Be Future Ready

IT Planet®

3

C<>deBot

Windows 10 with Office 2016

Davinder Singh Minhas

This book belongs to:

Name .....

Class ..... Section ..... Roll No. .....

School .....

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PREFACE

Technology is one of the biggest catalysts in transforming and improving education process while playing a vital role in the progress of a country. As we know, the world is changing at a fast pace and so is the technology. Hence, it is imperative for us to make our students match this pace, and also to help them inculcate futuristic skills and mindset.

To make students ready to face the uncertain challenges and to stay tuned with the unprecedented journey of technology, **National Education Policy 2020** has suggested certain skills that should be learnt by them. These skills will help them in becoming successful, innovative, adaptable, and productive human beings in the various fields such as **Digital Literacy**, **Coding**, **Computational Thinking** and **Artificial Intelligence** in the rapidly changing tech-savvy world.

Envisaging the same vision of National Education Policy 2020, we have created **CodeBot**, a comprehensive, exhaustive computer series for classes 1 to 8. This series is based on the latest software packages and operating system such as **Microsoft Office 2016** and **Windows 10**.

This series contains **five** sections:

- **Digital Literacy:** This section would discern students the use of computer technology in day-to-day life. It would also help them comprehend the computer subject as a tool, which can be **integrated** with other subjects.
- **Computational Thinking:** To inculcate the skills of problem-solving among the students, we have introduced Computational Thinking from class 1 to 5. It consists of interesting and engaging activities on Patterns, Decomposition, Abstraction, Algorithm, etc.
- **Coding Junction:** Having children learn coding at an early age helps them organize their thinking and express their ideas to create programs using the computer. It empowers them not only to use technology, but also to create it. Keeping this in mind, we have introduced interactive fun-based coding for all levels such as **Scratch Jr** and **Scratch** from class 2 to 5; **Python** with gamification and GUI-based coding and **MIT App Inventor** from class 6 to 8.
- **Artificial Intelligence (AI):** Knowledge of Artificial intelligence is becoming more and more important as the students have to be AI-ready for the present and future. Therefore, we have introduced AI from class 1 onwards in a fun and engaging manner.
- **Cyber Zone:** This section covers Internet literacy and throws light on issues such as **cybercrimes** and **cyber security**, thereby encouraging students to be good digital citizens.

To produce a visually appealing and easy to understand book, we have artfully combined the latest technologies, pictures, drawings and texts in this series. Most of the topics in this series show a **step-by-step pedagogy** which simplifies the complex computer concepts. The terms and examples described in this series are those which every student will encounter while using computers.

To make the chapters exciting, **topic-relevant projects** have been added that encourage the students to try out for themselves, and to instill in them the confidence before they embark on making their own project using a particular software. Each project in the chapter presents practical problems and their complete solution in an easy-to-understand approach.

In a Nutshell section summarizes the whole chapter and the **Self-Evaluation** section examines the students and their understanding of chapter-wise computer concepts. **Exercises** and **Activities** have been included at the end of every chapter to assess the level of understanding of students.

We welcome constructive suggestions and feedback to make this series more comprehensive, relevant, updated and useful both for the teachers and the learners. You may mail us at editor@pmpublishers.in.

AUTHOR

CONTENTS

1 Computer and its Components

OBJECTIVES

After completing this chapter, you will be able to:

- Understand the meaning of computer system.
- Understand the working of computer.
- Learn the characteristics of a computer.
- Identify hardware and its components and software and its types.

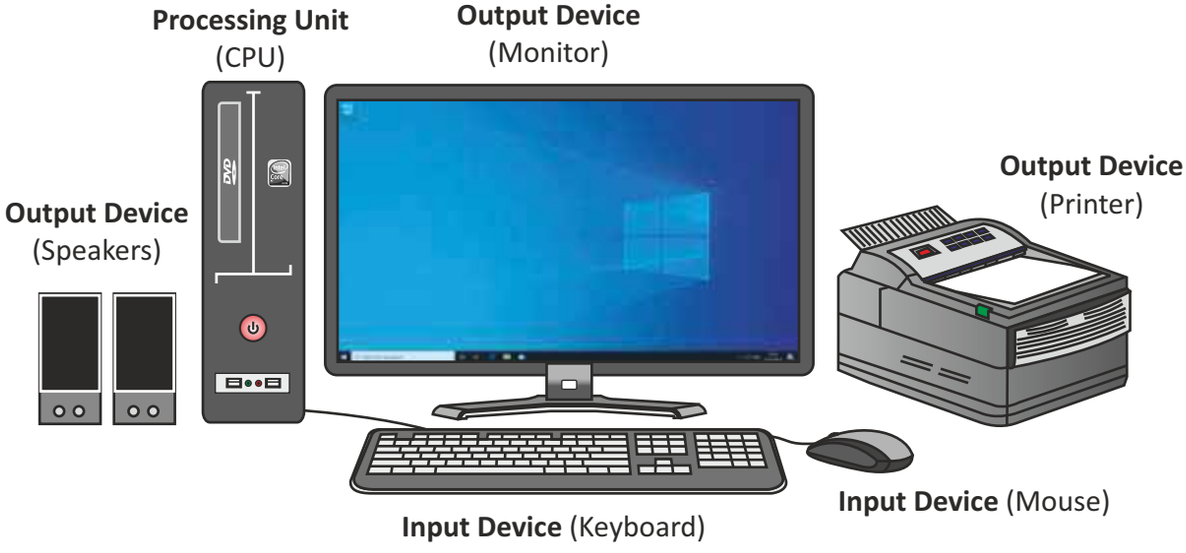
Hi Friends! Welcome back again. Now, you are in a new class. Let us learn more about computers.

Computer System

The word **computer** comes from the term 'compute', which means to calculate or count. A **system** is a collection or combination of components that are used together for a common task.

A computer is also called a **computer system** as it is not a single machine, but a combination of **hardware** and **software** components that work together to perform a task.

Look at the labelled diagram of a computer system.



COMPUTER SYSTEM

Computer and its Working

A **computer** is an electronic device which receives the **data** (input) from the user, manipulates it according to the specified rules (process) and converts it into **information** or **result** (output).

The working of a computer is based on the following principle:

INPUT → PROCESS → OUTPUT

1. Computer accepts data in the form of **input**.
2. It **processes** the data as per requirement or instructions.
3. It shows the result in the form of **output**.

Let us understand it with the help of an example.

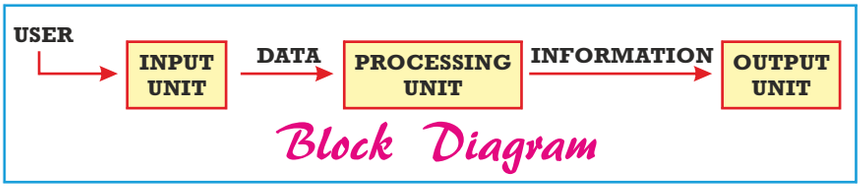
Making orange juice, using a juicer



Oranges **(Input)** Juicer **(Processing)** Orange juice **(Output)**

- Put oranges in the juicer. **(Input)**
- Juicer makes juice from oranges. **(Processing)**
- We get orange juice. **(Output)**

The working of a computer can also be shown in the form of a **block diagram**.



Block Diagram

This is how a computer works and it is also known as **IPO cycle**.

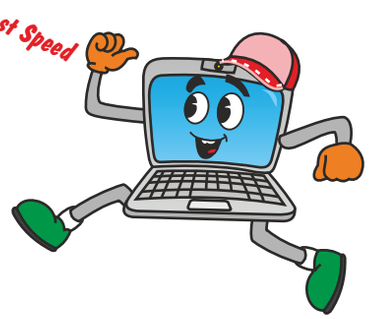
Update Your Knowledge

- **Data** is a collection of raw, unorganized facts that includes words, numbers, sounds and images.
- **Process** means an action which is taken by the computer on data to convert it into meaningful information.
- The meaningful and organized form of data is called **information**.

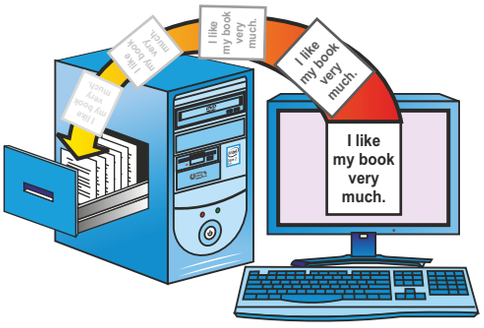
Characteristics of Computer

A computer is a powerful and useful machine. It is used in many different fields because of the characteristics it possesses. Let us have a look at some of these characteristics.

SPEED



- A computer works very **fast**.
- It can perform thousands of calculations in a second.

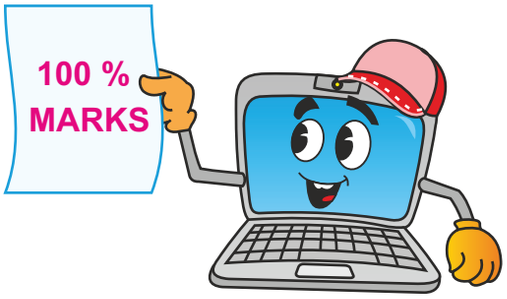


STORAGE

- The computer has a very large **storage** capacity.
- It can store large amount of work for a long time.

VERSATILITY

- **Versatility** means computer is used at different places for different purposes.
- A computer can perform a variety of tasks efficiently.



ACCURACY

- Computer works with high **accuracy**.
- It cannot make mistakes on its own.
- It always gives correct answer.

DILIGENCE

- Computer can do a lot of work again and again at the same speed without getting bored or tired.
- It can work continuously for 24 hours without needing any rest.

Hardware

All the physical equipment that are attached to a computer are collectively called **hardware.** You can touch and feel the hardware.

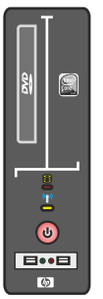
Hardware includes components like **System Unit, Input Devices, Processing Device, Output Devices** and **Storage Devices.**

Hardware

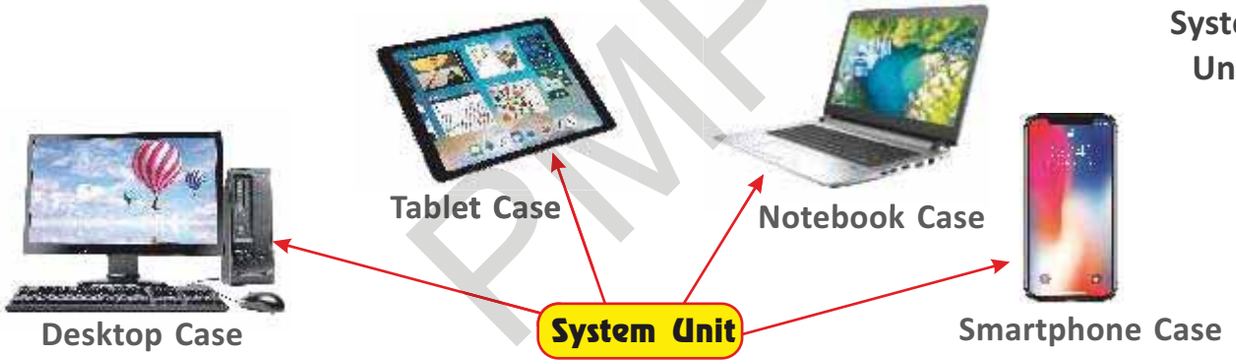
SYSTEM UNIT

System Unit is a plastic or metal case that contains the main components of a computer. It protects these internal electronic components from damage. It is also called **Computer Case.**

Every computer has a **System Unit** or **Computer Case.** It is available in a variety of shapes and sizes.



System Unit



INPUT DEVICES

The **data** or **instruction** we enter into the computer is called **input.** A hardware component that allows you to enter data and instructions into a computer is called an **Input Device.**

Some input devices are **keyboard, mouse, scanner, joystick,** etc.

Keyboard

Mouse

Scanner

Joystick

PROCESSING DEVICE

After getting the data or instructions from an input device, computer **processes** the data and changes it into **information** with the help of **processor** or **CPU.**

CPU (Central Processing Unit)

Central Processing Unit

CPU, also known as **Processor** or **Microprocessor,** is the **processing device** of a computer. It is also known as the **brain of the computer**. CPU performs all the calculations and processes data into information.

OUTPUT DEVICES

After **processing**, computer shows the final result or information as an **output**. A hardware component that shows the final result is called an **Output Device**.


Monitor


Printer


Speakers

Some output devices are **monitor**, **printer**, **speakers,** etc.

STORAGE DEVICES

Storage allows you to save your work for future use. Any hardware component that is used to store data, instructions and information for future use is called a **Storage Device**.


Hard Disk


Compact Disc

Some storage devices are **hard disk**, **compact disc (CD)**, **pen drive**, etc.


Pen Drive

Software

Software is a set of **instructions** that tells the computer hardware what to do and how to perform a particular task. You cannot touch or feel the software.

There are mainly two types of software:

1. **System Software**
2. **Application Software**

SYSTEM SOFTWARE

System Software is a type of software that **controls** and **manages** the overall activities of a computer system. It operates in the background and ensures that your computer system functions properly. It also runs the Application Software. **Operating System** is an example of system software.

Operating System

Operating System is the first software which is installed on the computer. It acts as a bridge between the **user** and the **computer system.** It also coordinates all the activities in the computer. Some famous operating system software are:

Windows: Windows is the most popular **operating system** developed by **Microsoft.**


Windows

Mac OS: Mac OS is an operating system developed by **Apple Inc** for their Macintosh line of computer systems.

Linux: Linux is an **open source** operating system developed by **Linus Torvalds.** It is available for free on the Internet.


Linux

APPLICATION SOFTWARE

The software that performs specific tasks for the users is known as **Application Software** or **App.**

Application software helps you in doing some specific type of work. For example, we use **Paint** to make drawings. But we cannot do calculations using Paint. We have to use the Calculator application software to calculate. Some application software programs are:

Microsoft Word: It helps you to create text documents with ease.

Microsoft Excel: It helps you to perform calculations and store the data in a tabular format (rows and columns).

Microsoft Paint: It helps you to draw and paint with the mouse.

Update Your Knowledge

Open source refers to those software programs which must be available to everybody, free of cost. Anybody can edit or modify its source code.

Update Your Knowledge

Hardware and software are **complementary** to each other. It means that without hardware, software is of no use. Likewise, without software, hardware is just a dumb machine. Therefore, hardware and software must work together in a computer to produce useful output.

In a Nutshell

- The working of a computer is based on IPO cycle.
- Speed, storage, versatility, accuracy and diligence are characteristics of a computer.
- Input devices are used to enter data in a computer.
- CPU is the processing device and is known as the brain of the computer.
- Output devices show the final result or information after processing.
- Storage device is used to store data, instructions and information for future use.
- Software is a set of instructions that tells a computer what to do and how to perform a particular task.

Exercises

A. Tick [✓] the correct answer.

1. ..... means to calculate or count.
   a. Compute ☐ b. System ☐ c. Computer system ☐
2. After processing, the computer shows the final result as a/an ..... .
   a. input ☐ b. storage ☐ c. output ☐
3. ..... is the physical components attached to a computer.
   a. Software ☐ b. Hardware ☐ c. Malware ☐
4. Software is mainly of ..... types.
   a. four ☐ b. three ☐ c. two ☐
5. ..... software helps in doing some specific work.
   a. System ☐ b. Application ☐ c. Operating System ☐

B. Write 'T' for True and 'F' for False statements.

1. Computer cannot perform a variety of tasks efficiently. ☐
2. System unit is also called a computer case. ☐
3. Hard disk is also known as the brain of a computer. ☐
4. Output is the final result we get through output devices. ☐
5. Operating System is used to perform a specific type of work. ☐

C. Fill in the blanks.

1. A computer ..... the data as per requirement or instructions.
2. ..... means computer is used at different places for different purposes.
3. Software is a set of ..... that tells the hardware what to do.
4. ..... operating system software is available free of cost.
5. Microsoft ..... helps us to perform calculations.

D. Differentiate between the following.

1. Input Devices — Output Devices

.....	.....
.....	.....
.....	.....

2. Hardware — Software

.....	.....
.....	.....
.....	.....

E. Answer the following questions.

1. What do you mean by a computer system?

.....

.....

2. Write any four characteristics of computer.

.....

.....

.....

3. What is system software?

.....

.....

.....

F. Application-based Question

Amit is working on a computer. His teacher asks him to tell the principle on which the working of a computer system is based, but he forgets. Help him to tell the answer.

.....

Activity Section

Activity Rearrange

Rearrange the jumbled-up letters and write the correct word/words in the given space.

a. R W H D A R A E .....

b. W F T E A O S R .....

c. Y T M E S S N T I U .....

Lab Activity

Open the Educational Suite GCompris [ ].

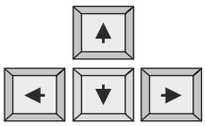
1. Click on this **icon** [ ] from the top of GCompris.
2. Click on **Maze** [ ].

Skill Formation

- This activity enhances the cognitive and fine motor skills in students.

PLAYING METHOD

You can play this game by using the **Arrow keys** on the keyboard to move the character up to the door.



Arrow Keys

Your level in the game keeps on increasing after you move the character out of the maze.

Group Discussion

Divide the students into two groups and discuss the topic – 'Hardware vs. Software'.

Online link

Take a quiz about working of computer by visiting the website:
https://www.quia.com/quiz/1938666.html

Take a quiz about computer hardware and software by visiting the website:
https://www.quia.com/quiz/6024146.html

2 Windows Operating System

OBJECTIVES

After completing this chapter, you will be able to:

- Understand about the functions of operating system.
- Learn about Windows and its different versions.
- Understand the components of Windows 10 screen.
- Start and use an app in Windows 10.
- Learn how to restart and shut down the computer.

Hello Friends! You have already read about operating system in the previous chapter. In this chapter, you will get to know about Windows operating system.

Operating System

Operating System is a software program that controls the overall activities of a computer. A computer is **useless** without the operating system.

For example, if you have a car but no driver, the car cannot move on its own. Just as a driver is a must to run the car, similarly, an operating system is a must to run or work with computers.

FUNCTIONS OF AN OPERATING SYSTEM

An operating system performs several functions, such as:

Controlling Hardware: The operating system controls all the hardware components of a computer system and enables them to work properly.

Running Software: The operating system runs application software, such as MS-Word, MS-Excel, Paint, Stykz, and games.

Booting: One of the major functions of an operating system is **booting**. It is the process of **starting** and **restarting** the computer.

Booting is of two types: **cold booting** and **warm booting**.

When a computer is switched on, this process of booting is called **cold booting**. The process to restart a computer that is already on is called **warm booting**.

USER INTERFACE

Interface provides simpler ways for the users to use the computer. User interacts with **operating system** through its **user interface**. It controls how you enter data and how information is displayed on the screen.

Most of the operating systems use two types of user interfaces:

Command Line Interface: Using a **Command Line Interface (CLI)**, the user interacts with the operating system by typing commands with the keyboard to perform specific tasks.

Graphical User Interface: With a **Graphical User Interface (GUI)**, the user interacts with the operating system by using keyboard and mouse to access windows, icons, and menus. Most users today work with the graphical user interface.

Windows

Windows is the most popular **GUI-based operating system** developed by Microsoft. It is a special program that controls the working of a computer. There have been different versions of Windows like Windows 98, Windows XP, Windows Vista, Windows 7, Windows 8, Windows 10 and recently launched Windows 11. In this chapter, we will study about **Windows 10**.

WINDOWS 10

Windows 10

Windows 10 is an operating system developed by Microsoft. It is the successor of Windows 8.1.

It is a GUI (Graphical User Interface) based operating system in which pictures, images, icons, and menus are used to give commands. Windows 10 has been designed to be used with multiple devices, including desktop computers, laptops, tablets, and smartphones.

STARTING WINDOWS 10

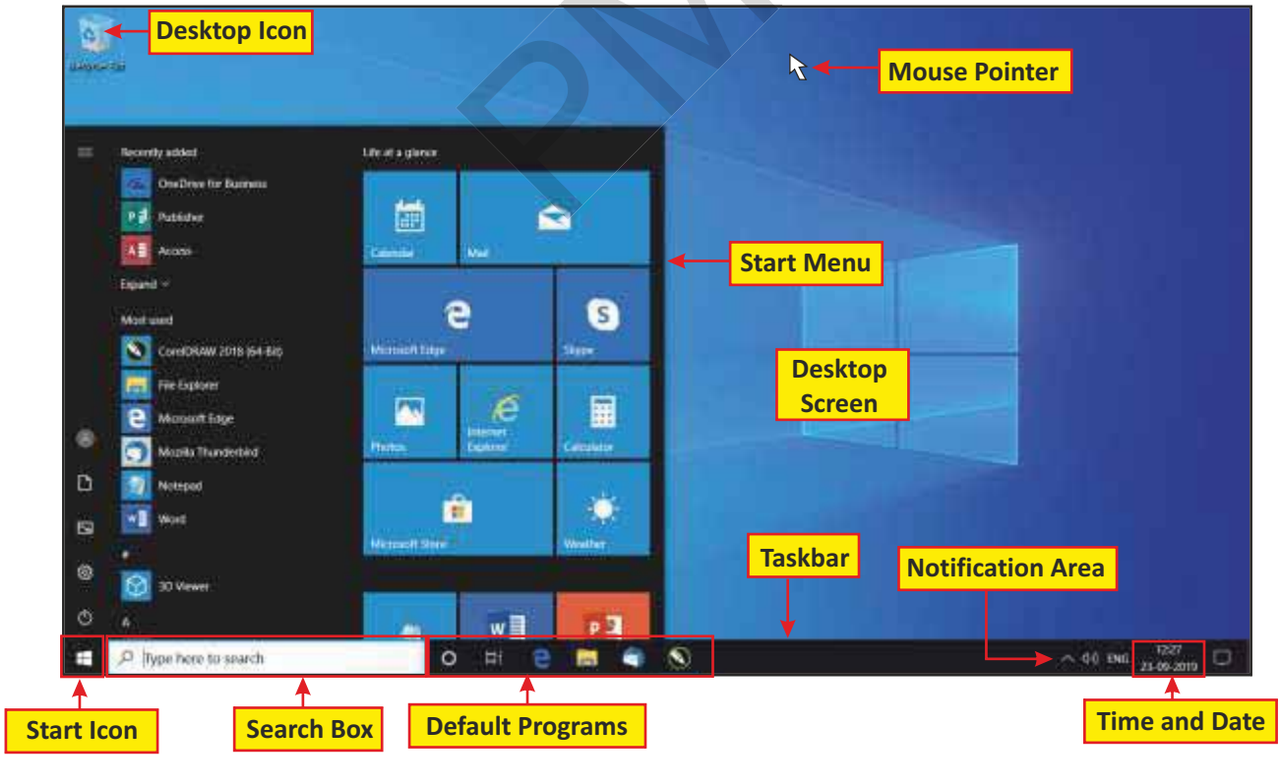
When you turn ON your computer, Windows 10 starts automatically and a **Windows Lock Screen** appears. You may be asked to enter the **password**. *In computer lab, your teacher will provide you the password.*

In the Lock screen, type the password and press the **Enter** key from the keyboard.

After some time, you will get the final **Desktop screen**.

COMPONENTS OF WINDOWS 10 SCREEN

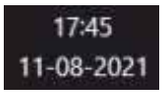
On the Desktop screen, you will see the following components:



Desktop Screen: It is the final screen that appears after switching ON the computer. It is an area where you work with your programs and documents.

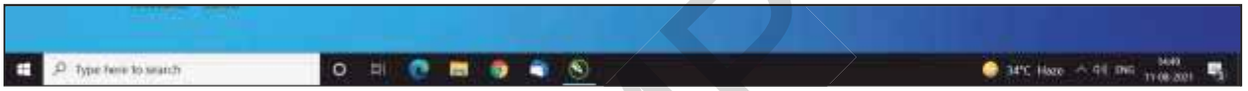
Icons: The small pictures on the desktop are called **icons**. An icon on the desktop represents a program. A program can be opened quickly by double-clicking on its icon.

Mouse Pointer: Mouse pointer helps you to point, click or double-click the various items on the desktop. When you move your mouse, this pointer moves along with it.



Time and Date: This is the current time and date on your computer. This option is used to see the calender and digital clock.

Taskbar: The long bar at the bottom of the desktop screen is called the **taskbar**. It contains Start icon on the left corner and notification area on the right corner. The programs which you open (active programs) are displayed in the taskbar.



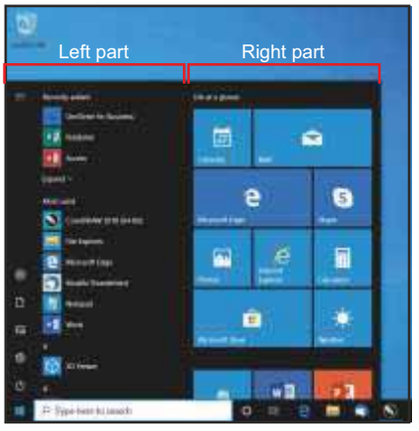
Default Programs: These programs are used to launch some selected Windows 10 programs with a click of the mouse.

Notification Area: It displays small icons that provide status and notify you about tasks that are happening on your computer.

Search Box: This box is used to search for items on your computer or on the Internet.

Start Icon: It is an icon located on the bottom left corner of the desktop screen. It is used to open the Start menu.

Start Menu: When you click on the Start icon, Start menu appears. It lists all the installed programs in the computer. It is divided vertically in two parts. The left part shows all the installed Apps along with Power, Settings, File Explorer and User's icon. The right part features a selection of tiles or live tiles that you can customize, resize and reorganize.

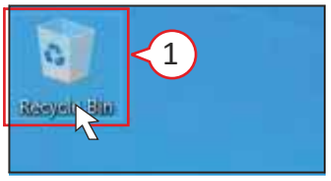


Working on Desktop Screen

SELECTING AND DESELECTING ICON

You can select the icon by **clicking** on it.

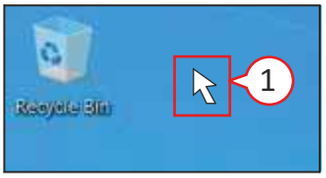
Selecting an Icon



1. **Click** on the **icon** you want to select.

The icon gets highlighted.

Deselecting an Icon



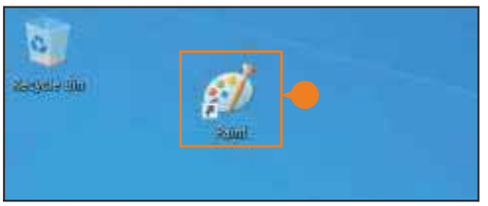
1. **Click** anywhere on the desktop to deselect the icon.

The icon appears in its original form.

MOVING AN ICON

You can move an icon anywhere on the desktop.

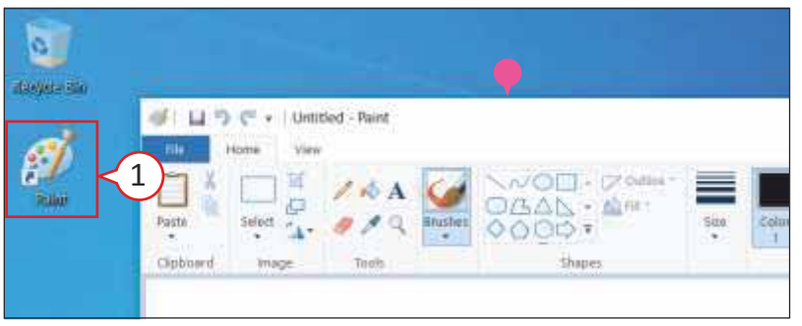
1. **Click** and **hold** the mouse button on the icon you want to move.
2. **Drag** the icon anywhere on the desktop.
3. **Release** the mouse button.



