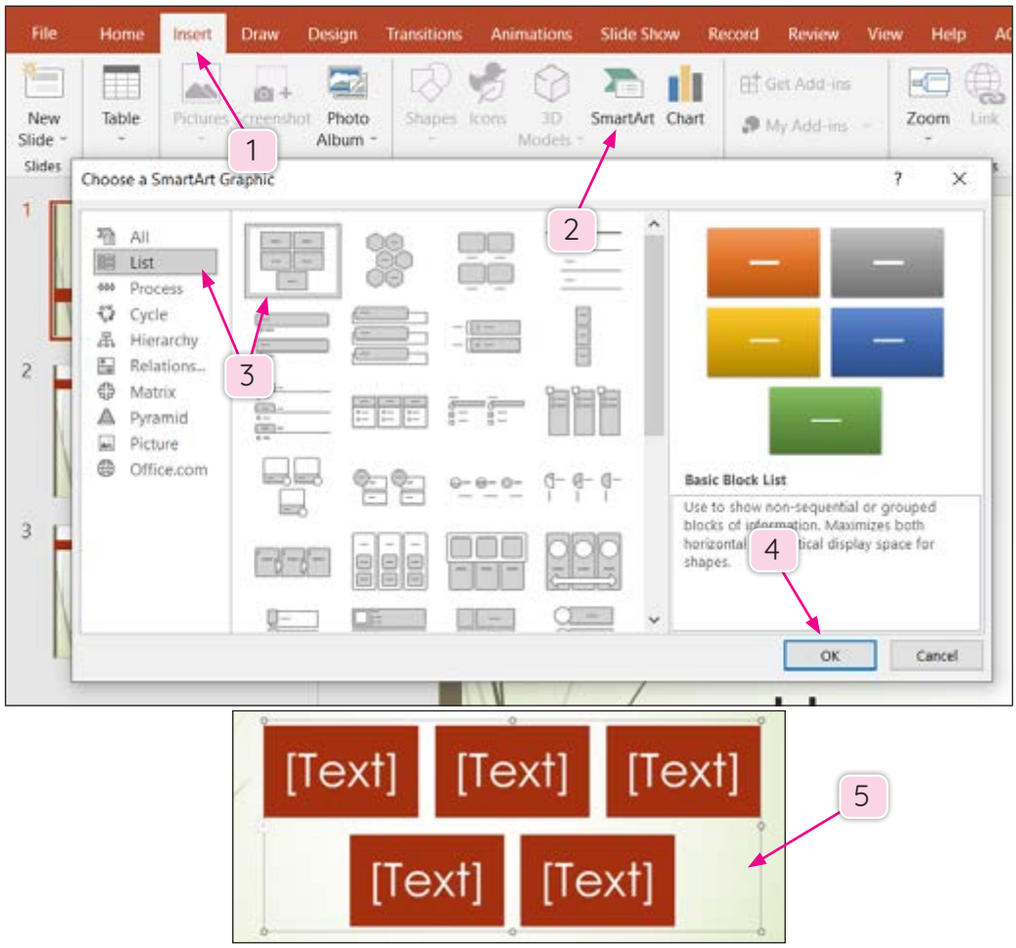
INSERTING SMARTART

In PowerPoint, we can present information and ideas in graphic form using **SmartArt**. A SmartArt graphic is a visual representation of information and ideas through graphics that contain text. SmartArt graphics has eight categories—**List, Process, Cycle, Hierarchy, Relationship, Matrix and Picture.**

Follow these steps to insert SmartArt to your slide:

1. Click on **Insert** tab.
2. Select **SmartArt** in Illustration group. A **Choose a SmartArt Graphic** dialog box will appear.

3. Choose a category and a graphic layout. When you click on the graphic layout option, a preview of the layout will appear. Here we have chosen **List**.
4. Click **OK** button.
5. To type the desired text, click on **[Text]** in each individual shape.



The look of SmartArt can be changed by changing the fill of its shape or text, by adding effects such as shadows, reflections, glows or soft edges.

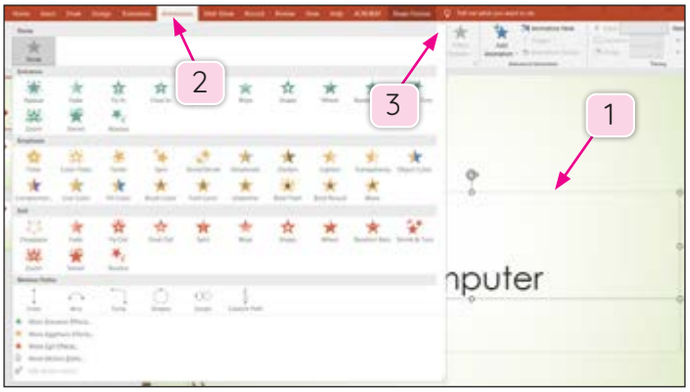
ANIMATION EFFECTS

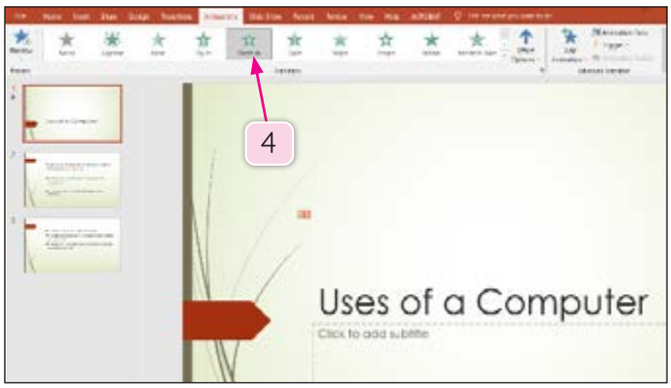
Animation is the element used in a presentation that makes objects move on a slide. It is a special visual effect. Animation effects are used to make a presentation more interesting and attractive. It enhances the appearance of the presentation.

Follow these steps to add animation to your presentation:

1. Click on the image or the text to be animated.
2. Click on the **Animation** tab.
3. Click on **More button** in the Animation group. A drop-down menu with various animation effects will open.

4. Choose the animation effect you want to apply. A number will appear before the selected text or object.





Types of Effects

The various animation effects are grouped into four categories.

- **Entrance:** Entrance effects control the way objects appear on your slide.

- **Emphasis:** Emphasis effects control how the audience's eye is drawn to the animated object.

- **Exit:** Exit effects control how the animated objects will leave the slide.

- **Motion Paths:** Motion paths control the movement of your text or objects around the slide.

NEWS FEED

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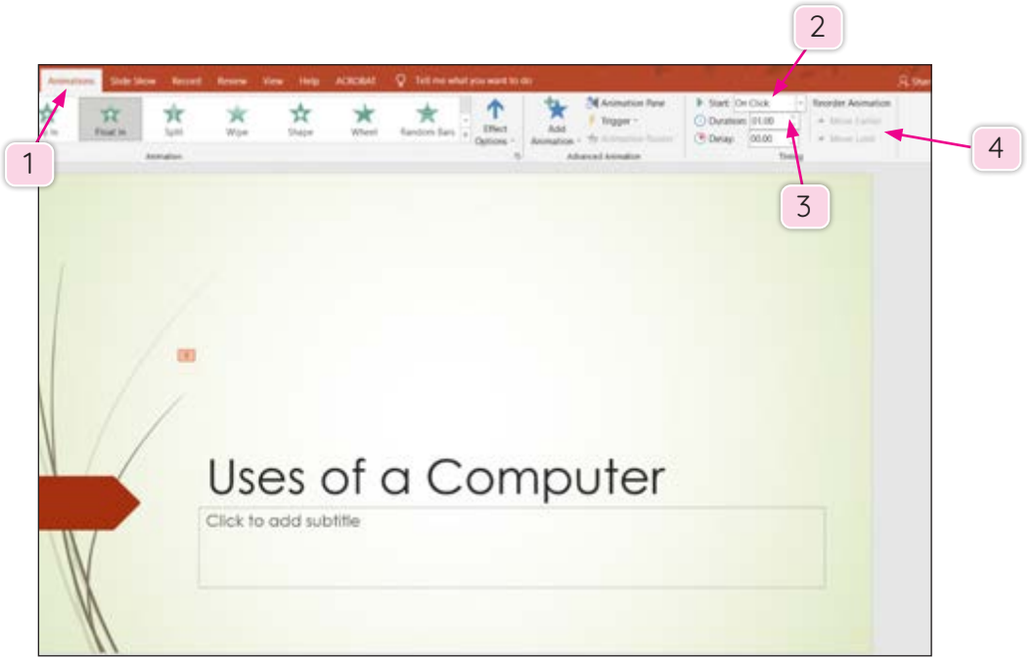
The average number of words on a PowerPoint slide is 40 words.

Timing of animation effects

Follow these steps to add or modify the timing of the animation effects:

1. Click on the **Animation** tab.
2. Click on the drop-down menu of **Start** in the **Timing** group. Select the option you want to apply.
   - **On Click:** The animation will begin on the click of the mouse.
   - **With Previous:** The animation begins at the same time as the previous animation in the list.
   - **After previous:** The animation will begin immediately after the previous animation end.



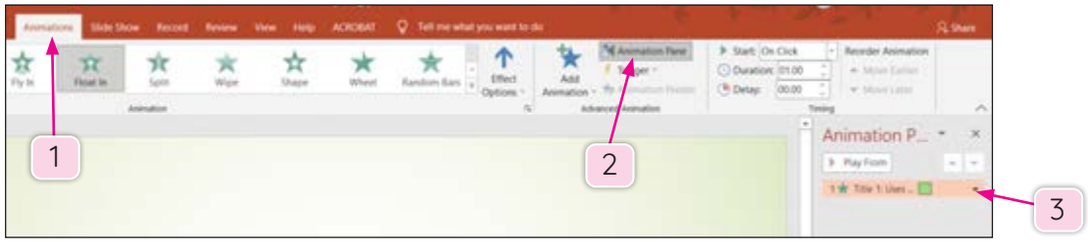
3. In the **Duration** box, enter the number of seconds that you want the animation to run.
4. Click on **Move Earlier** or **Move Later** to reorder the animation.

Animation Pane

Follow these steps to open Animation Pane:

1. Click on **Animation** tab.
2. Click on **Animation Pane** in **Advanced Animation** Group.
   A task pane will appear on the right side. This will show the number of text or object with the applied animation effects.

3. Click on the down arrow of each applied animation effect, if you want to reorder them.



Removing an Animation Effect

To remove an animation, click on the number to be removed. The number box will get highlighted and then press the **Delete** key.

Animation effects can also be removed from the **Animation Pane.** Click on the effect you want to remove and press the **Delete** key**.**

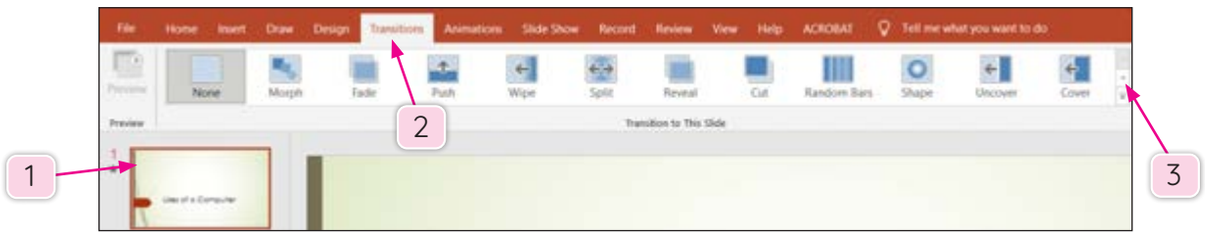
SLIDE TRANSITIONS

When we move from one slide to the next during a presentation, we can use a visual effect or animation to fill the gap between the slides. This visual effect or animation is known as **slide transition**. Transition is the way one slide follows during a presentation. We can control the speed, add sound and customize the look of transition effects.

Follow these steps to apply a transition in a presentation:

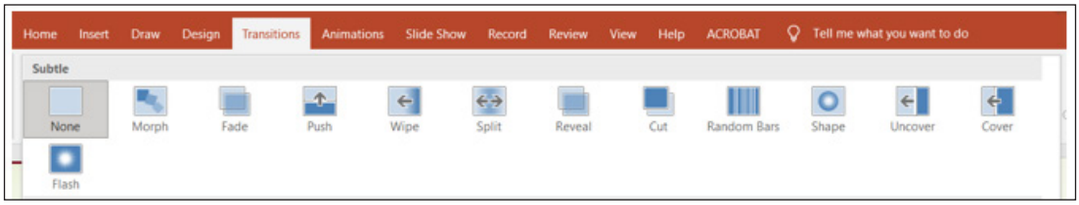
1. Select the slide you want to apply the transition from the **Slide Navigation**.
2. Click on **Transitions** tab.
3. Click on **More** button in the **Transition to This Slide** group.

A drop-down gallery of various transition effect options will open up.

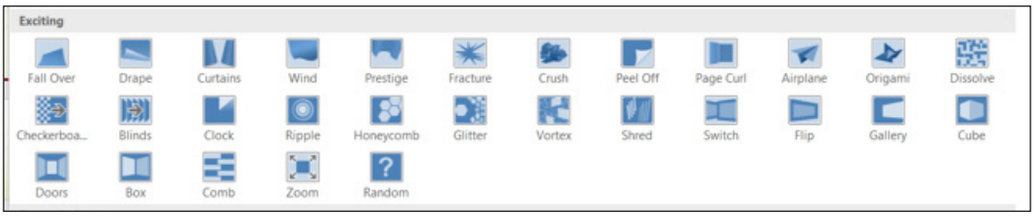


There are three categories of transition effects in PowerPoint.

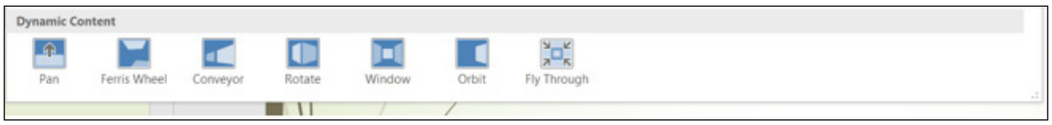
- **Subtle:** This has simple and basic transitions.



- **Exciting:** This category has more complex transitions than the basic category.



- **Dynamic Content:** These transitions are applied only to the content, such as text and images. They do not apply to the background.

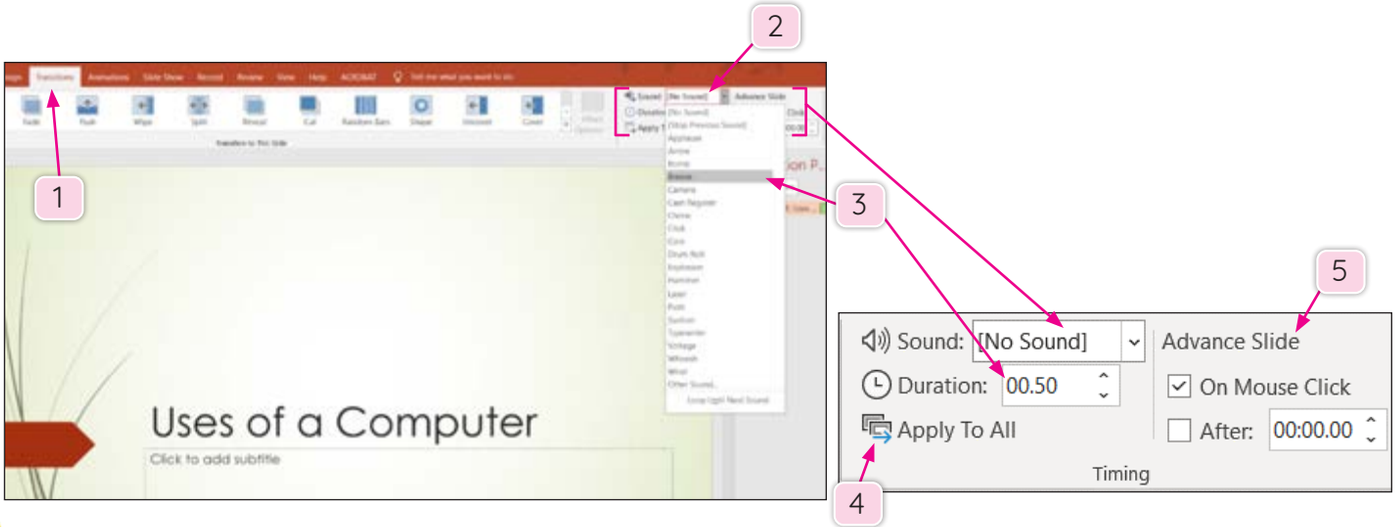


4. Click on the transition you want to apply to the selected slide. A preview of the transition will appear in the slide area.

Timing of slide transition

Follow these steps to add or modify the timing of a transition:

1. Click on **Transition** tab.
2. Click on **Sound** drop-down arrow in the **Timing** group.
3. Select the sound you want to add to your transition. Enter the duration you want to run in the **Duration** box.
4. Click on **Apply to All** option, if the transition is to be applied to all the slides.
5. Choose how you want to move to the next slide in the **Advanced Slide** option. It has two options.
   - **On Mouse Click:** The next slide will appear only when the mouse is clicked or a key is pressed on the keyboard.
   - **After:** The next slide will appear after the given number of seconds.



ACTIVITY TIME

CM CT

Identify the animation effects and write the names of their group.

1.  _____

2.  _____

3.  _____

4.  _____

REFRESH

- Presentation is a commonly used tool to share information and ideas with a group of people.
- A theme is a set of colours, fonts and visual effects that the slides in a presentation have in common.
- The colour, font, effect and background for a theme can be used using the variants group.
- Slide Master is the slide that is used to create the default layout and the appearance of the presentation.
- The background of a presentation can be changed by using the Format background command.
- Format Background has four fill effects.
- A SmartArt graphic is a visual representation of information and ideas through graphics that contain text.
- Animation is the element used in a presentation that makes objects move on a slide.

BROWSE

A **Choose the correct option.**

1. What indicates the animation order in the animation Pane?

   a. Letter ☐ b. Number ☐ c. Alphabet ☐

2. What indicates that the Sound Clip has been added on the slide?

   a. Microphone icon ☐ b. Speaker icon ☐ c. Headphone icon ☐

3. Which tab do you click to add a transition for a slide?

a. Design b. Transitions c. Animations

4. Which tab is used to change the background colour of a slide?

a. Transitions b. Animations c. Design

5. Which option allows you to select a texture for background?

a. Picture or texture fill b. Pattern fill c. Gradient fill

B Fill in the blanks with the words given below.

Entrance four Variants Subtle Motion

1. The elements of a theme can be modified using the _____ group.
2. Format background has _____ fill effects.
3. _____ effects control how the object enters the slide.
4. _____ Paths make an object move within a slide.
5. Morph effect is a _____ transition.

C Write T for true statements and F for false statements.

1. The colour of a theme can be changed through the Variants group.
2. Slide Master command is under the Animation tab.
3. Transitions help you add movement to elements on the slides.
4. Animations are visual effects between slides.
5. Slide transition is a type of effect used to make the slide disappear.

D Answer the following questions in one word or two words.

1. Which effect is used to add one solid colour background to the slides?

2. Which effect is used to change the background of the slides with two or more colours?

3. Which effect is used to add pictures and textures to the background of a slide?

4. Which effect is used to add a pattern of two colours to the background of a slide?

E **Answer the following questions.**

1. Differentiate between animation and transition.
2. What are the uses of transitions?
3. How is a Slide Master useful in creating a presentation?
4. Write the steps to change the colour scheme of a theme.
5. How can you insert sound in a presentation?

ACTIVITY TIME

CT

Match the effects with the correct names.

1.		a.	None
2.		b.	Morph
3.		c.	Fade
4.		d.	Push
5.		e.	Cover

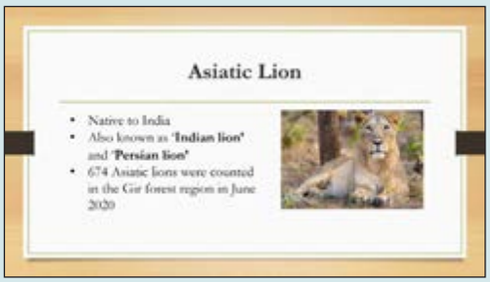
EL TE

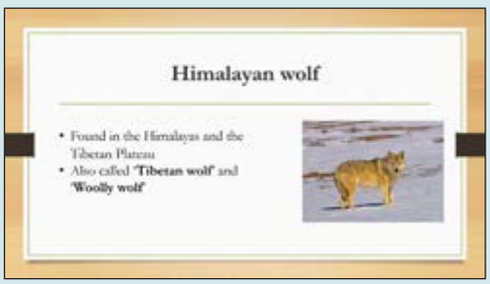
LET'S EXPLORE

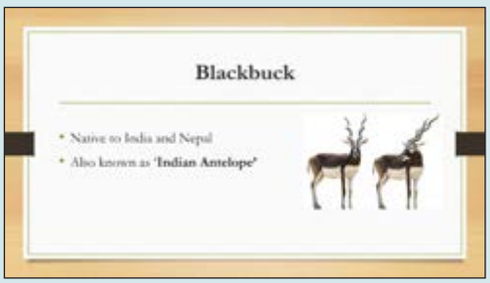
In the computer lab, do this activity.

Create a presentation on **'Endangered Animals in India'** using PowerPoint. Make these changes in the presentation.

- Change the background of the slides.
- Change font colour.
- Apply slide transition.
- Add animations.
- Add pictures related to the topic.







FOR THE TEACHER

- Explain to the students that we can make a PowerPoint presentation interesting by adding animation and transition effects.
- Explain the meaning of animation and transition effects.
- Create a presentation and demonstrate the effects discussed in the chapter.

Chapter 4

Introduction to Excel 2016

LEARNING OBJECTIVES

Scan QR Code to watch a video

In this chapter, students will learn about:

- Excel 2016—An Introduction
- Starting Excel
- Components of Excel 2016 Window
- Changing the active cell
- Creating a New Workbook
- Entering Data
- Working with Multiple Worksheets
- Saving a Workbook
- Opening a Workbook
- Closing a workbook

SIGN IN

CM

Read the passage and give the details of Jia's family in a tabular form.

Hi! My name is Jia. I have a big family. I live with my father, mother, two siblings, grandparents, and my uncle's family. My father is an engineer and my mother is a doctor. My grandmother is a teacher and my grandfather is a policeman. My older sister is Mia and my younger brother is Max. Uncle Jack is a pilot and his wife, Aunty Maria is a nurse. Ann and Ella are my cousins.

Family Member	Name	Occupation

In the above exercise, you have entered the information about Jia's family in a table.

MS Office has an application that can help us in organizing data in a tabular form easily.

Let us learn about Excel, which is a spreadsheet program.

Excel 2016 is a program that is used to create spreadsheets. A **spreadsheet** organises text and numbers into rows and columns. These rows and columns form a worksheet.

A **worksheet** is a collection of cells organized in rows and columns in which we can type and store data and perform mathematical functions on it to analyse it.

In a worksheet, the rows are numbered as 1,2,3,4,5.... Each row has a **Row Header** on the left side of the worksheet which indicates the number of the row. The columns are labelled as A, B, C, D, E.... These labels are indicated by **Column Headers** present at the top of the worksheet. Each worksheet of Excel 2016 has **1,048,576** rows and **16,384** columns.

An Excel file or a spreadsheet file is called a **workbook**. It has many worksheets. A new workbook contains only one worksheet, **Sheet 1**. The default name of a new workbook is **Book 1**.

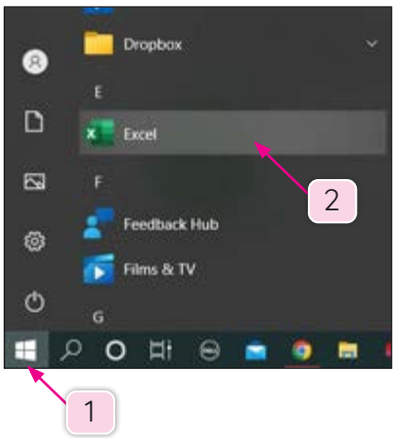
Features of Excel

- In Excel, the data are set in tabular form.
- There are rows and columns and the intersection of rows and columns makes a cell.
- Each cell has a cell address. The address is the number of the row and the letter of the column it appears in.
- It has built-in formulas and functions to perform mathematical calculations.
- The look of the worksheet can be changed by editing and formatting the data.
- It is easy to search and replace figures in a spreadsheet.
- Data in a series can be easily filled using the **AutoFill** feature.

STARTING EXCEL

Follow these steps to start Excel 2016:

1. Click on the **Start** button.
2. Scroll through the program list to find **Excel** and click on it. The Excel 2016 window will appear.
3. Click on the **Blank Workbook**. A blank Excel worksheet will open.



NEWS FEED

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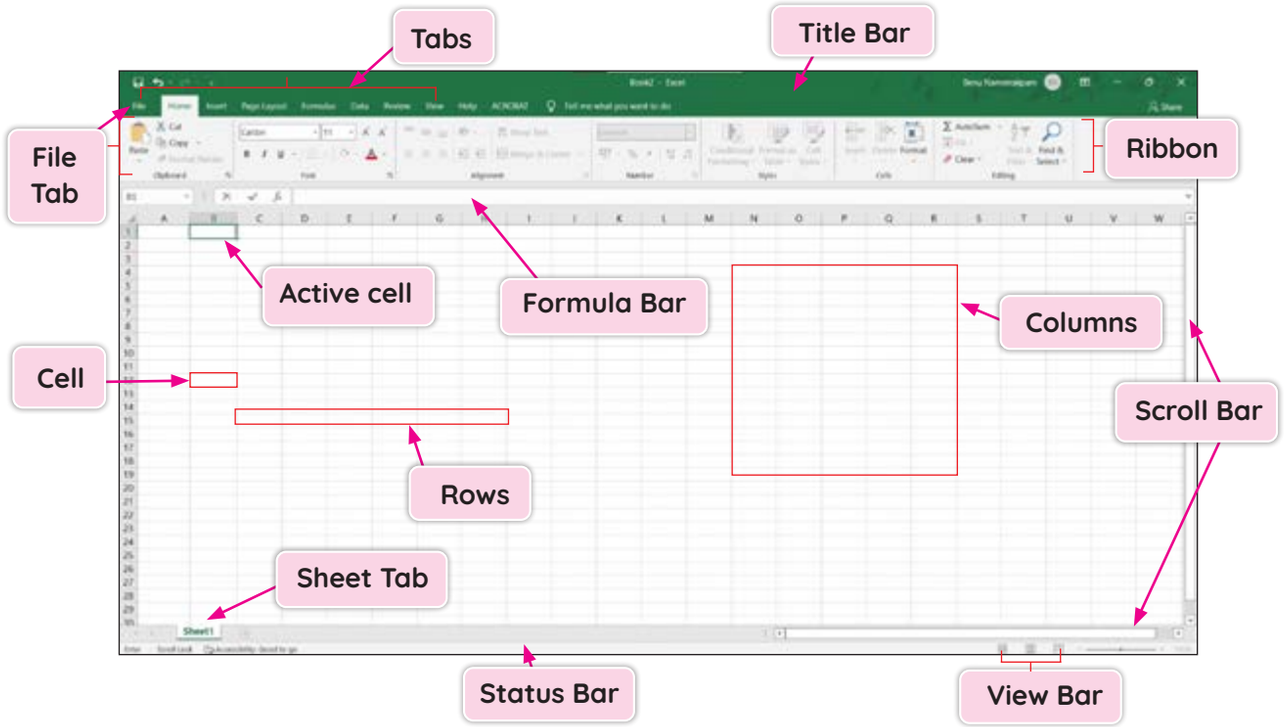
Microsoft Excel was launched in **1985** by the Microsoft Corporation.

COMPONENTS OF EXCEL 2016 WINDOW

The Excel 2016 window has many components. We can use these components to create and work with our workbook. Let us learn about these components.



Title Bar

It is located at the top of the excel window. It shows the name of the opened workbook file and the program.

File Tab

Clicking on the File tab will open the **Backstage**. In this Backstage view, we can find a list of commands such as save, open, etc.

Tab

There are nine tabs in Excel 2016. Each tab contains a set of tools that performs a specific function.

Ribbon

It is located below the Title bar and contains different tabs. These tabs are further divided into groups which contain many commands tools and buttons.

Cell

A cell is the intersection of a row and column in a worksheet. It is the smallest unit in a worksheet and we enter content here. Content can be text or number.

Active Cell

An active cell is highlighted by a green border. It is the cell that is currently active or selected. We can type data in an active cell only.

Rows and Columns

Rows are the horizontal sections of the table and columns are the vertical sections of the table.

Formula Bar

It shows the contents of the active cell. It is used to type and edit the contents or formulas entered in the active cell.

Status Bar

It is located at the bottom of the worksheet window. It displays the name of the selected command or the progress of current task.

Sheet Tab

It is located above the Status bar on the left side. It shows the number of worksheets in a workbook. The worksheets are named Sheet 1, Sheet 2, Sheet 3, etc.

View Bar

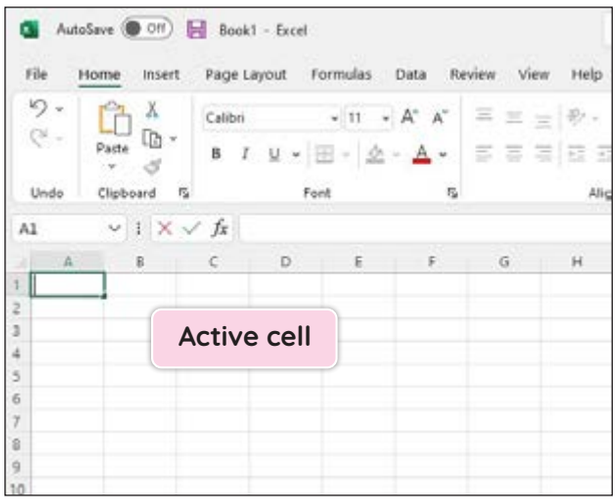
It is located on the right side of the Status bar. It provides access to view the worksheet in three different modes—Normal, Page Layout and Page Break Preview.

CHANGING THE ACTIVE CELL

The active cell is the cell that is currently active or selected. It has a green border around it. The default system is A1. We can make any cell in the worksheet an active cell. We can either use the keyboard or the mouse pointer.

To change the active cell using a mouse, just click on the cell you want to make active.

To change the active cell using a keyboard, use the following keys:

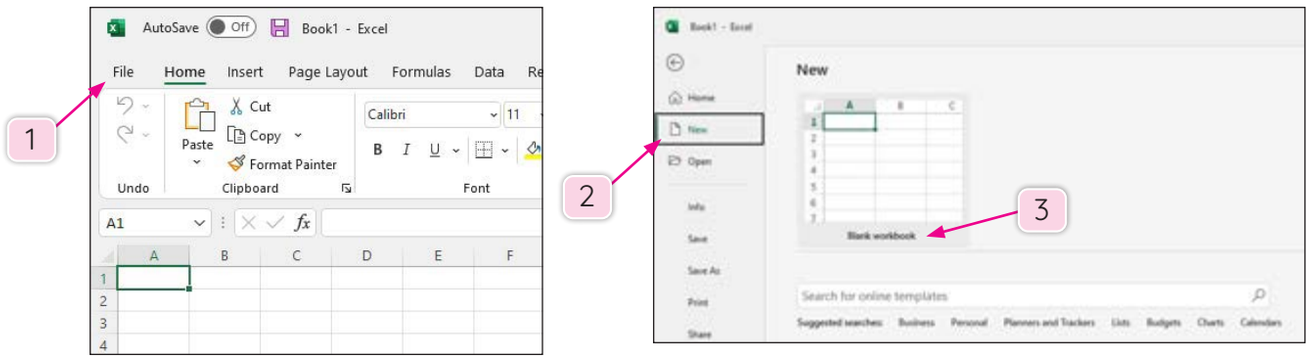


- To move the active cell **one row down**, press **Enter** key **or** **Down Arrow** key.
- To move the active cell **one row up**, press **Shift** + **Enter** key **or** **Down Arrow** key
- To move the active cell **one column to the left**, press **Shift + Tab** key **or** **Left Arrow** key.
- To move the active cell **one column to the right,** press **Tab** key **or** **Right Arrow** key.
- To move the active cell to the first cell, press **Ctrl + Home** key.
- To move the active cell to the last used cell on the worksheet, Press **Ctrl + End** key.

CREATING A NEW WORKBOOK

Follow these steps to open a new workbook when the Excel application is already running:

1. Click on the **File** tab. A Backstage View will appear.
2. Click on **New** in the left panel. A new pane will appear on the Backstage View.
3. Click on the **Blank Workbook**.



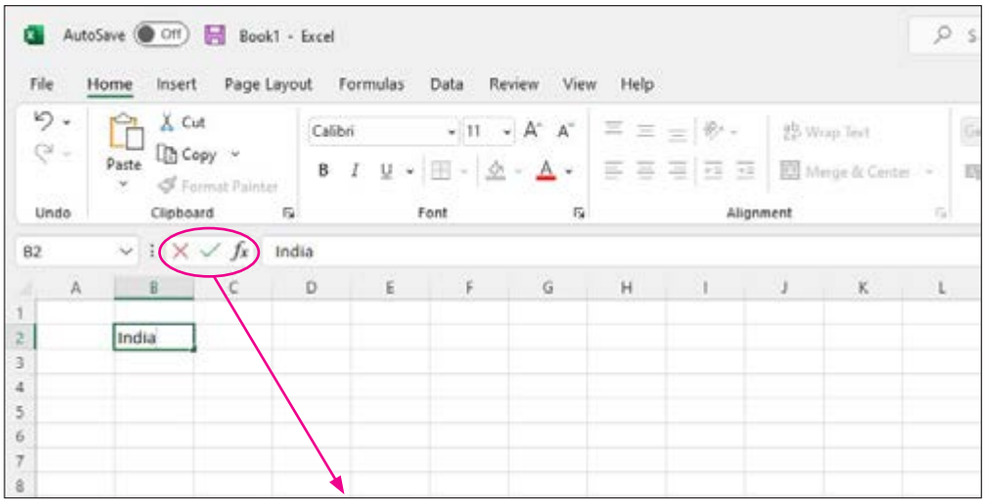
QUICK BYTE

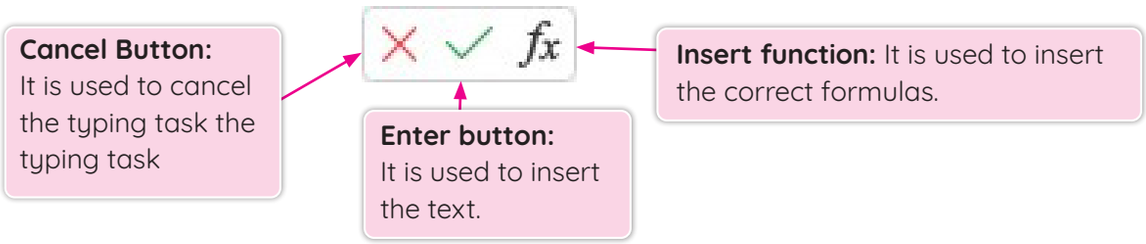
The shortcut to open a new workbook: **Ctrl + N**

ENTERING DATA

Follow these steps to enter data in a worksheet:

1. Click on the cell where you want to enter the data. The cell will become active.
2. Type the content (text or numbers).
3. Press **Enter** key. The content appears in the cell.





Cancel Button: It is used to cancel the typing task the typing task

Enter button: It is used to insert the text.

Insert function: It is used to insert the correct formulas.

These three buttons next to the formula bar become active when we type in Excel

WORKING WITH MULTIPLE WORKSHEETS

We can open multiple numbers of worksheets. We can switch between them using **Ctrl + Page Up** and **Ctrl + Page Down**. In a workbook, we can rename, add or remove worksheets.

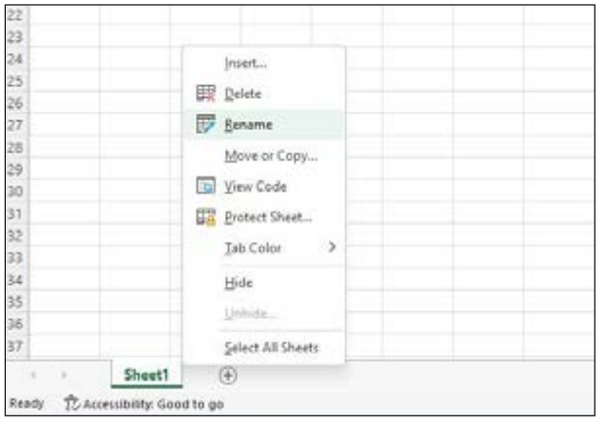
Renaming

To rename means to change the name of an existing worksheet.

Follow these steps to rename a worksheet:

Method 1

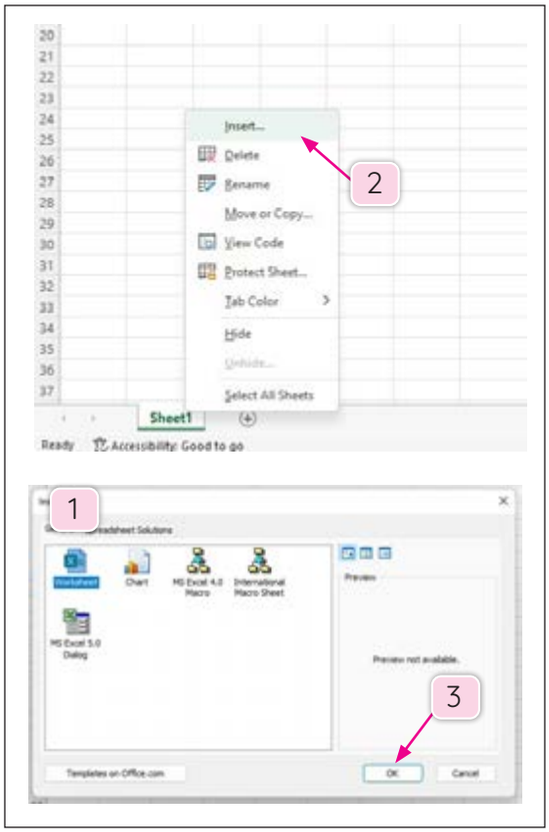
1. Right-click on the sheet tab you want to rename. A pop-up menu will appear.
2. Click on the rename option and type the new name for the sheet and press **Enter** key.



Method 2

1. Right-click on the sheet tab to be renamed. It cursor will appear and it will be highlighted.
2. Type the new name for the sheet and press **Enter** key.

The worksheet will be renamed.



Adding

We can insert a new worksheet into an existing workbook.

Follow these steps to insert a worksheet in the workbook:

Method 1

1. Right-click on the sheet tab. A pop-up menu will appear.
2. Click on the **Insert** option from the menu. An insert dialog box will appear. This box has options to select worksheet.
3. Click on the **OK** button.

Method 2

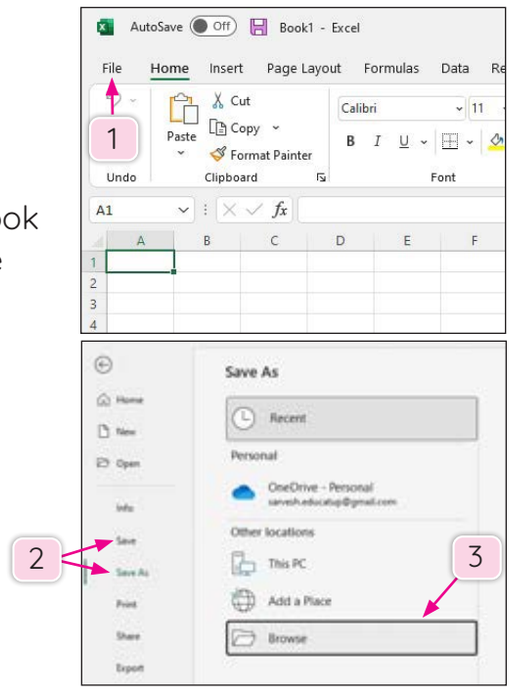
We can also add a new worksheet by clicking on the **New Sheet tab icon** ⊕ present next to the Sheet tab.

SAVING A WORKBOOK

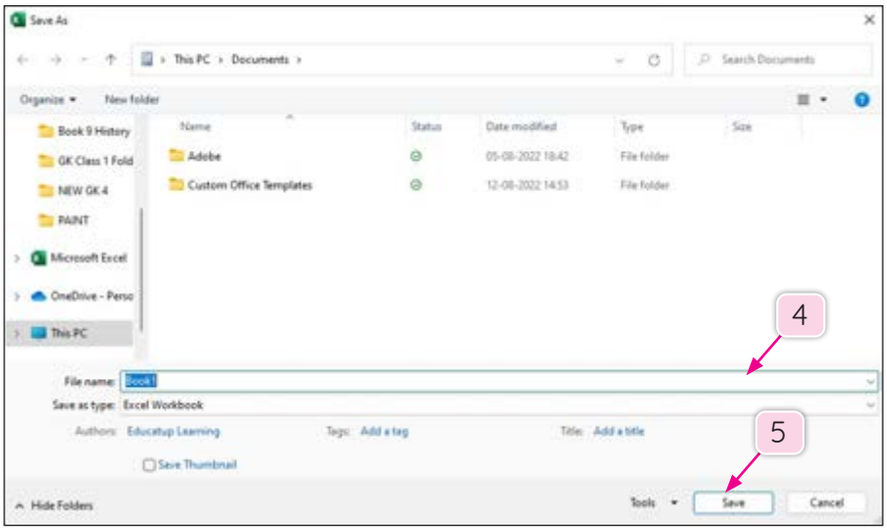
Follow these steps to save a workbook:

1. Click on the **File** tab.
2. Click on the **Save** option if you are saving the workbook for the first time or saving only the workbook you are currently working on.

   To save the worksheet with a different name, click on **Save As** option. The **Save As** pane will appear in the Backstage View.
3. Click on the **Browse** option to select the location to save the file.



4. In the **File name** box, type the name of the file.
5. Click on the **Save** button.



NEWS FEED

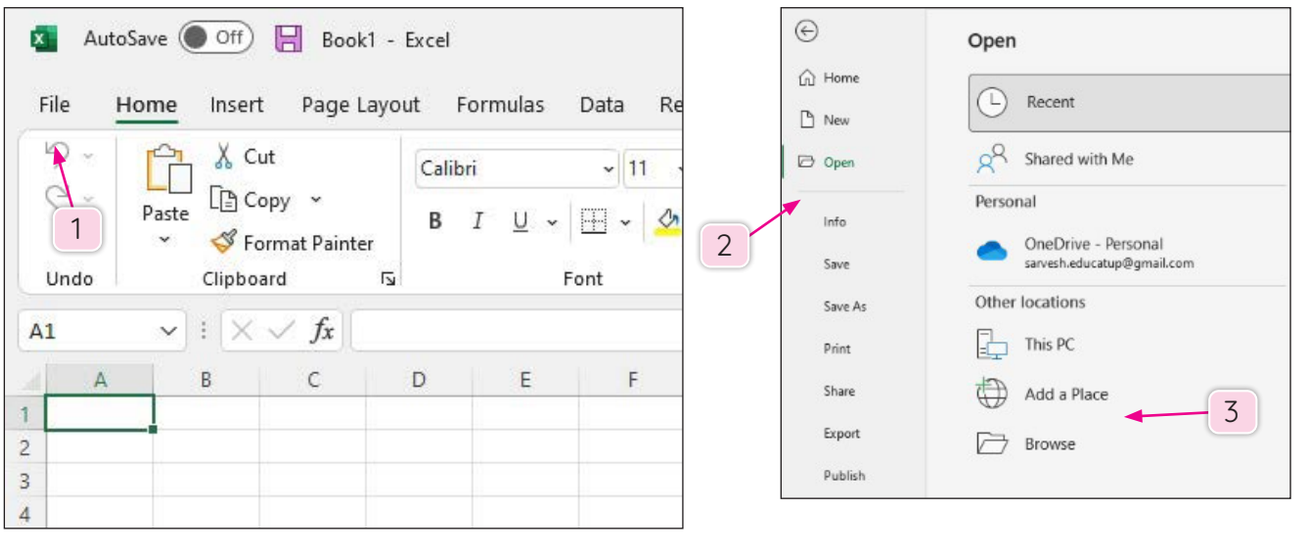
CM

It is not possible to name a worksheet 'History' in Excel.

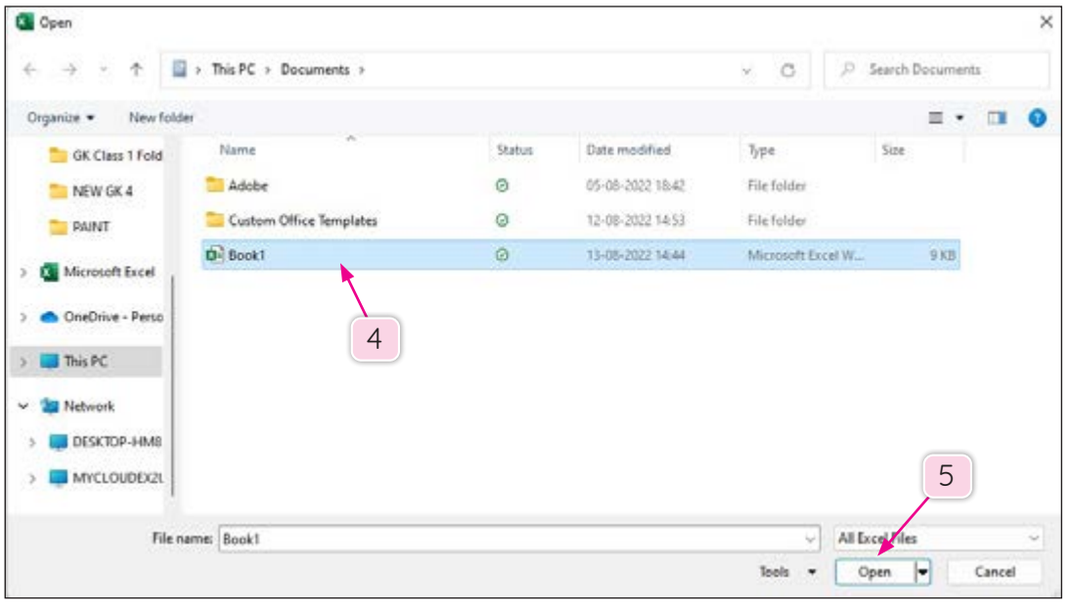
OPENING A WORKBOOK

Follow these steps to open a save workbook:

1. Click on the **File** tab.
2. Click on the **Open** option from the left pane. The Open dialog box will appear.
3. Click on **Browse** option and select the location where you have saved the workbook.
4. Select the workbook you want to open.



5. Click on the **Open** button. The selected workbook will open in the Excel window.



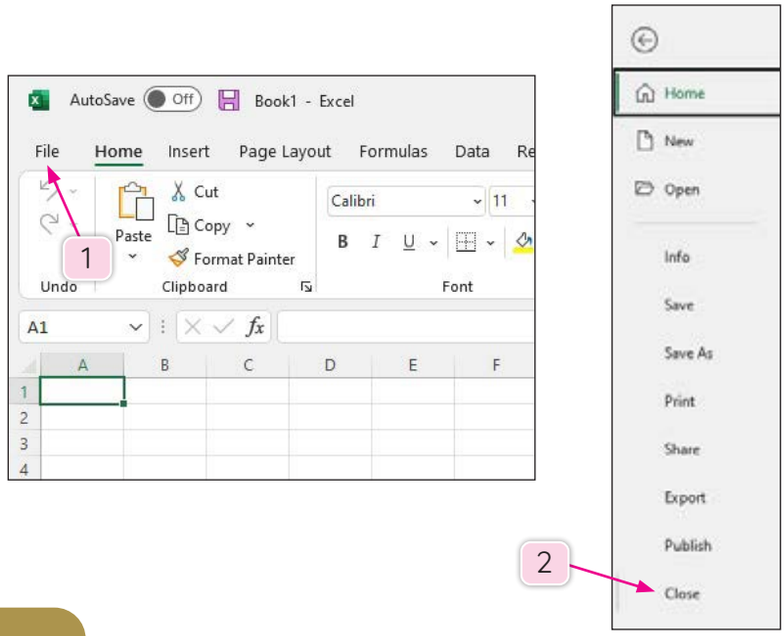
CLOSING A WORKBOOK

Follow these steps to close an open workbook:

1. Click on the **File** tab.
2. Click on the **Close** button.

This will close only the current workbook.

To close the Excel application, click on the **Close button** ✕ on the right side of the Title bar.



QUICK BYTE

The shortcut to close Excel: **Alt + F4**

CM

ACTIVITY TIME

PL

Find the following words in the given word search.