- After releasing the mouse button, the icon appears at the new place on the desktop.

OPENING A PROGRAM

You can open a program by **double-clicking** on its icon.

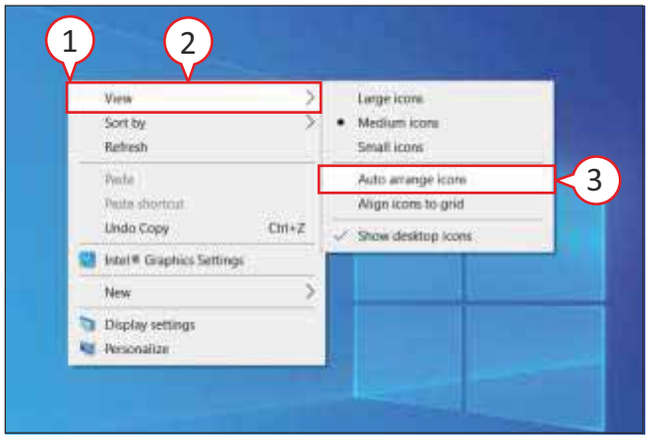


1. **Double-click** on the icon of program you want to open.

- The application window related to the icon appears.

ARRANGING THE DESKTOP ICONS

You arrange your clothes in the cabinet to keep them organized. Similarly, you can arrange the icons on the desktop.



1. **Right-click** on the blank desktop area.

A menu appears.

2. Click on **View**.

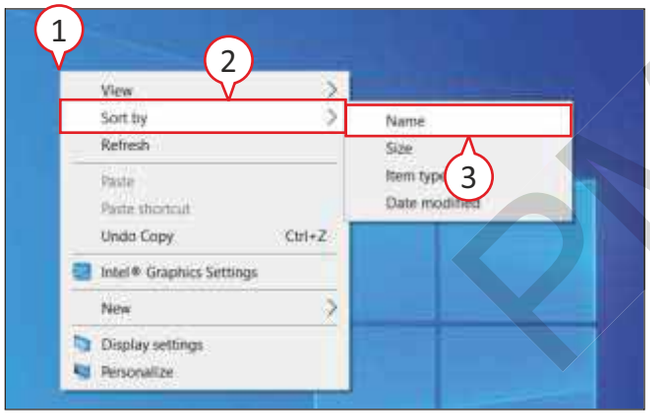
A pop-up menu appears.

3. Click on **Auto arrange icons**.

All the icons get arranged on the screen.

SORTING THE ICONS

You can arrange the icons in alphabetical order on the screen.



1. **Right-click** on the desktop area.

A menu appears.

2. Click on **Sort by**.

A pop-up menu appears.

3. Click on **Name**.

All the icons get arranged on screen in alphabetical order.

Update Your Knowledge

The first ever mention of Microsoft was in a letter from Bill Gates to co-founder Paul Allen in 1975. Gates initially wrote the company name as Micro-soft, which made sense considering it is a combination of microcomputer and software.

Microsoft

Know the Facts

- The house where Bill Gates lives was designed using a Macintosh computer.
- The average computer user blinks eyes seven times a minute, less than half the normal rate of 20.

Return of Start Button as Start Icon

In the beginning, Windows 95 had **Start** button. Clicking that button led to the **Start menu**. Both Start button and Start menu continued up to Windows 7. In Windows 8, Microsoft removed the Start button and Start menu completely, replacing them with a **Start screen** filled with live tiles. The Start button returned in Windows 8.1, but its main function was to provide access to the Start screen. Now on users' demand, the Start button and Start menu have returned in the form of Start icon in Windows 10.

Starting an App (Application Program)

You can start an **application program** or **App** (MS-Word, Paint, Microsoft Edge, etc.) installed on your computer to perform any task. For example, to write a letter, start MS-Word; to draw a picture, start Paint program; or to surf the Internet, start a web browser application, such as Microsoft Edge.

In Windows 10, there are mainly three methods to start an App. In this example, we will open an App (Paint) by using all three methods.

USING THE START MENU TILES

1. Click on **Start** icon to open **Start menu** *(or press ⊞)*.

- Right side of the Start menu displays tiles for commonly used Apps. Tile is a colorful rectangle that represents an App or a Windows feature.
- To see more tiles, you can use the scroll bar.

2. Click on the **App** you want to start.

The App starts.

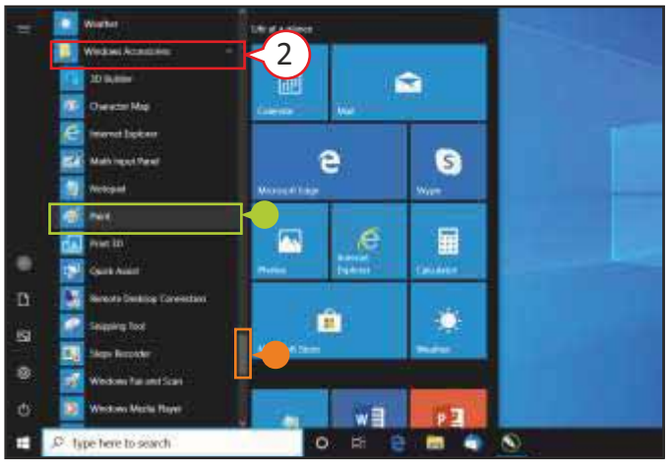
In this example, we have started **Paint**.

3. Click on **Close** button to close the App.

USING All APPS LIST

1. Click on **Start** icon to open **Start menu** *(or press ⊞)*.

Left side of the Start menu displays a list of all Apps installed on the computer.



- You can use the scroll bar to see more Apps in the list.

2. Click on the icon for the App you want to open.

- If the App icon is in sub-menu, click the sub-menu and then click on the App icon.

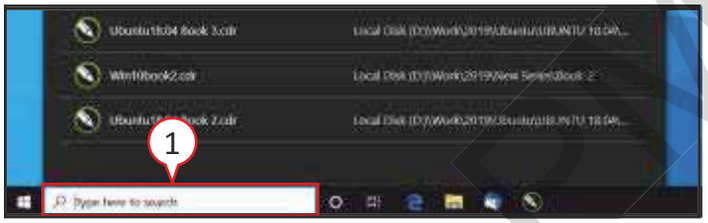
The App starts.

In this example, we have selected **Paint**.

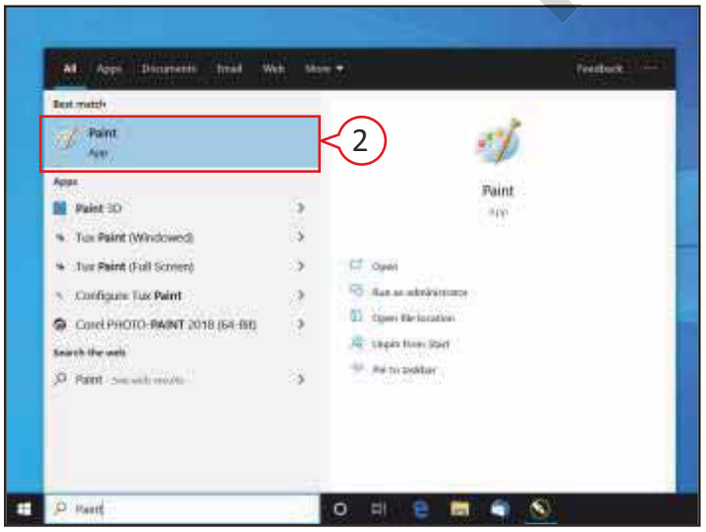
USING SEARCH BOX

You can also open an App using the **search box**.

Windows recognizes the application programs only by their file names. Therefore, you can use the search box to run a search on the file name, if you know it.



1. Click inside the **search box** of the taskbar and type the App name you want to open.



As you start typing, Windows displays each App with the name that includes your search text.

2. If you see the App you want, click on it.

The App starts.

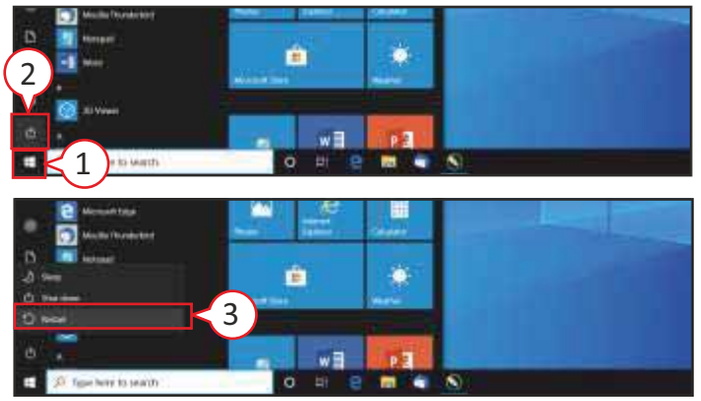
In this example, we have selected **Paint**.

Do You Know?

Alt + F4 is a keyboard shortcut to close a currently active window.

Restarting the Computer

Restarting the computer means it shuts down and starts up again immediately. If your computer is not operating properly, you can restart your computer to try to fix the problem.



1. Click on **Start** icon *(or press ⊞)*.

Start menu appears.

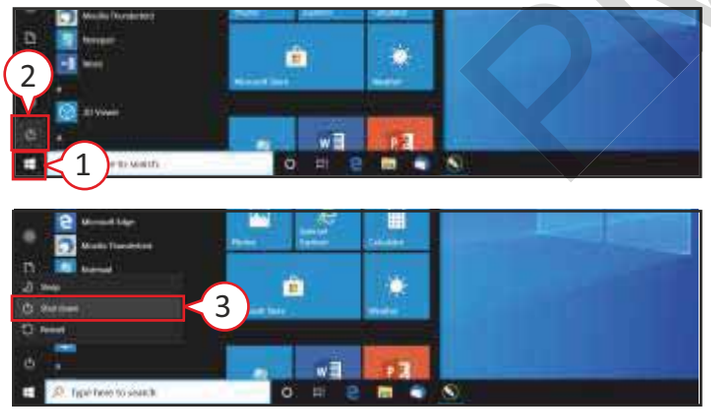
2. Click on **Power** button.

A sub-menu appears.

3. Click on **Restart** to restart your computer.

Shutting Down the Computer

After completing your work, you need to shut down your computer. To shut down a computer properly, follow the given steps:



1. Click on **Start** icon *(or press ⊞)*.

Start menu appears.

2. Click on **Power** button.

A sub-menu appears.

3. Click on **Shut down** to turn off the computer.

Update Your Knowledge

Put Windows to Sleep

When you are not using Windows, you can put it on **Sleep** mode. Sleep mode means that your computer is in a temporary low-power mode. This saves electricity even when your computer is plugged in. In Sleep mode, Windows keeps your apps open. This is handy because it means that when you return from Sleep mode, after you sign in to Windows again, you can immediately get back to what you were doing. Follow the given steps to put Windows to Sleep.

1. Click on **Start** icon. 2. Click on **Power** button. 3. Click on **Sleep**.

Windows activates Sleep mode.

Note: To return from Sleep mode, press the **Power** button of your computer or CPU.

In a Nutshell

- A computer is useless without the operating system.
- Operating systems have two types of user interface: CLI and GUI.
- Windows is a popular GUI-based operating system developed by Microsoft.
- Desktop is the final screen that appears after switching ON the computer.
- Start icon is located on the bottom left corner of the desktop screen.
- We can select, move, arrange and sort desktop icons.
- There are three methods to start an App in Windows 10.

Exercises

A. Tick [✓] the correct answer.

1. When we turn on the computer, it is known as ..... booting.
   a. warm ☐ b. hot ☐ c. cold ☐
2. ..... allows the user to interact with the operating system using keyboard only.
   a. GUI ☐ b. CLI ☐ c. CPU ☐
3. The small pictures present on the desktop are called ..... .
   a. pointers ☐ b. icons ☐ c. documents ☐
4. The bar at the bottom of the desktop is known as ..... .
   a. scroll bar ☐ b. title bar ☐ c. taskbar ☐
5. ..... means shutting down and starting up a computer again immediately.
   a. Shut down ☐ b. Booting ☐ c. Restart ☐

B. Write 'T' for True and 'F' for False statements.

1. A computer can work without the operating system. ☐
2. Lock screen is the final screen after switching on a computer. ☐
3. The search box is present on the right corner of the desktop. ☐
4. You can arrange the icons in alphabetical order on the desktop. ☐
5. You can start an App only through using the Search box. ☐

C. Fill in the blanks.

1. ..... is a software program that controls the overall activities of a computer.
2. ..... screen appears after switching ON the computer.
3. ..... menu lists all the installed programs in the computer.
4. ..... is a colorful rectangle that represents an App.

D. Differentiate between the following.

CLI	GUI
.....	.....
.....	.....
.....	.....

E. Answer the following questions.

1. What does user interface do?

   .....

   .....

2. What does Start menu contain?

   .....

   .....

   .....

3. What is the use of search box?

   .....

   .....

4. Name the three methods to start an App in Windows 10.

   .....

   .....

F. Application-based Question

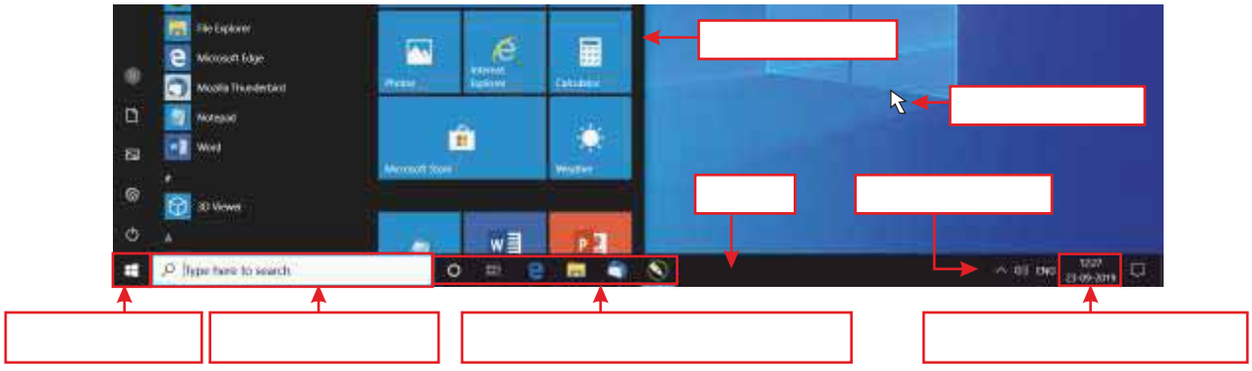
Suman wants to open Tux Paint, but she is unable to find it in Start menu. Which option do you suggest she should use?

.....

Activity Section

Activity Label

Label the given screen correctly.



Activity Mark

Find out and mark different components of Windows 10 screen.

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

Lab Activity

- **Work on the desktop by selecting, deselecting and arranging icons.**
- **Start an App in Windows by using all the three methods mentioned in the chapter.**

Skill Formation

These activities will develop organizational and fine motor skills in the students.

Group Discussion

Divide the students into two groups and discuss the topic – 'Is GUI Better than CLI?'.

Online Link

To learn more about operating system, visit the website:

https://computer.howstuffworks.com/operating-system1.htm

3 Paint 3D

OBJECTIVES

After completing this chapter, you will be able to:

- Identify 2D and 3D shapes.
- Understand Paint 3D window components.
- Draw 2D shapes and 3D objects.
- Add stickers, 3D text and effects in a project.
- Use 3D library to add 3D objects.

Hi Friends! You have already learnt in your previous class that Tux Paint and MS Paint are used for creating 2D shapes. Now, let us create 3D shapes using Paint 3D software.

Introduction

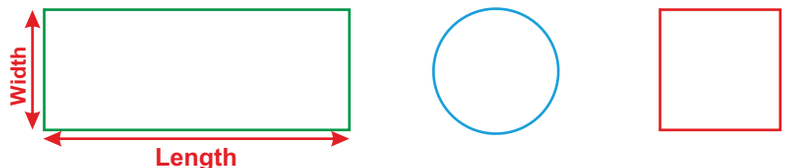
Paint 3D is a **drawing program** developed by Microsoft. It is an updated version of MS Paint which is included in Windows 10.

Paint 3D is used to create, edit and print **3D shapes**. It allows you to make creative projects using 2D and 3D tools.

2D AND 3D

In **2D** and **3D**, the **D** specifies **dimensions** involved in the shape.

A **2D shape** is flat and comprises of **two dimensions** that are **length** and **width**. These shapes are also known as **flat shapes**.



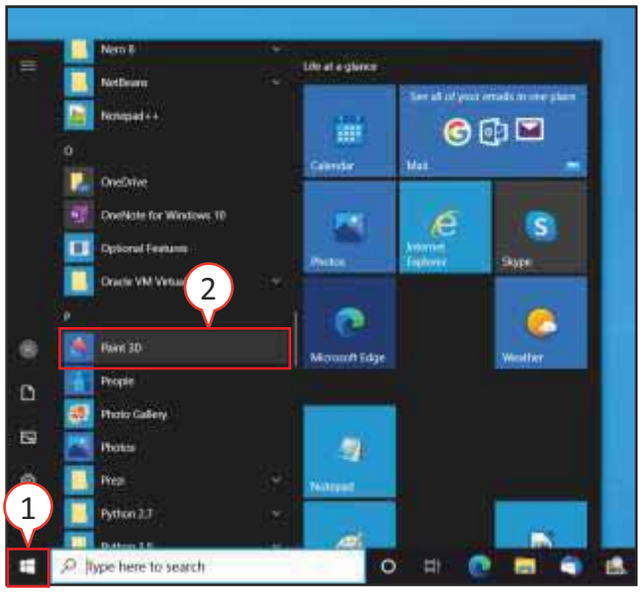
2D or flat shapes

A **3D shape** comprises of **three dimensions** that are **length, width** and **height**. These shapes look solid and real.

3D shapes

Starting Paint 3D

To start Paint 3D, follow the steps given below.



1. Click on **Start** icon (*or press* ⊞).

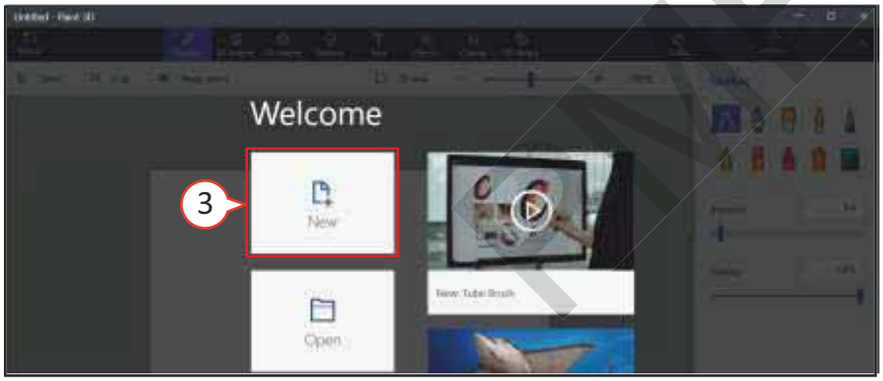
The Start menu appears.

A list of all the applications appears on the left.

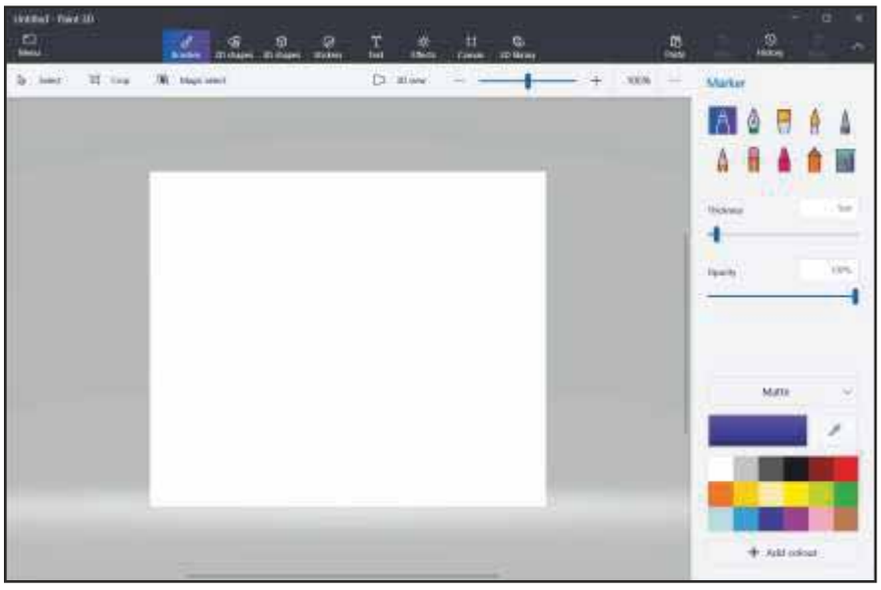
You can scroll down to find **Paint 3D**.

2. Click on **Paint 3D.**

Paint 3D Welcome screen appears in front of you.



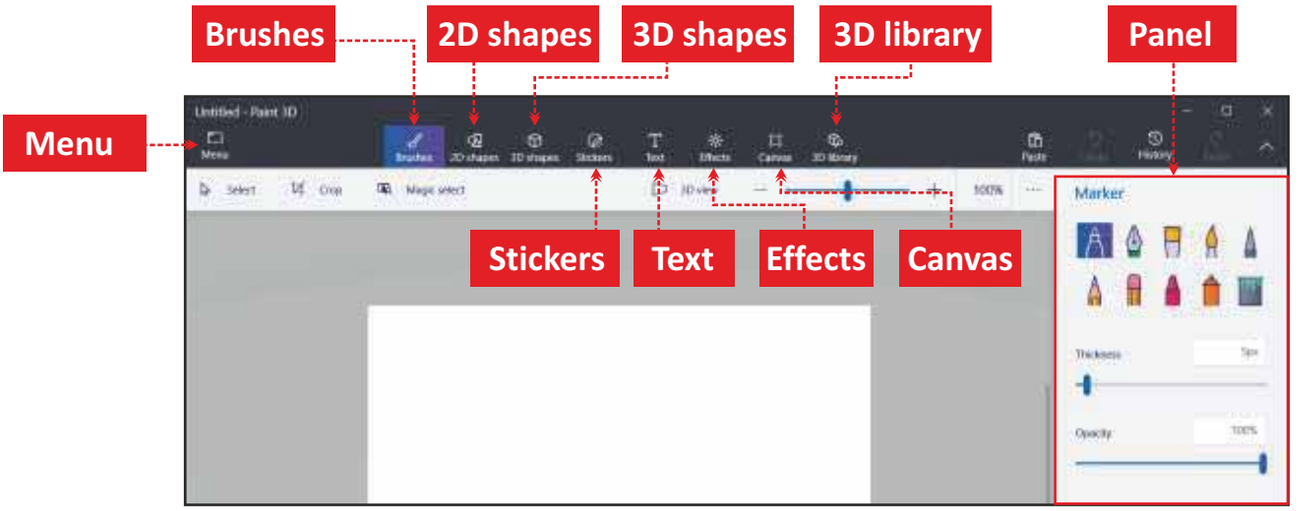
3. Click on **New** option to open a new project.



Paint 3D program opens with a blank canvas in the center to draw objects.

PAINT 3D WINDOW

Given below is the Paint 3D window. Let us know about its different components.



Menu: It contains many options like New, Open, Save, etc. to work with.

Brushes: It displays many types of brushes in the Marker panel on the right-side of the window.

2D shapes: This option is used to draw and edit 2D shapes.

3D shapes: This option is used to draw and edit 3D shapes.

Stickers: This option is used to add different stickers and textures.

Text: This option is used to add text in the drawing.

Effects: This option is used for selecting a Filter color, or the lighting source position.

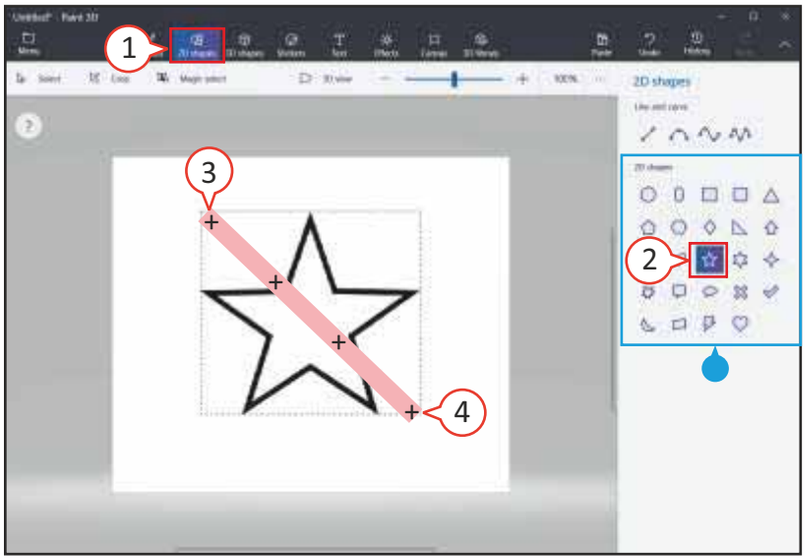
Canvas: This option allows you to resize and control the dimensions of canvas.

3D library: This option is used to add 3D objects.

Panel: This area shows all the tools of selected option.

Drawing 2D Shapes

You can draw various 2D shapes in Paint 3D. Follow the steps given on the next page to draw a 2D shape.

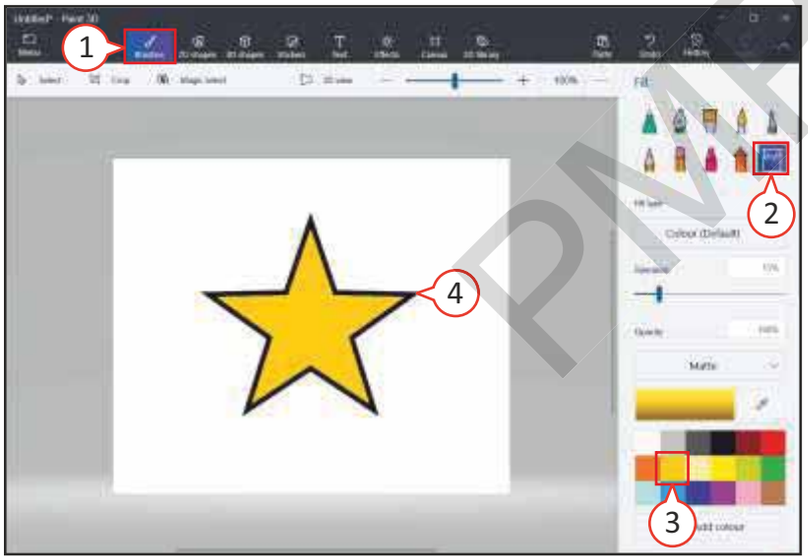


In this example, we have drawn a 2D star shape.

1. Click on **2D shapes**.
   - Different shapes appear in the **2D shapes** panel.
2. Click on the shape you want to draw.
3. Click and hold the left mouse button, and drag to draw the shape on canvas.
4. Release the mouse button.

FILLING COLOR IN THE SHAPE

You can fill any color in the 2D shape with Fill tool.

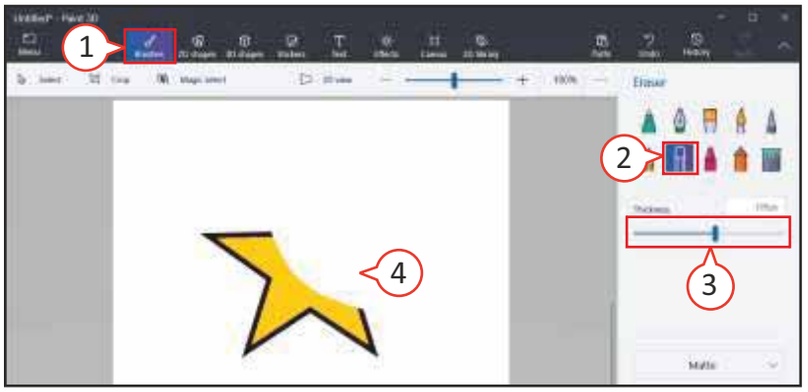


1. Click on **Brushes**.
2. Click on **Fill** tool.
3. Click on the **color** of your choice from the color palette.
4. Click anywhere inside the shape you want to fill with color.