Ribbon Cell Rows Columns Workbook Worksheet Data
Header Spreadsheet Program Backstage Horizontal
Vertical Sheet Tab Default

L	C	N	U	D	V	Q	S	Z	J	A	T	R	P	C	P	J	H	Q	O	B	G	R
M	E	S	D	S	S	M	S	T	F	J	S	U	B	B	C	R	A	B	G	X	Z	G
L	O	N	T	Z	T	D	O	L	F	N	K	B	P	W	R	U	C	K	E	E	J	R
G	L	I	R	P	E	N	C	U	B	A	R	Q	Y	C	A	E	A	G	X	T	B	D
M	I	I	E	K	E	P	I	A	M	L	X	V	H	X	H	M	A	Z	R	Q	M	V
S	L	D	C	S	H	W	H	F	Y	A	U	D	W	N	E	S	T	E	S	A	A	D
N	D	L	E	H	S	R	N	E	I	T	U	G	L	Y	A	H	E	F	M	H	M	M
M	F	A	G	O	K	I	O	D	D	N	T	X	E	R	D	E	E	Z	V	J	H	Q
U	Q	C	A	B	R	B	E	P	S	O	E	D	V	G	E	E	H	G	B	N	I	Z
L	N	I	T	A	O	B	F	V	C	Z	L	N	V	U	R	T	S	C	B	R	N	A
O	T	T	S	O	W	O	P	H	X	I	K	A	H	T	N	T	D	E	N	P	V	C
C	U	R	K	O	D	N	K	O	C	R	S	W	O	R	A	A	A	L	N	U	Q	L
R	N	E	C	B	U	A	B	T	V	O	D	K	M	F	J	B	E	L	W	T	C	D
T	T	V	A	A	F	T	V	O	C	H	L	K	U	Y	M	T	R	H	D	A	A	T
C	X	X	B	Y	V	A	K	O	O	B	K	R	O	W	J	M	P	O	Z	I	F	F
T	W	Q	Z	E	G	D	Q	V	Z	W	F	N	K	C	R	N	S	A	B	F	G	Y

REFRESH

- Excel is a program that is used to create spreadsheets.
- A worksheet is a collection of cells organized in rows and columns.
- An Excel file or a spreadsheet file is called a workbook.
- We can open multiple numbers of worksheets in a workbook.
- The Excel 2016 window has many components—Ribbon, Tab, Title Bar, File Tab, Cell, Rows, Columns, Sheet tab, Status Bar, View Bar, Scroll Bar
- A cell is the intersection of a row and column in a worksheet.
- The active cell is the cell that is currently active or selected.
- An active cell is highlighted by a green border.
- We can change the active cell by using the mouse as well as the keyboard.

BROWSE

A **Choose the correct option.**

1. A new workbook contains _____ worksheet.
   a. one b. two c. three

2. It is the smallest unit in a worksheet.
   a. workbook b. cell c. sheet

3. Row Header indicates the number of _____.
   a. columns b. active cell c. row

4. Columns are the _____ sections of the table.
   a. vertical b. horizontal c. diagonal

5. ⊕ is used to _____.
   a. add a new worksheet b. delete a worksheet
   c. go to the next worksheet

B **Fill in the blanks with the words given below.**

top active Backstage View spreadsheet

1. MS Excel is a _____ program.
2. _____ will open when we click on the File tab.
3. Column headers are present on the _____ of the columns.
4. Data can be typed only in an _____ cell.
5. _____ bar provides access to view the worksheet in three different modes.

C Write T for true statements and F for false statements.

1. The default name of a new workbook is Book 1.
2. We can use only the keyboard to change an active cell.
3. Ctrl + Home key is used to move the active cell to the last cell.
4. An active cell is highlighted by a blue border.
5. The shortcut key to close Excel is Alt + F4.

D Answer the following questions in one word or two words.

1. Where can you see the name of the opened workbook file?
2. Where can you see the content of an active cell?
3. Which cell is highlighted by a green border?
4. What is the shortcut key to open a new workbook?
5. When do you use Ctrl + Page Up and Ctrl + Page Down?

E Answer the following questions.

1. Write any three features of Excel.
2. What is a cell? How would you make a cell an active cell using the keyboard: One row down, one row up, one column to the left, and one column to the right?
3. Write the steps to enter data in a worksheet.

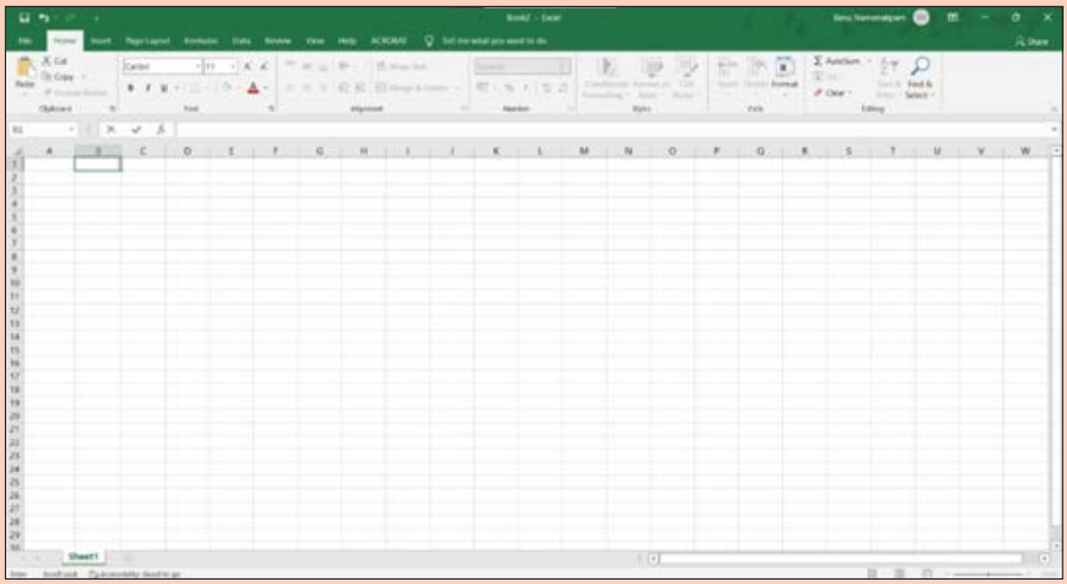
4. What are the uses of the cancel button, enter button and insert function?

5. How would you rename a worksheet? Write the steps.

ACTIVITY TIME

CM CT

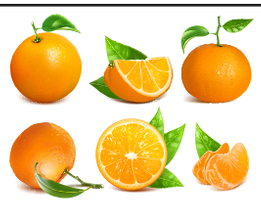
Label any 10 components of the Excel window given below.



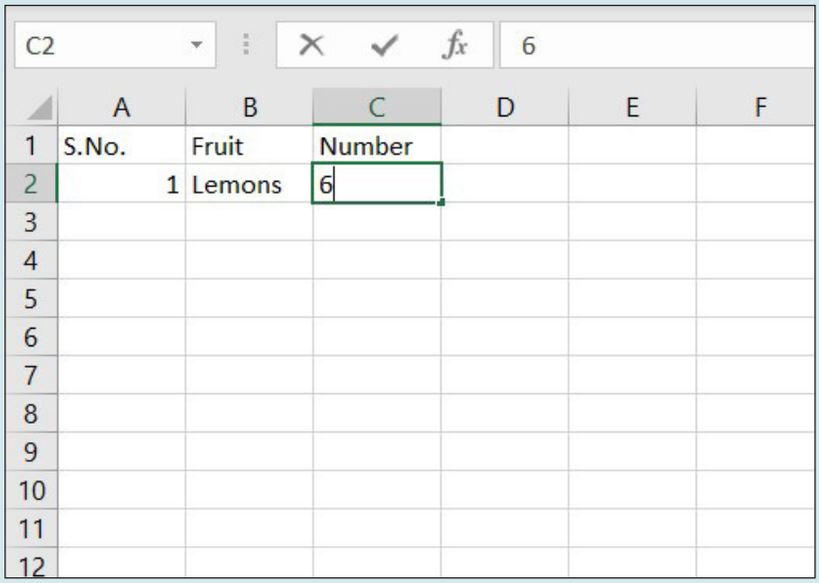
LET'S EXPLORE

EL TE

Create a worksheet for the fruits given in the picture. Save the file as 'List of fruits in the picture'.

6 Lemons	8 Apples	40 Strawberries	7 Bananas
			
5 Pears	**10 Oranges**	**30 Grapes**	**2 Watermelons**
			

24 Raspberries	32 Cherries	36 Blueberries	9 Mangos
			



FOR THE TEACHER

- Explain what is Excel and its uses
- Explain the features of Excel.
- Show them the different components of the Excel window.
- Demonstrate how to change an active cell, create a worksheet, enter data, save and close it.

PERIODIC ASSESSMENT 2

A. Fill in the blanks.

1. _____ is the slide that is used to create the default layout and the appearance of the presentation.
2. A _____ icon indicates that the Sound Clip has been added to the slide.
3. Row header indicates the number of _____.
4. A new workbook contains _____ worksheet.
5. The shortcut key to close Excel is _____.
6. A _____ is a collection of cells organized in rows and columns.

B. Find the odd one out.

1.	Morph	Fade	Push	Curtains
2.	Drape	Curtains	Wipe	Wind
3.	Fade	Plan	Conveyor	Window
4.	Appear	Fly in	Spin	Float in
5.	Zoom	Pulse	Spin	Teeter
6.	Transition	Worksheet	Cell	Column

C. Match the following.

1.	Entrance	a.	Spreadsheet
2.	Subtle	b.	Texture for background
3.	MS Excel	c.	Horizontal
4.	Active cell	d.	Effects
5.	Column	e.	Transition
6.	Gradient fill	f.	Green border

TEST PAPER 1

A. Choose the correct option.

1. _____ technology was used in second generation of computers.

   a. Vacuum tube ☐ **b.** Transistor ☐ **c.** Chip ☐

2. _____ technology was used in third generation of computers.

   a. Chip ☐ **b.** Transistor ☐ **c.** Vacuum tube ☐

3. _____ is to change the appearance of a paragraph.

   a. Page Breaks ☐ **b.** Page Formatting ☐ **c.** Paragraph Formatting ☐

4. _____ is the final step in the mail merge process.

   a. Merging the documents ☐ **b.** Creating a main document ☐

   c. Creating a data source ☐

5. MS Excel is a _____ program.

   a. drawing ☐ **b.** spreadsheet ☐ **c.** video ☐

6. _____ is the element used in a presentation that makes objects move on a slide.

   a. Design ☐ **b.** Animation ☐ **c.** Transition ☐

B. Fill in the blanks.

1. Analytical engine was invented by _____.
2. _____ was the first mechanical calculating device.
3. Paragraph spacing refers to the amount of _____ space between paragraphs.
4. _____ is a collection of words that have similar meanings.
5. _____ is the smallest unit in a worksheet.
6. A _____ indicates the animation order in the Animation pane.

C. Write T for true statements and F for false statements.

1. The first generation computers used Vacuum tube technology. ☐
2. Mark I was invented by Charles Babbage. ☐
3. There are two types of page orientation in Word. ☐
4. Word doesn't have the feature to find and replace words. ☐
5. The look of the theme in PowerPoint can be changed using the Variant group. ☐
6. An active cell is the cell that is currently active or selected. ☐

D. Answer the following in one sentence.

1. Who is considered as the father of computers?

   _____

2. Who is the first lady computer programmer?

   _____

3. What is the default paper size in Word?

   _____

4. What is the default page orientation in Word?

   _____

5. What is a transition?

   _____

6. What is the colour of the border of a highlighted cell in Excel?

   _____

E. Answer the following question.

1. Write a short note on Abacus.
2. Write any three features of fifth generation computers.
3. What is page orientation in Word? Explain its two types.
4. What are the main steps of mail merge process?
5. Write the steps to add an animation.
6. Write the steps to rename a worksheet.

Chapter 5

Editing in Excel 2016

LEARNING OBJECTIVES

Scan QR Code to watch a video

In this chapter, students will learn about:

- Selecting cells
- Entering date and time in a cell
- Editing cell contents
- Undo and Redo commands
- Copy and Move contents
- Deleting contents of a cell
- AutoFill features

SIGN IN

CT

Match the following.

1.	↓	a.	to move one column to the left
2.	↑	b.	to move to the last cell
3.	←	c.	to move one row down
4.	→	d.	to move to the first cell
5.	Ctrl + Home	e.	to move one row up
6.	Ctrl + End	f.	to move one column to the right

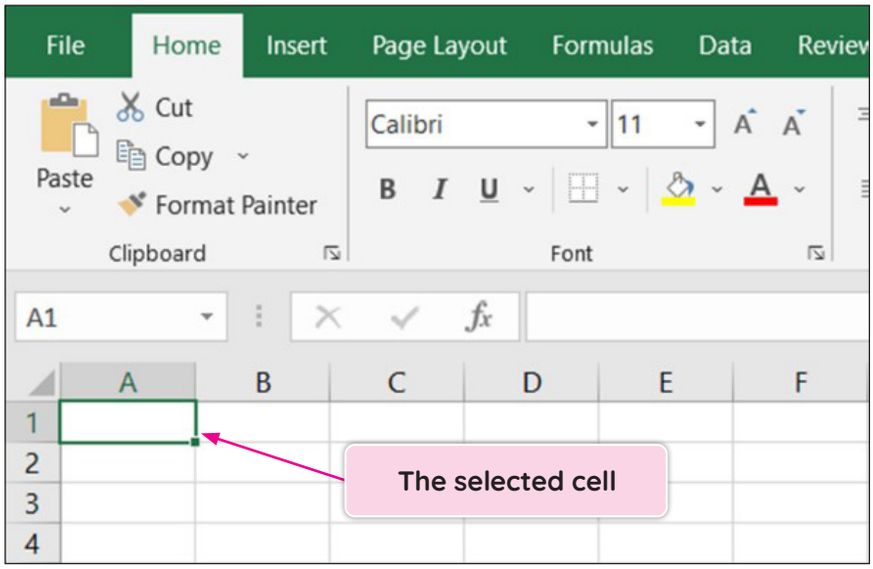
SELECTING CELLS

We have to select the cell to edit any content in it. We can select only a cell, a row, a column, a range of cells, multiple cells or the whole worksheet.

Selecting a Cell

Follow these steps to select a cell:

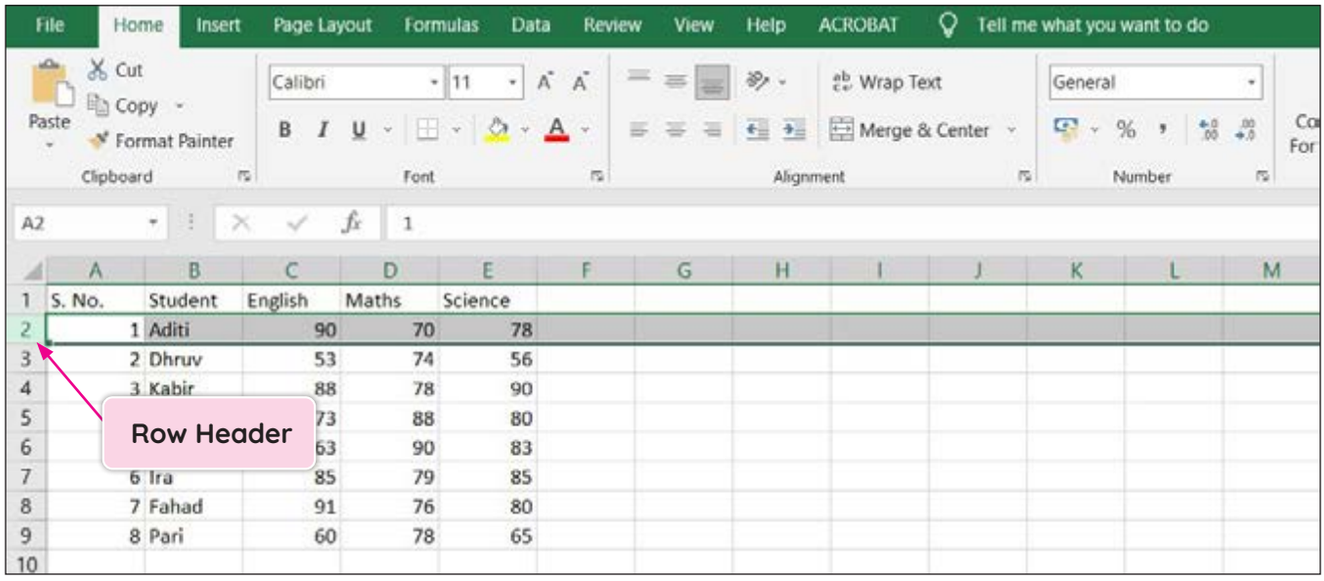
1. Click on the cell you want to select. A green border will appear around it to show it is an active cell.
2. To change the active cell, use the arrow keys.



Selecting a Row

Follow these steps to select a row of cells:

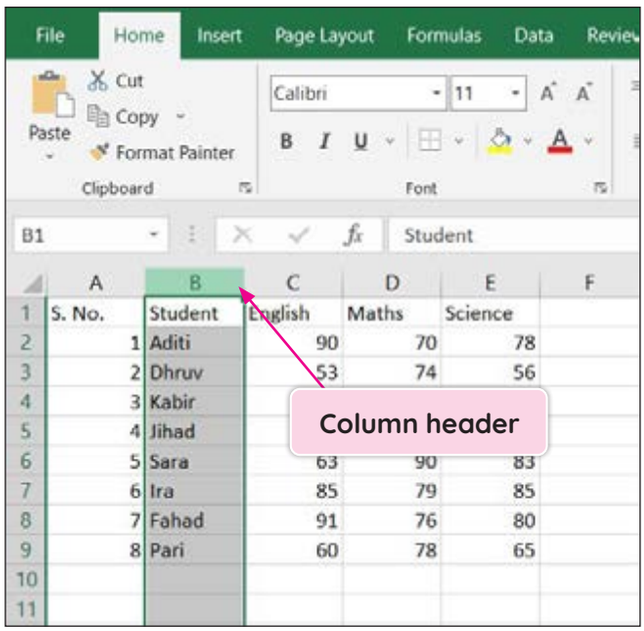
1. Position the mouse pointer to the row header of the row you want to select. The mouse pointer will change to an arrow.
2. Click on the Row Header and the entire row will get selected.



Selecting a Column

Follow these steps to select a row of cells:

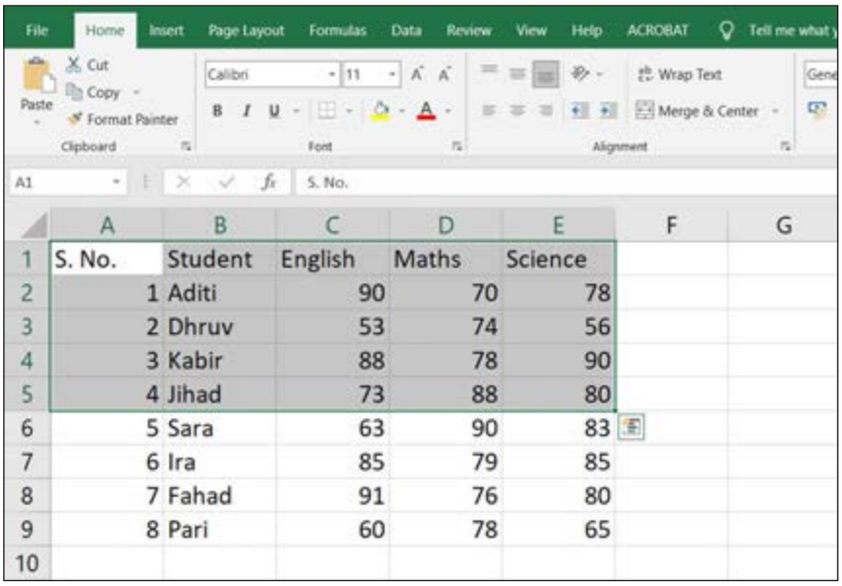
1. Position the mouse pointer to the column header of the column you want to select. The mouse pointer will change to an arrow.
2. Click on the Column Header and the entire row will get selected.



	A	B	C	D	E	F
1	S. No.	Student	English	Maths	Science	
2	1	Aditi	90	70	78	
3	2	Dhruv	53	74	56	
4	3	Kabir				
5	4	Jihad				
6	5	Sara	63	90	83	
7	6	Ira	85	79	85	
8	7	Fahad	91	76	80	
9	8	Pari	60	78	65	
10						
11						

Selecting a Range of Cells

A **range** is a collection of cells that are selected. They are next to each other and one side of their border is common. It can be within a row or column. A range is identified by the cell addresses of the cells in the **upper left cell** and the **lower right** cell of the range. These two addresses are separated by a colon. For example, in the given worksheet the range is **A1:E5**. A1 is the address of the upper left cell and E5 is the address of the lower right cell.



	A	B	C	D	E	F	G
1	S. No.	Student	English	Maths	Science		
2	1	Aditi	90	70	78		
3	2	Dhruv	53	74	56		
4	3	Kabir	88	78	90		
5	4	Jihad	73	88	80		
6	5	Sara	63	90	83		
7	6	Ira	85	79	85		
8	7	Fahad	91	76	80		
9	8	Pari	60	78	65		
10							

We have to select the range to edit the contents in the range. We can either use the mouse or keyboard to select a range.

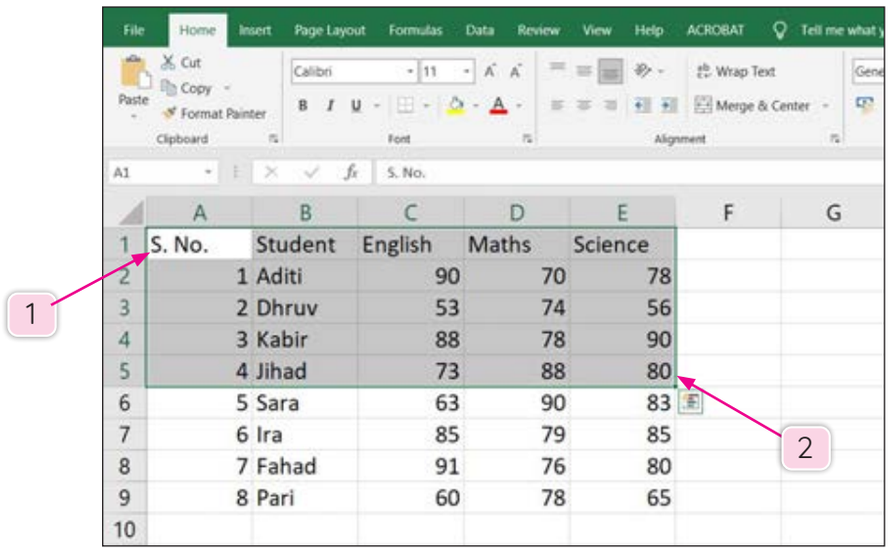
Follow these steps to select a range using the **mouse:**

1. Click on the upper cell from where you want to start the range.
2. Drag the mouse to the lower right cell.

Follow these steps to select a range using the **keyboard:**

1. Click on the upper left cell.
2. Then press the **Shift** key. Keep pressing and click on the lower right cell.

The range will be selected. All the cells in the range get highlighted except for the active cell.



	A	B	C	D	E	F	G
1	S. No.	Student	English	Maths	Science		
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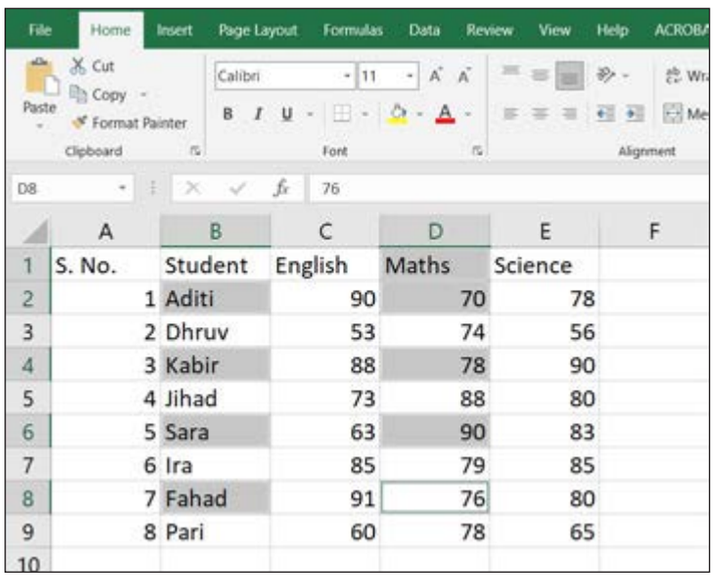
3	2	Dhruv	53	74	56		
4	3	Kabir	88	78	90		
5	4	Jihad	73	88	80		
6	5	Sara	63	90	83		
7	6	Ira	85	79	85		
8	7	Fahad	91	76	80		
9	8	Pari	60	78	65		
10							

Selected Multiple Cell

We can select cells that are not next to each other.

Follow these steps to select multiple cells:

1. Click on the first cell you want to select.
2. Keeping the **Ctrl** key pressed click on the other cells you want to select.
   All the selected cells will be highlighted.