The selected color gets filled in the shape.

ERASING THE SHAPE

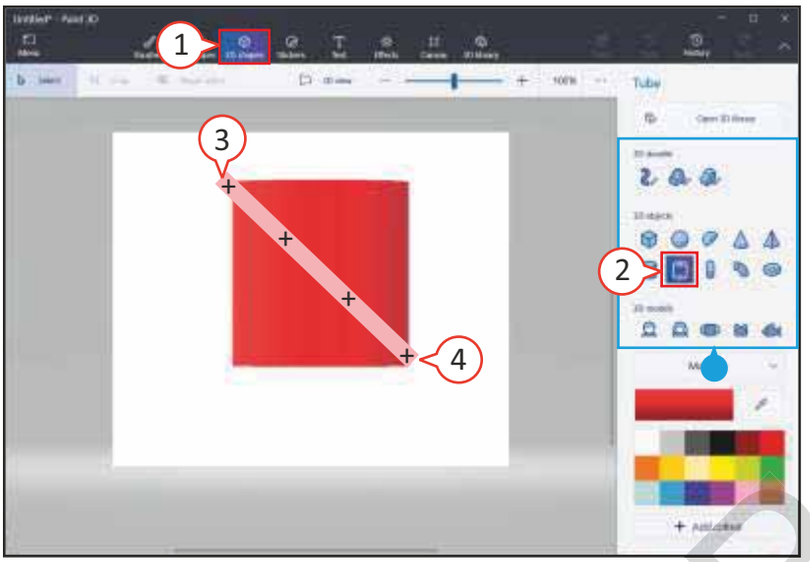
You can erase any shape or a part of it with Eraser tool.



1. Click on **Brushes**.
2. Click on **Eraser** tool.
3. Drag the **Thickness** slider to change the thickness of the eraser.
4. Drag your mouse on the shape you want to erase.

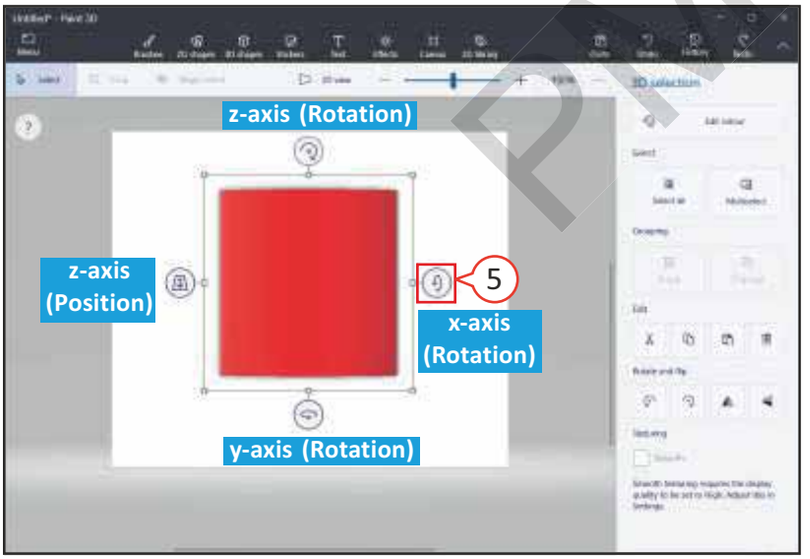
Drawing 3D Objects

You can draw various 3D shapes in Paint 3D. Follows these steps to draw a 3D shape.

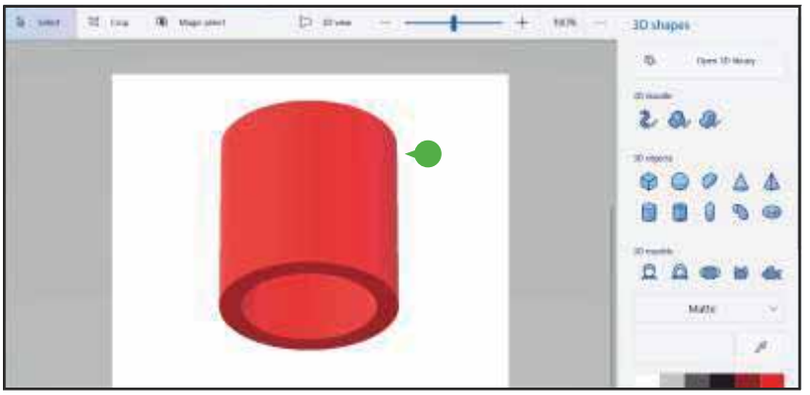


1. Click on **3D shapes**.
   - Different 3D objects appear in **3D shapes** panel.
2. Click on the object you want to draw.
3. Click and hold the left mouse button, and drag to draw the shape.
4. Release the mouse button.

Rotation tools (x-axis, y-axis and z-axis) appear around the object. You can use these tools to see the 3D effect.



5. Rotate the object using x-axis upto the position where it takes the 3D form.

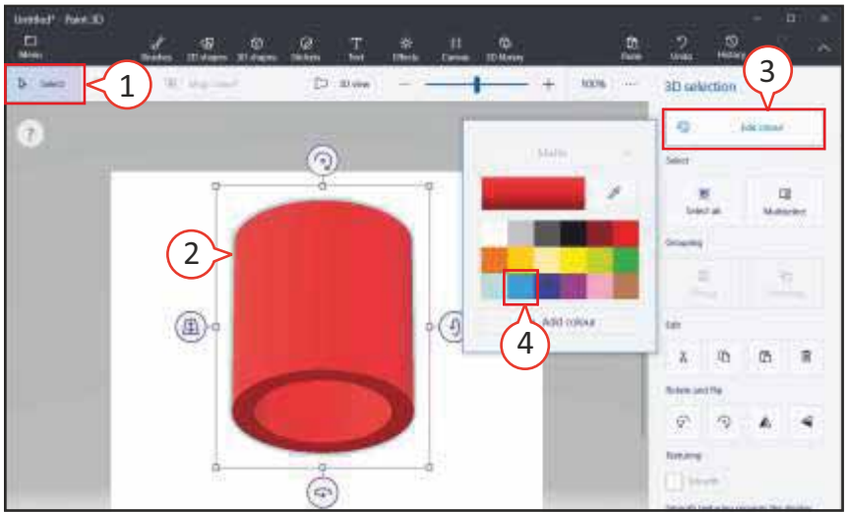


- The object appears in the 3D form.

In this example, the shape has rotated x-axis to upward (-30°).

CHANGING COLOR OF 3D OBJECT

You can change the color of 3D objects according to your choice.



1. Click on **Select** tool.
2. Click on the object to select it.
3. Click on **Edit colour** button from **3D selection** panel.

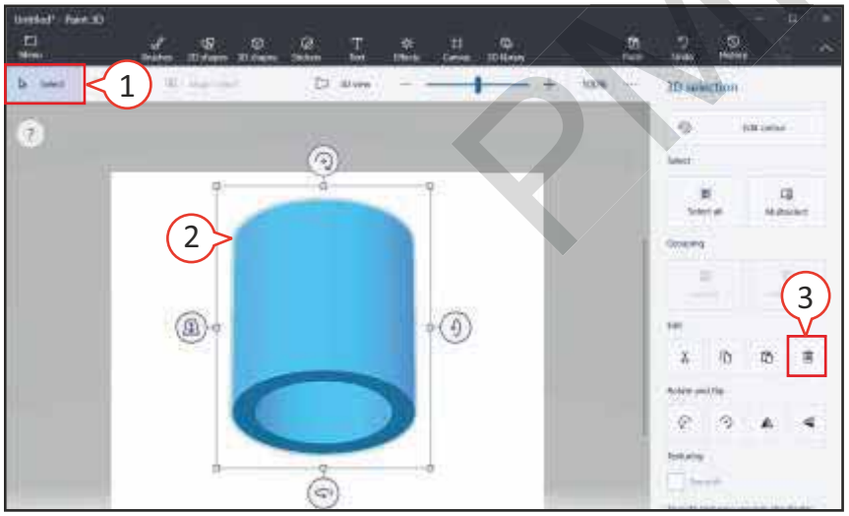
A color palette appears.

4. Click on the color you want to apply.

The object appears in the selected color.

DELETING 3D OBJECT

You can delete a 3D object from your project.



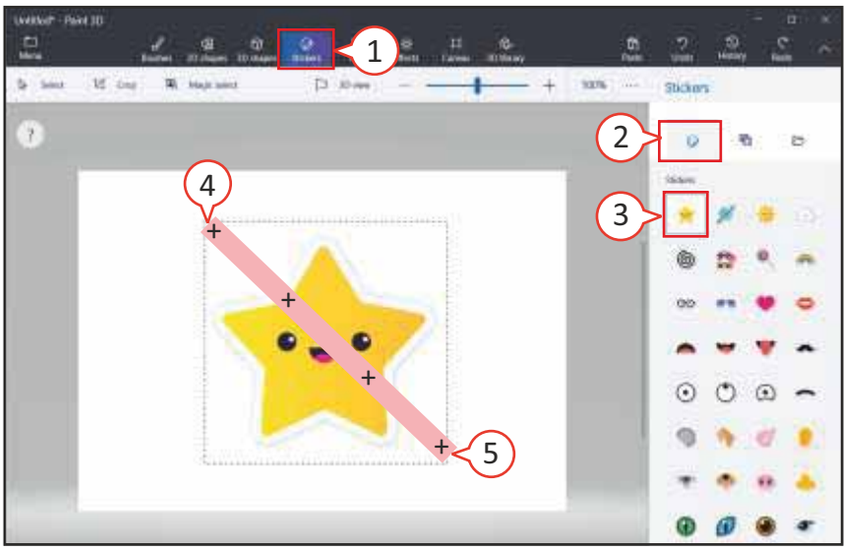
1. Click on **Select** tool.
2. Click on the object to select it.
3. Click on **Delete** button under the **Edit** section in panel.

The selected image gets deleted.

Adding Stickers

Paint 3D offers several stickers to add in your artwork. These stickers are used to add **texture** and **icons** to your 2D or 3D drawing.

Paint 3D stickers come in the form of **shapes** like lines, curves, squares, and stars; **traditional stickers** like cloud, swirl, rainbow, and facial features; and **surface textures**.



1. Click on **Stickers**.

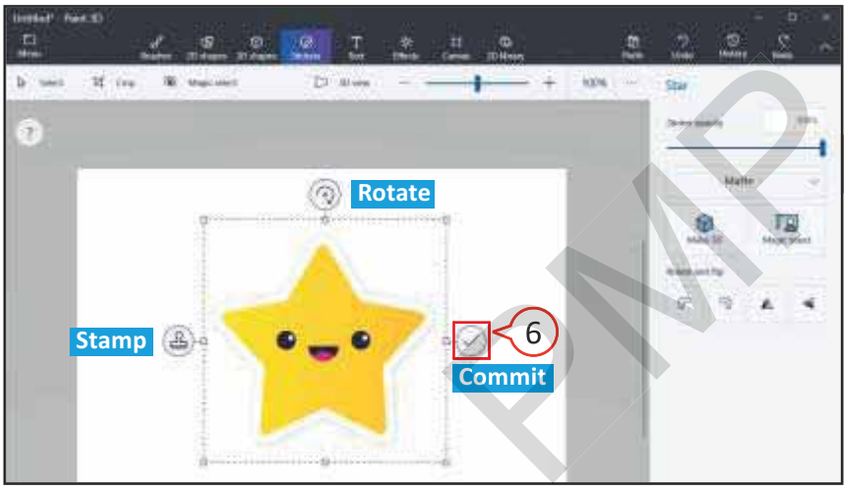
Stickers panel appears on the right side with three icons – Stickers, Texture and Add Stickers.

2. Click on **Stickers** icon.

All available stickers appear.

3. Click on the sticker you want to add.

4. Click and hold the left mouse button, and drag to draw the shape.
5. Release the mouse button.



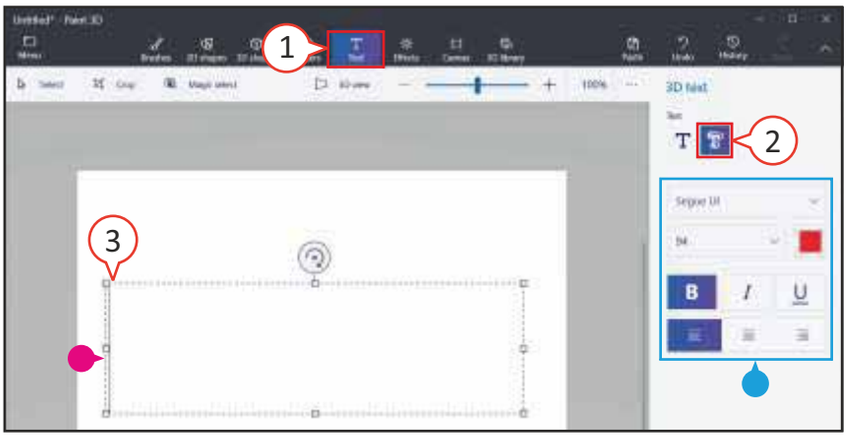
Sticker appears on the canvas with some icons around it.

You can now **rotate** or make a **stamp** (copy) of your sticker using these icons.

6. Click on **Commit** icon to apply the sticker on the canvas.

Adding 3D Text

You can add 2D and 3D text to your project in Paint 3D.

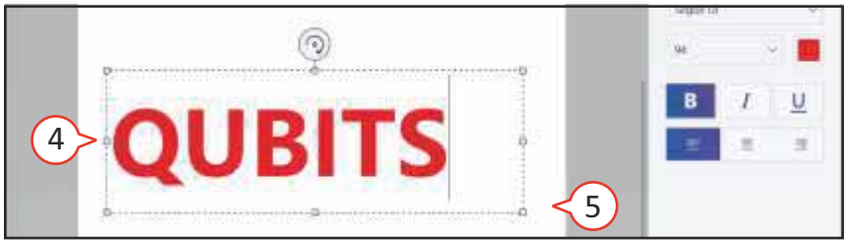


1. Click on **Text**.
2. Click on **3D text** icon.

- You can change font style, size, color; make text bold, italics, underline; and do alignment (left, right, center).

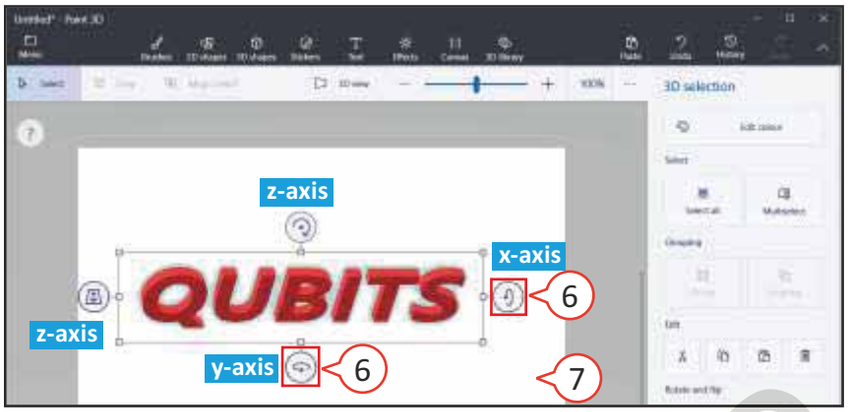
3. Click inside the canvas.

- A dotted rectangle box appears with the blinking cursor inside it.



4. Type your text.
5. Click anywhere outside the text box.

Rotation tools (x-axis, y-axis and z-axis) appear around the text. You can use these tools to see the 3D effect.

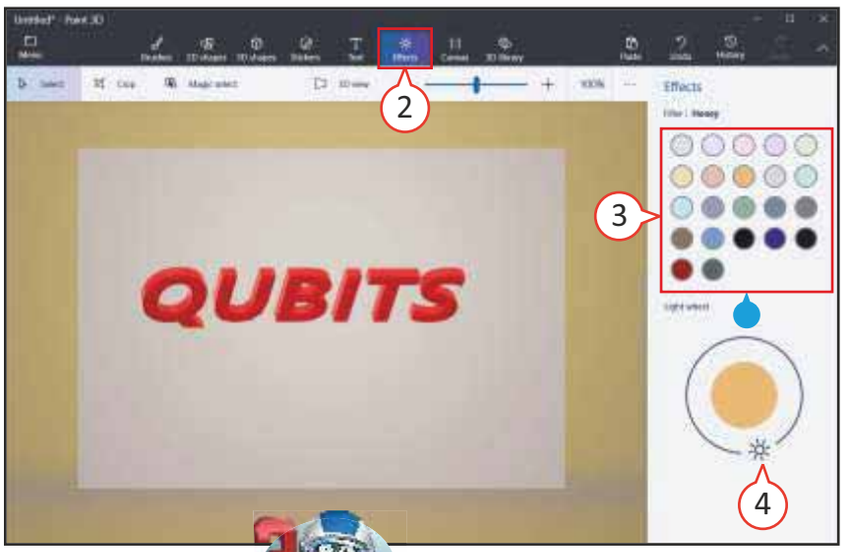


6. Rotate the text using x-axis and y-axis upto the position where it takes the 3D form.
7. Click anywhere in the canvas to remove the rotation tools.

Your text appears in 3D form.

Adding Effects

You can apply filter color and the light position effects on the 3D object or text.



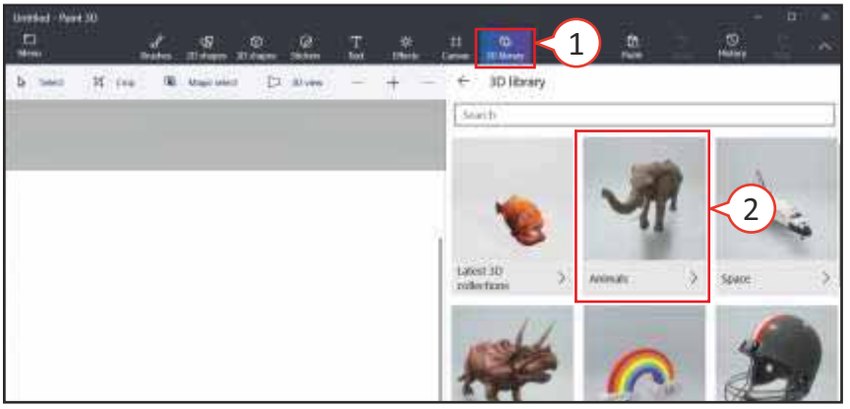
1. Open or create any 3D object or text.
2. Click on **Effects**.
   - **Effects** panel appears on the right side.
3. Click on any filter to apply the effect.
4. Rotate the **Light wheel** [☼] icon to lighten the effect.

Do You Know?

Paint 3D was introduced in Windows 10 only.

Using 3D Library

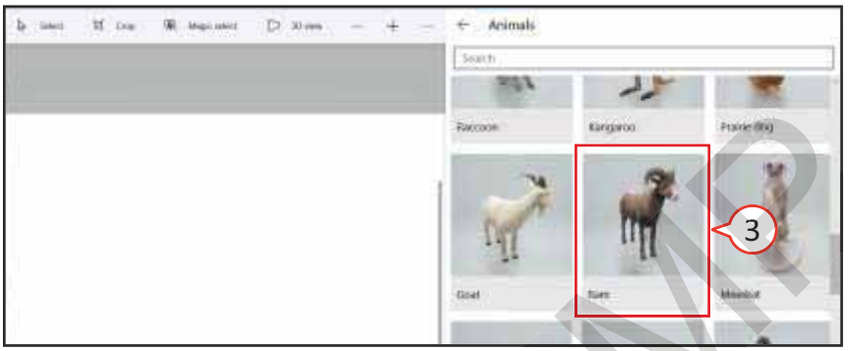
You can add 3D objects in your project from **3D library**.



1. Click on **3D library**.

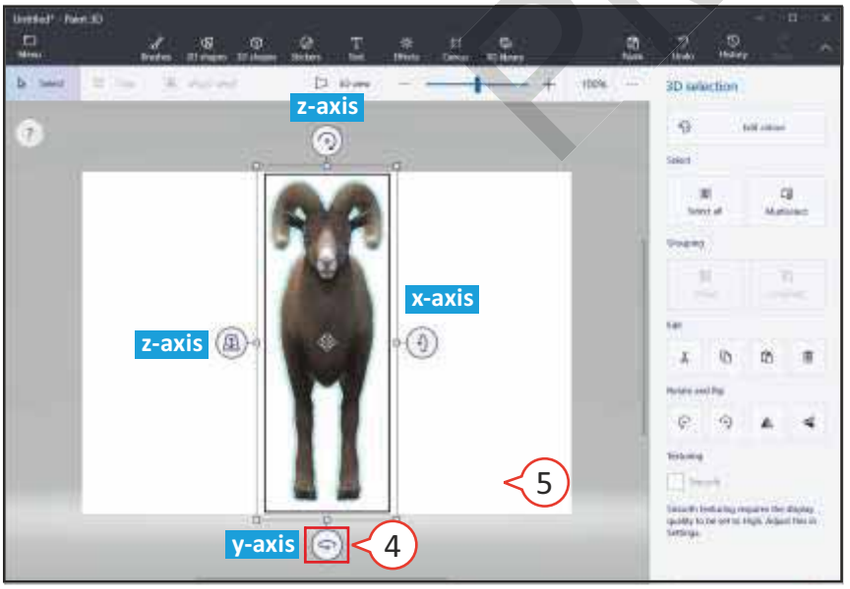
3D library panel appears which shows the categories of objects.

2. Click on any category (**Animals**).



3D models related to the selected category appear.

3. Scroll down and select the model (Ram).



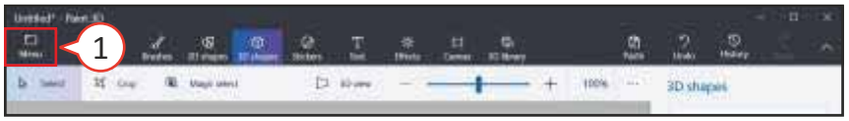
Selected model appears on the canvas with the **rotation tools** (x-axis, y-axis and z-axis).

4. Rotate the model using **y-axis** upto the position where it takes the 3D form.
5. Click anywhere in the canvas to remove the rotation tools.

Your 3D model from the 3D library appears on the canvas .

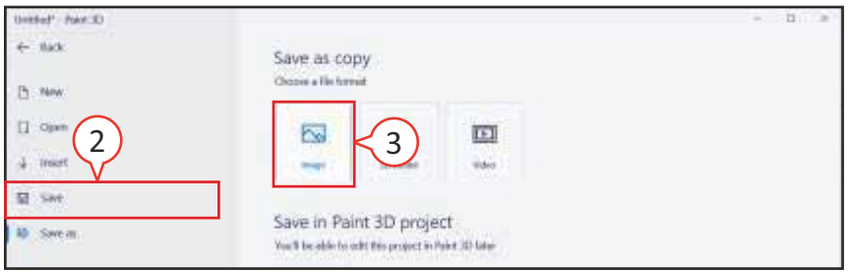
Saving Your Project

After finishing your work, you can save it for future use.



1. Click on **Menu**.

Backstage view appears.



2. Click on **Save** option.

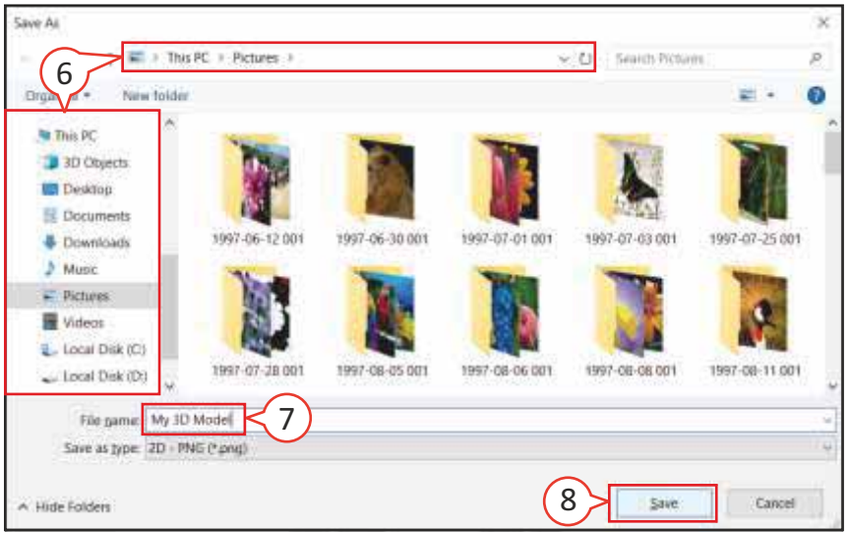
Saving options appear.

3. Click on **Image** option.

4. Click on the **Save as type** down arrow and select the **file type** (png, jpg, etc.)

In this example, we have selected **PNG** file type.

5. Click on **Save**.



6. Browse the location, where you want to save the file.
7. Type the name for the file in the **File name** text box.
8. Click on **Save**.

Your file gets saved in the location selected in step 6.

In a Nutshell

- Paint 3D is a drawing program developed by Microsoft to create, edit and print 3D shapes.
- When we open Paint 3D, the area where we draw is called canvas.
- Rotation tools are used to see the 3D effect.
- Stickers are used to add texture and icons to 2D or 3D drawing.
- We can add 2D and 3D text to our project in Paint 3D.
- We can apply filter color and the light position on the 3D object.
- We can add 3D objects in our project from 3D library.

Exercises

A. Tick [✓] the correct answer.

1. In 2D and 3D, the D specifies ..... involved in the shape.
   a. degrees ☐ b. dimensions ☐ c. designs ☐
2. ..... option is used for selecting a Filter color, or the lighting source position.
   a. Filter ☐ b. Effects ☐ c. Select ☐
3. We can erase a shape with ..... tool.
   a. Eraser ☐ b. Remover ☐ c. Select ☐
4. Click on ..... icon to add 3D text to the project.
   a. 3D text ☐ b. 2D text ☐ c. Add text ☐
5. We can use ..... tools to see the 3D effect.
   a. Sticker ☐ b. Filter ☐ c. Rotation ☐

B. Write 'T' for True and 'F' for False statements.

1. Paint 3D is an updated version of MS paint. ☐
2. 3D shapes are also known as flat shapes. ☐
3. Effects option contains many options like New, Open, etc. to work with. ☐
4. You can change the color of 3D objects according to your choice. ☐
5. Paint 3D stickers come in the form of shapes, traditional stickers and surface textures. ☐

C. Fill in the blanks.

1. Paint 3D is a drawing program developed by ..... .
2. A 3D shape comprises of three dimensions ..... , ... and ..... .
3. ..... option is used to add 3D text in Paint 3D.
4. Stickers are used to add ..... and ..... to our 2D or 3D drawing.
5. ..... tools appear when we select an object from 3D library.

D. Differentiate between the following.

2D Shapes	3D Shapes
.....	.....
.....	.....
.....	.....

E. Answer the following questions.

1. What is the use of Paint 3D software?

   .....

   .....

2. Why do we use rotation tool?

   .....

   .....

3. What are the forms in which stickers come in Paint 3D?

   .....

   .....

4. From where do we add 3D objects in a project?

   .....

   .....

F. Application-based Question

Sonika is working on a Maths project in which she needs to create 3D shapes. Which software can she use for this purpose?

.....

Activity Section

Activity Create 3D Effect

Launch Paint 3D and follow the steps given below to create 3D effects.

1. Select **3D shapes** from the ribbon and then open **3D library** and insert the boy from '**Characters**' category and tree from '**Flowers and Plants**' category, as shown.
2. Add stickers '**sun**' and '**cloud**' using **Stickers** option.
3. Add an effect using **Effects** option.
4. Now, create 3D effect on the character as shown in the figure.

Art Integration

Students will learn to add different elements to make a scenery.

Original

After 3D effect

Activity Create 3D Text

Follow the given steps to create 3D text as shown in the figure.

Skill Formation

This activity would enhance the creativity of the students.

1. Add text to the canvas using 3D text icon on Text tool.
2. Change its font style, size, color, alignment and make it bold.
3. Rotate the text upto the position where it takes the 3D form.

Group Discussion

Divide the students into two groups and discuss the topic – 'Paint 3D is More Interesting than MS Paint'.

4 Word Processor (MS Word 2016)

OBJECTIVES

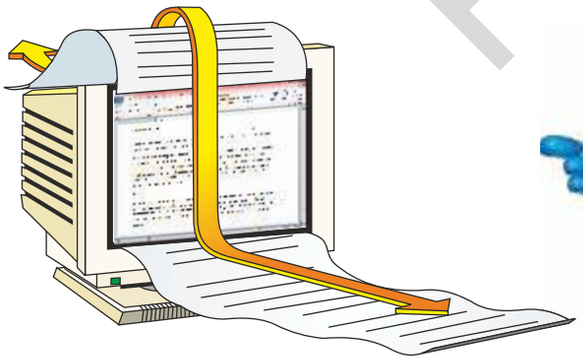
After completing this chapter, you will be able to:

- Understand the meaning, uses and types of word processor.
- Understand about Microsoft Word and components of its window.
- Learn how to enter, select and format text.
- Save a Word document to review and edit it in future.

Hello Friends! In your previous class, you learnt about Microsoft Word, which is a word processing software. In this chapter, you will learn more about it.

Word Processor

A **word processor** is a computer software that is used for **creating** and **formatting** a document by using keyboard. After creating the document, you can save it for future use and also print it on a paper.



Word processing software

THINGS WE CAN DO WITH WORD PROCESSOR

1. Type applications, letters, reports, etc.
2. Change color and font style of text
3. Add pictures to make the document more attractive
4. Modify the document by editing and formatting
5. Save the document for future use
6. Print the document on paper

TYPES OF WORD PROCESSORS

Some most popularly used word processors are:

Microsoft Word — It is powerful word processor created by Microsoft for Macintosh and Windows-based computers.

Writer — It is a free open source word processing program. It is a part of LibreOffice suite.

Google Docs — Formerly known as Google Documents, it is a free online word processor.

Microsoft Word

Microsoft Word is a **word processing program** used for creating documents. It helps us to write letters, reports, etc. beautifully by adding borders, shading, tables, graphics, or pictures in the documents. It was first released in October 1983 by Microsoft.

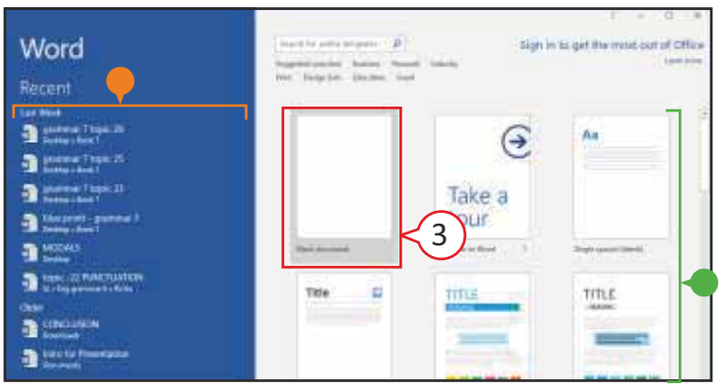
Microsoft Word 2019 is the latest version, released in **2019**. But in this book, we will study about Microsoft Word 2016.

STARTING WORD 2016

1. Click on **Start** icon (*or press* ⊞). The Start menu appears.

A list of all installed Apps appears on the left side of Start menu.

2. Scroll down and click on **Word 2016**.



Word opens and displays its **Start screen**.

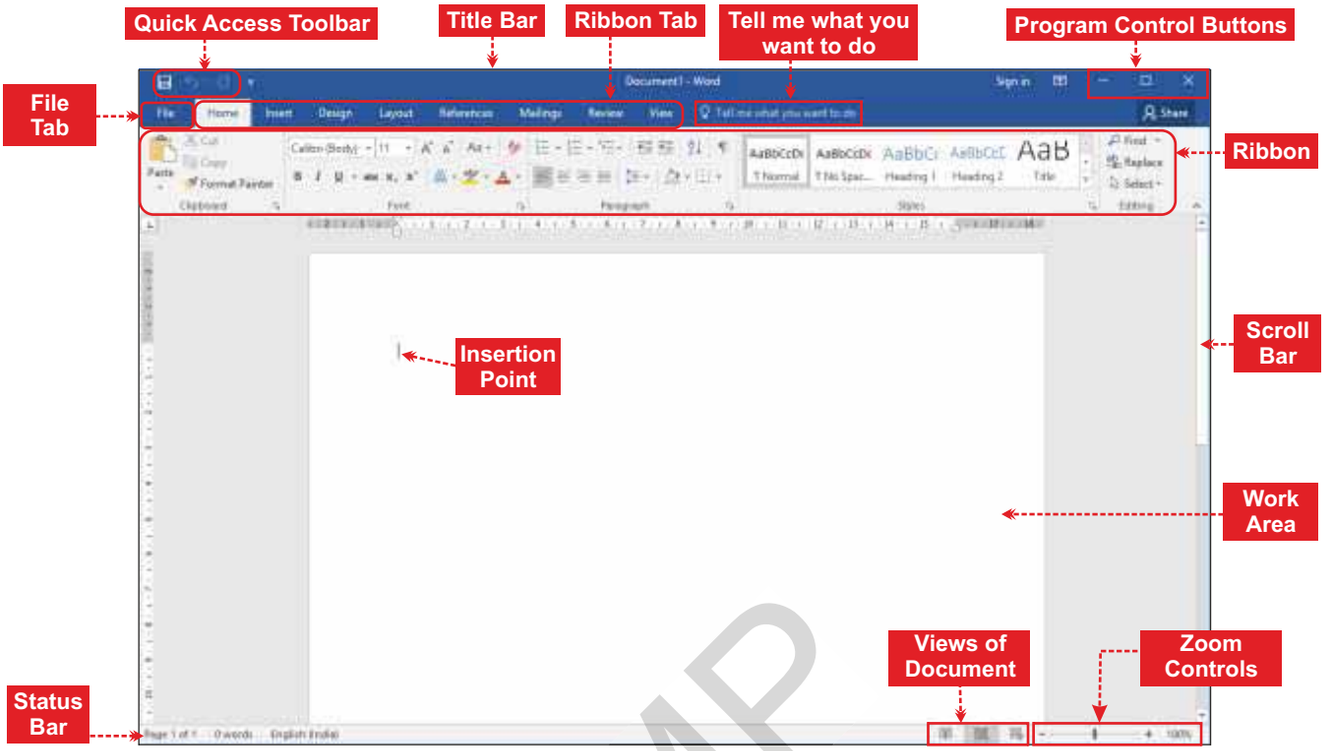
- You can use this area (**Recent**) to open an existing document.
- You can use this area to start a new document.

3. Click on **Blank document**.

An empty document titled **Document1** appears on your screen.

THE WORD WINDOW

You will get this window on your desktop after starting Word 2016.



Title Bar: It is the topmost bar of the window that displays the name of the currently active Word document.

File Tab: When you click on File tab, a Backstage view appears, which resembles a menu. In Backstage view, there is a list of commands like save, open, print, etc.

Quick Access Toolbar: It displays quick access buttons for the Save, Undo, and Redo commands.

Ribbon: It displays groups of related commands in tabs. Each tab offers shortcut buttons to common tasks.

Ribbon Tab: Each ribbon tab provides a set of tools related to an overall task you are likely to be performing in a specific document.

Insertion Point: It is a small vertical flashing line on the screen that indicates the place where the text you type will appear.

Views of Document: Word provides access to three different views of your document.

Zoom Controls: They are used to enlarge or reduce the view of document.

Scroll Bar: The scroll bar helps you to move the contents of a document up, down, right, and left.

Status Bar: Status bar is situated at the bottom of a Word document. It displays information, such as word count, page number, line number, zoom slider, language and other details.

Program Control Buttons: Use these buttons to minimize the program window, restore it to full size, or close the window.

Work Area: It is the area in the document window where you enter or type the text of your document.

Tell me what you want to do: This search feature helps you find or locate commands on the Ribbon.

Project: The Little Fish

Subject Integration

English

This integration would enrich the linguistic skills of the students.

Start

THE LITTLE FISH

There are a great many million fish in the seas, but this story is about a very small fish. The little fish had everything in the sea to make him contented, but he was not happy because he was so very small. "It is very hard to be such a little mite of a fish!" he would say, over and over again.

One day he was swimming along with the rest of his friends, when suddenly, with no warning, they found themselves in the meshes of a great net. There was much floundering and splashing as the net was drawn up out of the water into the sunlight, and just as its haul was being emptied into the boat, the smallest fish wriggled through the mesh and slipped back into the cool clear water.

How good it felt! He swam here and there, and never again all the rest of his life he said that he wished to be anything but a fish.

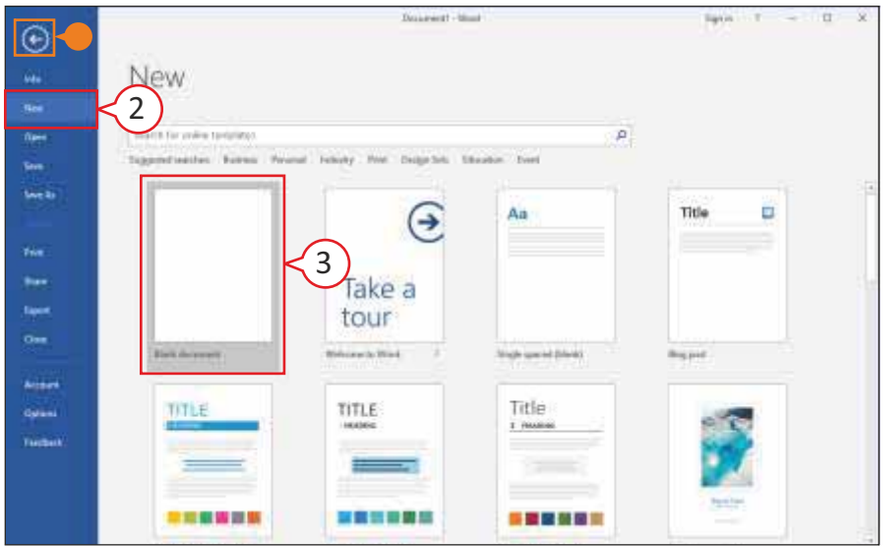
Moral of the story is "Everyone is Important".

Creating a New Document

A new document is created every time you start writing a fresh letter or report. Creating a new document is like writing on a fresh, new piece of paper on your screen. Let us create a new document to start the project.

1. Click on **File** tab.

Backstage view appears.



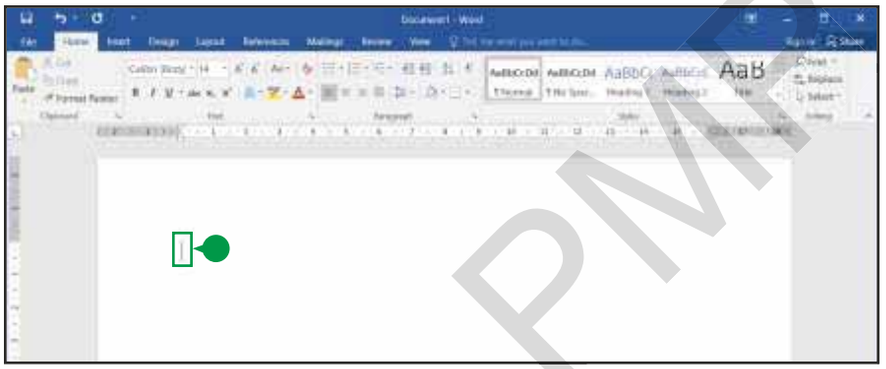
- You can click **Back** button to move back from Backstage view and see the open document.

2. Click on the **New** button.
3. Click on **Blank document**.

The new document opens and you can start working on it.

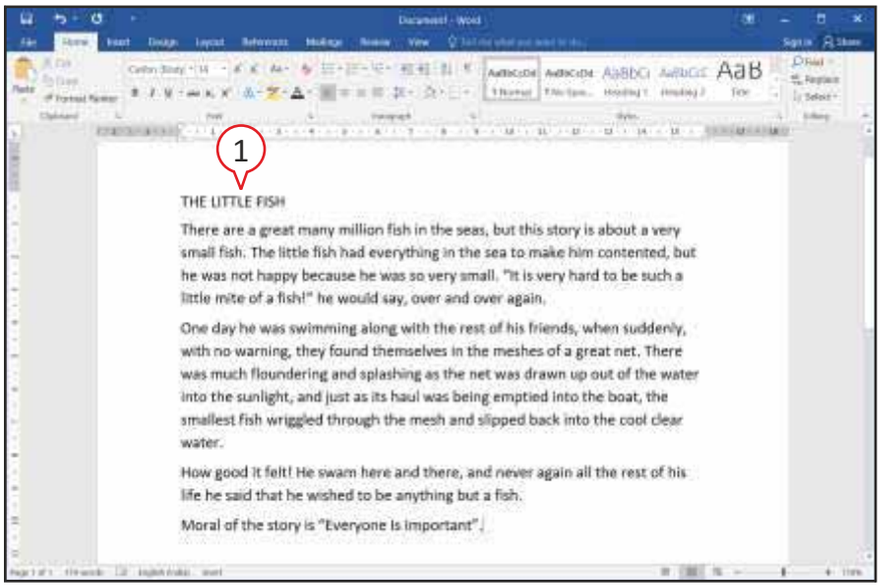
ENTERING TEXT

The text can be entered with the help of a keyboard.



- The text you type appears where the **insertion point** flashes on your screen.

The text always appears to the **left** of the insertion point as you type.



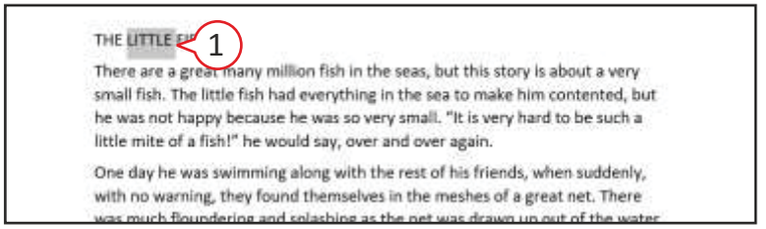
1. Type the text.

When you reach the end of a line, Word automatically sends the text to the next line. Press the **Enter** key only when you want to start a new paragraph.

SELECTING TEXT IN A DOCUMENT

Before making a change in the text in Word, you must select the text first. Selected text appears **highlighted** on screen.

Selecting a Word

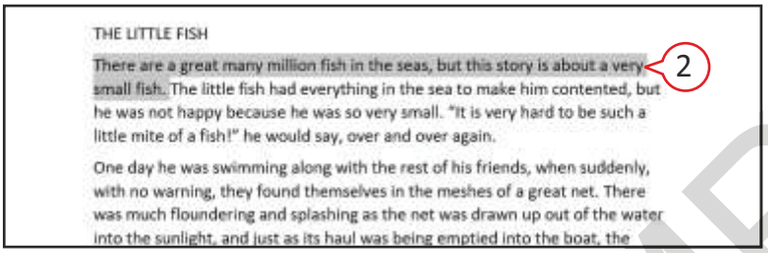


1. **Double-click** the word you want to select.

The word gets selected.

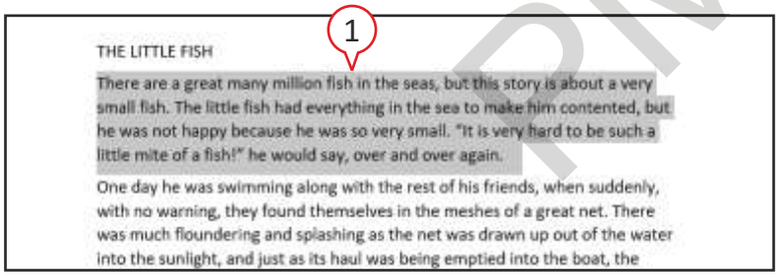
To deselect text, click outside the selected area.

Selecting a Sentence



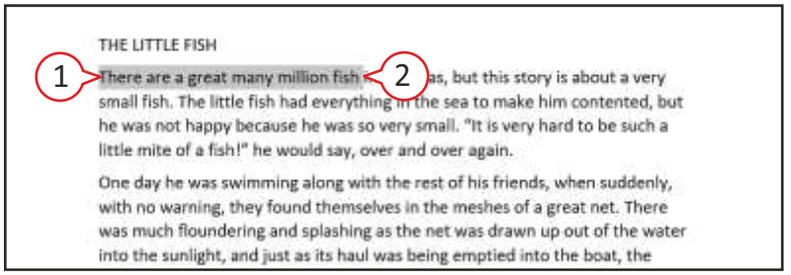
1. Press and hold down the **Ctrl** key from the keyboard.
2. While holding down the Ctrl key, click the sentence you want to select.

Selecting a Paragraph



1. Place your mouse pointer over the paragraph you want to select, and then click **three times** quickly to select a paragraph.

Selecting any Part of Text



1. Place your mouse pointer over the first word you want to select.
2. Drag the mouse pointer over the text you want to select.

Selecting the Entire Document

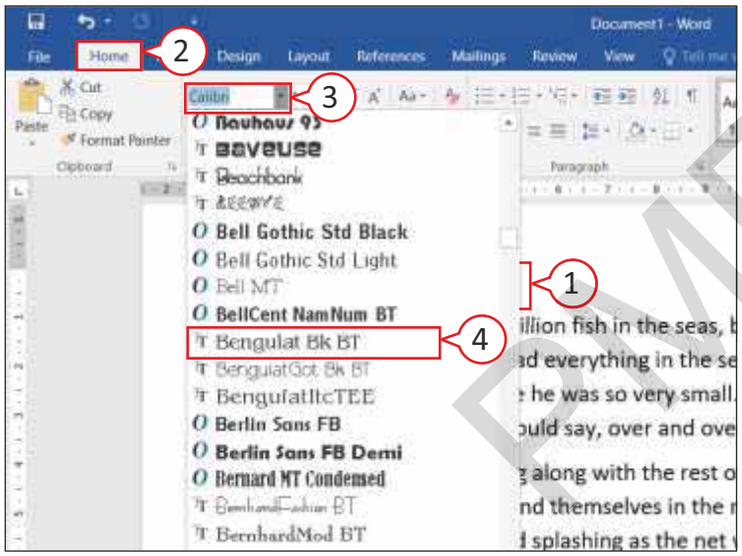
Press **Ctrl + A** from the keyboard to select the entire text of the document.

Formatting Text

Formatting means making any changes to the text of the document so that it should look eye-catching and attractive. You can format text by modifying the font, font size, and color; making it bold, underlined, or italics; changing the alignment of the text; etc. according to the requirement.

CHANGING FONT OF THE TEXT

A **font** is a **typeface** that defines the shape of each character. You can change the font style of the text to make changes in the appearance of the document.



1. Select the text you want to change. *(not shown)*
2. Click on **Home** tab.
3. Click on the drop down arrow of **Font**.

A menu appears.

Word displays a sample of the selected text in the font you point the mouse on.

4. Click on the font you want to use.

- The text you selected is changed to the new font.

To deselect text, click anywhere outside the selected area.

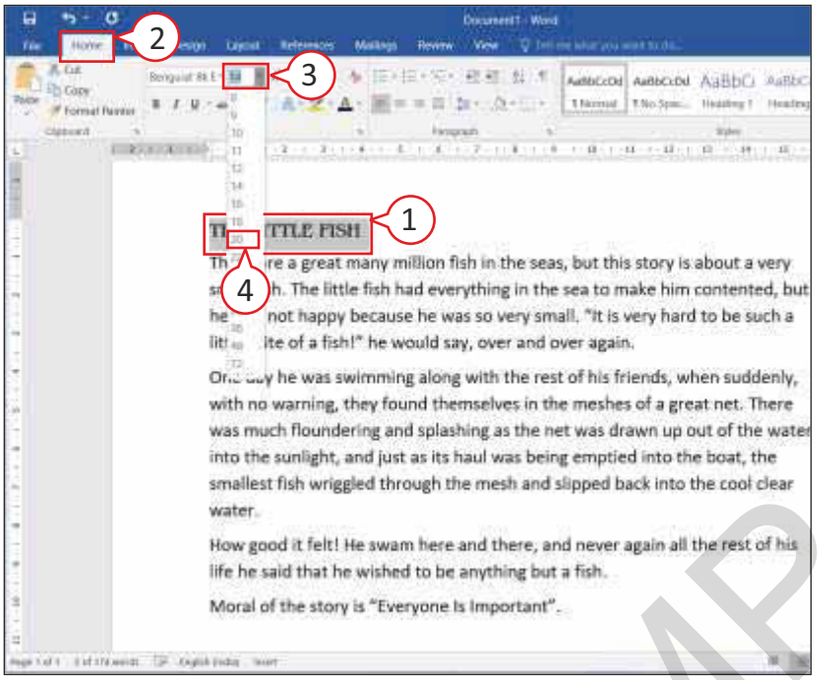
Do You Know?

Enter Text Automatically

Word enters some of the common words automatically when you start typing in the document. For example, when you begin to type a common word, phrase or date like 'Jan', Word suggests common words and phrases based on what you have typed (January). You can press the **Enter** key to let Word finish typing the word or phrase for you. You can keep typing to ignore suggestion given by Word.

CHANGING SIZE OF THE TEXT

You can **increase** or **decrease** the size of the text in your document. Increasing the size makes reading of the text easier while decreasing the size helps fit more text on a page.

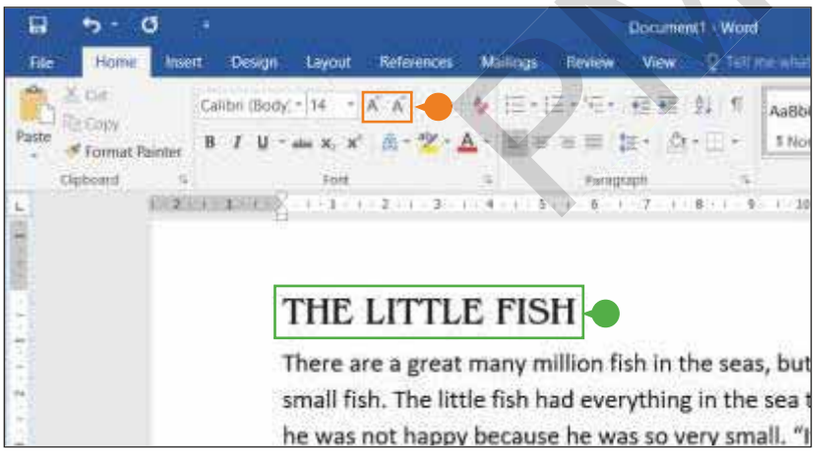


1. Select the text you want to change to a new font size.
2. Click on **Home** tab.
3. Click on the down arrow of **Font size**.

A menu appears.

Word displays a sample of the selected text in the font size you point the mouse on.

4. Click on the size you want to use.



- The text you selected is changed to the new size.

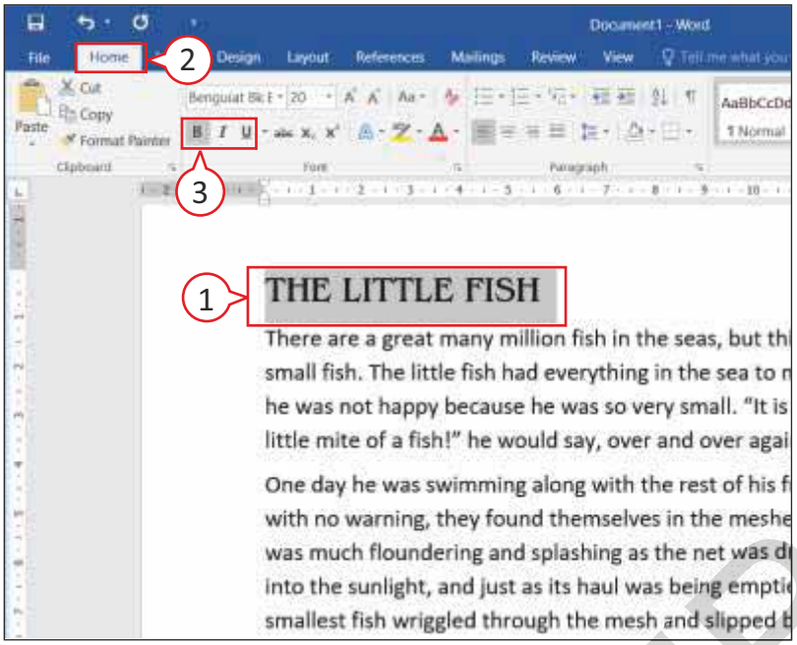
- You can also change the font size using the **Increase Font Size** [A^] and **Decrease Font Size** [A˅] buttons on the Home tab. Word increases or decreases the font size with each click of the button.

Repeat Formatting (F4)

F4 key is a tremendous time saver in Word. It is also called the **Repeat Formatting** command, invoked by the F4 key. Actually, F4 repeats typing and many other actions too. For example, click on a word and press Ctrl+B to make it bold. Click on another word and press F4. It also becomes bold. This is because F4 repeats only the most recent formatting (or other) action.

MAKING THE TEXT BOLD, ITALIC OR UNDERLINED

You can make your text **bold**, **italic** or **underlined** to emphasize information in your document.

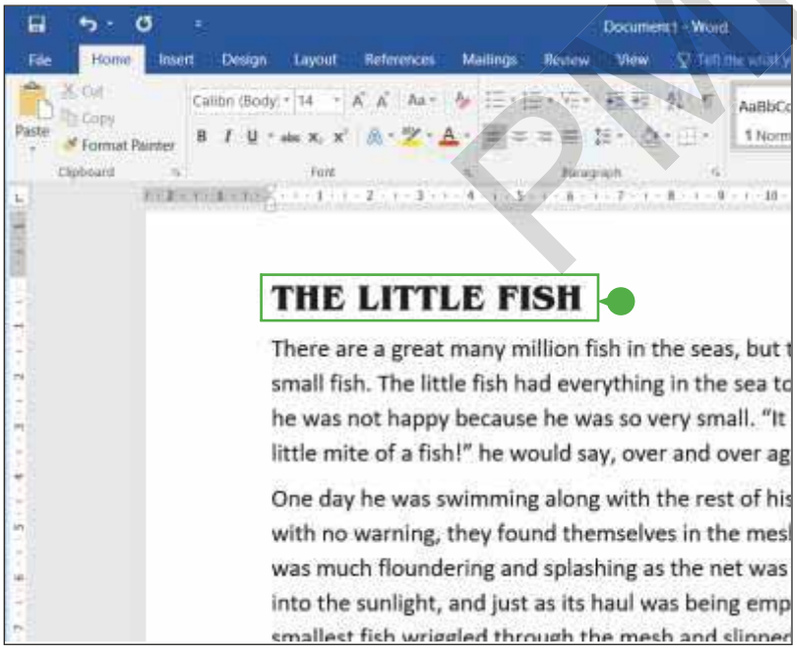


1. Select the text you want to make bold, italic or underlined.
2. Click on **Home** tab.
3. Click any of the following buttons:

   (B) **Bold** *(Ctrl+B)*

   (*I*) *Italic (Ctrl+I)*

   (U) Underline *(Ctrl+U)*



- The text you selected appears in the new style.