	A	B	C	D	E	F
1	S. No.	Student	English	Maths	Science	
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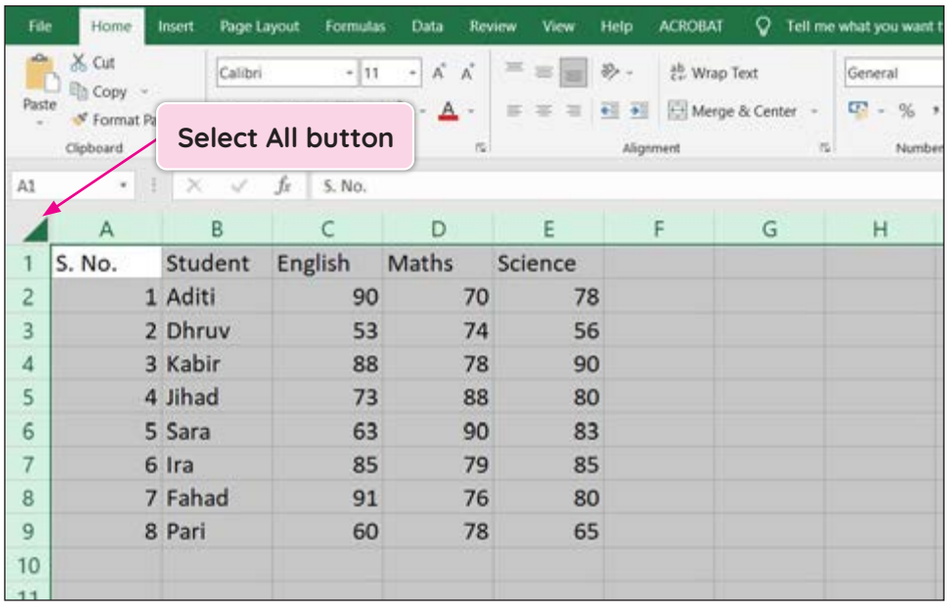
3	2	Dhruv	53	74	56	
4	3	Kabir	88	78	90	
5	4	Jihad	73	88	80	
6	5	Sara	63	90	83	
7	6	Ira	85	79	85	
8	7	Fahad	91	76	80	
9	8	Pari	60	78	65	
10						

Selecting the Whole Worksheet

To select the whole worksheet, click on the **Select All** button. This button is the triangle present above row 1.



QUICK BYTE

CM

The shortcut key to select the whole worksheet: **Ctrl + A**

ENTERING DATE AND TIME IN A CELL

We can enter a date and time in an Excel cell in different ways. We can also change the format in any of the available options in Excel.

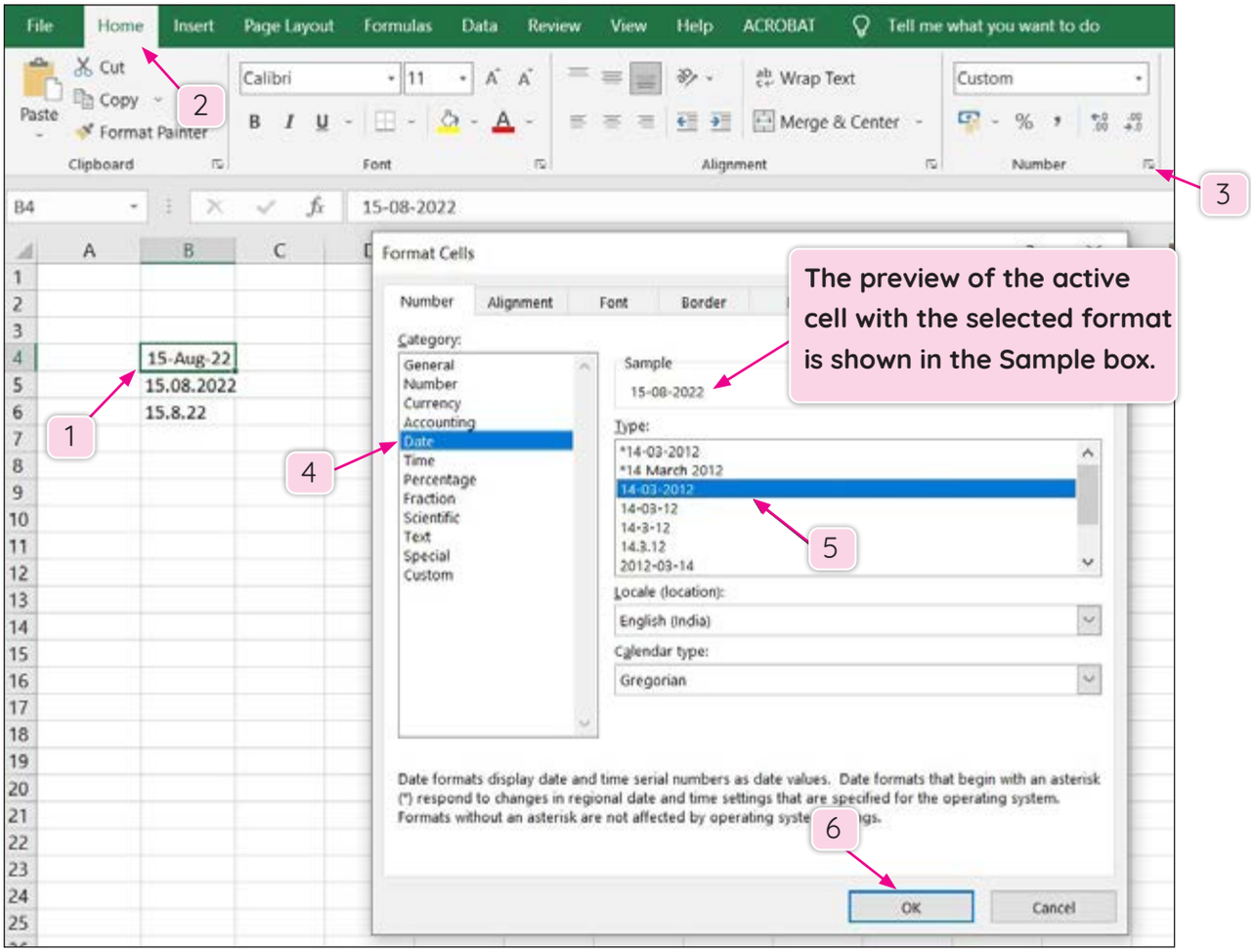
Date

When we type something like 15-08-22 or 15-8-2022 or 15 August 2022 or August 15, 2022, in a cell, Excel reorganises it as a date and displays it in the applied date format to the cell.

Follow these steps to change the format of the date you have entered:

1. Select the cell where you want to edit the date.
2. Click on the **Home** tab.
3. Click on the **Number** format dialog box launcher. A **Format cells** dialog box will appear.
4. Click on the **Date** option in the Category group. A list of formats will be displayed.
5. Choose and click on the format you want.

6. Click on **OK** button to change the format.

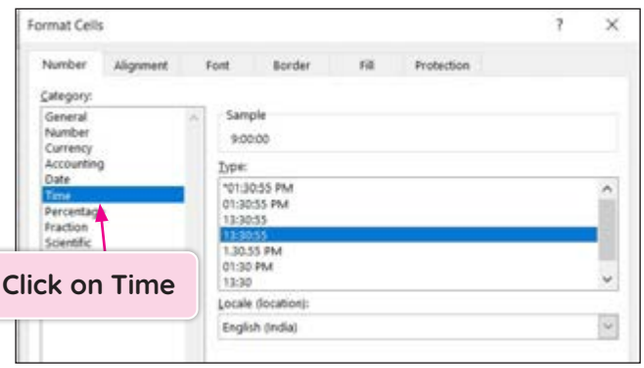


Time

In Excel, the default time format is **hours:minutes:seconds AM/PM.**

When we enter time, we must follow the format of at least **hours:minutes** i.e. the hour and minutes are separated by a colon with no space on either side.

Follow the same steps as given above to change the time. Click on the **Time** option instead of Date in the Category group.



QUICK BYTE

CM

The shortcut to apply the default date: **Ctrl + Shift + #**

The shortcut to apply the default time: **Ctrl + Shift + @**

NEWS FEED

CM

There are **24 Date and Time** functions listed on the drop-down menu under Formulas, Date & Time: 11 Date formats and 10 Time formats.

EDITING CELL CONTENTS

We can edit the contents in a cell. To edit means to change the content either partially or completely. There are two ways to edit contents in a cell—

- by replacing the contents in the cell itself.
- by using the formula bar.

Replacing the contents in the cell itself

Follow these steps to replace the contents of a cell:

1. Click on the cell to make it active.
2. Type the new content. The new content will automatically replace the previous content.

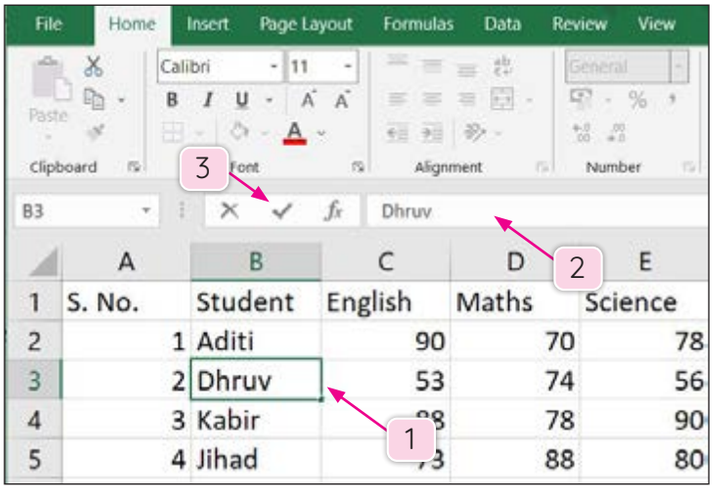
Using the Formula Bar

The content of a cell can be edited by double-clicking on the cell or using the formula bar.

Follow the following steps to edit the content of a cell:

1. Click on the cell you want to edit. The content of the cell appears on the formula bar.
   Or double-click on the cell where you want to edit the content. The cursor will appear in the cell.
2. Type the new content in the cell or the formula bar.
3. Press the Enter key on click on the Enter button ✓ on the formula bar.

The content of the cell will be changed.



	A	B	C	D	E
1	S. No.	Student	English	Maths	Science
2	1	Aditi	90	70	78
3	2	Dhruv	53	74	56
4	3	Kabir	[illegible]	78	90
5	4	Jihad	[illegible]	88	80

NEWS FEED

CM

Excel has over 475 formulas in its Functions Library, from simple to very complex mathematics tasks.

UNDO AND REDO COMMANDS

The **Undo** command is used to erase the last change made to the worksheet. Click on the **Undo** button in the **Quick Access Toolbar** to undo the last changes. To undo many actions, click on the down arrow next to the Undo button.

The **Redo** command is used to redo the last Undo action. We can redo only when we have done an Undo action. Click on the **Redo** button in the **Quick Access Toolbar** to redo an action.

COPY AND MOVE CONTENTS

The contents of a cell, a range of cells or the whole worksheet can be easily copied and moved. The copy and move commands in Excel are similar to the commands in MS Word.

Copy Contents

Follow these steps to copy the contents:

1. Select the cells you want to copy. In the figure given below, we have selected B2:B3.
2. Click on the **Home** tab.
3. Click on the **Copy** button Copy in the **Clipboard** group.

   Or

   After selecting the cells, right-click and choose the **Copy** option from the context menu.

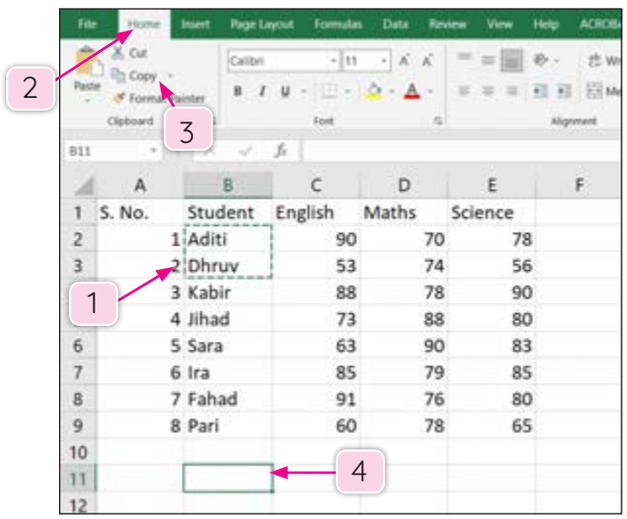
   You can also press **Ctrl + C** to copy the cells.

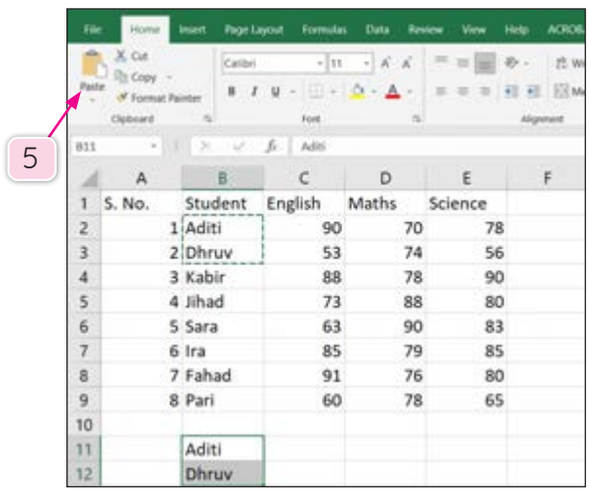
   A dashed border will appear around the selected cells.
4. Click on the cell where you want to copy the selected range.
5. Click on the Paste button in the Clipboard group.

   Or right-click and choose the **Paste** option from the context menu.

   You can also press **Ctrl + V** to paste the cells.

   The copied cells will be copied at the new place.





The cells are pasted in the range B11:B12.

Move Contents

Follow these steps to move the contents:

1. Select the cells you want to move. In the figure given below, we have selected B2:E2.
2. Click on the **Home** tab.
3. Click on the **Cut** button Cut in the **Clipboard** group.

   Or

   After selecting the cells, right-click and choose the Cut option from the context menu.

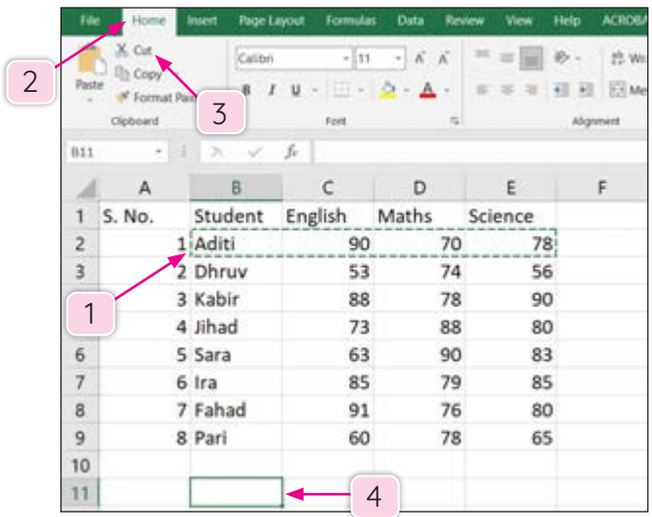
   You can also press **Ctrl + X** to cut the cells.

   A dashed border will appear around the selected cells.
4. Click on the cell where you want to move the selected range.
5. Click on the **Paste** button in the **Clipboard** group.

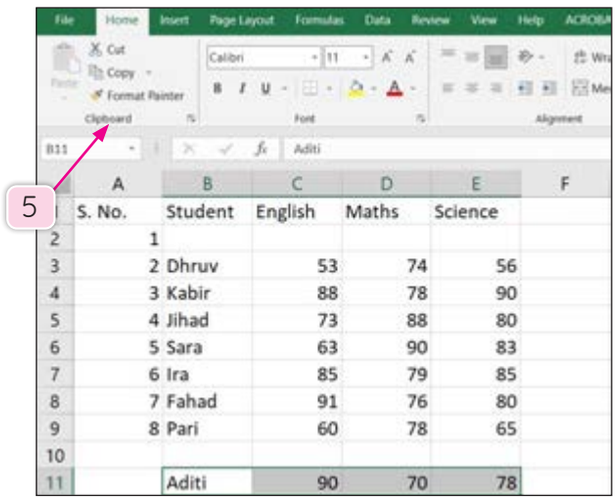
   Or right-click and choose the **Paste** option from the context menu.

   You can also press **Ctrl + V** to paste the cells.

   The copied cells will be moved to the new place.



	A	B	C	D	E
1	S. No.	Student	English	Maths	Science
2	1	Aditi	90	70	78
3	2	Dhruv	53	74	56
4	3	Kabir	88	78	90
5	4	Jihad	73	88	80
6	5	Sara	63	90	83
7	6	Ira	85	79	85
8	7	Fahad	91	76	80
9	8	Pari	60	78	65
10					
11					



	A	B	C	D	E
1	S. No.	Student	English	Maths	Science
2	1				
3	2	Dhruv	53	74	56
4	3	Kabir	88	78	90
5	4	Jihad	73	88	80
6	5	Sara	63	90	83
7	6	Ira	85	79	85
8	7	Fahad	91	76	80
9	8	Pari	60	78	65
10					
11		Aditi	90	70	78

The cells are pasted in the range B11:E11.

QUICK BYTE

CM

The shortcut to copy cell: **Ctrl + C**

The shortcut to paste cell: **Ctrl + V**

The shortcut to cut: **Ctrl + X**

DELETING CONTENTS OF A CELL

We can delete the contents of a cell by using **Delete** key. Select the cell or the range of the cells and press **Delete** key to delete the contents. The contents of the cells will be deleted.

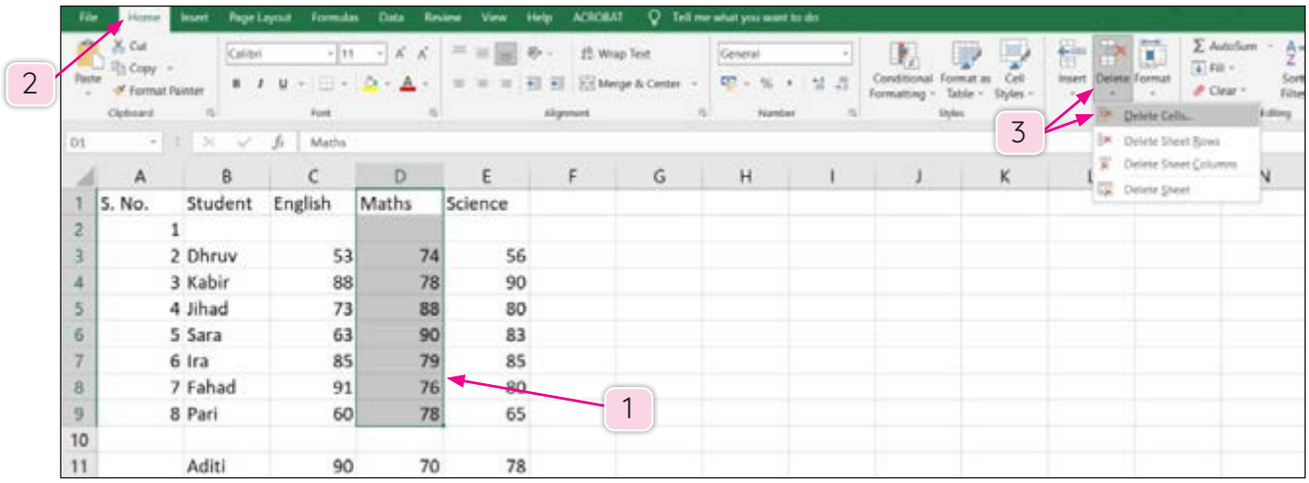
We can delete the content of a single cell, a range of cells, a row or a column.

Deleting cells

Method 1

Follow these steps to delete the cells:

1. Select the cells to be deleted.
2. Click on the **Home** tab.
3. Click on the **Delete** button in the **Cells** group. A drop-down menu will appear. Click on the **Delete Cells** option.



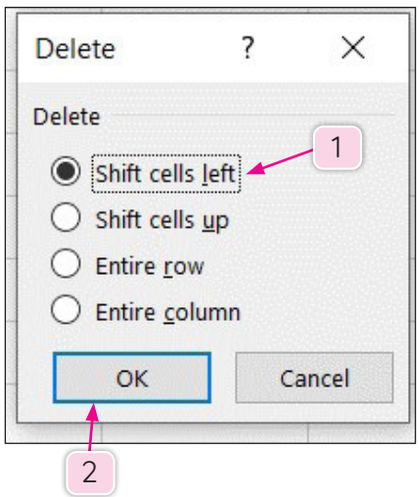
	A	B	C	D	E
1	S. No.	Student	English	Maths	Science
2	1				
3	2	Dhruv	53	74	56
4	3	Kabir	88	78	90
5	4	Jihad	73	88	80
6	5	Sara	63	90	83
7	6	Ira	85	79	85
8	7	Fahad	91	76	80
9	8	Pari	60	78	65
10					
11		Aditi	90	70	78

Method 2

After selecting the cells, right-click on it. Choose **Delete** option from the context menu that appears.

A Delete dialog box appears. It has four options—

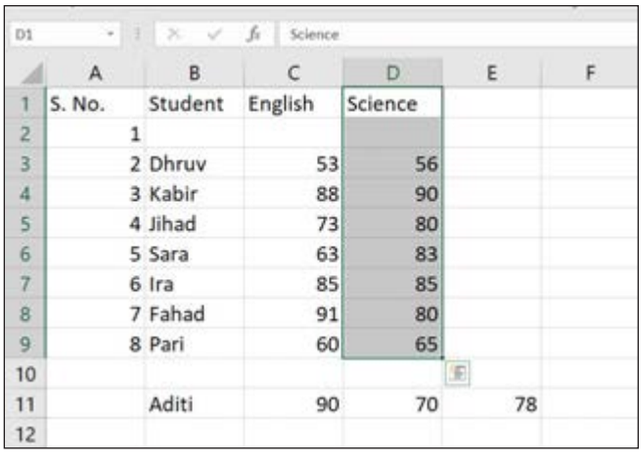
- **Shift cells left:** Choose this option to delete the selected cells and shifts the cells to the left.
- **Shift cells up:** Choose this option to delete the selected cells and the cells shift up.
- **Entire row:** Choose this option to delete the entire row.
- **Entire column:** Choose this option delete the entire column.



1. Choose the option you want and click on the radio button next to it. Here, the option **Shift cells** left has been selected.

2. Click on the **OK** button.

The selected cells will be deleted and the cells on the right will shift to the left to fill the space. In the given figure, the cells move from column E to D as the cells in Column D are deleted.

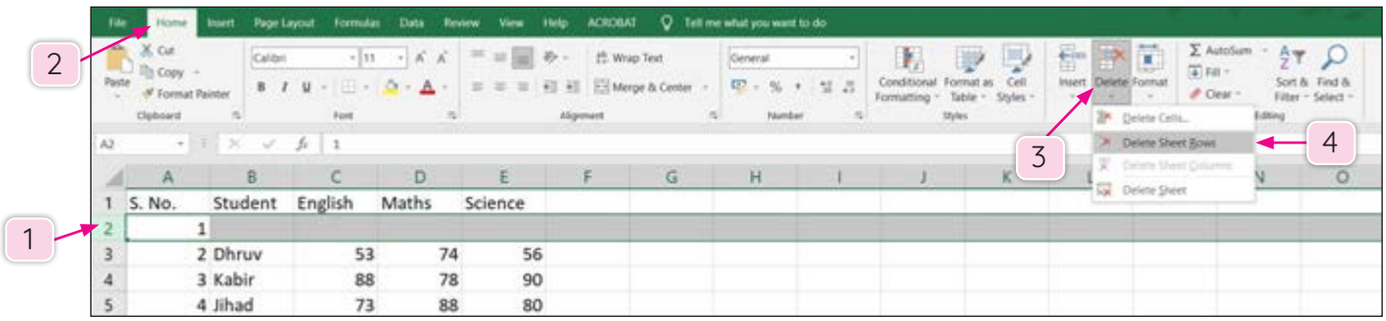


	A	B	C	D	E	F
1	S. No.	Student	English	Science		
2	1					
3	2	Dhruv	53	56		
4	3	Kabir	88	90		
5	4	Jihad	73	80		
6	5	Sara	63	83		
7	6	Ira	85	85		
8	7	Fahad	91	80		
9	8	Pari	60	65		
10						
11		Aditi	90	70	78	
12						

Deleting an Entire Row or Column

Follow these steps to delete an entire row or a column:

1. Click on the **Row** or **Column Header** for the cells you want to delete.
2. Click on the **Home** tab.
3. Click on the **Delete** drop-down menu in the Cells group.
4. Choose and click on **Delete Sheet Rows** to delete a row or **Delete Sheet Column** to delete a column.



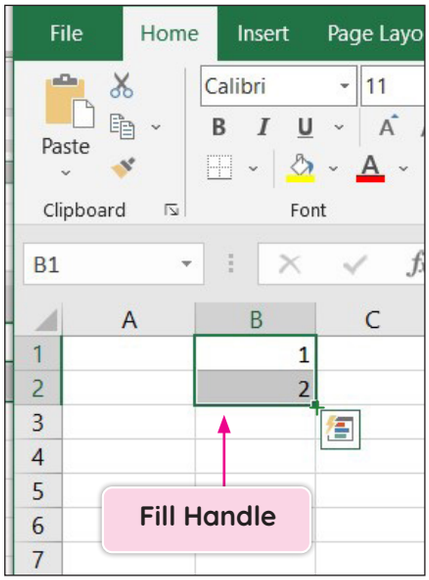
	A	B	C	D	E
1	S. No.	Student	English	Maths	Science
2	1				
3	2	Dhruv	53	74	56
4	3	Kabir	88	78	90
5	4	Jihad	73	88	80

The selected row or column is deleted. The row below or the column on the right will shift and fill the space. In the picture given below, row 1 is deleted and row 3 shifts to fill the space.

	A	B	C	D	E	F	G	H
1	S. No.	Student	English	Maths	Science			
2	2	Dhruv	53	74	56			
3	3	Kabir	88	78	90			
4	4	Jihad	73	88	80			
5	5	Sara	63	90	83			
6	6	Ira	85	79	85			
7	7	Fahad	91	76	80			

AUTOFILL FEATURE

In Excel, the **AutoFill** feature helps us to automatically fill a series of data in a row or column. AutoFill command can be used to automatically extend the sequence of a **series of numbers, days of the week, months of the year, hours of the day, etc.**

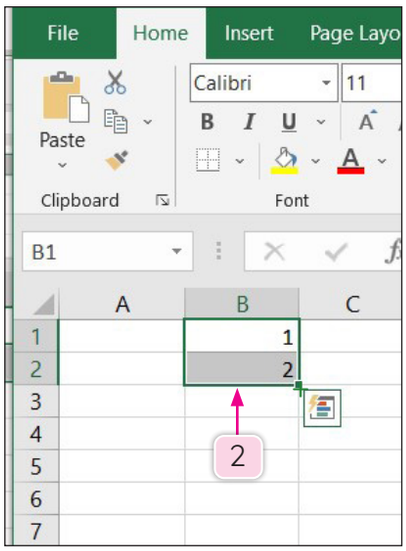


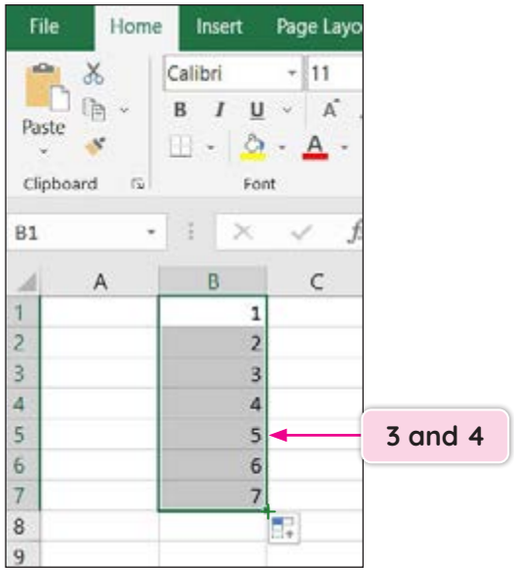
The mouse pointer changes to a plus sign when we position the mouse on the bottom right corner of the selected cell or range. This is called the **Fill Handle**.

Follow these steps to use the AutoFill feature:

Method 1

1. Type the first two numbers of the series you want to enter.
2. Select the cells.
3. Position the mouse pointer at the right corner of the selected cells. Once you see the **Fill Handle**, drag over the cells you want to AutoFill.
4. Release the mouse button. The cells are automatically filled with the series.

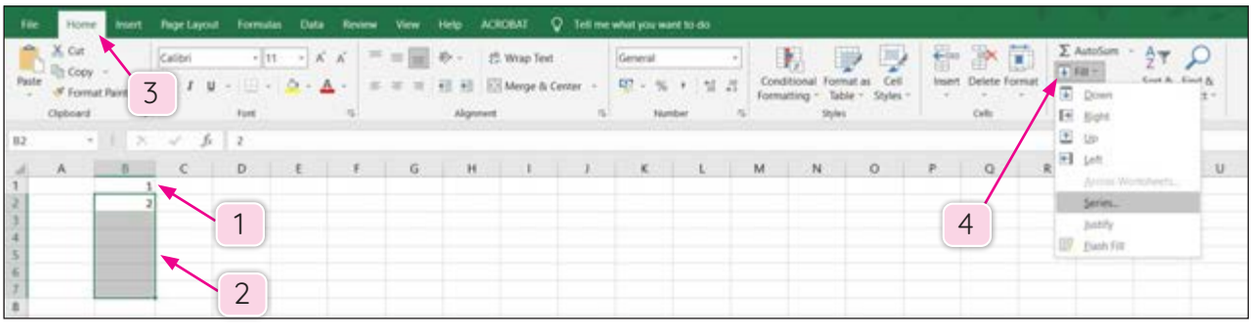


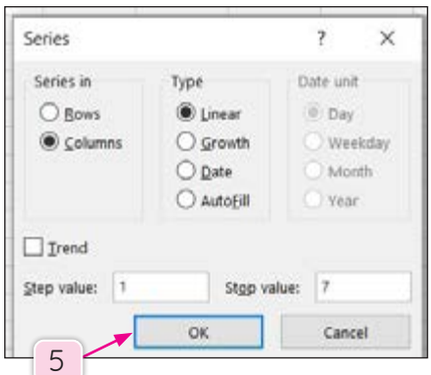


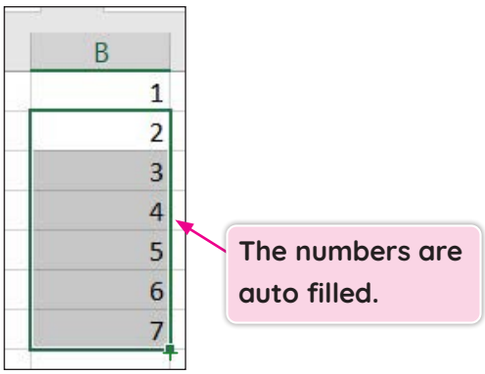
Method 2

1. Type the first number in the series you want to fill.
2. Select the cells that you want to enter the series.
3. Click on the **Home** tab.
4. Click on the **Fill** button in the **Editing** group. A drop-down menu will appear.

5. Click on the **Series** option from the menu. A series dialog box will appear.
6. Click on the **OK** button. The cells are filled with the series.







ACTIVITY TIME

CM

Write the shortcuts.

1. To copy cell
2. To apply the default date
3. To select the whole worksheet
4. To apply the default time
5. To cut cell

REFRESH

- A cell has to be selected to edit any content in it.
- A range is a collection of cells that are selected.
- Click on the Select All button to select the whole worksheet.

- Date and time can be entered in an Excel cell in different ways.
- The contents in a cell can be edited by replacing the contents in the cell itself or by using the formula bar.
- The AutoFill feature helps us to automatically fill a series of data in a row or column.

BROWSE

A **Choose the correct answer.**

1. It is a collection of cells.
   a. Rows and Columns ☐ b. Group of cells ☐ c. Range ☐
2. The shortcut key to select the whole worksheet.
   a. Ctrl + A ☐ b. Ctrl + Z ☐ c. Ctrl + Q ☐
3. The shortcut to apply default date.
   a. Ctrl + shift + # ☐ b. Ctrl + shift + % ☐ c. Ctrl + shift + ! ☐
4. In Excel, the default time format is
   a. minutes:seconds:hours AM/PM ☐
   b. hours:minutes:seconds AM/PM ☐
   c. seconds:minutes:hours AM/PM ☐
5. The shortcut to apply default time.
   a. Ctrl + Shift + ! ☐ b. Ctrl + Shift + @ ☐ c. Ctrl + Shift + # ☐

B **Fill in the blanks using the words given below.**

Ctrl + V	AutoFill	MS Word	Formula	Undo

1. We can edit the contents in a cell by using the _____ bar.
2. The _____ command is used to erase the last change made to the worksheet.

3. The shortcut to paste a cell is _____.

4. The copy and move commands in Excel are similar to the commands in _____.

5. The _____ feature helps us to automatically fill a series of data in a row or column.

C Write T for true statements and F for false statements.

1. To select a row, position the mouse pointer on the column header. _____

2. An active cell has a blue colour border around it. _____

3. In the range A1E5. A1 is the address of the upper left cell and E5 is the address of the lower right cell. _____

4. We cannot select multiple cells in Excel. _____

5. To delete the contents of cells, select the cell and press the Esc key. _____

D Answer the following questions in one word or one sentence.

1. Which key is used to change active cell?

2. Which key is used to select a range of cells?

3. Which key is used to select multiple cells?

4. What is the shortcut to select the whole worksheet?

5. Which key is used to erase the contents of a cell?

E **Answer the following questions.**

1. How would you select a column? Write the steps.
2. Write a short note on range.
3. What is AutoFill feature?
4. What are the uses of Undo and Redo commands?
5. How would you delete an entire row or column? Write the steps.

ACTIVITY TIME

CT CM

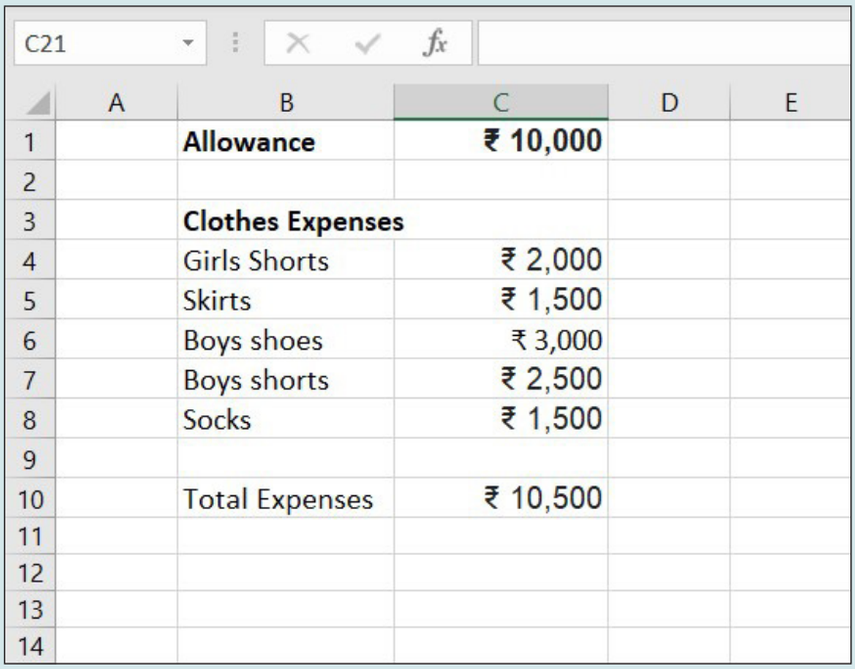
Solve the puzzle.

1. If A2 is the address of the upper left cell and E6 is the address of the lower right cell. What is the range?
2. If the active cell is A7, what is the location of the two cells above it?
3. If B5 is the address of the upper left cell and G7 is the address of the lower right cell. What is the range?
4. If the active cell is B7, what is the location of the cell on the right of it?
5. If the active cell is G7, what is the location of the cell on the left of it?

LET'S EXPLORE

EL TE

In your computer lab, create and format the clothes shopping budget with a chart.



	A	B	C	D	E
1		**Allowance**	**₹ 10,000**		
2					
3		**Clothes Expenses**			
4		Girls Shorts	₹ 2,000		
5		Skirts	₹ 1,500		
6		Boys shoes	₹ 3,000		
7		Boys shorts	₹ 2,500		
8		Socks	₹ 1,500		
9					
10		Total Expenses	₹ 10,500		
11					
12					
13					
14					

The allowance is ₹ 10,000 and the total expenses are ₹ 10,500. The expenses need to be modified.

Format the chart as followed:

- Insert serial number in Column A. Start from A4.
- Edit the cell C8, make it ₹ 1000.
- Edit the cell C10, make it ₹ 10000.
- Enter the date and time of formatting the chart.

FOR THE TEACHER

- Recapitulate the basics of Excel.
- Help the students in using various Excel editing features.

Chapter 6

Internet and Email

LEARNING OBJECTIVES

Scan QR Code to watch a video

In this chapter, students will learn about:

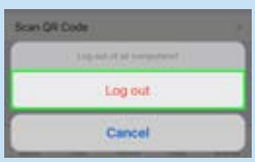
- Internet
- Requirements for connecting to the Internet
- Types of Internet connections
- Web browser
- Using URLs
- Email
- Email etiquettes

SIGN IN

SEL CM

Are these actions good or bad? Discuss.

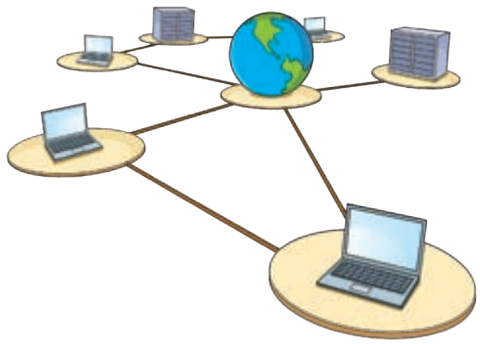
- Putting pictures of your friends on the Internet without their permission
- Not to log out or sign out after you finish
- Sending bad messages about friends
- Sharing your pictures online with people you do not know



In the previous classes, we have learnt that the Internet is a well-connected network of computers all over the world. Through the Internet, we perform many activities and are connected with people all over the world. In this chapter, let us learn how we can connect and use the Internet.

INTERNET

The Internet is a global network that connects millions of computers and computer networks all over the world. It contains websites and web pages that provide us with information on almost any topic.



The full form of the Internet is **Interconnected Network.**

Uses of Internet

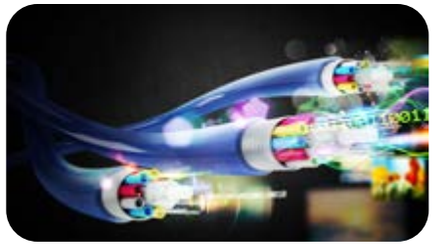
Today, Internet is used in various fields of our daily life. These are some of the various applications of Internet.

REQUIREMENTS FOR CONNECTING TO THE INTERNET

The basic things required for connecting to the Internet are:

A Computer System or a device

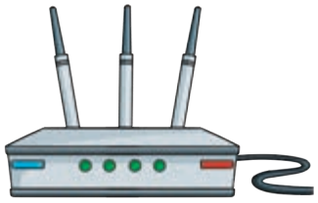
A computer or any device similar to a computer such as a mobile phone is important to connect to the internet. The device connected to the Internet can be used to easily access the information available around the world. It is only through the device we can access a web browser.



A Telephone and Cable Line

Telephone and cable lines are used to set up a link between different computers and servers.

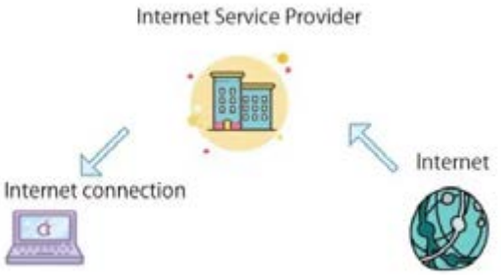
A Modem or a network card



A modem is to transmit digital information through telephone lines and back. The full form of modem is Modulator-Demodulator.

A modem is of two types: Internal and External modem.

A company providing Internet Connection (ISP)



An ISP is a company that provides us with the internet at a particular fee. BSNL, Airtel, Vodafone, and Reliance Communications are some of the Internet Service Provider companies.

The full form of ISP is Internet Service Provider.

Web Browser

A web browser is application software used to access information on the Internet. It helps us to retrieve information from different websites and web pages.

There are a number of web browsers. Some of the popular are Google Chrome, Microsoft Edge, Apple Safari, Mozilla Firefox and Opera.

TYPES OF INTERNET CONNECTION

There are several ways to connect our devices such as laptops, computers, smartphones, and tablets to the Internet. We can connect to the Internet using different broadband technologies including satellite cable, telephone wires, and wireless or mobile connections. Some of the most commonly used Internet connections are discussed below.

Dial-Up

A Dial-Up connection links the phone line to a computer to get access to the Internet. It is the most basic type of Internet connection.

The disadvantage of this type of connection is that the phone line cannot be used to make calls if it is being used to connect to the Internet.

Broadband

A broadband connection is provided through cable or telephone companies. It is a high-speed Internet connection and faster than a dial-up connection. Through broadband, we can share a large amount of data. It includes several high-speed transmission technologies such as Digital Subscriber Line (DSL) and Cable Modems.

Wi-Fi

A Wi-Fi connection allows users to connect to the Internet wirelessly. It uses radio frequency to connect to the Internet. Wireless connections are only possible through the modem which recognizes Internet signals and sends them to computers.

The advantage of a wireless connection is that it is an 'always on' connection and it can be connected from anywhere as long as the device falls into its network range.

Mobile Internet

The Internet can be accessed through Internet-enabled mobile phones. Usage of the Internet using a cellular telephone service provider is known as Mobile Internet. It is a wireless Internet connection access through mobile networks. The main advantage of the mobile internet is that we can always access the Internet even if a computer is not nearby.

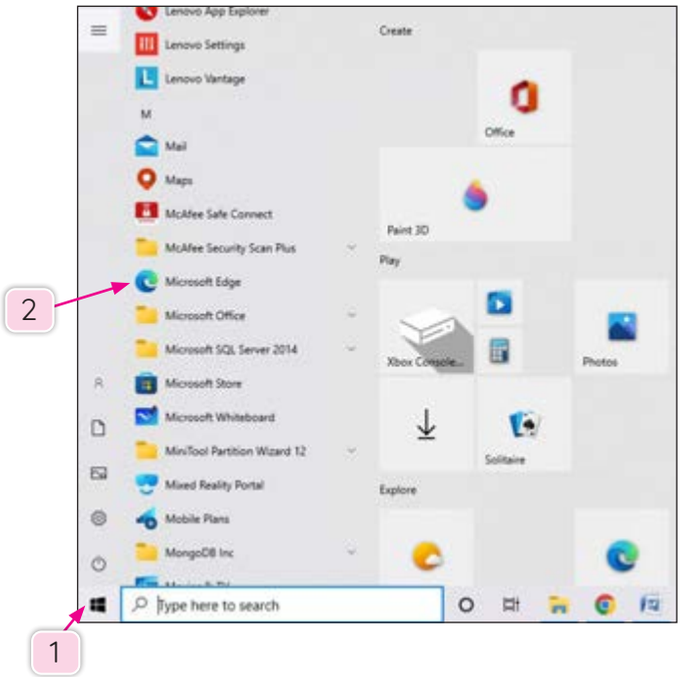
Hotspots

Hotspots are sites that offer Internet access. Sharing a connection from one phone to other phones, tablets or computers is called using a hotspot. Most smartphones can share mobile data through hotspots.

WEB BROWSERS

A web browser is an application software used to explore and access information on the World Wide Web. To open a web browser, we need an Internet connection. Once the device is connected to the Internet, follow these steps to open the web browser:

1. Click on the **Start** button.
2. Scroll down the programs list and click on the browser, **Microsoft Edge**.
   A web browser window appears.



Microsoft Edge window

USING URLs

URL is the address of a web page. Every web page has a specific Uniform Resource Locator or URL. When the URL of a particular website or a web page is typed into the search engine of a web browser, the web browser finds it and displays it on its window.

Follow these steps to open a website or a web page:

1. Open the web browser.
2. Type the **URL** in the web browser's address bar.
3. Press the **Enter** key.

For example, if you want to know about UNICEF, type **www.unicef.org** in the address bar and then press Enter key. The home page of the website of UNICEF will appear on the browser window.

Home page of the website of UNICEF

EMAIL

Email stands for electronic mail. It is a system of It is used to send messages to other people, just like postal mail. But in the case of emails, we send and receive the mail through a device such as a computer or a smartphone that is connected to the Internet. It is one of the most widely used services of the Internet.

Advantages of email

An email can be used for various purposes. Some of the advantages of email are:

- It is one of the fastest and most economical forms of communication. We can send and receive an email in a minute.
- Through emails we can send not only text but also image, audio and video messages.
- It can be used to communicate with a large number of people.
- Email is environment-friendly because we do not use any paper or pen.
- It can be sent and received in many places and at any time of the day.
- The chances of the mail getting delivered to the wrong person are very less.
- If a mail fails to get delivered, we are instantly alerted of it so we can send another mail.

Email Address

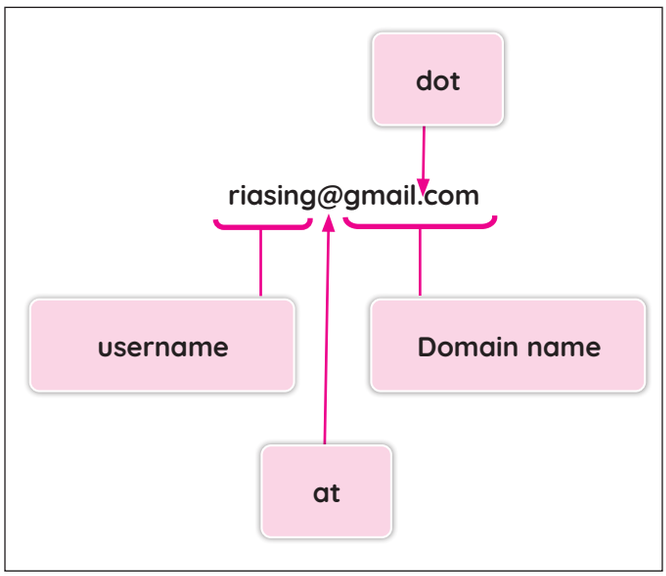
If someone wants to send you something to your home. How will they do it? They will post the mail to your home address. Similarly, to send or receive an email, you need to have an address. This address is called an **electronic address** or **email address.**

An email address is a name that you use to send and receive emails. Here are some email addresses:

alex@yahoo.com

riasing@gmail.com

An email address contains a username and a domain name and they both are separated by a '@'. The portion before the '@' is the **username** and the portion after '@' is the **domain name**. The username is unique to everyone. The most standard and recommended form is to use the first name or first name and last name together as a username. The domain name is common for everyone. The domain name uses a specific network for sending or receiving mail.



Saying email addresses

Remember these when we say an email address:

- @ is pronounced as 'at'.
- . is pronounced as 'dot'.

The email address **riasing@gmail.com** is read as 'riasing at Gmail dot com'.

NEWS FEED

CM

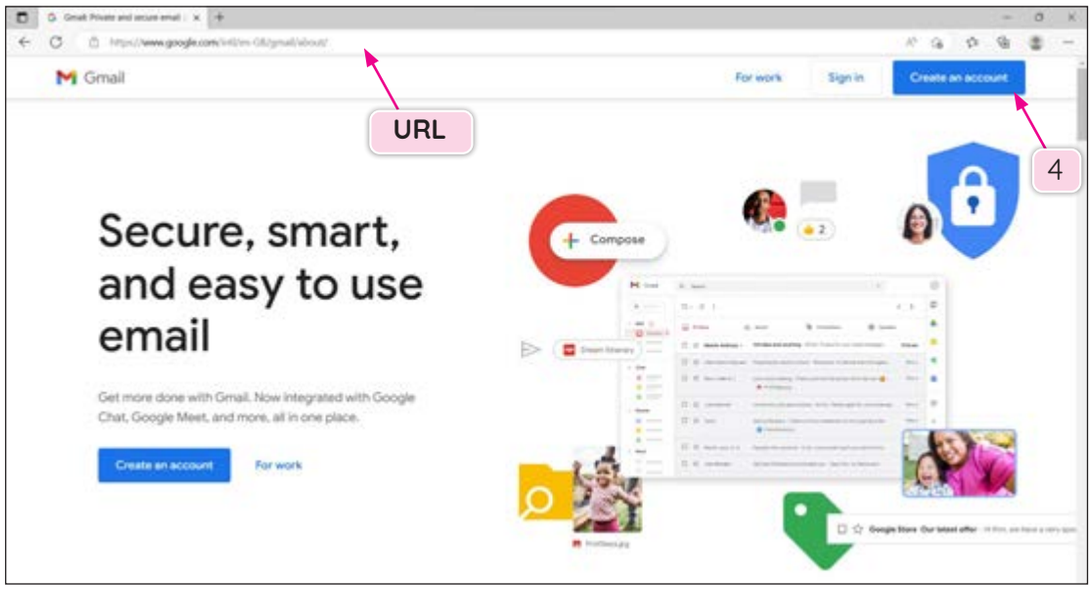
All email addresses follow the same format **abc@domainname.com** since 1980s.

Creating an Email Account

Many websites allow you to create an email account for free. For example, Hotmail, Gmail, Yahoo, etc. An email account can be opened with any of these service providers. The most common email service provider is Gmail.

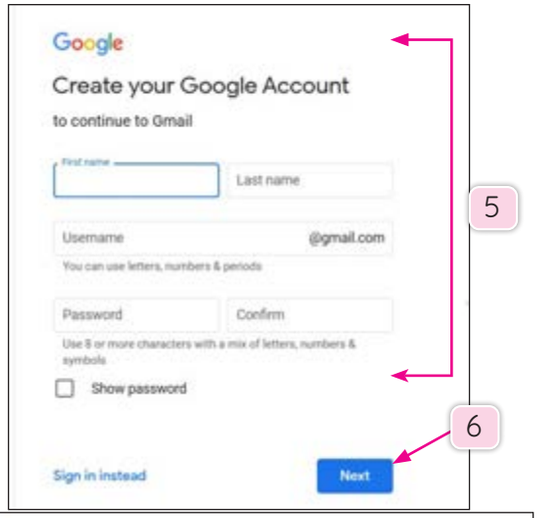
Follow these steps to open an email account:

1. Connect your device to the Internet.
2. Open the web browser, **Microsoft Edge**.
3. In the address bar, type the URL, **www.gmail.com** and then press **Enter.** The home page of Gmail will open.
4. Click on **Create an account** option. It will open a window asking for various details.
5. Fill in the details.
   - **First name:** Type your first name in this field.
   - **Last name:** Type your last name in this field.
   - **Username:** Type the words you want to create your account with.