*This example applies **Bold** style to the text.*

To remove the bold, italic or underline style, repeat steps **1** to **3**.

Update Your Knowledge

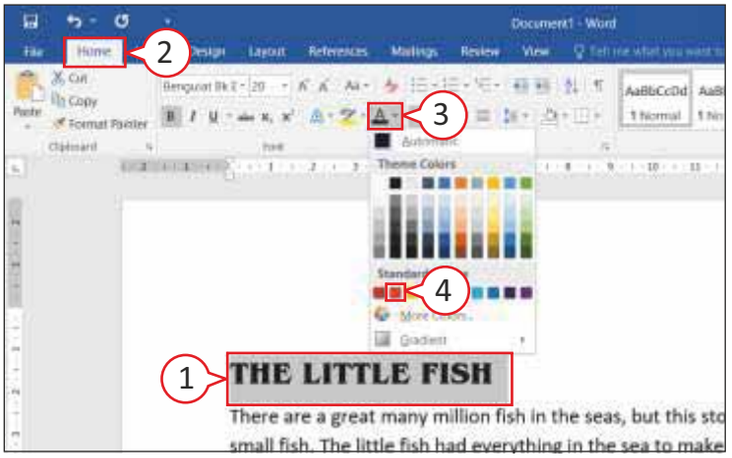
- **Bold** makes the text darker than the surrounding text.
- **Italic** makes the text slanted just like handwriting slants.
- **Underlining** adds a line under the text.

Keyboard Shortcuts

- ! Press **Ctrl+B** to apply **bold**.
- ! Press **Ctrl+I** to apply **italic**.
- ! Press **Ctrl+U** to apply **underline**.

CHANGING THE COLOR OF TEXT

Color of the text can be changed to draw attention towards headings or important information in your document.



1. Select the text you want to color.
2. Click on **Home** tab.
3. Click on the down arrow of **Font color**.

Font color palette will appear.

4. Click on a color.

Word applies the selected color to the text.

*In this example, we have applied **red color** to the text.*

HIGHLIGHTING TEXT

You can draw attention to some part of the text in a document by creating highlights with the use of color. Highlighting text in a document is useful for marking information that you may want to review or verify later.

1. Click on **Home** tab.
2. Click on the down arrow of **Text highlight color** button.
3. Click on the desired highlight color.

The mouse pointer changes to (🖉) .

4. Select each area of text you want to highlight.

The text you select appears highlighted.

5. When you finish highlighting the text, press the **Esc** key from keyboard.

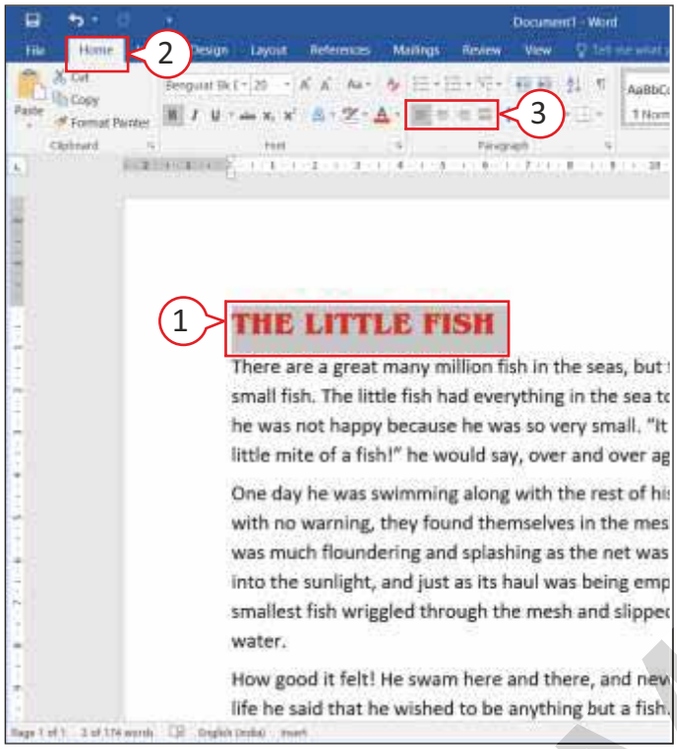
Formatting Techniques

Stream method: Apply formatting before you start typing a word or passage, and then turn it off when you are done. For example, click the **Bold** tool, type a word and then click the **Bold** tool again.

Selection method: Select the text you want to format and then apply the formatting.

CHANGING ALIGNMENT OF TEXT

You can align text in four different ways to enhance the appearance of your document. By default, Word aligns the text to the **Left.**



1. Select the text that you want to format.
2. Click on **Home** tab.
3. Click on one of the following buttons:
   - **Align Left** ( ) to left-align text *(or press Ctrl+L)*
   - **Center** ( ) to center-align text *(or press Ctrl+E)*
   - **Align Right** ( ) to right-align text *(or press Ctrl+R)*
   - **Justify** ( ) to justify text between the left and right margins *(or press Ctrl+J)*

- The text displays the new alignment.

To deselect the text, click outside the selected area.

In this example, we have used **Center** align command.

By repeating the steps **1** to **3,** select the remaining text and **Justify** it.

Saving a Document

The document must be saved into the memory of computer for its future use. Once the document is saved, you can review and edit it later. File created in Word 2016 is saved with the file extension **.docx**.

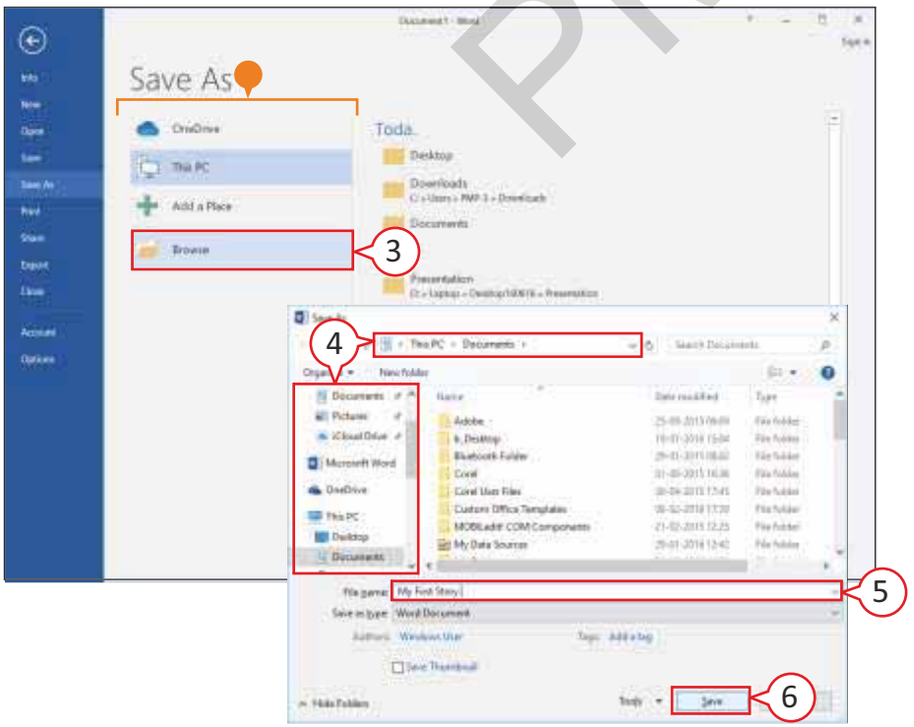
1. Click on **File** tab.

Backstage view appears.

2. Click on the **Save** or **Save As** option.

*You can even click the **Save** button [ ] on Quick Access Toolbar to save the document.*

- Locations where you can save your file appear here. Once you select a location, folders available at that location appear on the right side of the screen.



3. Click on **Browse**.

Save As dialog box appears.

4. Click on these areas to navigate to the folder in which you want to save the document.
5. Type a name for the document.
6. Click on **Save**.

Word saves the document, and the new file name appears on the **title bar**.

*The keyboard shortcut to save a document is **Ctrl + S**.*

In a Nutshell

- A word processor is a computer software that is used for creating and formatting a document.
- MS-Word is a word processing program developed by Microsoft.
- Before making a change in the text, you must select it first.
- Formatting means changing the layout of the text of the document.
- You can align text in four different ways to enhance your document's appearance.
- The Word 2016 file is saved with .docx file extension.

Exercises

A. Tick [✓] the correct answer.

1. ..... is an example of a word processor.
   a. MS Paint ☐ b. MS Word ☐ c. Windows 10 ☐
2. ..... is a free open source word processor.
   a. Word ☐ b. Writer ☐ c. Google Docs ☐
3. ..... bar is situated at the bottom of a Word document.
   a. Scroll ☐ b. Title ☐ c. Status ☐
4. We can use double-click to select a ..... .
   a. paragraph ☐ b. word ☐ c. line ☐
5. ..... text is useful for marking information.
   a. Highlighting ☐ b. Formatting ☐ c. Selecting ☐

B. Write 'T' for True and 'F' for False statements.

1. We can modify the document by editing and formatting. ☐
2. Work area is where we enter or type the text. ☐
3. To select a paragraph, you have to click two times over it. ☐
4. Formatting means making any changes to the document. ☐
5. Word 2016 file is saved in .txt file extension. ☐

C. Write the shortcut keys for the following.

1. Saving a document .....
2. Bold text .....
3. Italic text .....
4. Select entire text .....

D. Fill in the blanks.

1. ..... is a free online word processor.
2. ..... bar is situated at the bottom of a Word document.
3. A ..... is a typeface that defines the shape of each character.
4. By default, Word aligns text to the ..... .
5. Word file is saved with ..... extension.

E. Answer the following questions.

1. What is a word processor?

   .....

   .....

2. What do you mean by formatting text?

   .....

   .....

3. Why do we need to change the size of the text in a document?

   .....

   .....

   .....

4. What is the use of saving a document?

   .....

   .....

F. Application-based Question

Abha wrote an essay on Dr. A.P.J. Abdul Kalam. Now, she wants to change the font of the essay. As she is not able to do it, help her to do the task.

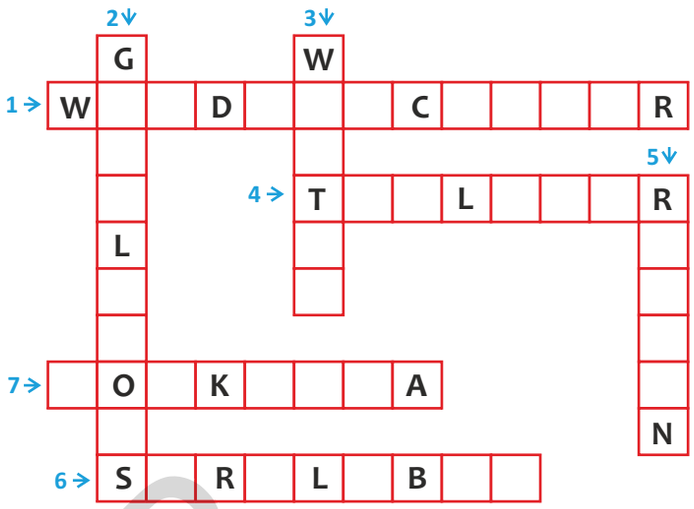
.....

Activity Section

Activity Puzzle Time

Solve the crossword puzzle with the help of given clues.

1. A software for creating document
2. Free online word processor
3. A part of LibreOffice suite
4. The topmost bar of window
5. Displays groups of related commands in tab
6. To move the document up, down, right, and left
7. A place where you type the text of your document



Lab Activity

Open Word, create a new document and type the following story.

Two Goats

One day, two goats arrived at the same bridge. It was a narrow bridge. The wise one laid down on the bridge. The other walked over him. They crossed the bridge comfortably and went on their ways.

Now, perform the following tasks:

1. Set the heading font size as 18 points and color red.
2. Make the heading bold and italic.
3. Set the font size of rest of the text as 14 points and color blue.
4. Save the document with your name.
5. Write the moral of the story and align it at center.

Skill Formation

- This activity will aid the students in presenting the given information in a systematic manner.

Group Discussion

Discuss the various formatting tools available in MS-Word.

Online Link

To learn more about creating a document in MS Word, visit the website:

https://www.computerhope.com/jargon/m/microsoft-word.htm

Worksheet-I

Chapters 1 - 4

A. Tick [✓] the correct answer.

1. The meaningful and organized form of data is called ..... .

   a. data ☐ b. information ☐ c. process ☐

2. CPU works as ..... of the computer.

   a. brain ☐ b. hands ☐ c. eye ☐

3. ..... are used to launch some selected Windows 10 programs with a click of mouse.

   a. Default program ☐ b. Status bar ☐ c. Tool bar ☐

4. ..... in Paint 3D are used to add texture and icons.

   a. Images ☐ b. Stamps ☐ c. Stickers ☐

5. By default, Word aligns the text to ..... .

   a. right ☐ b. left ☐ c. center ☐

B. Write 'T' for True and 'F' for False statements.

1. The computer has a very large storage capacity. ☐
2. Icons are the small pictures on the desktop. ☐
3. Only 2D text can be added to a project in Paint3D. ☐
4. Writer is a free open source word processing program. ☐
5. There are three different ways to align text in Word. ☐

C. Fill in the blanks.

1. ..... allows to store data and information for future use.
2. There are three methods to start an ..... in Windows 10.
3. ..... is the area where we draw in Paint 3D.
4. ..... tools appear an object when we select it from 3D library.
5. Font is a typeface that defines the ..... of each character.

D. Define the following.

1. Hardware: .....

.....

2. Warm booting: .....

.....

3. Formatting: .....

.....

4. Font: .....

.....

E. Answer the following questions.

1. How does processing unit work in IPO cycle?

.....

.....

2. Why do we need a software?

.....

.....

.....

3. What is the need of user interface? Explain its types.

.....

.....

4. What are the types of stickers available in Paint 3D?

.....

.....

.....

5. Why do we increase and decrease the text size in Word?

.....

.....

5 Internet

OBJECTIVES

After completing this chapter, you will be able to:

- Understand the meaning of Internet.
- Understand different uses of Internet.
- Learn important terms related to Internet.

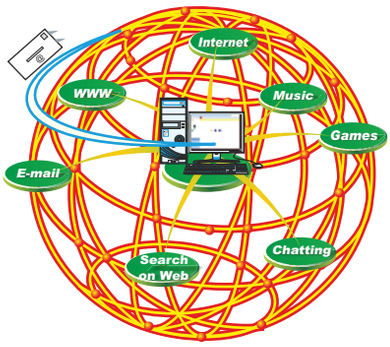
Hey Friends! Internet is a special feature of the computer through which you can search any information and communicate with anyone, sitting at one place. Let us know more about the Internet.

Introduction

The **Internet** is popularly called **Net.** It is the largest network that connects millions of computers across the world.

With the help of Internet, you can:

- search on any topic
- buy or sell things
- listen to music and play games
- send messages and communicate with your friends and family



No one knows exactly how many computers are connected to the Internet. It is certain, however, that these numbers are in trillions and are increasing at a rapid rate.

Uses of Internet

Today, the Internet is used by most of the people. It has become a powerful tool in today's world. The different uses of Internet are:

E-MAIL (ELECTRONIC MAIL)

An **electronic mail (e-mail)** enables us to send and receive messages to/from people from anywhere.

SEARCH INFORMATION

You can find any kind of information you require through the Internet. It is a valuable tool for study and research.

SHOPPING

You can purchase or sell products on the Internet even while sitting at home. You can place the order and pay through a credit/debit card on the Internet. The product gets delivered at the place of your choice.

CHATTING

Internet allows you to exchange typed messages with others. A message once sent instantly appears on the other person's computer or any other device.

ADVERTISEMENT

Many companies advertise themselves and their products on the Internet if they have their websites on the Internet.

Update Your Knowledge

Internet was developed by the **Advanced Research Projects Agency (ARPA)** of the US government in 1969 and was first known as **ARPANET**.

Do You Know?

No single person, company, institution, or government agency owns the Internet. Each organization on the Internet is responsible only for maintaining its own network.

LISTENING TO MUSIC AND WATCHING MOVIES

You can use the Internet to listen to songs and watch movies. YouTube is a video sharing service that is one of the most popular sites/apps on the Internet.

PLAYING GAMES

The Internet also provides a wide range of games that you can either play online or download on your computer.

SOCIAL NETWORKING

Social networking is a service that enables you to connect with people who share similar personal or professional interests. One of the most popular social networking sites is Facebook.

Internet Terms

Following are some of the important terms related to Internet:

WORLD WIDE WEB (WWW)

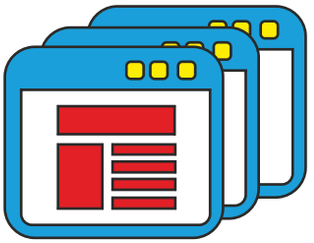
World Wide Web or **web** is an electronic library that contains lots of information in the form of text, pictures, and sound. It was developed by **Tim Berners-Lee** in **1989**.

WEB PAGE

Web page is a single page on the web that contains information in the form of text, graphic, sound and/or video.

WEBSITE

A collection of web pages related to the same topic is called **website**. A website is organized by different organizations like schools, hospitals, companies and even individuals.



WEB BROWSER

Web browser or simply **browser** is a software used to open a web page or website. Some popular browsers are Google Chrome, Microsoft Edge, and Mozilla Firefox.

HOME PAGE

Whenever you open a web browser, the first page that appears is the **home page**. It always displays the starting web page of a website. This page links to all other pages on the website.

LINK

A **link**, also called **hyperlink**, is a built-in connection to another related web page or the part of a web page. When you click the link, the other page loads into your web browser automatically.

UNIFORM RESOURCE LOCATOR (URL)

Every website on the Internet has a **unique address**. This address of a website or web page is called the **URL**.

SEARCH ENGINE

Search engine is the software that finds websites, web pages, images, videos, news, maps, and other information related to a specific topic on the Internet. Some popular search engines are Google, Bing and Yahoo.

In a Nutshell

- Internet is the largest network that connects millions of computers across the world.
- Internet is used for e-mailing, searching information, shopping, chatting, advertisement, listening to music, watching movies, playing games and social networking.
- Web browser is a program that is used to open the web pages or website.
- Every website has its unique address called URL.

Exercises

A. Tick [✓] the correct answer.

1. Computers connected to ..... exchange information with one another.
   a. television ☐ b. Internet ☐ c. telephone ☐
2. You can communicate with others on Internet through ..... .
   a. chatting ☐ b. browsing ☐ c. advertising ☐
3. A collection of web pages is called ..... .
   a. website ☐ b. link ☐ c. URL ☐
4. The first page that appears in a browser is called ..... page.
   a. search ☐ b. home ☐ c. middle ☐

B. Write 'T' for True and 'F' for False statements.

1. Everybody knows exactly how many computers are connected to the Internet. ☐
2. You cannot purchase or sell products on the Internet. ☐
3. Facebook is a popular social networking site. ☐
4. A web browser is the address of a website or a web page. ☐
5. A link is a built-in connection to another related web page or the part of a web page. ☐

C. Fill in the blanks.

1. ..... enables us to send and receive messages to/from people from anywhere.
2. ..... enables us to connect with people who share similar personal interests.
3. ..... is a collection of web pages related to the same topic.
4. Each page on the web has a unique address called the ..... .
5. ..... is a software used to open web page or website.

D. Give the full form of the following.

1. E-mail .....
2. WWW .....
3. URL .....

E. Define the following.

1. Home page: .....
   .....
2. Link: .....
   .....

F. Answer the following questions.

1. What do you mean by Internet?
   .....
   .....
2. Write any four uses of Internet.
   .....
   .....
3. What is the use of search engine?
   .....
   .....

G. Application-based Question

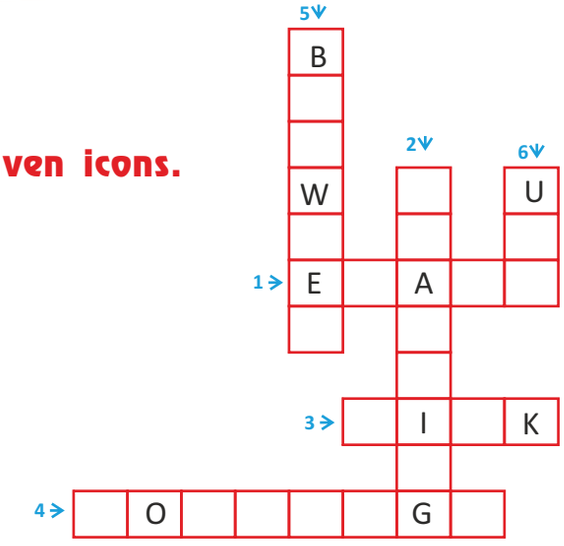
Danish wants to order DVD of the latest Xbox game. He does not know how to search and order it from Internet. He needs your help. Help him by telling him the services used for this purpose.

.....

Activity Section

Activity Crossword

Solve the crossword with the help of given icons.



Activity Tick and Write

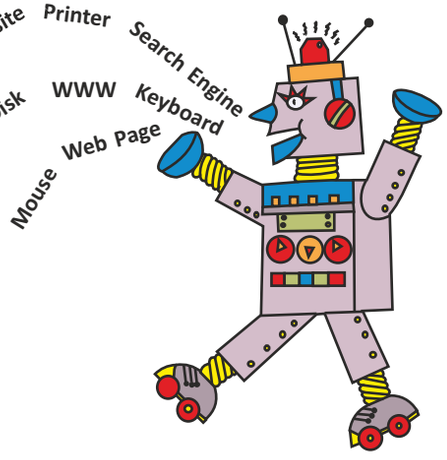
This robot is speaking some words. Circle the Internet-related words and write them in the space given below.

.....

.....

.....

.....



Lab Activity

With the help of your teacher in the school, open the web browser and find the information on "Ten Famous Indian Foods" and type the same on MS-Word.

Skill Formation

- This activity will enhance the self-directed learning ability of the students.

Group Discussion

Divide the students into two groups and discuss the topic – 'Advantages and Disadvantages of Internet'.

Online link

To learn more about Internet and its terms, visit the website:
https://www.lifewire.com/top-internet-terms-for-beginners-2483381

COMPUTATIONAL THINKING

6 Algorithm and Sequence

OBJECTIVES

After completing this chapter, you will be able to:

- Understand about algorithm and sequencing.
- Learn about branching (If-then) statement.
- Learn about abstraction and debugging.

Hey Friends! You have already learnt about patterns, decomposition and coding in your previous class. Now, we are going to learn about fundamentals of coding.

Algorithm and Sequence

An **algorithm** is a set of step-by-step instructions to solve a problem. Let us understand it with the help of an example.

What steps would you follow to buy a chocolate?

The possible steps are as follows:

Step 1: Take money and go to the shop.

Step 2: Choose the chocolate of your choice.

Step 3: Pay money to the shopkeeper.

Step 4: Take the balance amount (if any).

Finally, you get the desired result, i.e. a **chocolate**.

Here, we have created an algorithm that consists of these steps.

Each step is an instruction to be performed.

You know that you cannot change the order of these steps. This is called a **sequence**.

Sequencing is the particular order in which instructions are performed in an algorithm.

Understanding the process of building the algorithm and sequence helps students build a strong foundation in logical thinking and problem-solving.

Activity Sequence

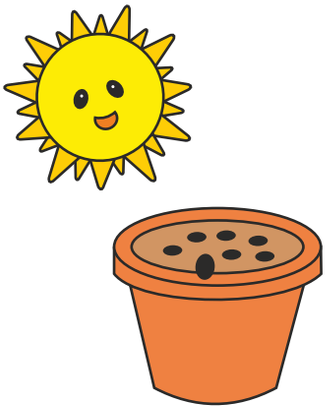
GROWING A PLANT

Write the number of steps in the correct sequence.

Tiny sprouts are formed.

Pour water in the soil.

Put soil in the pot.



Keep the pot in sunlight.

Plant starts to grow.

Drop seeds in the pot.

Branching (If-Then) Statement

You must have heard something like this from your parents or elders:

"If you get good marks in exams ..... [condition]

then you will get a .....". [action, if the condition is met]

Similarly, some algorithms also contain these **condition–action** based instructions. The **If-then** is a branching conditional statement. It is used to decide the execution of statements on some conditions. First, the condition is checked and **if** it is true, only **then** a certain course of action takes place.

Let us understand this with the help of an algorithm.

Step 1: Go to a restaurant.

Step 2: Order soup and noodles.

Step 3: **If** soup arrives first, [Condition]

Step 4: **Then** pick a spoon. [Action]

Step 5: **If** noodles arrive first, [Condition]

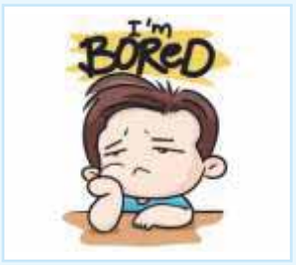
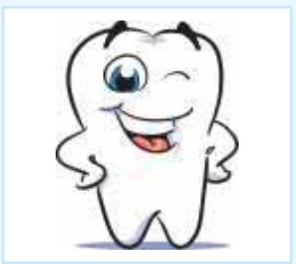
Step 6: **Then** pick a fork. [Action]

Here, you are instructed to pick a **spoon** if soup arrives before the noodles and if noodles arrive first then pick a **fork**.

The knowledge of branching statement enables the students to grasp the concept of cause and effect which applies to a variety of academic areas and real-life situations.

Activity Branching

Match the If–Then statements by drawing a line to connect the correct sentences.

IF....	THEN....
 1. If you are feeling hungry,	 a. take swimming classes.
 2. If you are feeling bored,	 b. eat a piece of cake.
 3. If you want to act like a fish,	 c. have some fish.
 4. If you have a sweet tooth,	 d. play cricket outside.

Abstraction

Abstraction means to focus on important information and ignore the rest. It means filtering out the data which you need from the whole.

Let us clarify it with the help of an example.

Children! You know about different shapes such as square, triangle, rectangle and circle.

In our real world also, we see these shapes in everyday objects such as the sun (circular), birthday cap (triangular), pencil-box (rectangular) and so on.

We can easily tell the shape of these objects as the sun is **round (circular),** birthday cap is **triangular** and pencil-box is **rectangular.**

Abstraction *helps the students to learn to identify the details that are important in solving a problem.*

Activity Abstraction

ABSTRACT THE SHAPES FROM OBJECTS

Match the object to its correct shape.

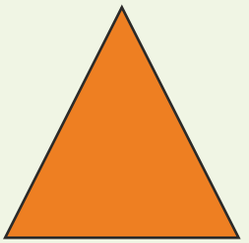
1. 

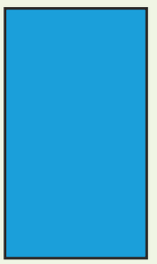
2. 

3. 

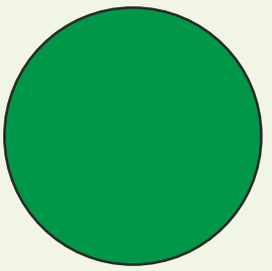
4. 

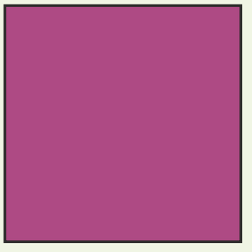
5. 

a. 

b. 

c. 

d. 

e. 

Debugging

Sometimes, we make mistakes while writing an algorithm due to which it does not work correctly. These mistakes are called **bugs**.

Debugging is a process to find these bugs and remove them. When these bugs are removed, algorithms work correctly!

Consider the following algorithm to get ready for school.