You can use your first name, a combination of your first and last name or you can use something else. If the username you choose is already taken, it will inform you and give you several options similar to the username that you chose.

- **Password:** A password is used so that nobody else can access your email and send unwanted emails. Type a strong password that you can remember. A password for a Gmail account should contain 8 or more characters which should be a combination of letters, numbers and special characters.

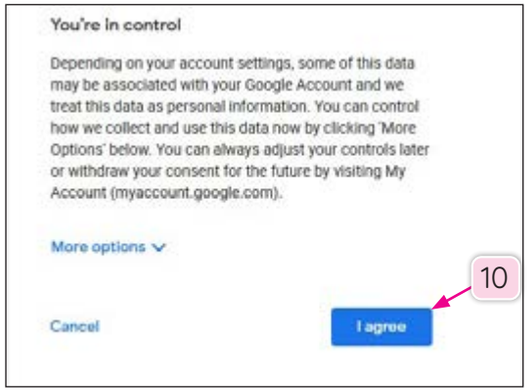


6. Click on the **Next** button to continue.

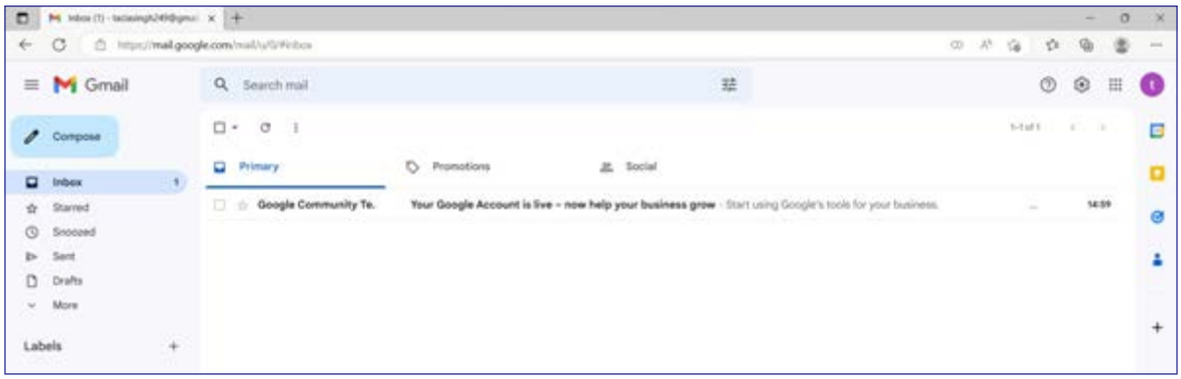
   The next page opens a screen that asks for various details. It asks for a phone number, a recovery email address, your birthday and your gender. Phone number and recovery mail address are optional so you can skip that if you choose.

7. Enter a phone number and email address. Take permission from your parents or any adult whose phone number or email address you would be using.
8. Click on the **Next** button to continue. Enter the verification code sent to the phone number or email address provided by you in the previous step.

9. Click on the **Verify** button. Google displays a list of terms and conditions. Read it yourself and have your guardians go through the terms and conditions as well. If your guardian agrees with the terms and conditions, then you can continue.
10. Click on the **I agree** button to continue.



The welcome screen of your personal Gmail account will open.



Gmail account window

NEWS FEED

CM

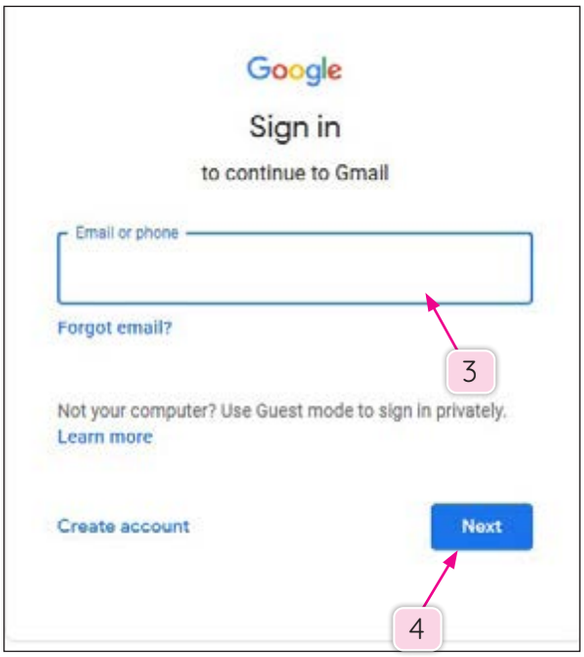
The phone number entered while creating an account can be used to reset the password in case we do not remember the password.

Signing In

Signing in to an account means to access the account. We can sign in to an account from anywhere if we have an Internet connection on our devices.

Follow these steps to sign in to your account:

1. Open the **web browser**.
2. Type the URL **www.gmail.com** in the address bar and press **Enter** key.
3. In the **Email or phone** field, enter the username that you have created.



4. Click on the **Next** button.

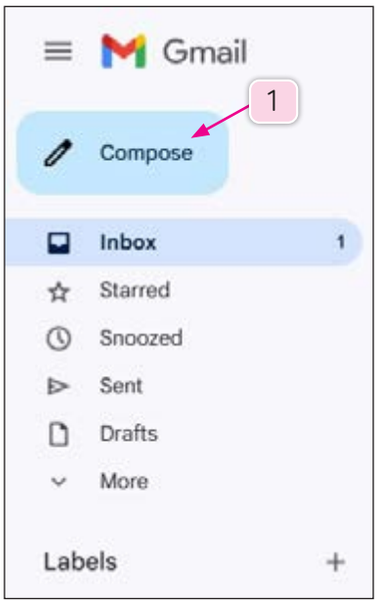
   A new window will open asking for the password.

5. Enter the password in the **Password field** and then click **Next** button.

   Your email account will open.

Sending an Email

Let us learn how to send an email using the account you have created. First, take the email address of the person you want to send an email.



Then, follow these steps to send the email:

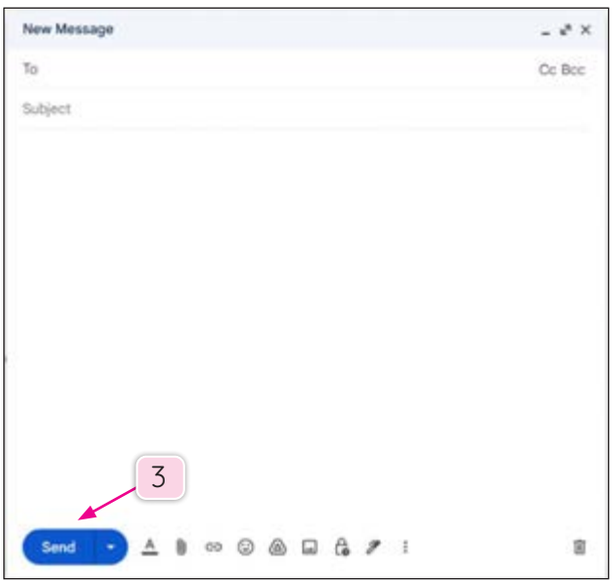
1. Click on the compose present on the left side of the window.

   A **New Message** window will open on the screen.

2. Type all the information needed in the message window.

   The message window has many fields:

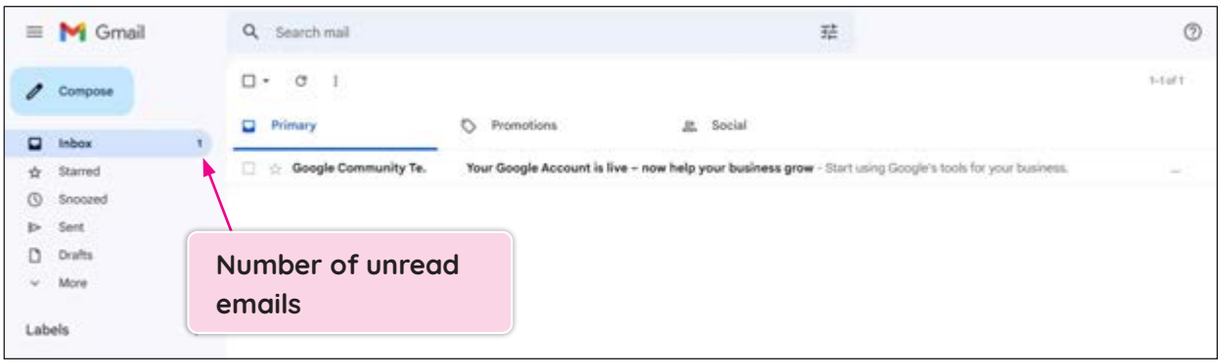
   - **To:** In this space, type the mail address of the person you want to send the mail to. We can enter more than one email. The email addresses are separated by a comma (,).
   - **Cc:** CC stands for Carbon Copy. The person whose address is typed here is not the direct recipient of the mail. It is to inform him/her that the mail has been sent to the person marked in the **To** field.
   - **Bcc:** BCC stands for blind carbon copy. The address entered in this field will be hidden from the other persons you have sent the mail.
   - **Subject:** The section is to introduce the purpose of writing the mail.
   - **Body:** In the white empty field below the subject line is where you type the message.
   - **Toolbar:** There are several other options below the body of the message where you can do various tasks. For example, attach files, add images or emojis, etc.



3. After you finish writing your mail, click on **Send**.

Reading an Email

The Emails you have received will appear on the first window that appears when you Sign in or Log in. The number of unread emails is displayed in front of the word 'Inbox'. The unread emails appear in bold. All the emails that you get are displayed on the mail window in Inbox. Click on the name of the sender or the subject to read the email.



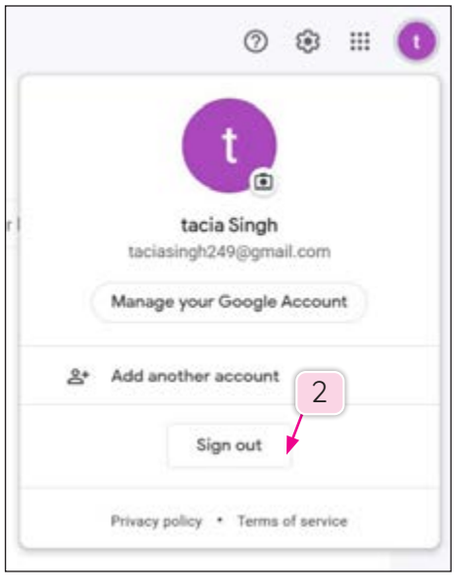
An email account window

Sign Out

It is very important that the email account is properly closed after using it so that nobody else can use it to send unwanted emails. Closing an email account after completing our work is called **Sign out**.

Follow these steps to sign out of your email account:

1. Click on the icon with the first letter of your name. It is present in the top right corner.
2. Click on the **Sign out** button and it will close your account.



EMAIL ETIQUETTES

When we meet someone, there are certain accepted behaviours and actions that we have to follow. When we meet people online, we have to follow the same basic etiquette and be polite even if we not meeting the person face to face.

Some of the etiquettes that we should follow while using emails or social networking sites are:

- While writing an email, the message should be conveyed clearly so that the receiver does not have any problem understanding it.
- We should not write a message in capital letters as it implies shouting at the person.
- A mail should always begin with a proper greeting.
- The subject of the mail should be specific so the other person reading the mail knows what it is going to be about.

- Use the Bcc feature if you are sending the same email to multiple people.
- Go through the message before sending it.
- Check spelling and grammar errors.
- Do not click on any web link sent by someone you don't know.
- Open only the attachments that come from a trusted source.
- Always sign out when you are done using your account.

ACTIVITY TIME

CM

Identify and write what they are.

1. www.google.com
2. aakash@yahoo.com
3. Google Chrome
4. Airtel
5. BSNL

REFRESH

- The full form of the Internet is Interconnected Network.
- The Internet is a global network of computers.
- The things required to connect to an Internet connection are a device, telephone and cable lines, modem, web browser and ISP.
- There are several kinds of Internet connections.
- In a Dial-up connection a phone line is used to connect to the Internet.
- Cable is not required in a Wi-Fi connection.
- URL stands for Uniform Resource Locator and is the web page address.
- The full form of email is Electronic Mail.
- An email is used to send messages to other people electronically.
- An email account is required to send and receive messages electronically.
- An email address contains a username and a domain name.
- It needs to sign in to your email account to read a message you have received.

BROWSE

A **Choose the correct option.**

1. A web browser is _____.
   a. domain name b. an application to access websites
   c. an ISP
2. Opera and Mozilla Firefox are examples of _____.
   a. An IPS b. a URL c. a web brows
3. In the email address **abc@gmail.com**, the domain name is _____.
   a. smile b. @ c. gmail
4. In the email address **mary23@gmail.com**, the username is _____.
   a. gmail b. .com c. mary23
5. @ in an email address is read as _____.
   a. as b. at c. an

B **Fill in the blanks using the words given below.**

carbon copy Gmail URL Dial-up email

1. Electronic mail is the full form of _____.
2. _____ stands for Uniform Resource Locator.
3. CC stands for _____.
4. _____ is a type of Internet connection.
5. _____ is an email service provider.

C Write T for true statements and F for false statements.

1. Emails are delivered instantly.
2. Only one name can be entered in the To field while composing an email.
3. Signing in to an account means closing the account.
4. We should not share our password for email accounts with anyone.
5. We should not sign out from our email account after we complete our work.

D Answer the following question in one word or one sentence.

1. Give one example of an Internet connection.
2. Name two web browsers.
3. Name two ISPs.
4. Give one example of a URL.
5. Give one example of an email address.

E Answer the following questions.

1. Define the term Internet. Write some uses of it.
2. Describe the things required for an Internet connection.
3. Explain the types of Internet connection.

4. Differentiate between the BCC and CC fields of the message window.

5. List some etiquettes that should be followed while using social networking sites.

ACTIVITY TIME

PL

Find the following words in the puzzle. Words are hidden ↑ ↓ → ← and ↘.

Internet Hotpots Vodafone Password Message Electronic
Attachment Username Address Mail Browser Modem

W	E	S	B	A	E	Y	S	K	E	U	J	S	T	O	P	T	O	H	N	D	F	Y
Z	U	S	D	T	U	L	Q	J	L	B	R	C	X	P	Y	H	K	P	X	L	Y	V
X	D	M	R	H	B	G	E	B	D	M	O	E	I	J	A	R	K	L	V	E	K	U
W	J	W	E	U	A	X	T	C	R	R	Z	C	J	F	W	N	Y	B	N	H	H	T
E	W	T	T	W	H	B	N	O	T	O	G	F	S	H	A	Z	U	M	K	I	F	N
A	L	I	V	I	B	L	E	G	M	R	W	C	H	U	D	V	P	I	W	E	R	B
P	S	F	Z	K	L	I	M	X	Z	N	O	S	D	O	D	N	L	T	D	N	S	T
T	A	F	K	B	C	D	H	R	V	W	K	N	E	D	R	O	I	O	A	O	H	R
P	K	S	D	N	B	G	C	E	S	N	H	P	I	R	E	U	A	G	T	F	U	D
N	K	V	S	H	F	F	A	G	Q	p	K	B	T	C	S	J	M	D	E	A	A	A
R	Q	Q	H	W	B	H	T	A	A	O	O	C	I	G	S	M	M	Y	N	D	X	H
M	L	B	O	B	O	M	T	S	K	N	P	J	S	Y	D	A	Z	J	R	O	O	S
F	C	X	C	G	R	R	A	S	G	N	Q	K	G	O	L	T	D	F	E	V	J	N
F	Z	U	L	G	M	E	D	E	U	E	G	Q	Y	E	S	A	Z	I	T	R	M	A
F	Z	U	S	E	R	N	A	M	E	W	T	K	U	K	O	W	Y	W	N	L	E	L
N	D	F	Z	E	P	C	O	M	E	D	O	M	K	L	U	X	Q	S	I	F	T	I

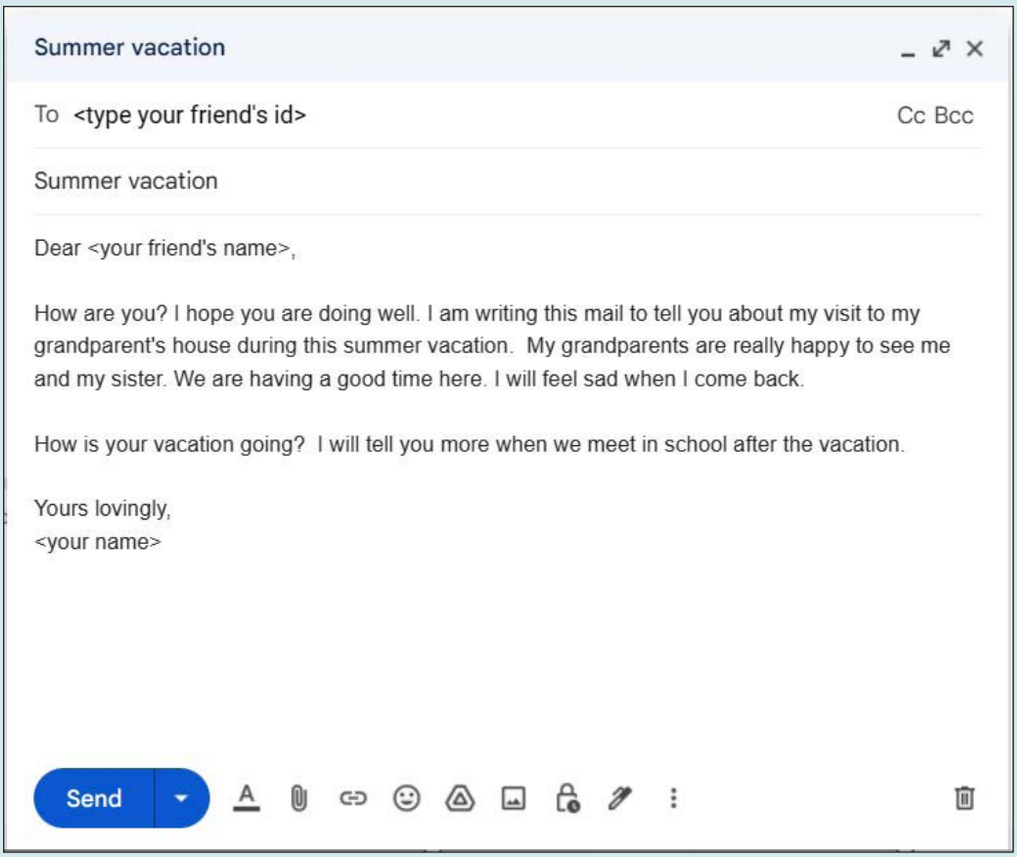
LET'S EXPLORE

EL TE

Do these activities in the computer lab.

- You have learnt how to create an email account. Now, with the help of your teacher, create your email account.

- Using the account you have created, create an email telling your friend about your visit to your grandparent's home during summer vacation. And mail it to your friend.



FOR THE TEACHER

- Recapitulate the uses of the Internet discussed in the previous classes.
- Demonstrate how to create an email account.
- Show them how to send and read an email.
- Discuss the etiquettes to be followed while using email and social networking sites.

Chapter 7

Data Processing

LEARNING OBJECTIVES

Scan QR Code to watch a video

In this chapter, students will learn about:

- Data and information
- Data sorting
- Information representation
- Decoding

SIGN IN

CM CR

Look at the pictures and write the names of the objects in the correct column.

Lamp

Television

Refrigerator

Bookcase

Toaster

Oven

Rocking Chair

Kettle

Sofa

Rice Cooker

Things you see in the kitchen	Things you see in the living room
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

DATA AND INFORMATION

Data is a collection of facts that is unorganized. It needs to be arranged to make it meaningful.

Information is the meaningful outcome we get after processing, organising or presenting the data in a given context.

For example, the test score of each student for different subjects is data. From this data, we can find out the least-scoring or highest-scoring subject. This is the information.

From the data given in the above table, we can get the information that maths is the least-scoring subject for the students and English is the highest-scoring subject.

Name	Maths	English	Science	Social Science
Danish	50	80	70	76
Ajay	69	88	85	70
Maya	51	92	70	79
Ishita	70	85	76	81
Asad	66	93	81	69

It is easy to get the required information if the data is represented in a neat and organised manner such as the table.

DATA SORTING

Data needs to be arranged to get the information we are looking for. Data sorting is organising and arranging data into meaningful order to make it easier to understand and analyse.

Look at the picture given below. If you have to arrange the items in ascending order, how will you do it?

First, make a table and write the number of each item.

Name of the item	Number
1. Boots	9
2. T-shirt	3
3. Coat	7
4. Umbrella	8
5. Hat	2

From the data given in the table, we can get the required information by organizing or arranging it.

Now, arrange the number of items in ascending order.

Name of the item	Number
1. Hat	2
2. T-shirt	3
3. Coat	7
4. Umbrella	8
5. Boots	9

NEWS FEED

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The word **'Data'** derives from the Latin word 'datum' (singular) which meant 'something given'.

The word **'Information'** derives from the Latin word 'datum' (singular) which meant 'something given'.

INFORMATION REPRESENTATION

There are many ways to represent information. Let us look at some ways through which information is represented.

Tables

We can represent information in the form of a table.

In a table, information or data is arranged in rows and columns. The way information is represented in table form is called a **tabular format**.

The school timetable is an example of representing information in a tabular format.

A format of school timetable

Pictograms

We can represent information in the form of pictograms. A pictogram is a way of representing information or data using images, icons or symbols.

These are some of the commonly used pictograms.

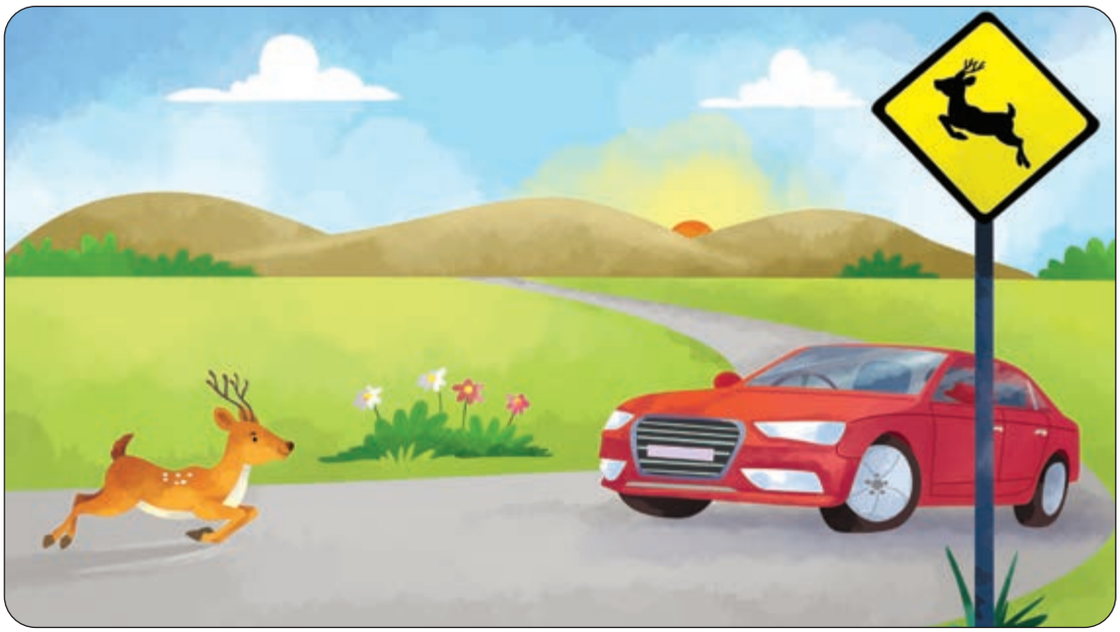
Do not use phone

No Left-turn

Pedestrian Crossing

Deer Crossing

The sign 'Dear Crossing' on the side of the road informs people about deer crossing the road.



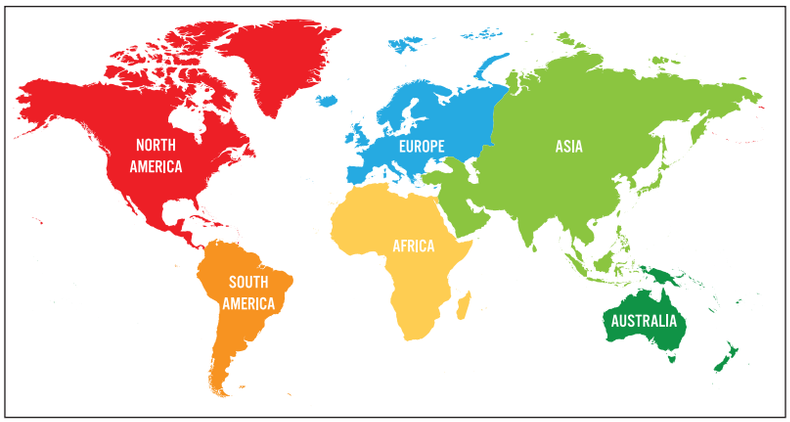
Pictures

We can represent information in the form of pictures and drawings. A picture helps us learn and explain tough concepts in an easier way. A picture is able to grab our attention and we can remember what we see in a picture for a longer period.