Step 1: Wake up.

Step 2: Get dressed.

Step 3: Brush teeth.

Step 4: Take bath.

Step 5: Eat breakfast.

Step 6: Go to school.

Is this algorithm correct? **No.**

There is a mistake (bug) in it; **Step 2** should come after **Step 4**.

So, we need to debug this algorithm and rewrite the steps correctly.

Step 1: Wake up.

Step 2: Brush teeth.

Step 3: Take bath.

Step 4: Get dressed.

Step 5: Eat breakfast.

Step 6: Go to school.

After debugging, the algorithm works correctly!!!

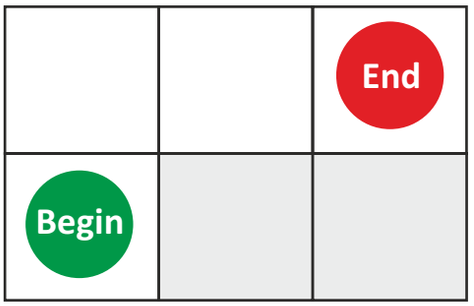
Learning the process of debugging sets students on the path of becoming a better coder and problem-solver.

Activity Debugging

DEBUG IT!!

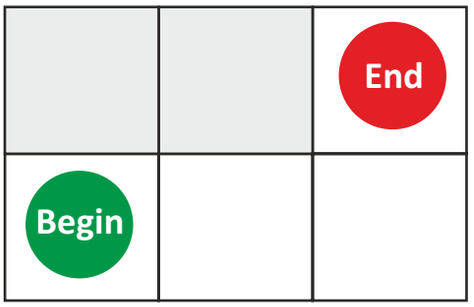
Each of these sequences has a bug (mistake) in it. Find the bug and cross it out.

1.



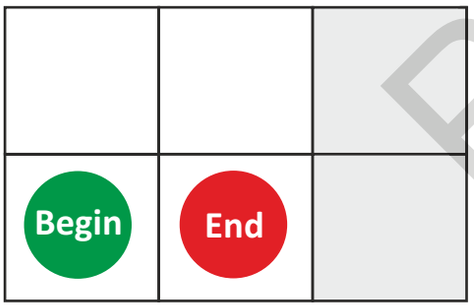
Move Up ☐ Move Right ☐ Move Down ☐

2.



Move Right ☐ Move Left ☐ Move Up ☐

3.



Move Up ☐ Move Left ☐ Move Down ☐

**Note: Do not consider shaded areas.*

In a Nutshell

- An algorithm is a step-by-step instruction to solve a problem.
- Sequencing is the particular order in which instructions are performed in an algorithm.
- The If-then statement is used to decide the execution of statements on some conditions.
- Abstraction means filtering out the data which you need from the whole.
- Debugging is the process of find bugs (errors) in algorithm and remove them.

Exercises

A. Write 'T' for True and 'F' for False statements.

1. We can change the order of steps in an algorithm.
2. Abstraction means filtering out the required data from the whole.
3. Mistakes found while writing an algorithm are called bugs.
4. Debugging is the particular order in which instructions are performed in an algorithm.

B. Fill in the blanks.

1. ..... is a set of step-by-step instructions to solve a problem.
2. The ..... is a branching conditional statement.
3. ..... means to focus on important information and ignore the rest.
4. ..... are mistakes that are committed while writing an algorithm.
5. After debugging, the algorithm works ..... .

Activity Section

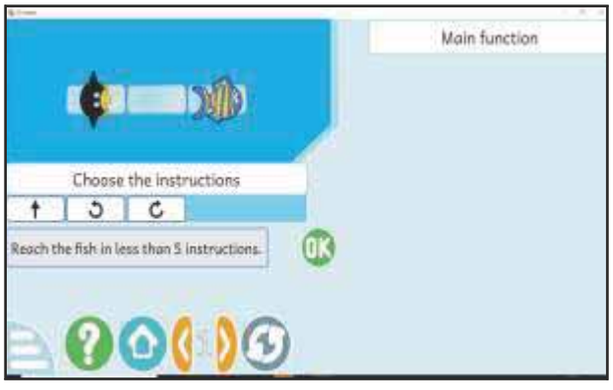
Lab Activity

Open the Educational Suite GCompris [ ].

1. Click on this **icon** [ ].
2. Click on **Programming Maze** [ ].

Skill Formation

This activity aids in the development of spatial intelligence and enhances cognitive skills.



PLAYING METHOD

You can play this game by helping the hungry Tux to find the fish using the instructions like move forward, turn left and turn right.

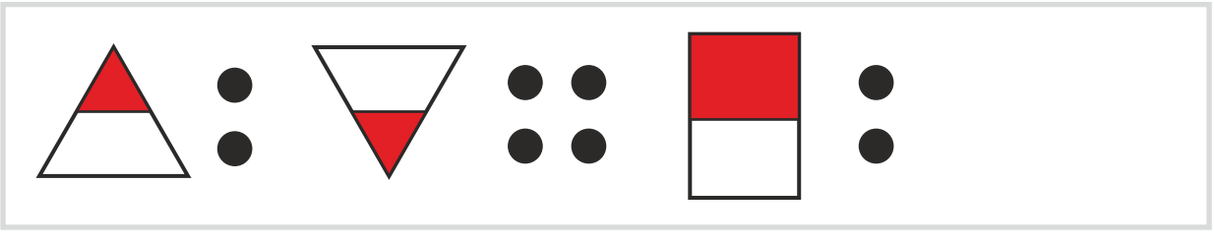
Choose the instructions, arrange them in order and then press **OK** to lead the Tux to his goal.

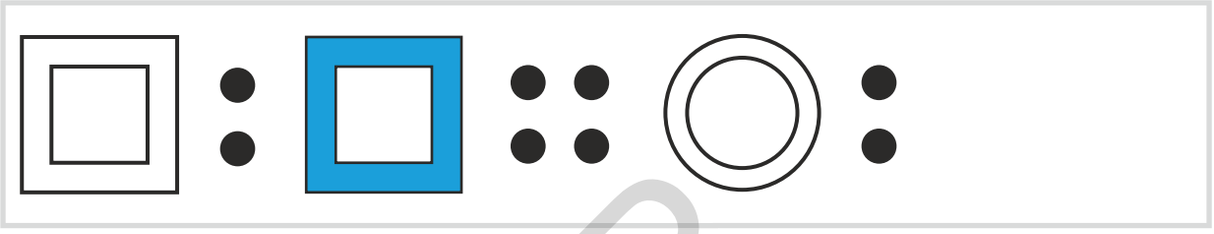
Activity Analogies

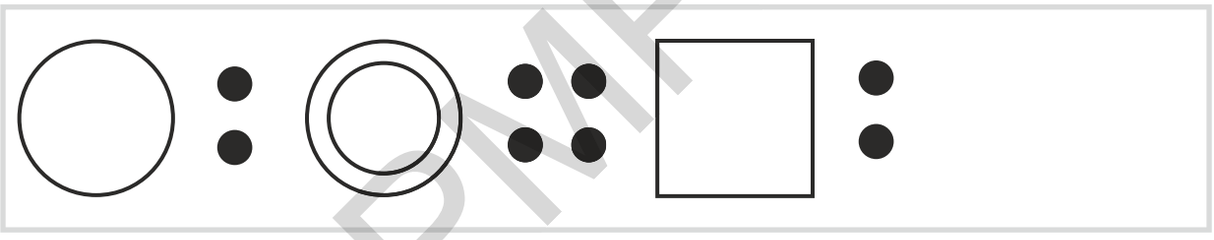
Art Integration

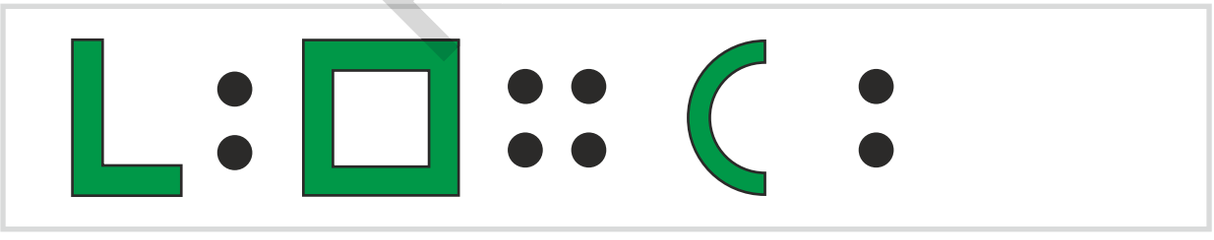
Students will learn to draw different types of shapes. They will be able to identify different types of colors.

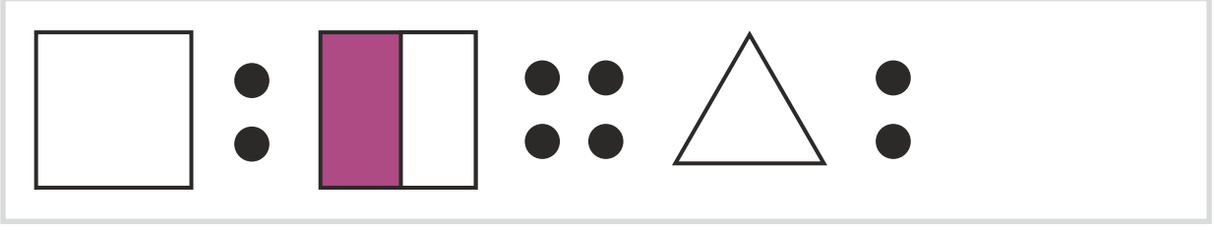
A. Draw and color (whenever required) what should come next.

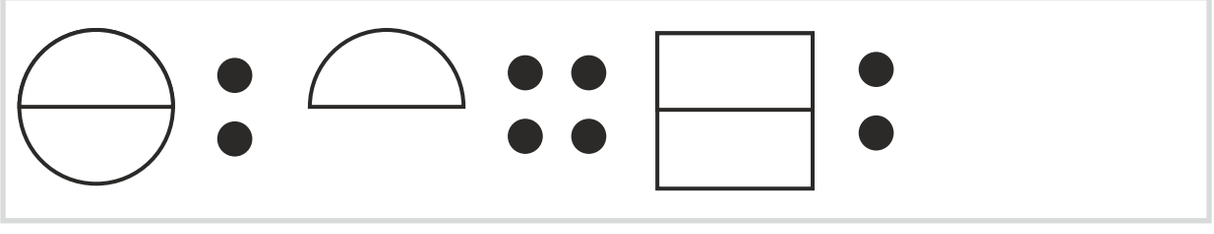
1. 

2. 

3. 

4. 

5. 

6. 

Activity Match

Skill Formation

This activity helps in the development of sorting skill in students.

B. Match the kettle with the right cup.

1. 

2. 

3. 

4. 

5. 

6. 

a. 

b. 

c. 

d. 

e. 

f. 

7 Scratch 3.0

OBJECTIVES

After completing this chapter, you will be able to:

- Understand the meaning and advantages of Scratch.
- Understand components of Scratch 3 window.
- Identify and work with Scratch blocks.
- Create and run a Scratch program.
- Save a Scratch project.

Hi Friends! In your previous class, you learnt a simple, fun-based programming language ScratchJr. In this chapter, you will learn about Scratch, the advance form of ScratchJr.

Introduction

Scratch is a free **visual programming language**, where you move blocks (also called bubbles) into a set order and then configure the blocks to create interactive stories, games, and animations. This language is fairly easy for anyone to learn, regardless of age. It includes graphics and sounds and enables you to quickly see the results of your work.

Started in 2007, Scratch was developed by the **Lifelong Kindergarten Group** at the **MIT** (Massachusetts Institute of Technology) **Media Lab**, led by **Mitchel Resnick**.

Mitchel Resnick

ADVANTAGES OF SCRATCH

Scratch is an easy programming language for many reasons.

- You do not have to remember or type any commands; they are all on the screen, so you just need to drag and drop them.
- Commands or blocks fit together like jigsaw pieces, so there are clear visual hints about how you can combine them.
- The commands are color-coded and categorized, so you can easily find a command when you need it.

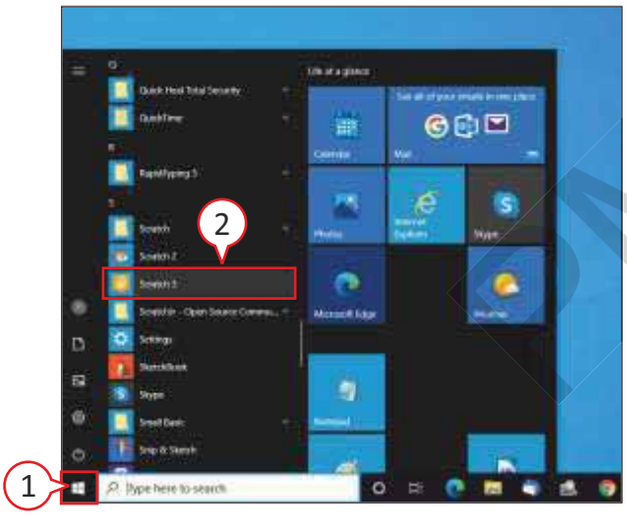
SPRITES

Scratch projects are made up of objects or characters called **sprites**. You can give instructions to a sprite, telling it to move or play music, or interact with other sprites. To tell a sprite what to do, you snap graphic blocks together into stacks called **scripts**. You can also change how a sprite looks by giving it a different costume.

Sprite

Starting Scratch 3

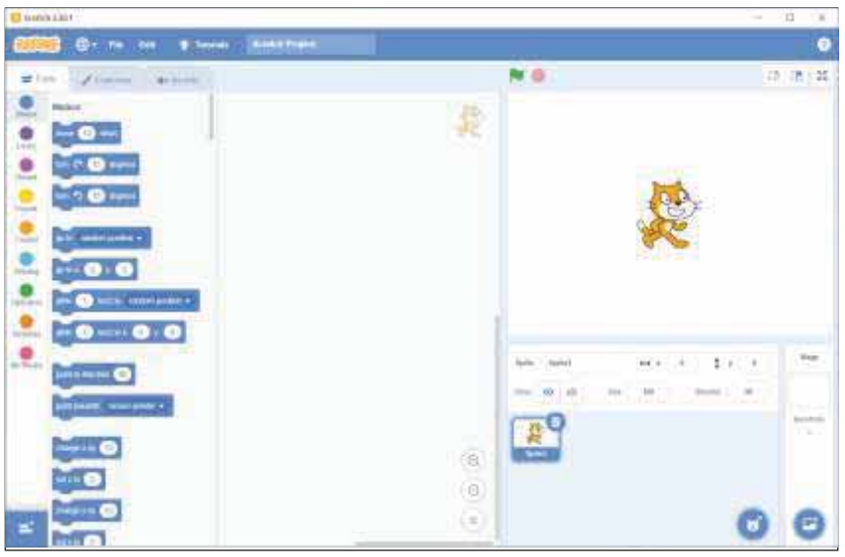
Scratch is a free open source programming software. By default, Scratch is not installed in Windows 10. You have to download it from the Internet and install it on your computer. Once installed, follow these steps to open Scratch in Windows 10.



1. Click on **Start** icon to open Start menu (*or press* ⊞).

   A list of all installed apps appears on the left.

2. Scroll down and click on **Scratch 3**.

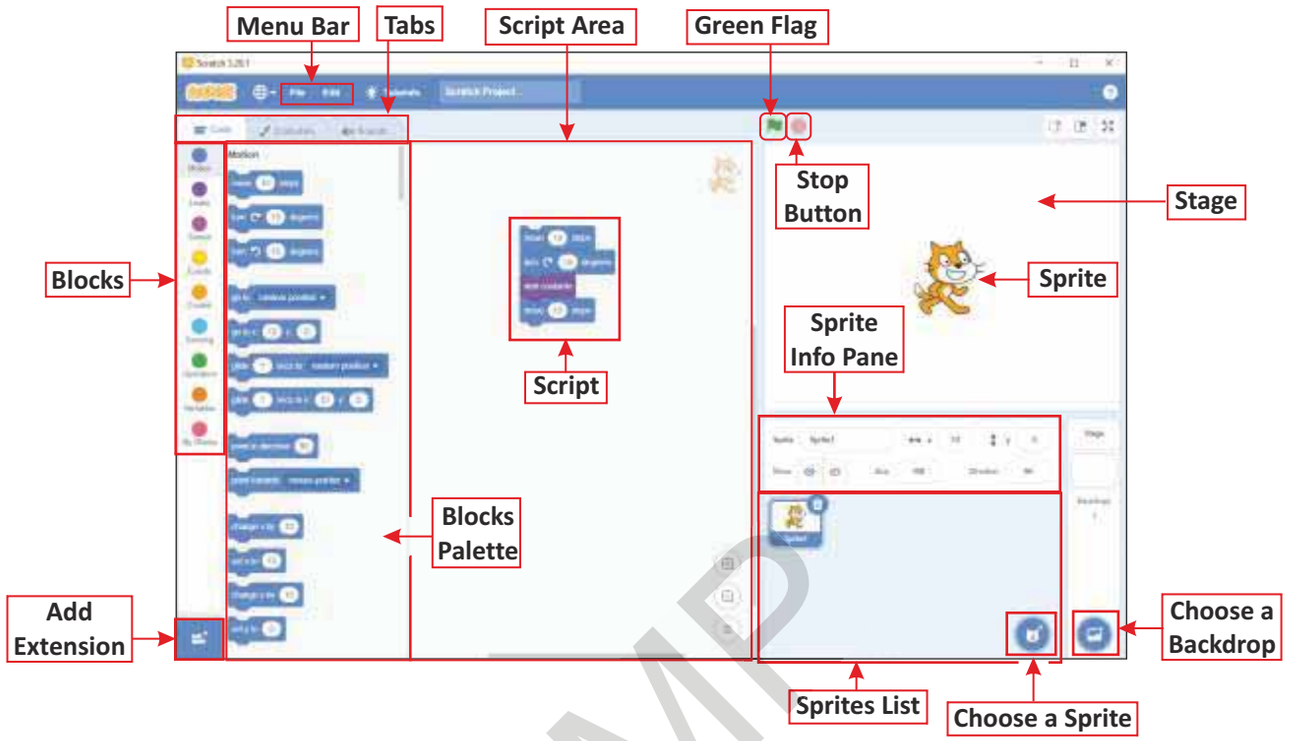


Scratch window appears on the computer screen as shown on the left.

In this chapter, we will work on Scratch 3 version, which was officially released in Jan 2019.

UNDERSTANDING SCRATCH 3 WINDOW

When Scratch starts up, you will see a screen similar to the one shown below. The different areas of the screen have been labeled for you.



Menu Bar: It is used to display drop-down menus that provide common commands to the user, such as New, Save, etc.

Blocks: This area lists nine categories of color-coded blocks.

Blocks Palette: This area shows all the blocks available to you. Blocks are color-coded by category. They can be dragged to Script Area for coding sprite on stage.

Script Area: It is the place where you make your programs in Scratch by assembling blocks there.

Script: Script is also known as **program**. It is a collection of stepwise instructions given to the sprite in the form of stack of blocks.

Sprite Info Pane: In this area, you will find the name of the current sprite together with its x-y position, size and direction. This area also allows you to show or hide the sprite.

Stage: It is the place where you see your stories, games, and animations come to life. Sprites move and interact with one another on the stage.

Tabs: Tabs allow you to see and change the current sprite.

- **Code** tab shows you any script that currently exists. It also helps you develop new scripts pertaining to the current sprite.
- **Costumes** tab allows you to create, edit, or copy the image of the sprite on screen.
- **Sounds** tab displays the sounds of the current sprite.

Green Flag: You can click on the Green Flag to run your main program.

Stop Button: You can click on this button to stop your running program.

Sprite: It is a small character that performs all actions in the Scratch. There are a number of sprites present in the Scratch, but the Scratch Cat is the default sprite.

Choose a Sprite: By using this button, you can choose a new sprite from library, paint it, upload it from a file, or get it from camera.

Choose a Backdrop: By using this button, you can choose a new backdrop of the program from library.

Sprites List: The cat is a sprite, which is like a character or an object in a game. Your project might include many sprites. In the Sprites List, you can see all the sprites that are in your project and click them to switch from one another.

Add Extension: This button lets you access a number of other block types like Pen, or Music blocks.

SCRATCH BLOCKS

The Scratch blocks are organized into color-coded categories.

Motion: These blocks define the movement of sprites.

Looks: These blocks change the appearance and costumes of sprites.

Sound: These blocks control the playback and volume of musical notes and audio files.

Events: These blocks are used to control events and the triggering of scripts.

Control: These blocks are used to control the execution of script based on a predefined event.

Sensing: These blocks let multiple sprites interact with themselves.

Operators: These blocks perform mathematical functions within the project.

Variables: These blocks are used to store data, like name, in a project.

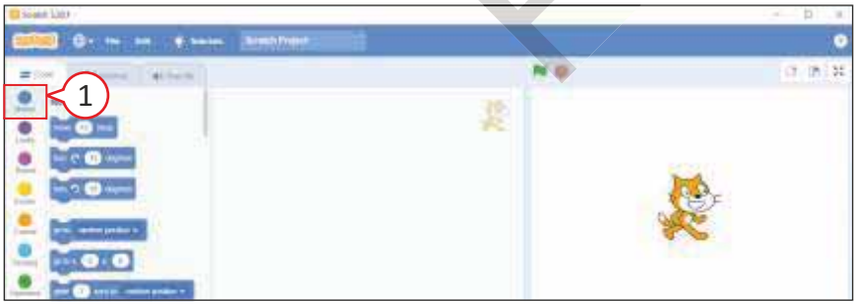
My Blocks: You can create your own blocks, using this option.

Working with Blocks

When you click on any category of blocks, you can view the code blocks belonging to that category. When you click blocks in the Blocks Palette, the sprite moves immediately. Let us move the sprite using **Motion** blocks.

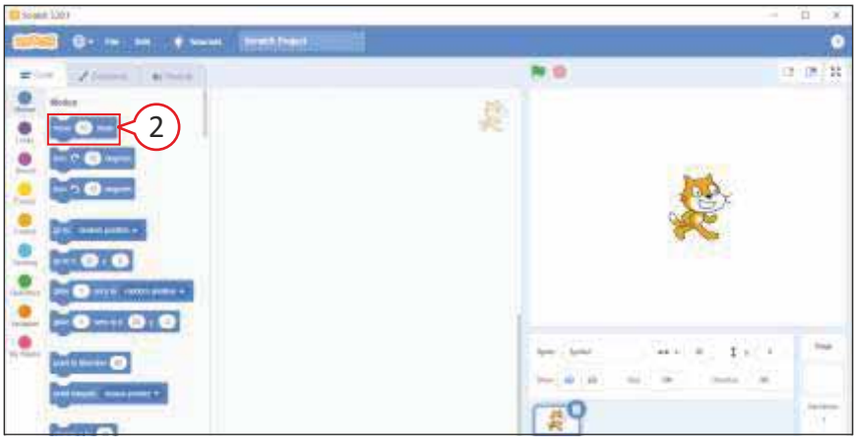
MOTION BLOCKS

These blocks control sprite placement and movement.



1. Click the **Motion** button and look at the various Motion blocks.

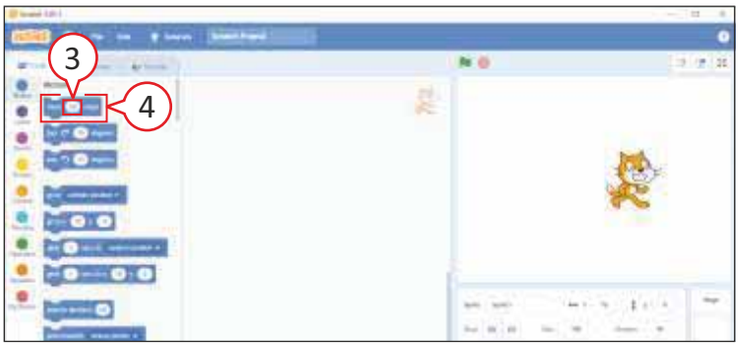
When you first start Scratch, Motion button is selected by default.



2. In the Blocks Palette, click the **move 10 steps** block.

The cat on the stage moves in the direction of its face.

Each time you click the block, the cat moves.



3. Click on the number **10** and change it to **50**.

The number determines how far across the sprite moves on the screen.

4. Click the block and the cat moves according to the specified number.

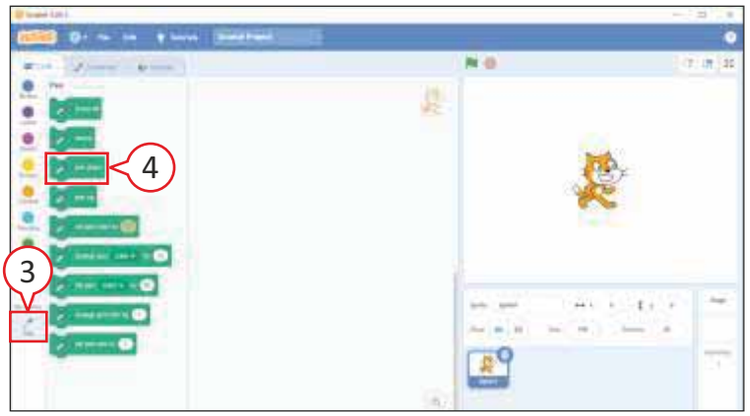
USING PEN EXTENSION

Pen is used to draw shapes using different colors and sizes. By default, Pen is not located in the Blocks category. To use Pen, you have to enable it from **Extensions**.

1. Click on **Add Extension** button from the bottom left corner.

Choose an Extension window appears.

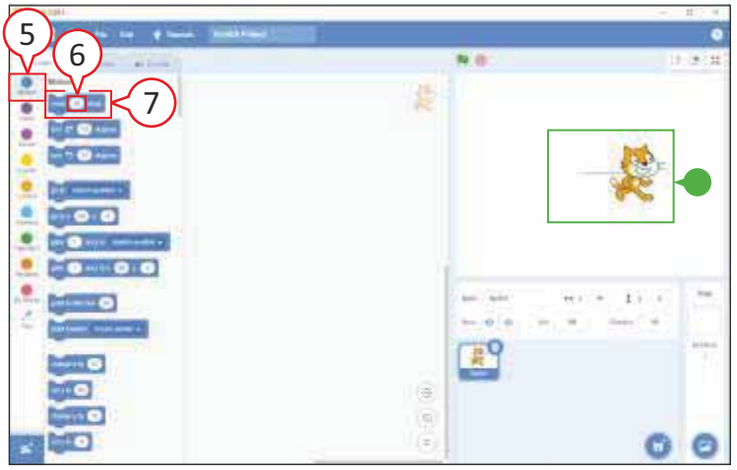
2. Click on **Pen** extension.



Pen extension appears in the Blocks category.

3. Click the **Pen** extension.
4. Click on **pen down** block.

Now, if you click the **Motion** button and click the blocks to move the cat around, it will leave a line behind it, wherever it goes.

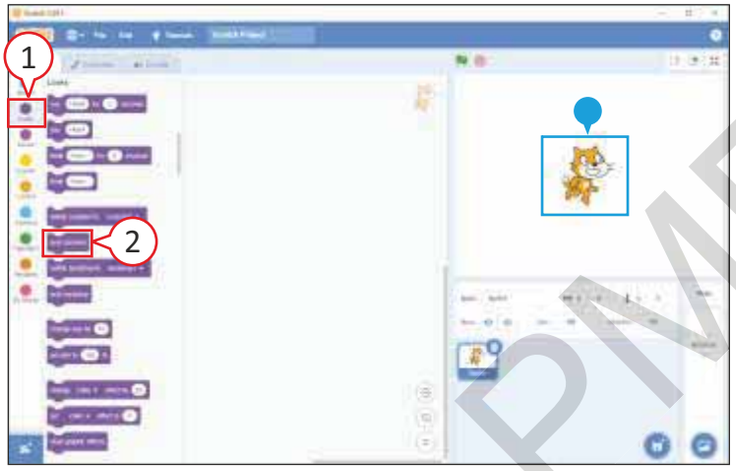


5. Click the **Motion** button.
6. In the Blocks Palette, click the **move 10 steps** block and change the number **10** to **50**.
7. Click the **move 50 steps** block.

- *The cat on the stage moves in the direction of its face and leaves a line behind it.*

LOOKS BLOCKS

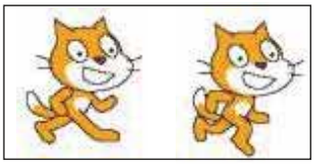
These blocks change the sprite and background appearance.



1. Click the **Looks** button to display the Looks blocks.
2. Click on **next costume** block.

- It will make the cat's legs move as if it is running.

Costumes are just different pictures a sprite has. The cat has two costumes that show its legs in different positions.

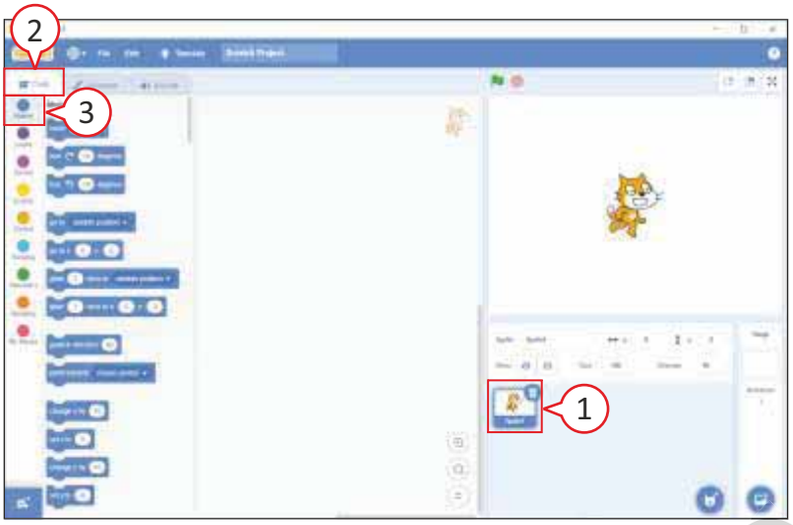


Project: Make the Cat Draw a Circle

CREATING A PROGRAM

When you click blocks in the Blocks Palette, the sprite moves immediately; it only tests what blocks do, but it is not a program.

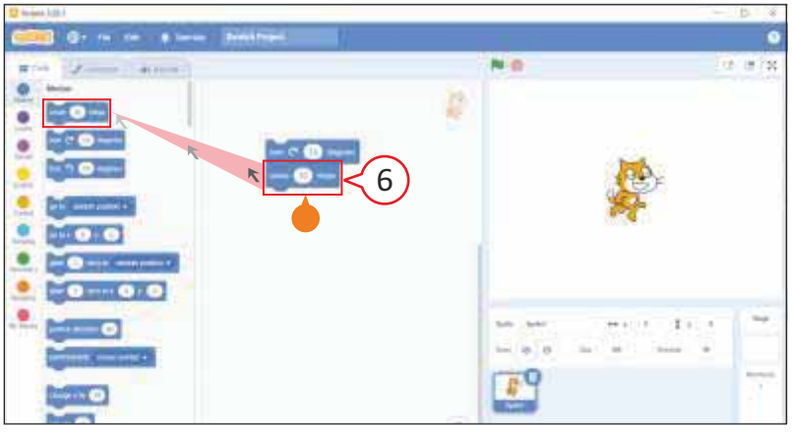
A **program** is a set of repeatable instructions that you can store up to carry out later. In the Script Area, you make your programs in Scratch by dragging the blocks from Blocks Palette and dropping them on top of one another.



1. Click on the cat in the Sprites List.
2. Click the **Code** tab.
3. Click the **Motion** button.

4. Select the **turn clockwise 15 degrees** block.
5. Drag this block from the Blocks Palette into the Script Area using the mouse.

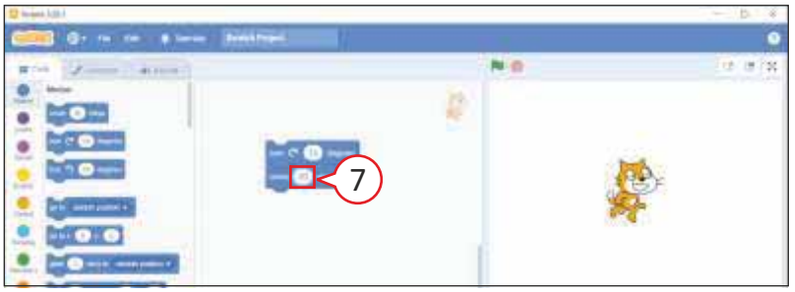
This first block turns the cat downwards.



6. Select the **move 10 steps** block, drag it into the Script Area, and place it under the first block.

- Blocks snap together. These joined blocks are called **script** or **program**.

This second block moves the cat in the direction of its face.



7. Click on the number **10** to select and change it to **20**.

The number determines how far across the screen you want the cat to move.

8. Click on **Add Extension** button.

9. Click on **Pen** extension.

10. Click the **Pen** extension to display the Pen blocks.
11. Select the **pen down** block, drag it into the Script Area, and place it underneath the second block.

This third block leaves a line behind it, when the cat moves.

12. Select the **set pen size to 1** block, drag it into the Script Area, and place it underneath the third block.

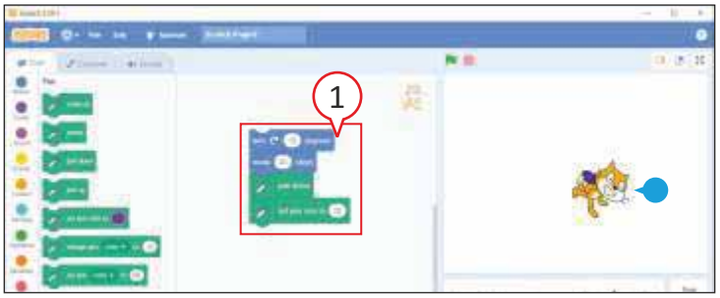
This fourth block changes the thickness of line.

13. Click on the number **1** to select and change it to **20**.

The number determines how thick the size of line will be.

Now, run the script and check its working.

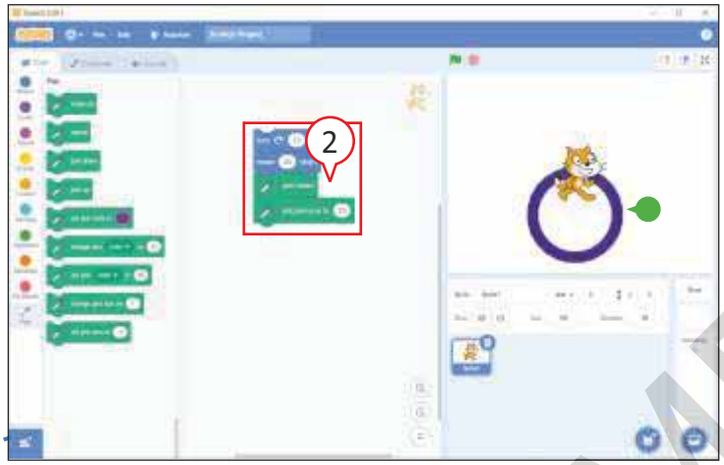
RUNNING THE PROGRAM



1. Click any of the joined-up blocks in Script Area.

- Scratch carries out all the joined-up instructions in order, starting from the top and working its way down the blocks.

In this program, the cat first rotates 15 degrees clockwise, moves 20 steps in the direction of its face, and leaves a line behind it.



2. Keep clicking on the joined-up blocks in Script Area till the sprite (cat) completes its circle.

- On every click, Scratch carries out all the joined-up instructions in order, starting from the top and working its way down the blocks.

Saving a Project

A project includes the sprites and scripts that are used in it. It is a good idea to save your projects, so you can see, reuse or edit them in future. The file extension of Scratch programs is **.sb3**.

1. Click on **File** menu.
2. Click on **Save to your computer**.

The **Save As** dialog box appears.

3. Navigate the location where you want to save the project.
4. Type the name of your project in the **File name** text box.
5. Click on **Save** to save your project.

Do You Know?

To open a saved project, click a file and select **load from your computer** and select file through browsing from Open dialog box.

In a Nutshell

- Scratch is a free visual programming language used to create interactive stories, games, and animations.
- Scratch project is made up of objects called sprites.
- Script Area is a place where user makes programs by assembling blocks.
- Stage is a place where we see our stories, games and animations come to life.
- In Scratch, we have color-coded blocks named Motion, Looks, Sound, Events, Control, Sensing, Operators, Variables and My Blocks.

Exercises

A. Tick [✓] the correct answer.

1. Scratch projects are made up of objects called ..... .
   a. sprites ☐ b. costumes ☐ c. bubbles ☐
2. ..... shows all the blocks available to us for use in programming.
   a. Toolbar ☐ b. Blocks Palette ☐ c. Menu Bar ☐
3. The default sprite present in the Scratch is ..... .
   a. dog ☐ b. cat ☐ c. mouse ☐
4. ..... blocks let multiple sprites interact with themselves.
   a. Operators ☐ b. Sensing ☐ c. Variables ☐
5. ..... are different pictures a sprite has.
   a. Motions ☐ b. Extensions ☐ c. Costumes ☐

B. Write 'T' for True and 'F' for False statements.

1. Blocks menu displays list of ten categories of color-coded blocks. ☐
2. Green flag is used to start the main program. ☐
3. Tabs allow us to see and change the current sprite. ☐
4. To run the program, click outside the joined-up blocks of script. ☐
5. The file extension of Scratch programs is .sbz. ☐

C. Fill in the blanks.

1. You can change how a sprite looks by giving it a different ..... .
2. Script is also known as ..... .
3. ..... is a small character that performs all the actions in Scratch.
4. ..... blocks perform mathematical functions within a project.
5. ..... is used to draw shapes using different colors and sizes.

D. Define the following.

1. Stage: .....

   .....
2. Script Area: .....

   .....
3. Program: .....

   .....

E. Answer the following questions.

1. Write down any two advantages of Scratch.

   .....

   .....
2. What is a sprite? What is its role in Scratch?

   .....

   .....
3. Name the categories of blocks present in Scratch window.

   .....

   .....
4. What is the purpose of Code and Costumes tabs?

   .....

   .....

F. Application-based Question

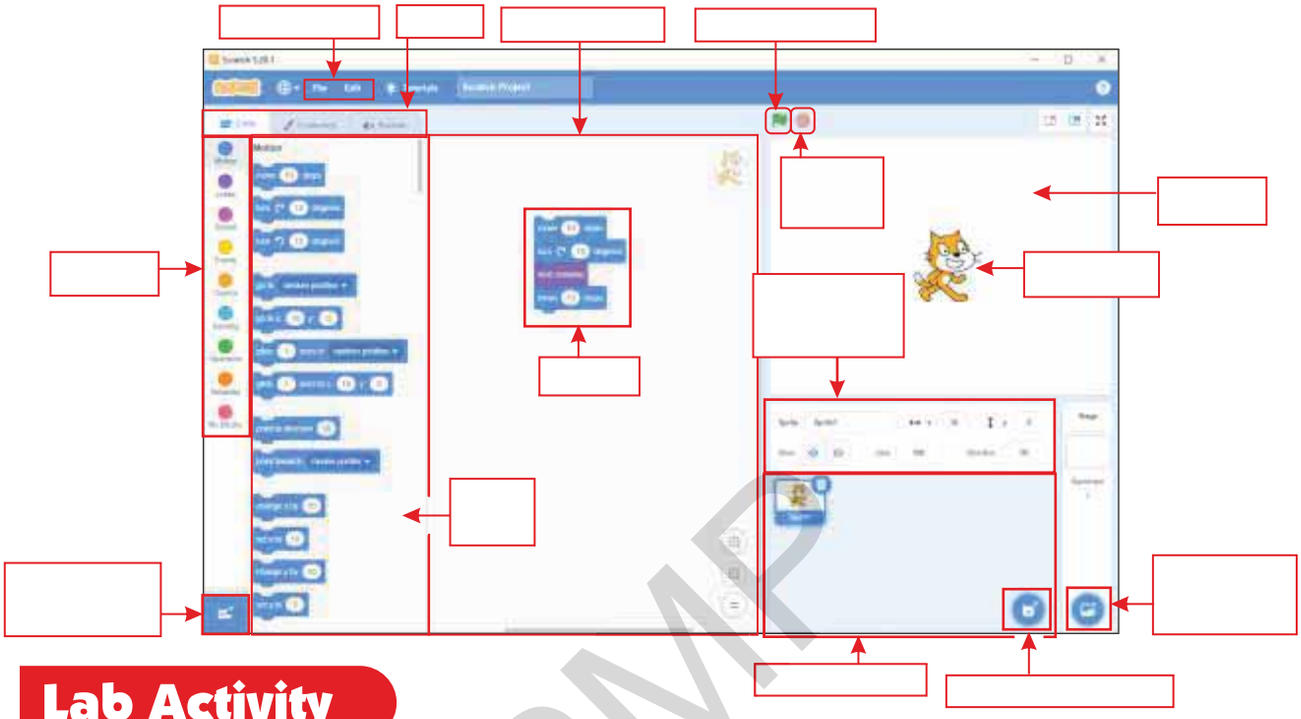
Shikha has made a program in Scratch. She has added Motion blocks and Looks blocks. Now, she wants to run the program. Tell her how she can do it.

.....

Activity Section

Activity Label

Label the following window.



Lab Activity

Make a project by arranging the blocks as shown below and run the program.

Subject Integration

Mathematics

Students would learn to make a square shape using Sratch programming.

Group Discussion

Divide the students into two groups and discuss the topic – 'Scratch is a Fun-based Programming Language'.

Online Link

To learn about making a simple game on Scratch, visit the website:

https://junilearning.com/blog/coding-projects/how-to-make-a-scratch-game-step-by-step/

8 AI vs. Human Intelligence

OBJECTIVES

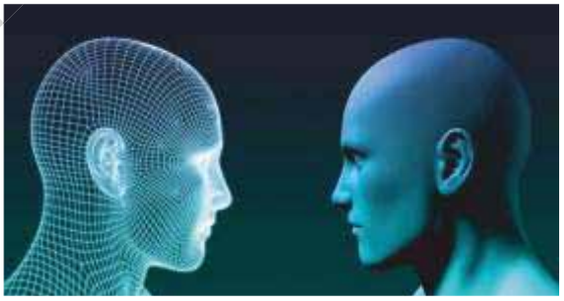
After completing this chapter, you will be able to:

- Understand the meaning and features of human intelligence.
- Differentiate between human intelligence and AI.
- Learn about weak AI and strong AI.
- Understand how to play Quick, Draw!

Friends! AI has become a popular technology in today's world. It aims to cover every field of life. Such a widespread use of AI has in fact started a debate — Artificial Intelligence vs. Human Intelligence.

Artificial Intelligence

Artificial Intelligence (AI) is a way of making intelligent computer programs or robots in a manner similar to how an intelligent human thinks and acts.



Human Intelligence

Humans gain intelligence from past experiences and actions based on different situations and environments.

FEATURES OF HUMAN INTELLIGENCE

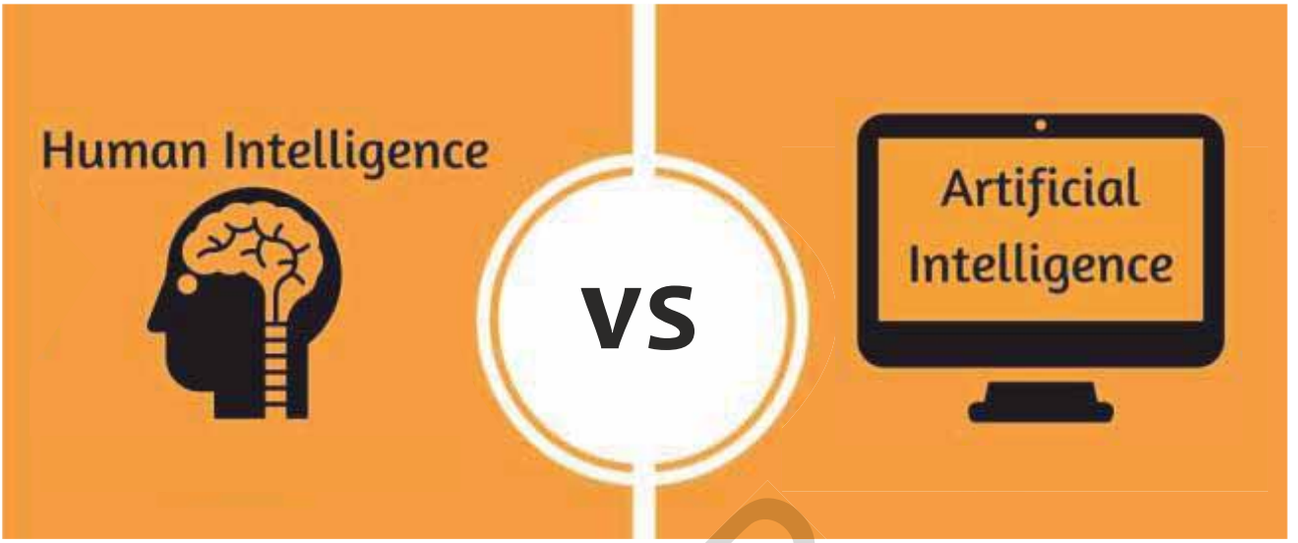
a) **Problem-solving and decision-making:** It is an ability to think, learn and solve a problem by taking a decision to select the best possible choice out of multiple choices.

b) **Reasoning and planning:** Reasoning is the ability to think through various problems and apply strategies to solve them. Planning is the series of action to be taken to achieve a goal.

c) **Learning and adaptability:** It is an ability of continuous learning and adapting as per the situation and surroundings.

A lot of differences exist between **human intelligence** and **Artificial Intelligence** on the basis of nature, decision-making, performance, adaptability, etc.

Some of them are listed below:



COMPARISON	HUMAN INTELLIGENCE	ARTIFICIAL INTELLIGENCE (AI)
Cognitive behaviour	Human intelligence is based upon common sense, judgment and creativity.	AI always mimics human behaviour.
Nature	Human Intelligence is natural.	AI is artificial.
Adaptability	Human Intelligence adapts easily to the change in the environment.	AI takes more time to adjust to unfamiliar changes.
Speed	Human Intelligence cannot beat the speed of AI.	AI machines can solve any complex problem very fast.
Decision-making	Human decision can be biased.	Decision-making capability of AI is unbiased.

Weak AI vs. Strong AI

Artificial Intelligence can be categorized into two types: **Weak AI** and **Strong AI**.

WEAK AI	STRONG AI
1. Machines powered with **weak AI** are designed and trained for a particular task. 2. The virtual assistants like **Google Assistant, Siri** and **Alexa** represent weak AI because they give a programmed response which has been fed by human beings. 3. At present, all AI systems are weak.	1. Machines with **strong AI** have the mind of their own. These machines can think and accomplish complex tasks on their own without human interference. 2. We have seen strong AI in sci-fi movies like **'Her'**, **'The Terminator'**, **'I-Robot'** and **'WALL-E'**. 3. Strong AI is the future of Artificial Intelligence.

Sophia – Humanoid Robot

Sophia is a **social humanoid robot**, created by **Hanson Robotics**. It has a woman-like appearance and has marked the beginning of creating a **strong AI**.

Sophia was activated on **February 14, 2016** and soon became a global star. She has appeared in various TV interviews and public appearances. Her ability to see, imitate human gestures, and facial expressions, and make simple conversation makes her one of a kind.

With so much progress happening in this field, one could imagine what future can bring with the unstoppable journey of Artificial Intelligence.

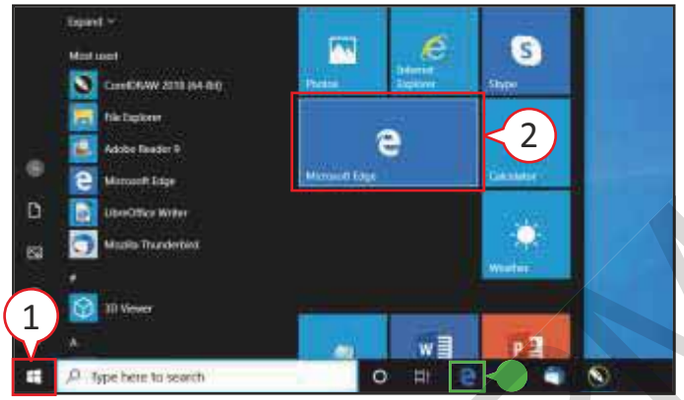
AI Lab

QUICK, DRAW! WITH GOOGLE

Quick, Draw! is a free online game developed by **Google**. This game prompts players to quickly draw six different objects. It gives 20 seconds to the player to draw the prompt. As you start to draw the object, Quick, Draw! starts yelling out words and phrases it thinks you are trying to illustrate.

How to play Quick, Draw!

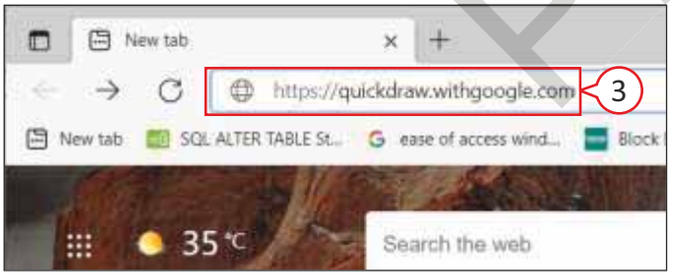
To start this game, you need a computer with Internet connection.



1. Click on **Start** icon to open Start menu (*or press* ⊞).
2. Click on **Microsoft Edge**.

- You can also open Microsoft Edge by clicking on its icon in the taskbar.

Microsoft Edge window appears.



3. Click on address bar and type **https://quickdraw.withgoogle.com**
4. Press **Enter** key from the keyboard.

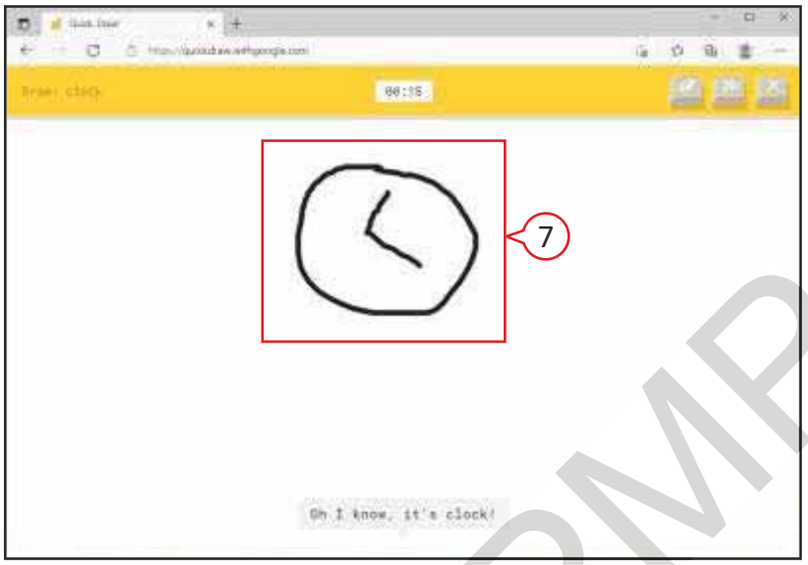
Quick, Draw! page appears.

5. Click on **Let's Draw!** button to start the drawing game.

New screen appears, which prompts you to draw a picture of the object it suggests within 20 seconds.

In this example, it prompts you to draw a clock.

6. Click on **Got It!** .



New screen appears.

7. Draw the picture (clock) with mouse (on desktop) or with finger (on Tablet or smartphone).

As you draw, Quick, Draw! will start speaking out and showing up the guesses about your drawing.

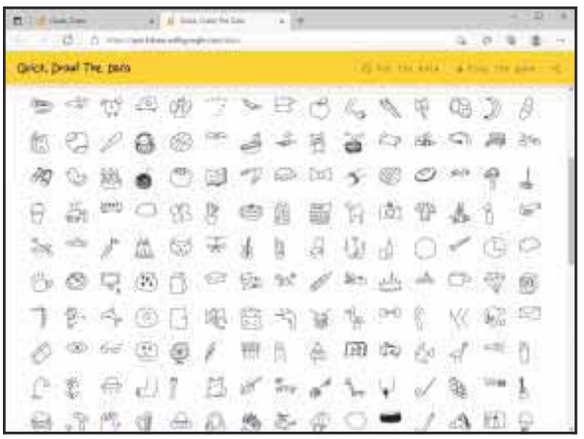
After **20 seconds**, next screen appears and prompts you to draw second picture.

8. Repeat steps **6** and **7** to draw the picture.

Once you have completed six suggested drawings, you can check your result.

In this example, 3 out of 6 pictures are correct, according to Google.

9. Click on **Play Again** button if you want to play more.



Once you draw the pictures, Google **stores** them in its **dataset**. The Quick, Draw! dataset is a collection of millions of drawings, and you can be one of the contributors to the dataset for AI.

Your drawings help developers train new robots or AI-enabled machines.

Skill Formation

- The ultimate goal of Quick, Draw! is to make your drawing skills better and show you how AI recognizes your drawing by yelling out words and phrases it thinks you are trying to illustrate.

In a Nutshell

- Artificial Intelligence is a way of making intelligent computer programs or robots.
- Humans gain intelligence from past experiences and actions based on different situations and environments.
- A lot of differences exist between human intelligence and Artificial Intelligence on the basis of nature, decision-making, performance, etc.
- Artificial Intelligence can be categorized into two types : weak AI and strong AI.
- Quick, Draw! is a free online game developed by Google.

Exercises

A. Tick [✓] the correct answer.

1. Human intelligence is ..... .

   a. artificial ☐ b. simple ☐ c. natural ☐

2. Decision-making capability of AI is ..... .

   a. unbiased ☐ b. biased ☐ c. weak ☐

3. Machines with strong AI can accomplish ..... tasks on their own.

   a. easy ☐ b. complex ☐ c. human ☐

4. Sophia, the social humanoid robot, has a delicate ..... like appearance.

   a. doll ☐ b. woman ☐ c. man ☐

5. The Quick, Draw! dataset is collection of millions of ..... .

   a. drawings ☐ b. songs ☐ c. games ☐

B. Write 'T' for True and 'F' for False statements.

1. Planning is the series of action to be taken to achieve a goal. ☐
2. Artificial Intelligence adapts easily to the change in the environment. ☐
3. At present, all AI systems are weak. ☐
4. Sophia, the humanoid robot, was activated in 2016. ☐
5. Quick, Draw! game prompts players to quickly draw six objects. ☐

C. Fill in the blanks.

1. Artificial Intelligence always ..... human behavior.
2. Human intelligence cannot beat the ..... of Artificial Intelligence.
3. Google Assistant is an example of ..... AI.
4. ..... is a social humanoid robot created by Hanson Robotics.
5. Picture drawn in Quick, Draw! are stored in the ..... of Google.

D. Differentiate between the following.

Weak AI	Strong AI
.....	.....
.....	.....
.....	.....

E. Answer the following questions.

1. Write two features of human intelligence?

   .....

   .....

2. Write any two differences between human intelligence and Artificial Intelligence.

.....

.....

3. What does Quick,Draw! software do as we start drawing an object?

.....

.....

F. Application-based Question

Ravish is a computer scientist. He is creating a robot which would be able to learn continuously and adapt as per the situation. Which feature of intelligence is he using?