A picture showing the stages of the life cycle of a butterfly

Maps

We can represent information in the form of maps. A map presents information about a place in a simple visual way. Through a map, we can know the shape and size of countries, the distances between places and the special locations of a place.



A map continents of the world

DECODING

Decoding is the process of converting code into text or a format of a language that is easy to understand.

Read what the girl is saying to the boy.

Do you understand what the girl is saying? She is talking in a code. How will we know the message hidden in the code? We have to decode it to understand its meaning using the given letter/number key.

A	B	C	D	E	F	G	H	I	J
26	25	24	23	22	21	20	19	18	17

K	L	M	N	O	P	Q	R	S	T
16	15	14	13	12	11	10	9	8	7

U	V	W	X	Y	Z
6	5	4	3	2	1

To decode the above message, replace the numbers with the letter of the same position in the letter/number key chart.

19 12 6	26 9 22	2 12 6
H O W	A R E	Y O U

The message in the given code is '**How are you?**'

NEWS FEED

CM

The method by which information is converted into secret code is called encryption. The science of encrypting and decrypting information is called cryptography.

ACTIVITY TIME

CT CM

Using the letter/number key chart, decode the following.

1. 19 22 15 15 12

2. 20 12 12 23 14 12 9 13 18 13 20

3. 24 12 14 11 6 7 22 9

REFRESH

- Data is a collection of facts that is unorganised.
- Information is organized or arranged data.
- Data sorting is arranging and organising data to make it easier to understand.
- Information can be represented in many ways.
- Decoding is the process of converting a coded message into a format that can be easily understood.

BROWSE

A **Choose the correct option.**

1. It is the unorganised facts.

   a. Information b. Data c. Decode

2. It is the outcome of organised data.

   a. Data b. Sorting c. Information

3. It gives the information in a neat and clean format?

   a. Maps b. Tables c. Pictograms

4. It presents information about a place visually.

   a. Pictograms b. Maps c. Pictures

B Write T for true statements and F for false statements.

1. Data and Information are the same.
2. We get data from the information.
3. We get the required information after arranging the data.
4. We can represent information in only one way.
5. Decoding is writing a message in code.

C Answer the following questions in one word or two words.

1. What do you call the representation of information in the form of a table?
2. What do you call the representation of information using images and icons?
3. What do you call the process of converting a coded message into an understandable format?

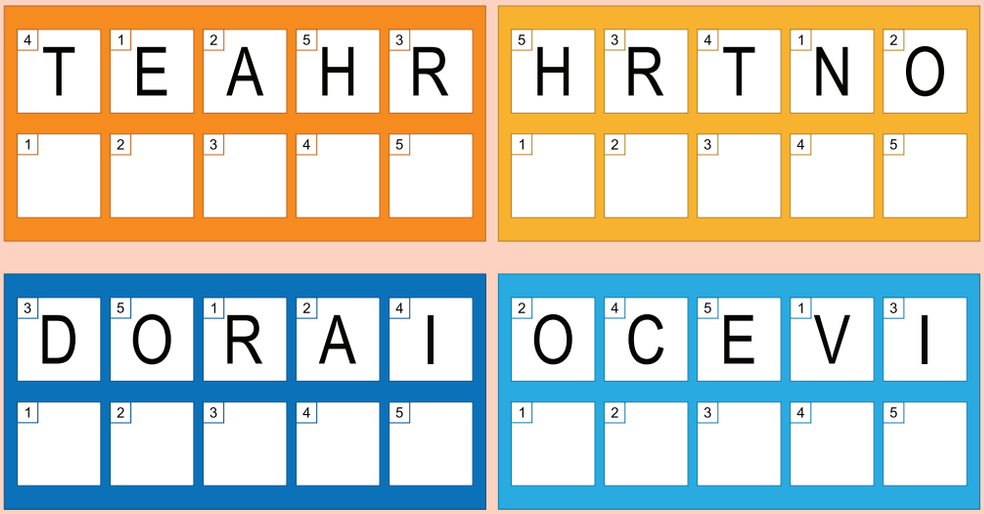
D Answer the following questions.

1. What is the difference between data and information?
2. What is data sorting?
3. Write some of the ways through which we represent information.

ACTIVITY TIME

CT CM

1. **Decode the words.**



2. **Collect data from your classmates to find the most popular sport in your class.**

a. Record the data in a table.

Sport	Cricket	Football	Swimming	Basketball	Other
Number of students					

b. Arrange the data in descending order.

Sport	Number of Students
1.	
2.	
3.	
4.	
5.	

- Which is the most popular sport in your class?
- Which is the least popular sport in your class?

EL TE

LET'S EXPLORE

1. **In the computer lab, browse through the Internet and find out the meaning of these pictograms.**

1. 

2. 

3. 

4. 

5. 

6. 

7. 

8. 

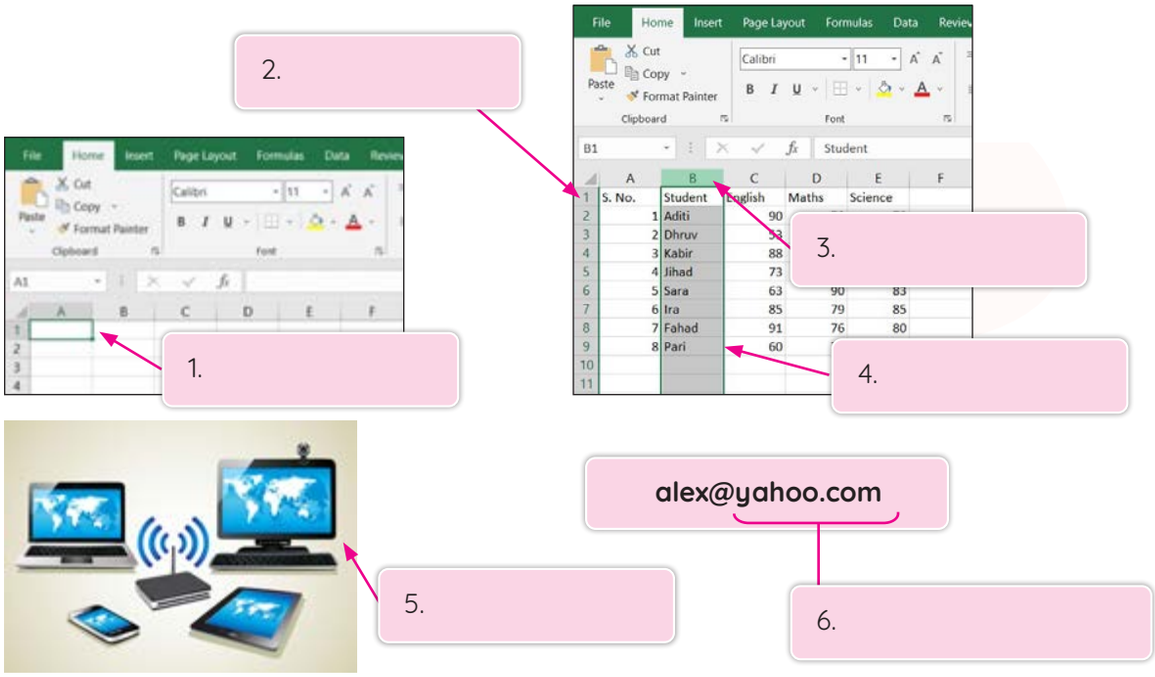
2. **Discuss which of these can be used in or around a school.**

FOR THE TEACHER

- Explain with an example the difference between data and information.
- Explain the concept of secret messages.
- To reinforce the concept, play a game where a student has to create a coded message and another student have to decode it.

PERIODIC ASSESSMENT 3

A. Look at the pictures and write the missing labels.



B. Fill in the blanks.

1. In Excel, a _____ has to be selected to edit any content in it.
2. _____ is a collection of facts that is unorganised.
3. _____ presents information about a place virtually.
4. Google and Safari are examples of _____.
5. _____ are delivered instantly.

C. Match the following.

1.	Range	a.	Web browser
2.	Ctrl + A	b.	Email address
3.	Google	c.	A way to represent information
4.	abc@gmail.con	d.	Collection of cells
5.	AutoFill	e.	Select the whole worksheet
6.	Pictogram	f.	Excel

Chapter 8

Conditional Programming in Scratch

LEARNING OBJECTIVES

Scan QR Code to watch a video

In this chapter, students will learn about:

- Shapes of blocks in Scratch
- Learning the Sensing Blocks
- Variables
- Understanding conditional programming
- Creating a project

SIGN IN

PL

Find 10 words related to Scratch. Words are hidden →, ↓ and ↘.

G	B	M	T	R	M	O	T	I	O	N	O	P	T	F	E	R	U
I	V	E	M	S	O	U	N	D	H	W	Z	T	L	Y	Q	L	I
B	B	K	T	N	A	R	E	V	D	Q	R	Z	O	V	H	V	H
X	L	A	C	Y	Y	L	P	M	O	W	Z	H	O	G	L	X	A
S	R	O	C	O	F	H	Z	L	J	O	K	V	K	Y	Y	K	K
R	F	B	C	K	N	Z	B	G	W	X	N	L	S	S	V	Q	E
N	N	K	V	K	D	T	O	E	V	E	N	T	S	P	Q	P	T
E	W	U	Z	C	Y	R	R	L	A	P	U	O	W	R	H	R	G
F	W	T	O	D	E	L	O	O	M	T	S	C	R	I	P	T	K
F	O	Z	U	F	V	A	J	P	L	G	O	K	K	T	A	Q	R
Q	F	Y	R	S	T	A	G	E	S	U	Z	Z	B	E	C	Q	J
D	S	M	G	Q	V	J	W	F	D	H	J	O	A	I	I	Y	R

SHAPES OF BLOCKS IN SCRATCH

Blocks in scratch are made up of different shapes. They can be grouped into six types—Hat, Stack, Boolean, Reporter, C and Cap.

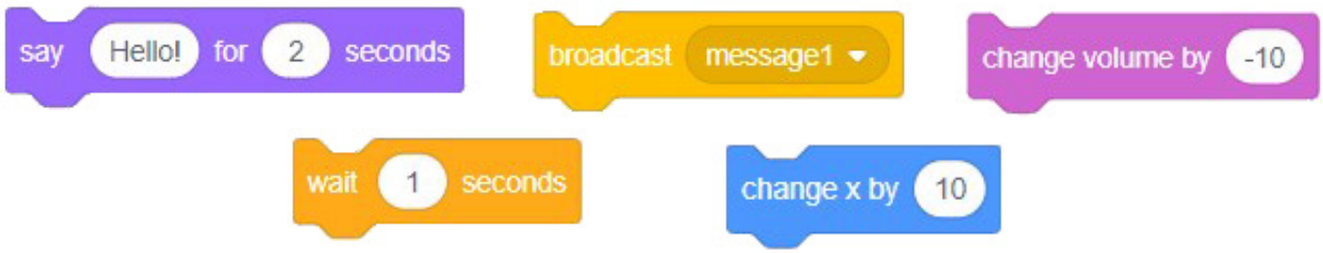
Hat Blocks

A Hat block looks like a hat. Hat blocks are designed to start a script. These blocks always come on top of the script like a hat. We cannot put any other block on top of them. All the hat blocks are either Control blocks or Events blocks.

Some of the Hat blocks that we can find in Scratch

Stack Blocks

A Stack block is a rectangular block with a cut of bowl shape at the top and a bump at the bottom. Stack blocks are designed to fit above and below other blocks. They formed the majority of the blocks available in scratch. These blocks are used to run commands.



Some of the Stack blocks that we can find in Scratch

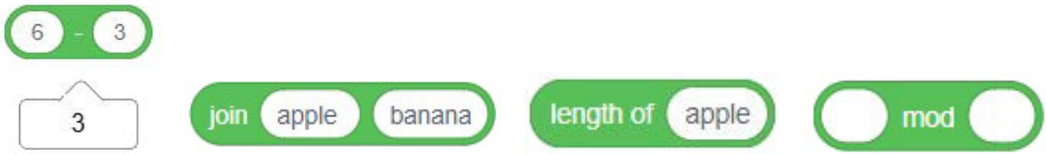
Boolean Blocks

A Boolean block has pointy ends and looks like an elongated hexagon. Boolean blocks represent one of two outcomes—'true' or 'false' or the number '0' or '1' depending on their usage in the script.

Some of the Boolean blocks that we can find in Scratch

Reporter Blocks

A reporter block has rounded edges. Reporter blocks report a value. This value can be numbers or strings. For example, we get the value for 6 – 3 as 3.



Some of the Reporter blocks that we can find in Scratch

C Blocks

A C block has the shape of the letter C. Other blocks can fit inside a C block. C blocks are also known as **wrap blocks**. They perform loops and conditions. These blocks are present in the control category.

Some of the C blocks that we can find in Scratch

CAP Blocks

A CAP block ends the scripts. CAP blocks are shaped with a notch at the top and a flat button. We cannot place other blocks below them. They are the last block in a script. There are two CAP blocks and they can be found in Control group.

CAP blocks that we can find in Scratch

NEWS FEED

CM

On **March 5, 2007**, the oldest existing Scratch project, Weekend, was uploaded.

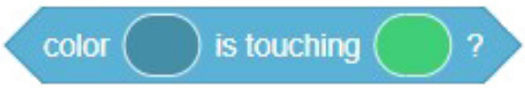
LEARNING THE SENSING BLOCKS

Sensing blocks in Scratch are used to detect different factors of a project such as location of the mouse-pointer, distance from other sprites and whether a sprite is touching other sprite. Sensing blocks are colour-coded **light blue**. There are 18 Sensing blocks in Scratch 3.0. Let us learn about some of the sensing blocks and their functions.

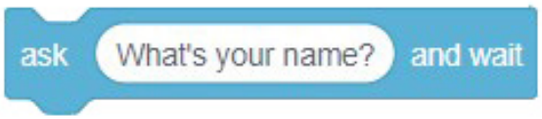
This block checks if the sprite is touching the **mouse-pointer**, edge, or another sprite. If the sprite is touching the selected object, then it executes the block given after it in the condition. If it is not, it executes other blocks as per the given condition.

This block checks if the sprite is touching a **specific colour**. If it touches, then it executes a set of blocks. If not, it executes another set of blocks.

This block checks if the first colour is touching the **second colour**. If it touches, then it executes a set of blocks. If not, it executes another set of blocks.



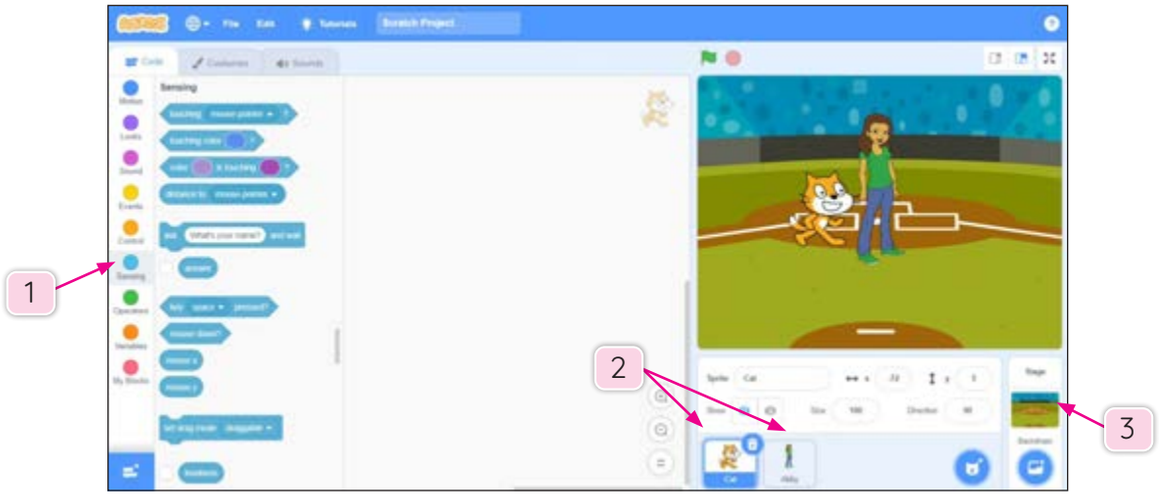
This block will make the sprite using the block to ask a **question** and prompts the user to type the input using the keyboard. No other block runs at that time as it waits for the user input.



To understand the working of sensing blocks, let us create a script.

Follow these steps to add sensing blocks to the script:

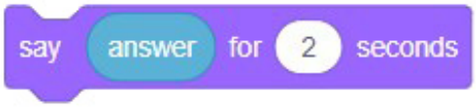
1. Click on the **Sensing** block category in the **Code** tab.
2. Delete the cat sprite and insert a different sprite, **Abby**.
3. Add a new backdrop to the stage, **Baseball 1**.
4. Drag the **Ask** block to the script area and click on it. A speech bubble will appear above Abby with the text 'What's your name?'
   An input box with a blinking cursor will also appear on the stage.
5. Type your name in the input box. Click on the tick button or press the **Enter** Key. The name will disappear.



6. Click on the check box before the answer block. The answer will display on the stage.

To make Abby speak the name for a given number of seconds, follow these steps:

- Place the **Answer** block from the **Sensing** block in the **Say** block from **Looks** block.



- Now snap this block to the Ask block and click. Abby will speak the name for 2 seconds.

The question in the ask block can be changed according to our choice. To change the question, click on the type box and type the question.

VARIABLES

All the computers need a program to carry out a task. A **program** is a group of commands and instructions that tell a computer what task to do. In Scratch, blocks are the commands or instructions that are given to the sprite to perform a task. These blocks form a script.

We use data such as numbers, text, dates and pictures in a program. This data is stored in variables. **Variables** are used to hold values. The values of this variable are not fixed. The value can be modified according to the script. For example, in the turn block, by default, the variable has a value 15. We can modify this value according to the script.

Variables are of two types—numeric variable and string variable.

A numeric variable is a variable that stores numbers. For example, 10, 784, 999, 89765, etc. These variables are used in calculation.

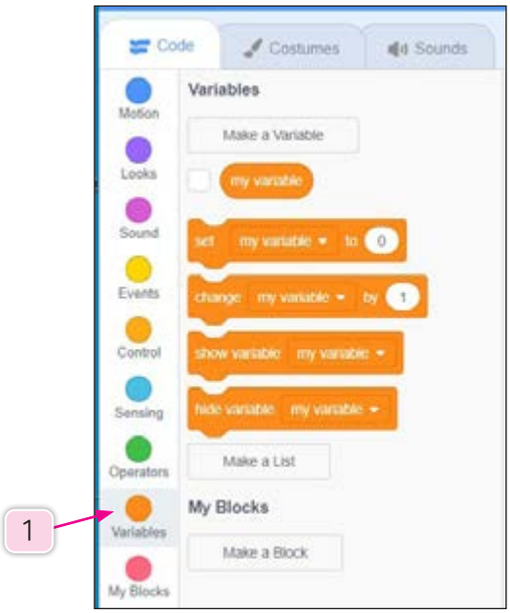
A string variable is a variable that stores letters in the form of strings or characters. The values of string variables may include names, words, sentences and numbers. The values are enclosed in quotation marks. For example, “Hello”, “I am a girl”, “10”, “Number 1”, etc.

Creating Variables in Scratch

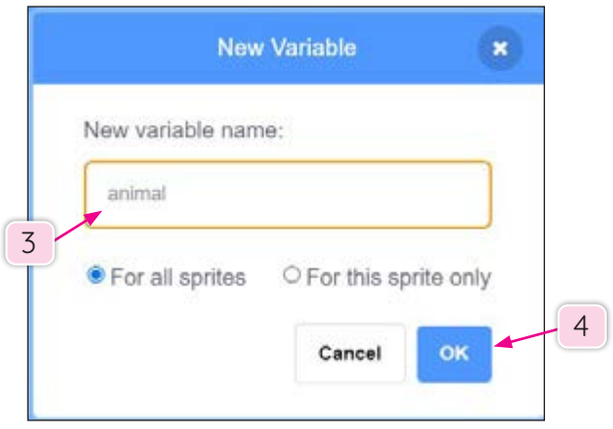
Follow these steps to create variables in Scratch:

1. Click on the **Variables** block category. A set of blocks will appear in the block palette.
2. Click on the **Make a Variable** block. A **New Variable** dialog box will appear. Enter the name of the new variable in the **New variable name** box.
3. Choose and click on the radio button of either of the two given options.
   - Click on **For all sprites** to make the variable appear for all the sprites.
   - Click on **For this Sprite only** to make the variable appear for only this Sprite.
4. Click on the **OK** button.

   The variable will appear in the list of Variables blocks.



Variables Blocks

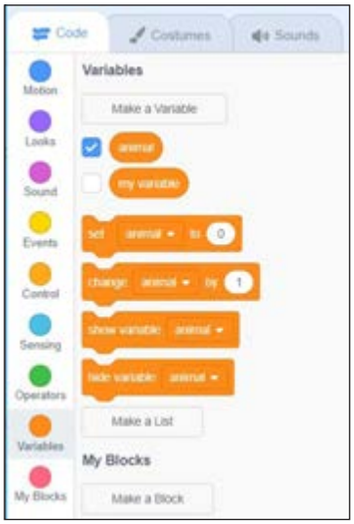


New variable dialog box

We have added the variable animal and chose **For all sprites**. This variable will be available for all the sprites.

Now, let us create a script using this variable block.

The sprite will ask you to type the animal you like. Type the name and press Enter key. The name of the animal appears in the speech bubble of Abby. The name of the animal also appears in the variable name on the stage.



UNDERSTANDING CONDITIONAL PROGRAMMING

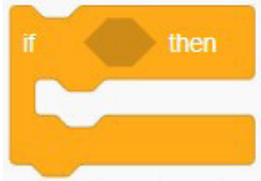
A condition is something that is either true or false. A conditional statement checks whether a condition is true or false. There are many tasks that depend on some conditions to be true to do the task.

For example, on a cloudy day, you want to play in the park. There are two conditions:

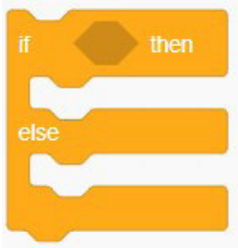
1. If it rains, you will not play in the park.
2. If it does not rain, you will play in the park.

Condition blocks work on the condition's value. There are two conditional statement blocks in Scratch.

1. **If…then block**
   The blocks inside this block will run if the condition is **true**. If the condition is false, the blocks inside this conditional block will not run. The blocks outside the conditional block will run.



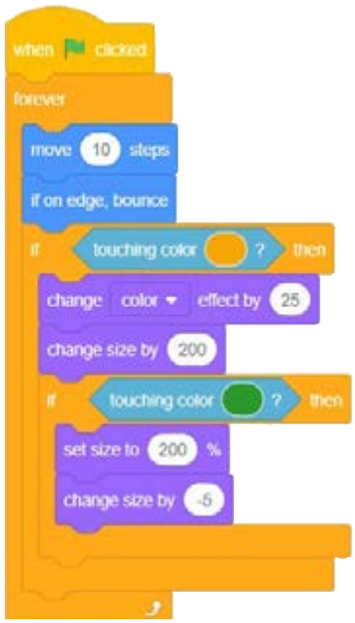
2. **If…then…else block**
   The blocks inside the **'then' condition** will run if the condition is true. If the condition is false, the blocks inside the **'else' condition** will run.



Forever and repeat blocks can be used with these blocks.

Now, let us make a small script using the conditional block.