.....

Activity Section

Activity Matching

Match the text boxes with the pictures correctly. One has been done for you.

I am based upon common sense, judgment, creativity, etc.

Human Intelligence

My decision-making capability is unbiased.

I am natural and can adapt to a change easily.

I can solve any complex problem very fast.

Artificial Intelligence

Lab Activity

Give a demonstration of Quick, Draw! and familiarize the students with its different tools.

Skill Formation

- This game enhances the visual spatial intelligence of the students.

Group Discussion

Divide the students into two groups and discuss the topic – 'Which intelligence is Better – Artificial Intelligence or Human Intelligence?'.

Worksheet-II

Chapters 5 - 8

A. Tick [✓] the correct answer.

1. ..... is an electronic library that contains lots of information in the form of text, pictures, and sound.

   a. WWW ☐ b. Browser ☐ c. URL ☐

2. ..... means to focus on important information and ignore the rest.

   a. Branching ☐ b. Sequencing ☐ c. Abstraction ☐

3. A collection of web pages is called a ..... .

   a. website ☐ b. link ☐ c. URL ☐

4. ..... are different pictures a sprite has.

   a. Extensions ☐ b. Costumes ☐ c. Motions ☐

B. Write 'T' for True and 'F' for False statements.

1. You can buy or sell products on the Internet. ☐
2. Mistakes found while writing an algorithm are called bugs. ☐
3. Costumes tab shows any script that currently exists. ☐
4. Looks blocks change the sprite and background appearance. ☐

C. Fill in the blanks.

1. ..... is a software used to open a web page or website.
2. After debugging, the algorithm works ..... .
3. ..... blocks perform mathematical functions within a project.
4. ..... is the series of action to achieve a goal.

D. Define the following.

1. Home page: .....

   .....

2. Sequencing: .....

   .....

3. Script: .....

.....

4. Quick, Draw!: .....

.....

E. Answer the following questions.

1. What are the uses of Internet?

.....

.....

2. What is social networking?

.....

.....

.....

3. What do you mean by an algorithm?

.....

.....

.....

4. Write any two advantages of Scratch.

.....

.....

.....

5. What is the use of Pen in Scratch? Where is it located?

.....

.....

6. Write any two features of human intelligence.

.....

.....

.....

.....

Project Work

Project Paint 3D

Create a similar project in Paint 3D.

Project Word

Write an essay on 'My Family' in the space given below.

MY FAMILY

.....

.....

.....

.....

.....

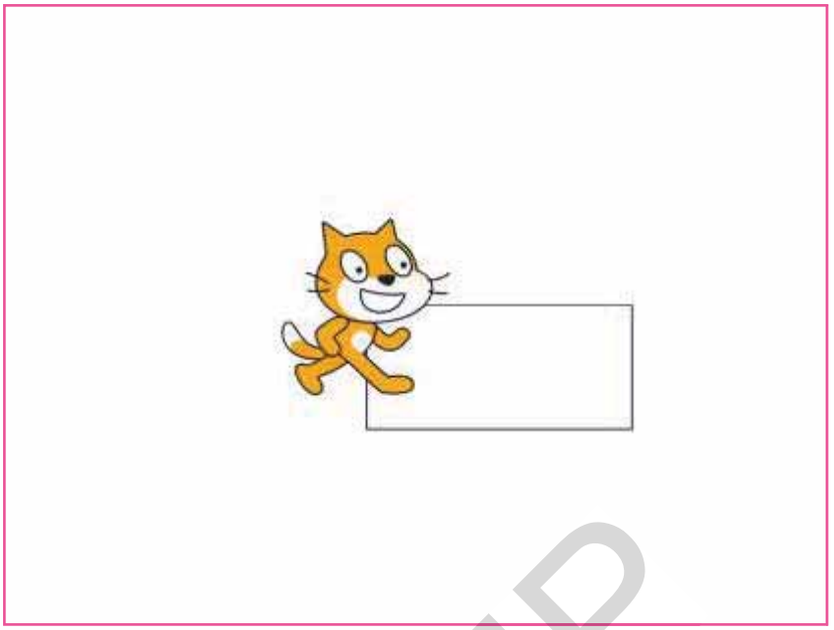
.....

.....

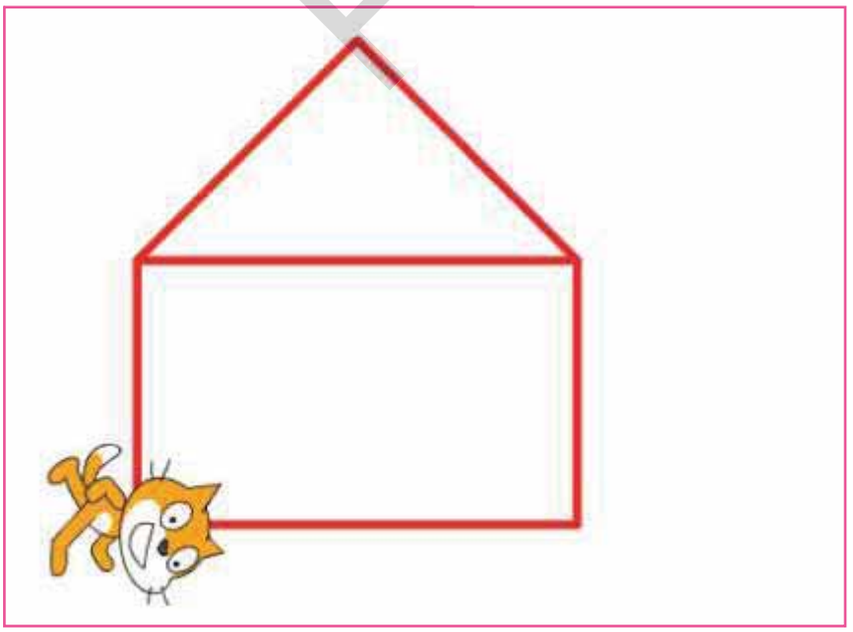
- Now, open Word and type the same lines in a new document.
- The font of title should be 'Comic Sans MS' and font size should be 20.
- The paragraph font should be 'Comic Sans MS' and font size should be 14.
- Now, save the file with the name 'My Family'.
- Close the file and exit from Word.

Project Scratch

A. Make a rectangle in Scratch by arranging the blocks as shown below and run the project.



B. Make a hut in Scratch by arranging the blocks as shown below and run the project.



Note: To fit the hut in the stage, first drag the sprite to the lower left corner.

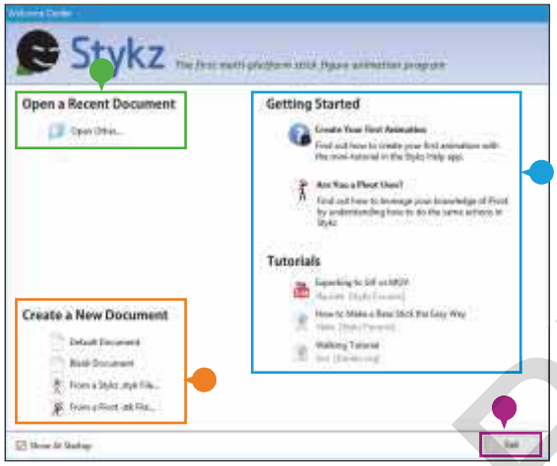
Additional Information

Stykz

Stykz is a **stick-figure** animation program. It is a free software used to create simple animations. You can download Stykz from the Internet.

WELCOME CENTER

When you open Stykz, **Welcome Center** appears showing you different sections to work in Stykz.



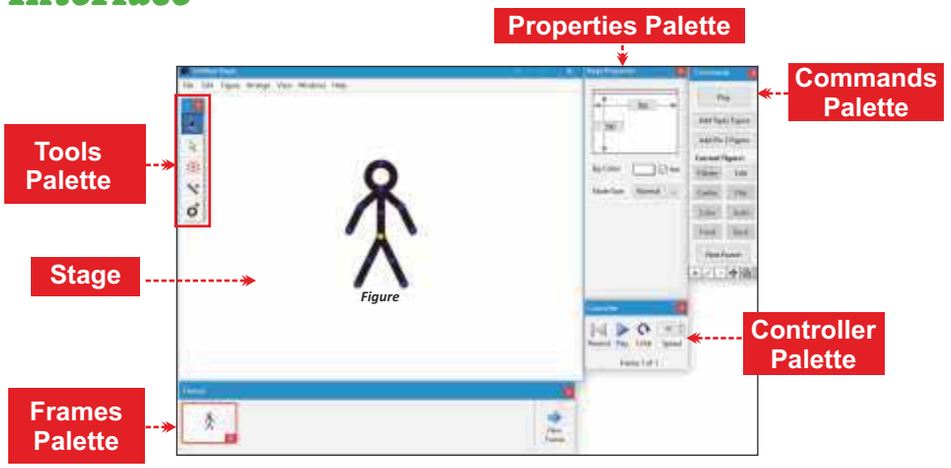
- You can **open** recent and other documents from this section.
- You can create a **new** document from this section.
- You can get **help** and **tutorials** from this section.
- You can click on **Exit** to close the Welcome Center.

CREATING A DOCUMENT

1. In the Welcome Center, click on **Default Document**.

The **Stykz** program appears.

The Stykz Interface

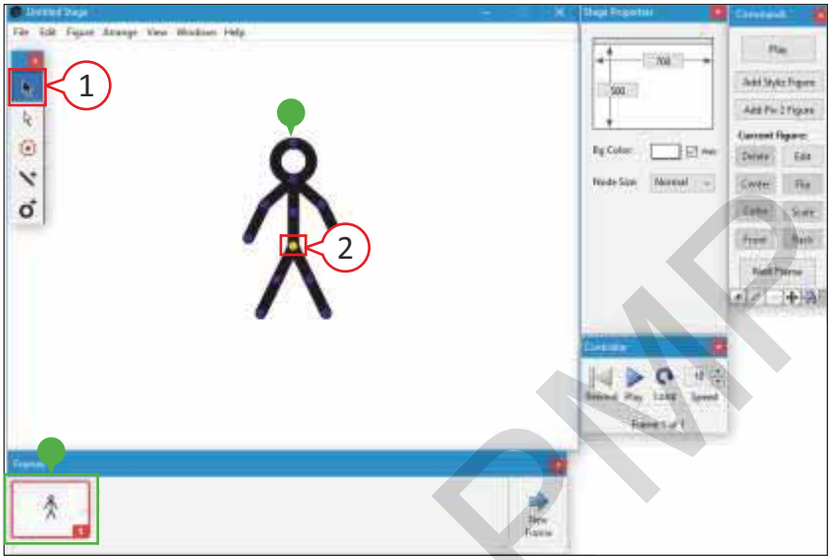


When you create a document, the figure shows **blue** and **yellow** circles. When you select it with **Select** tool, the **blue** circles change to **red** circles.

These red and yellow circles are called **nodes**, and black lines are called **segments**.

Red circles are used to rotate the attached segment and are called **pivot nodes**. Yellow circle is used to drag the figure and is called **drag node**.

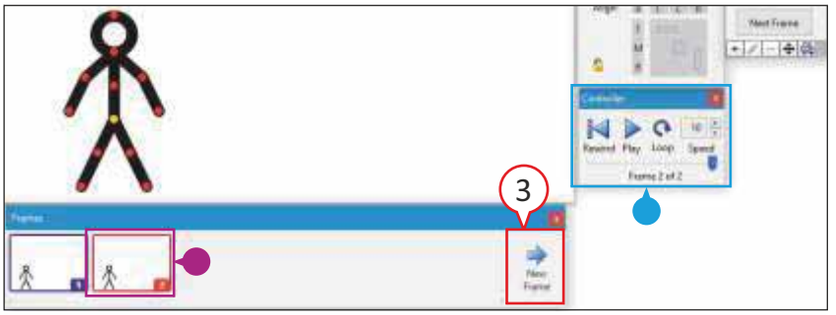
ANIMATING A DOCUMENT



- As we have opened a **Default Document**, the figure on the stage and the first frame in **Frames** palette are created by default.

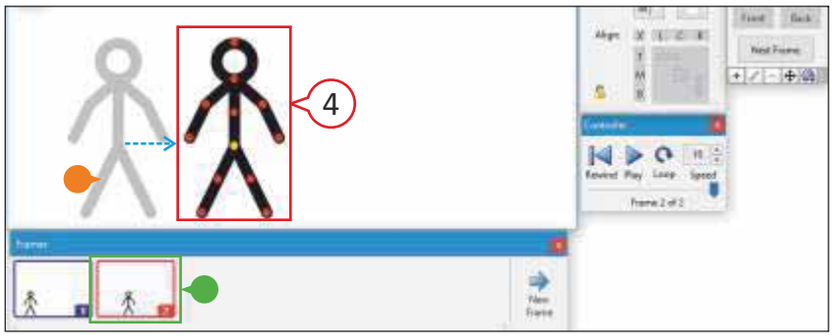
1. Click on **Select** tool.
2. Click on the **drag node** (yellow circle) to drag the figure on the lower left side of stage.

- As you drag the figure, the thumbnail of stage in the current frame also gets updated.



3. Click on **New Frame** button to create a new frame.

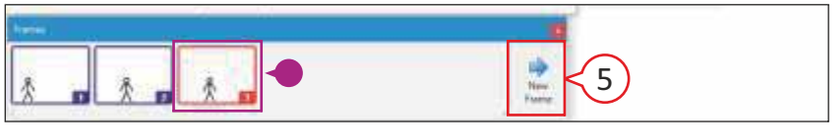
- A new thumbnail appears in Frames Palette with **red border**.
- The **Controller** palette changes to **Frame 2 of 2**. Earlier, it was Frame 1 of 1.



4. Click on **drag node** and drag the figure to the right on the stage.

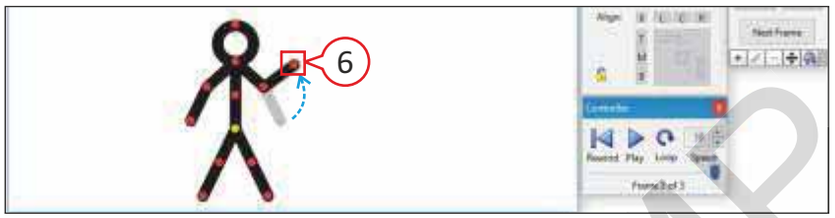
- As you drag, the **gray** figure of previous frame is displayed. This is called **onionskin**.

- *As you drag the figure, the thumbnail of stage in the current frame also gets updated.*



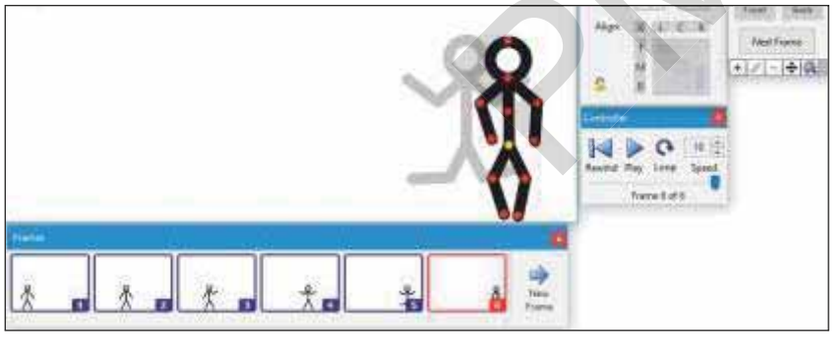
5. Click on **New Frame** button to create a new frame.

- *A new thumbnail appears in Frames palette with **red border**.*



6. Click on pivot node (red circle) and **rotate it upward**.

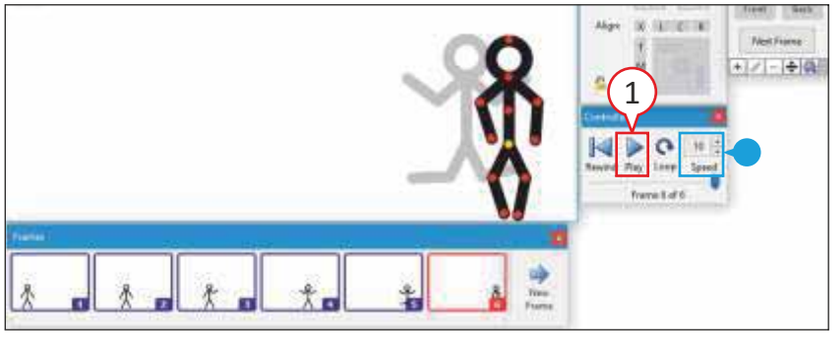
The **gray** figure of previous frame is displayed. It is used to position the figure of current frame relative to the previous frame.



Repeat steps **5** and **6** to add more frames and change the positions of the figure.

PLAYING THE ANIMATION

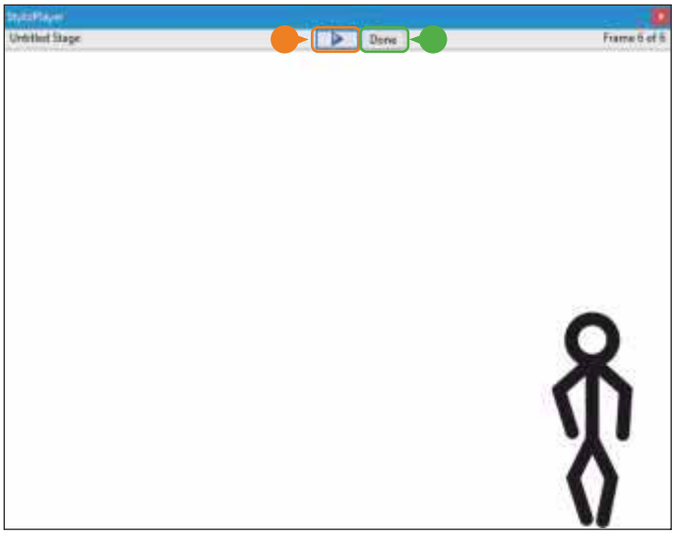
After creating the animation, you can test it by playing it in **StykzPlayer** window.



1. In the **Controller** palette, click on **Play** button.

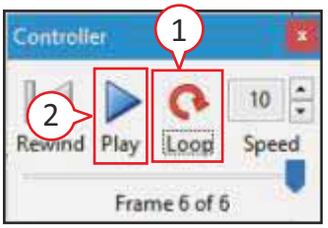
- You can adjust the speed of the animation by using **Speed** option.

Animation plays only once in a new window called **StykzPlayer**.

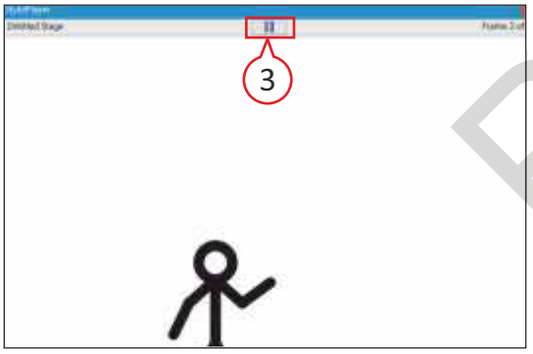


- As animation plays only for once, you can click on **Play** button to play the animation again.
- You can click on **Done** button to close the StykzPlayer window.

Continuously Playing The Animation



1. To play the animation again and again, click on **Loop** button.
2. Click on **Play** button.



The animation starts playing continuously in StykzPlayer window.

3. Click on **Pause** button to stop the animation.

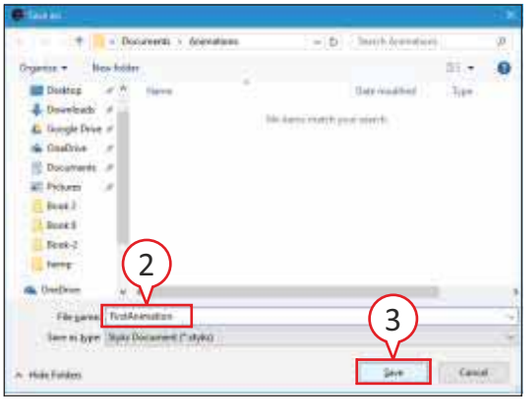
To play again, click on **Play** button.

You can click on **Done** to close the StykzPlayer window.

SAVING THE ANIMATION

You can save the animation to play it again in the future.

1. Click on **File** menu, then click on **Save**. The **Save as** dialog box appears.



2. Type the name of the file.
3. Click on **Save**.

Your animation file gets saved with **.stykz** file extension.

NATIONAL CYBER OLYMPIAD
SAMPLE PAPER — SYLLABUS 2021-22

CLASS 3

SYLLABUS

Section – 1 : Patterns, Analogy and Classification, Coding-Decoding, Mirror Images, Embedded Figures, Alphabet Test, Ranking Test, Grouping of Figures, Figure Matrix, Geometrical Shapes, Days and Dates & Possible Combinations.

Section – 2 : Fundamentals of Computer, General Information about Computers, Storage Devices, Parts of Computer, Uses of Computer, Input and Output Devices, Introduction to Internet, MS-Paint, Introduction to MS-Word (Opening, Closing, Saving and Printing a Word document, Components of MS-Word window, Editing commands like Cut, Copy, Paste, Undo and Redo, Moving in a document using Home and End Keys), Latest Developments in the field of IT.

Section – 3 : Higher Order Thinking Questions - Syllabus as per Section – 2.

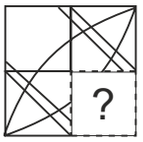
Questions are based on Windows 7 and MS-Office 2010. **Total Questions: 35** **Time: 1 hr.**

PATTERN & MARKING SCHEME			
Section	**(1) Logical Reasoning**	**(2) Computers & IT**	**(3) Achievers Section**
No. of Questions	**5**	**25**	**5**
Marks per Ques.	**1**	**1**	**2**

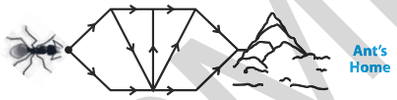
LOGICAL REASONING

1. Which of the following options will complete the pattern in Fig. (X)?

(A) 
(B) 
(C) 
(D) 

Fig. (X) 

2. In how many different ways can the ant return to its home?



(A) 7 (B) 6 (C) 8 (D) 9

3. If 'Star' is called 'Sun', 'Sun' is called 'Moon', 'Moon' is called 'Earth' and 'Earth' is called 'Comet', then man lives on _____.

(A) Star (B) Moon (C) Earth (D) Comet

COMPUTERS AND INFORMATION TECHNOLOGY

4. Select the odd one out regarding shapes found in Paint program.

(A)  (B)  (C)  (D) 

5. Which of the following is the image of an Abacus?

(A)  (B)  (C).  (D) 

6. Select the INCORRECT match of brushes in MS-Paint of Windows 7 with their corresponding names.

(A)  – Marker (B)  – Natural pencil (C).  – Calligraphy brush 1 (D)  – Watercolor brush

7. Select the odd one out.

(A) Opera Mini (B) Bing (C) Safari (D) Internet Explorer

8. Which of the following statements about a computer is NOT correct?

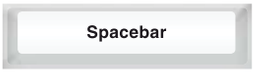
(A) You can watch movies on it. (B) You can solve your sums on it.
(C) You can play games on it. (D) You can cook food with it.

9. The key that erases characters towards the left is _____.

(A) 

(B) 

(C) 

(D) 

10. Find the odd term out.

(A) Keyboard (B) Mouse (C) Monitor (D) Joystick

11. The control unit of the computer controls the _____.

(A) Working of the computer keyboard (B) Flow of electricity within the computer

(C) Flow of data in the computer (D) Performance of all arithmetic and logical operations

12. MS-Paint is a Windows program that is used for _____.

(A) Calculations (B) Writing letters (C) Drawing purposes (D) Preparing presentations

13. Which of the following is NOT an example of search engine?

(A) Google (B) facebook (C) bing (D) YAHOO!

ACHIEVERS SECTION

14. Alia wants to create a shortcut for MS-Word 2010, so that she can quickly access it. But she does not know the correct sequence of steps required to follow to create a desktop shortcut. Help her by rearranging the given steps in the CORRECT order.

(A) 4 → 1 → 2 → 6 → 5 → 7 → 3

(B) 1 → 2 → 4 → 7 → 3 → 6 → 5

(C) 4 → 3 → 2 → 7 → 1 → 5 → 6

(D) 6 → 1 → 5 → 7 → 2 → 4 → 3

1. Select/click All Programs
2. Click Microsoft Office folder
3. Click Desktop (create shortcut) option
4. Click on Start button
5. Right click
6. Go to Microsoft Word 2010
7. Select 'Send to' from the pop-up menu.

15. Identify the following.

– It is a device that converts textual data into spoken sentences.

– It is used to read the text information to blind persons.

– It translates the entered text into spoken words.

(A)  (B)  (C)  (D) 

SAMPLE ANSWER SHEET

1. Name: If your name is SAURAV GUPTA. then you should write as follows:

S	A	U	R	A	V		G	U	P	T	A													

2. Father's Name: If your father's name is DINESH GUPTA then you should write as follows:

D	I	N	E	S	H		G	U	P	T	A													

SCHOOL CODE

M	H	O	5	4	7
A	A	●	0	0	0
B	B	1	1	1	1
C	C	2	2	2	2
D	D	3	3	3	3
E	E	4	4	●	4
F	F	5	●	5	5
G	G	6	6	6	6
●	H	7	7	7	●
I	I	8	8	8	8
J	J	9	9	9	9
K	K				
L	L				
●	M				
N	N				
O	O				
P	P				
Q	Q				
R	R				
S	S				
T	T				
U	U				
V	V				
W	W				
X	X				
Y	Y				
A	Z				

← Darken the circle

3. SCHOOL CODE
Write your school code i.e. if your school code is MH0547 darken as follows:

4. CLASS
If you are in Class 10 then you should darken as follows:

5. ROLL NO.
If your roll no. is 587, then you should write and darken the circles as follows:

CLASS		ROLL NO.		
1	0	5	8	7
0	●	0	0	0
●	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	●	5	5
6	6	6	6	6
7	7	7	7	●
8	8	8	●	8
9	9	9	9	9

Darken the circle →

6. GENDER
If you are a boy then darken **Male** circle

GENDER	
MALE ●	FEMALE ○

CORRECT way to darken the circle

WRONG way to darken the circle

7. If your choice for Answer 1 is C, then you should darken the circle as follows: 1. Ⓐ Ⓑ ● Ⓓ

MARK YOUR ANSWERS WITH HB PENCIL/BALL POINT PEN (BLUE/BLACK)

National Cyber Olympiad

1. Ⓐ Ⓑ Ⓒ Ⓓ	**4.** Ⓐ Ⓑ Ⓒ Ⓓ	**7.** Ⓐ Ⓑ Ⓒ Ⓓ	**10.** Ⓐ Ⓑ Ⓒ Ⓓ	**13.** Ⓐ Ⓑ Ⓒ Ⓓ
2. Ⓐ Ⓑ Ⓒ Ⓓ	**5.** Ⓐ Ⓑ Ⓒ Ⓓ	**8.** Ⓐ Ⓑ Ⓒ Ⓓ	**11.** Ⓐ Ⓑ Ⓒ Ⓓ	**14.** Ⓐ Ⓑ Ⓒ Ⓓ
3. Ⓐ Ⓑ Ⓒ Ⓓ	**6.** Ⓐ Ⓑ Ⓒ Ⓓ	**9.** Ⓐ Ⓑ Ⓒ Ⓓ	**12.** Ⓐ Ⓑ Ⓒ Ⓓ	**15.** Ⓐ Ⓑ Ⓒ Ⓓ

ANSWERS

1. (C) 2. (A) 3. (D) 4. (D) 5. (B) 6. (C) 7. (B) 8. (D) 9. (A) 10. (C) 11. (C) 12. (C)
13. (B) 14. (A) 15. (A)