Change the sprite to **starfish** and the backdrop to **underwater 1.**

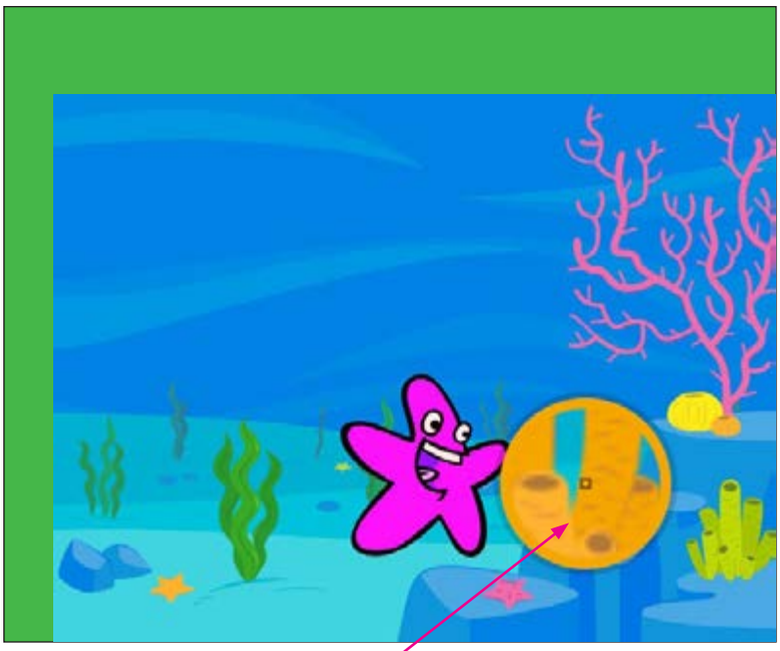


Follow these steps to crate the script:

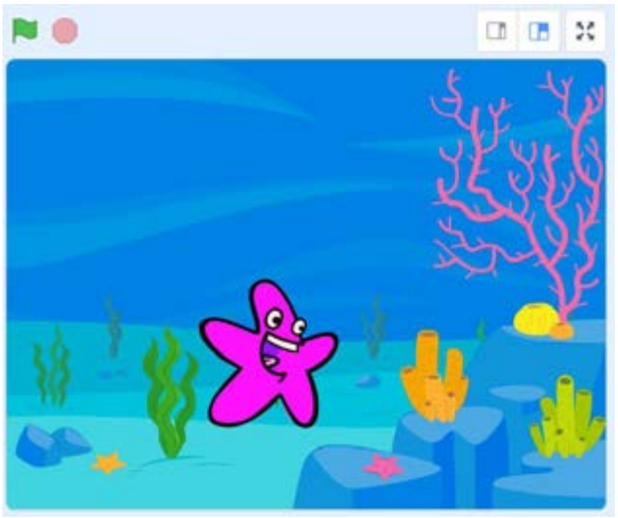
1. Drag **when green flag clicked** from the **Event** category to the script area.
2. Drag the **Forever** block from the **Control** category and put it to the green flag category.
3. Drag the **move** block and put it inside the **forever** block.
4. Then, drag **if on edge, bounce** block and put it inside the forever block.
5. Drag **if…. then** block inside the **forever** block and snap the **sensing** block, **touching colour** in the hexagon of the **if** loop.

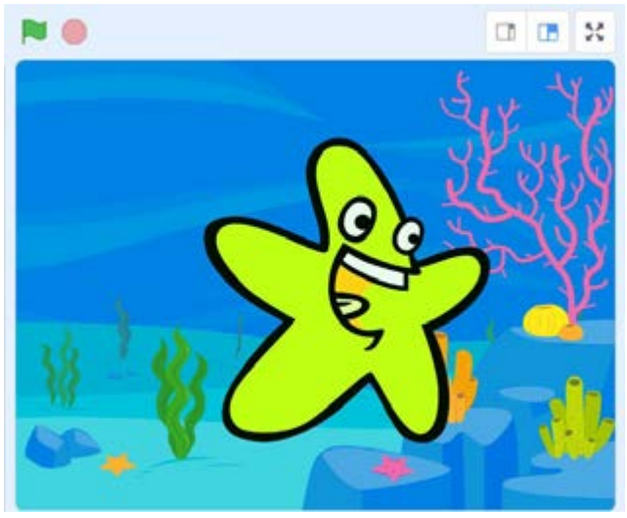
To get the correct colour, use the dropper and select the colour you want from the backdrop.

Dropper



Selecting colour from the backdrop



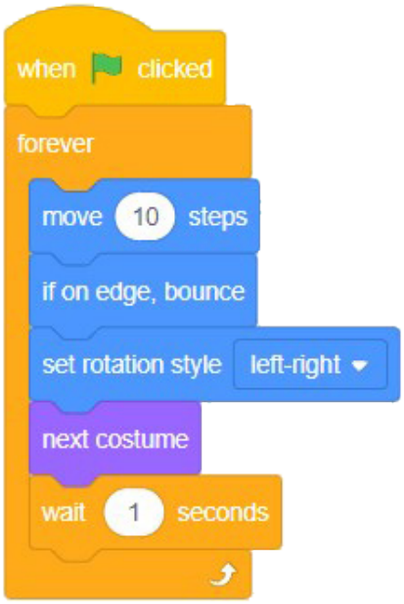


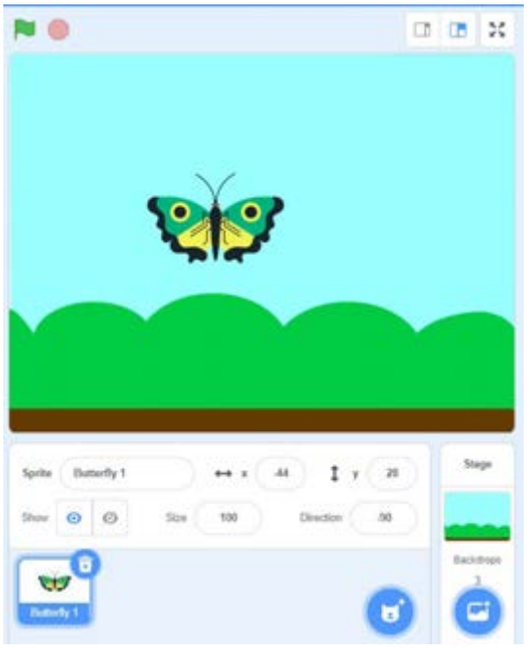
The starfish changes colour and size when it touches the colour selected in the touch block.

CREATING A PROJECT

We have already learnt about different blocks in Scratch. Now, let us create a project where the butterfly flies in the blue sky.

Create the given script for the butterfly to move its wings.





Now, click on the green flag and see the butterfly moving its wings.

NEWS FEED

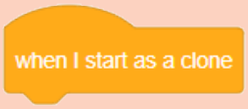
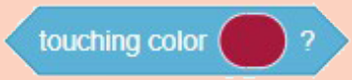
CM

After downloading and installing the Scratch app, Scratch projects can be created without an Internet connection.

ACTIVITY TIME

CT

Match the following.

1.		a.	Reporter block
2.		b.	CAP block
3.		c.	Sensing block
4.		d.	Boolean block
5.		e.	Hat block

REFRESH

- Blocks in Scratch are made up of different shapes.
- Blocks can be grouped into six types—Hat, Stack, Boolean, Reporter, C and Cap.
- A Hat block looks like a hat and is designed to start a script.
- A Boolean block has pointy ends and looks like an elongated hexagon.
- Stack blocks are designed to fit above and below other blocks.
- Reporter blocks report a value.
- A C block has the shape of the letter C.
- A CAP block ends the scripts.
- Sensing blocks in Scratch are used to detect different factors of a project
- Variables are used to hold values.
- Variables are of two types—numeric variable and string variable.
- Condition blocks work on the condition's value.

BROWSE

A **Choose the correct option.**

1. There are grouped into _____ types.
   a. five b. six c. seven

2. A _____ block that has a cut of bowl shape at the top and a bump at the bottom.
   a. Sensing b. Boolean c. Stack

3. A _____ block that checks if the sprite is touching a specific colour and executes the command.
   a. condition b. variable c. sensing

4. The colour of sensing blocks is _____.
   a. light blue b. dark blue c. navy blue

5. There are _____ sensing blocks in Scratch 3.0.
   a. 18 b. 17 c. 19

B **Fill in the blanks with the words given below.**

Condition	two	Control	variables	factors

1. C blocks are present in the _____ category.

2. Sensing blocks in Scratch are used to detect different _____ of a project.

3. There are _____ types of variables in Scratch.

4. The value of _____ can be modified according to the script.

5. _____ blocks work depending on the condition value.

C Write T for true statements and F for false statements.

1. A block can be added on top of the Hat block.
2. Boolean blocks are hexagonal in shape.
3. The Ask block prompts the user to type the input using the keyboard.
4. The value of the variable in Scratch is fixed.
5. In the 'If...then block', the blocks inside the block will run if the condition is true.

D Answer the following questions in one word or one sentence.

1. Which block always comes on the top of the script?
2. Which block reports a value?
3. What is the other name of C blocks?
4. Which block has a notch at the top and a flat button?
5. Which block works on the condition value?

E Answer the following questions.

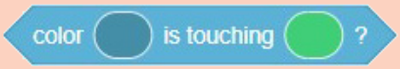
1. What are the types of blocks in Scratch? Name them.
2. What is the difference between a Hat block and a CAP block?
3. What is the function of a Sensing block? Explain with an example.
4. Differentiate between a numeric variable and a string variable.
5. Explain the two types of conditional blocks.

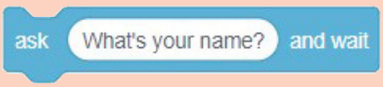
CT

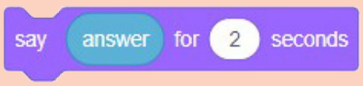
ACTIVITY TIME

Write the function of these blocks.

1. 

2. 

3. 

4. 

5. 

EL TE

LET'S EXPLORE

In the computer lab, create this project on Scratch.

You can choose any backdrop and character for the project.

FOR THE TEACHER

- Explain how different blocks function in Scratch.
- Demonstrate how to write a script using different blocks.
- Encourage the students to create projects using various blocks.

Chapter 9 Smart Living

LEARNING OBJECTIVES

Scan QR Code to watch a video

In this chapter, students will learn about:

- Smart homes
- Advantages of smart homes
- Smart home devices

SIGN IN

CM

Name four devices that can be operated by voice commands.

1.
2.
3.
4.

Development in technology has made it possible to perform many tasks easily and comfortably. New devices have been developed that are well-connected and can be remotely controlled. When these devices are used in homes, it provides a better living experience for the people living in them. It makes a home a smart home.

SMART HOMES

A **smart home** is a house that has a system that uses AI to connect the various appliances to perform certain tasks automatically. This system also allows the homeowner to control some tasks such as lighting, security, entertainment, etc., remotely through smartphones or computers. It helps to make our life simple and convenient.

Smart Homes

ADVANTAGES OF SMART HOMES

A smart home has many benefits and makes our life more comfortable. Some of the benefits a smart home offer are:

- **Conservation of energy**

  Smart Homes are efficient in energy savings. Most smart devices can monitor daily energy consumption and can suggest ways to minimise the wastage of energy. Some devices also have sensors to detect occupancy and turn off the devices if no one is there in the room.

- **Security and safety**

  Smart devices such as smart cameras, smart door locks and bells can ensure maximum security to a homeowner. These devices also enable the owner to monitor the house in real-time when he/she is away. Some of the devices such as smoke detectors can alarm when it detects smoke and help the people in the house feel safer.

A man monitoring through a home security camera

- **Easy access**

  A homeowner can remotely access the home appliances from a smartphone or a laptop. For example, before leaving the house if a person forgets to turn off the heater, he can easily do it through any of the connected devices.

- **Comfort and convenience**

  In a smart home, there are various functions which can be operated through your phone. It allows flexibility and can it more comfortable for the person living in the house. For example, the owner can set a timer to turn on the light before reaching.

NEWS FEED

CM

The term **'smart house'** was coined by the American Association of Home Builders in 1984. The term **'Internet of Things' or 'IoT'** refers to the billions of physical objects or things connected to the Internet such as sensors, gadgets, appliances and other machines.

SMART HOMES DEVICES

An important feature of a smart home is that the devices used in smart homes are connected with each other and can be accessed through a smartphone, tablet, laptop or remote control. These devices are connected to the internet and use various domains of AI like Machine Learning, Natural Language Processing and Computer Vision.

Here are some of the devices used in smart homes:

Smart TV

A smart TV is an AI-enabled TV that can be connected to the Internet and functions more like a computer. It enables access to a wide range of apps and allows the user to stream music and videos, browse the Internet and view videos. It can be operated through a remote or by using voice commands.

Smart TV

Smart Doorbells

A Smart Doorbell has a built-in camera and a microphone to talk to the visitor. These features provide security to the owner who can see the visitor at the door before opening it.

A woman rings a smart doorbell

Smart Cameras

Smart cameras are great devices for home security. It helps to monitor indoor and outdoor activities. It records everything and also sends a signal to alert the owner if there is a breach or any other kind of suspicious activity.

A smart camera connected to a smartphone

CM

NEWS FEED

Smart home technology began in 1975 with the invention of X10, a device that works with a building's existing AC wiring and controlled small appliances and lighting systems.

Smart Smoke Detectors

A smoke detector is used to detect smoke and give a signal if there is fire in your home. A smart smoke detection system has the technology to pair with Wi-Fi and alert your phone when the alarm is activated.

A smoke detector

Smart Lighting

The lighting of your house can be controlled through a smartphone app. This is called smart lights. It helps to save and conserve energy. This allows you to schedule when the lights are ON or OFF, set light levels and check the home lighting status while you are away.

Adjusting lighting through a smartphone

Smart Speakers

Smart speakers can be controlled using your voice. They understand voice commands and can also perform activities like creating a playlist, turning on reminders, searching for information on the internet, etc. They have built-in voice assistants such as Siri, Alexa and Google Assistant.

Alexa

ACTIVITY TIME

CM

Identify the images and write one use of each appliance.

1. 

2. 

3. 

4. 

5. 

REFRESH

- A smart home is a house that has a system that uses AI to connect the various appliances to perform certain tasks automatically.
- A smart home helps to make our life simple and convenient.
- There are many benefits of smart homes such as conservation of energy, provide safety and security, comfort and convenience.
- There are many devices used in smart homes such as smart TV, smart doorbells, smart camera, smart smoke detectors, smart lighting and more.

BROWSE

A **Choose the correct option.**

1. It is a device that helps to monitor a smart home.

   a. Smart TV ☐ b. Smart Camera ☐ c. Smart Doorbell ☐

2. It is a device that allows one to see and speak to a visitor before opening the door.

   a. Smart Doorbell ☐ b. Smart Lighting ☐ c. Smart TV ☐

3. It is a device that detects smoke.

   a. Smart Speaker ☐ b. Smart Doorbell ☐

   c. Smart Smoke Detector ☐

4. It is a device that can be operated by voice and create a playlist.

a. Smart TV ☐ b. Smart Camera ☐ c. Smart Speaker ☐

5. It is a device that functions like a computer.

a. Smart Camera ☐ b. Smart TV ☐ c. Smart Speaker ☐

B Fill in the blanks with the words given below.

remotely | benefits | smart camera | lighting | Internet

1. In a smart home, devices are connected to the _____.
2. A smart home has many _____.
3. Smart device such as _____ provides maximum security to the homeowner.
4. Smart homes have a system that allows the owner to _____ access the devices.
5. Smart _____ can be used to check the status of home lighting even from away from the home.

C Write T for true statements and F for false statements.

1. Smart homes are possible because of the development in technology. ☐
2. A smart home makes the living experience in these houses tedious. ☐
3. A smart home is efficient in saving energy. ☐
4. The homeowner of a smart home can access the devices in the house remotely. ☐
5. Smart lighting is used only to adjust the light levels. ☐

D **Answer the following questions.**

1. What is a smart home?
2. List the advantages of a smart home.
3. How does smart TV work?
4. Describe two devices that help in providing security and safety in a smart home.

LET'S EXPLORE

EL TE CR

In the computer lab, use the Internet to search for more smart devices that are not discussed in the chapter.

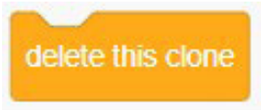
Create a chart of how these devices help to make a home a smart home.

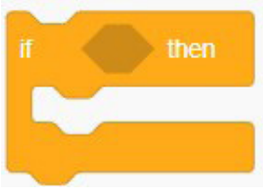
FOR THE TEACHER

- Explain the concept of smart homes.
- Elaborate on how smart devices help to perform some of the tasks more conveniently.
- Show and demonstrate how some of the smart devices that are used in smart homes work.

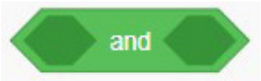
PERIODIC ASSESSMENT 4

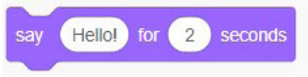
A. Write the names of the group to which these blocks belong.





1. _____ 2. _____ 3. _____





4. _____ 5. _____ 6. _____

B. Fill in the blanks.

1. There are _____ types of block shapes in Scratch.
2. _____ blocks are designed to fit above and below other blocks.
3. Sensing blocks are _____ in colour.
4. A smart _____ has a built-in camera and a microphone to talk to the visitor.
5. _____ records everything and also sends a signal to alert the owner if there is any kind of suspicious activity.
6. Smart speakers can be controlled using our _____.

C. Write how these devices help in making a home smart home.

1. Smart Smoke Detector

   _____

2. Smart Doorbell

   _____

3. Smart Camera

   _____

TEST PAPER 2

A. Choose the correct option.

1. In Excel, a collection of cells is called _____.

   a. groups of cells ☐ **b.** range ☐ **c.** rows and columns ☐

2. _____ is a type of Internet connection.

   a. Hotspots ☐ **b.** Gmail ☐ **c.** URL ☐

3. Domain name and username are separated by a _____.

   a. comma (,) ☐ **b.** period (.) ☐ **c.** at (@) ☐

4. _____ gives the information in a neat and clean format.

   a. Pictograms ☐ **b.** Maps ☐ **c.** Tables ☐

5. C blocks are called _____ blocks.

   a. surround ☐ **b.** wrap ☐ **c.** big ☐

6. _____ helps in saving and conserving energy.

   a. Smart speakers ☐ **b.** Smart camera ☐ **c.** Smart Lighting ☐

B. Fill in the blanks.

1. In the email, BCC stands for _____.
2. The full form of email is _____.
3. A web browser is an _____ to access websites.
4. In Scratch, _____ block is used to run the script continuously.
5. Smart _____ are efficient in energy savings.
6. A _____ system has the technology to pair with Wi-Fi and sound an alarm when smoke is detected.

C. Write T for true statements and F for false statements.

1. In the range A2D5. A2 is the address of the upper left cell and D5 is the address of the lower right cell. ☐
2. An email is used to send messages to other people electronically. ☐

3. An email account is required to send and receive emails. ☐
4. All the blocks in Scratch are of the same colour. ☐
5. Smart homes use devices that are Internet and AI-enabled. ☐
6. Siri and Alexa are examples of built-in voice assistants used in smart lighting. ☐

D. Define the following.

1. Web browser

_____

2. Email address

_____

3. Data

_____

4. Hat blocks

_____

5. Smart home

_____

6. Smart TV

_____

E. Answer the following questions.

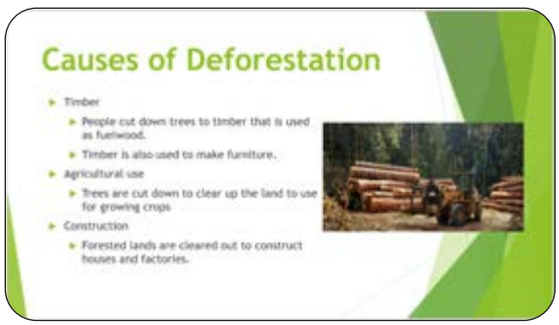
1. Write some of the advantages of email.
2. Write a short note on URL.
3. Explain the different parts of an email.
4. What is a conditional statement?
5. Write the names of the six types of blocks in Scratch.
6. How do smart cameras and smart doorbells give security to a homeowner?

PROJECT

A. Create the following presentation on 'Deforestation' using PowerPoint. You can add more content and images.

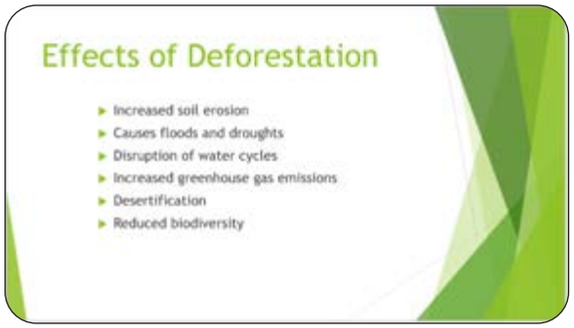
Slide 1

Slide 2



Slide 3

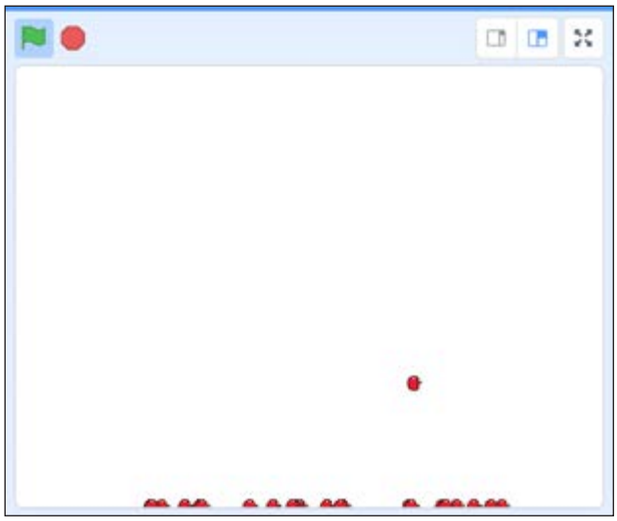
Slide 4



B. Create the following worksheet in Excel.

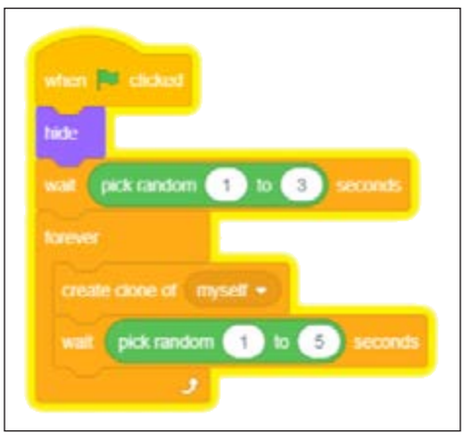
	A	B	C	D	E	F
1		**Students**	**Test 1**	**Test 2**	**Test 3**	**Test 4**
2	1	Ria	77	39	65	25
3	2	Mary	58	98	99	78
4	3	Deepak	96	76	76	98
5	4	Ali	67	87	88	92
6	5	Rahul	87	56	85	59
7	6	Kriti	96	68	58	69
8	7	Ishaan	89	99	78	87
9	8	David	74	76	81	77

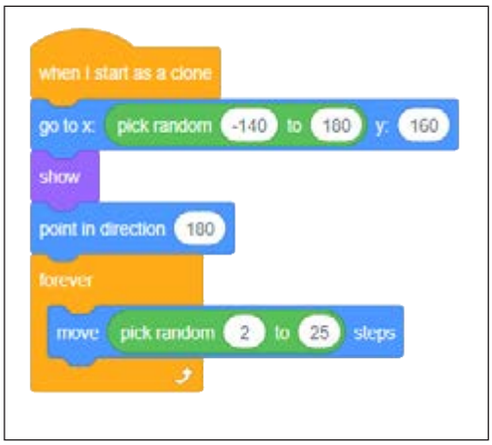
C. In Scratch, develop a script to create a game of falling objects from the sky.



You can change the object to any object of your choice. You also add other elements such as a backdrop.

Here is the hint for the script.





NATIONAL CYBER OLYMPIAD

(Sample Paper)

LOGICAL REASONING

1. Find the combination of numbers so that letters are arranged accordingly to form a meaningful English word.

D	I	E	C	S	V	E
1	2	3	4	5	6	7

a. 1, 2, 3, 4, 5, 6, 7 **b.** 7, 6, 5, 4, 3, 2, 1

c. 1, 3, 6, 2, 4, 3, 5 **d.** 1, 3, 4, 2, 6, 3, 5

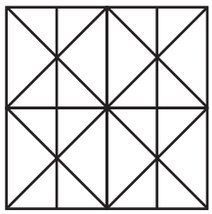
2. What is the minimum number of straight lines required to make the given figure?

a. 9

b. 11

c. 7

d. 10



3. Anil is taller than Vijay but shorter than Abdul. Vijay is Shorter than Jack but taller than Vinay.

Who among them is the shortest with respect to height?

a. Jack **b.** VIjay **c.** Vinay **d.** Anil

COMPUTERS AND INFORMATION TECHNOLOGY

4. Select the odd one out.

a. CD **b.** Hard disk **c.** Pen drive **d.** RAM

5. Which of the following device is used to convert images from physical format into digital format?

a. Printer **b.** Scanner **c.** OMR **d.** Mouse

6. Which of the following devices emits computer audio as audible audio?

a. Microphone **b.** Webcam **c.** Speaker **d.** Scanner

7. **Which of the following represents slide sorter in MS PowerPoint 2016?**

a.  **b.**  **c.**  **d.** 

8. **The small picture on the desktop representing a program is called _____.**

a. Drive **b.** Image **c.** Picture **d.** Icon

ACHIEVERS SECTION

9. **In MS Paint, which of the following options gets activated by pressing <Ctrl> + <E>?**

a. Bitmap **b.** Thumbnail **c.** Properties **d.** Gridlines

10. **Ms. Reddy has to make a presentation in MS PowerPoint 2016 for her company and she has to include graphics, audio and video clips. Which of the following options will help her to insert an image?**

a.  **b.**  **c.**  **d.**