## ⊹ Concept of Network:

"The term "network" refers to a group of entities (objects, entity, people,etc.) which are connected to one another. A network, therefore, allows material or immaterial elements to be circulated among all of these entities, based on well- defined rules"

 "A computer network is a group of computers and devices interconnected to each other allowing the computers to communicate with each other andshare resources and information".
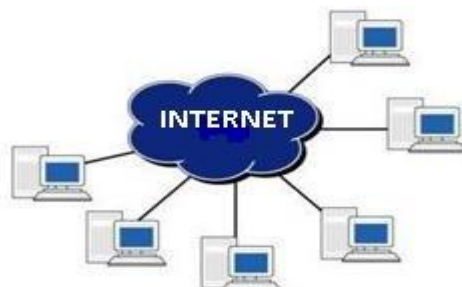
⊹ INTERNET

Internet is a global network that connects billions of computers across the world with each other and to the World Wide Web. It uses standard internet protocol suite (TCP/IP) to connect billions of computer users worldwide. It is set up by using cables such as optical fibers and other wireless and networking technologies. At present, internet is the fastest mean of sending or exchanging information and data between computers across the world.

- Internet is called the network of networks.
- The Internet is essentially a global network of computing resources.
- Connects thousands of computer network all over the world.
- It is a network of networks sharing a common mechanism for addressing computers, and a common set of communication protocols.
- It allows exchange of information between two or more computers on a network.
- Each computer in Internet is called a host, is independent.
- The Internet is a huge ocean of information of resources and services such as inter-linked hypertext documents of the World Wide Web (WWW), online banking, file transfer and sharing, online gaming, online education, books,movies, sports and email etc.
- Developed by ARPANET (Advance Research Project Agency Network) in1968 around.
- Equipment required for using Internet
    - OS
    - Web browser
    - Internet service provider (ISP)
    - Telephone line
    - Modem

🞥 History and Evolution of the Internet

The Internet completely revolutionized communication and technology across the Globe. Internet was discovered through a combined effort of multiple researchers and programmers.
Given below are a few important points which played an extremely important role in the development of the Internet:

- The internet started with development of ARPANET system of the Advanced Research Projects Agency (ARPA) of the Department of Defense, U.S.

- ARPANET was the first WAN and had only four sites in 1969.

- Internet evolved from basic ideas of ARPANET for interconnecting computers.

- Commercializing and making Internet usage convenient for the general public started in the 1970s

- The development of Transmission Control Protocol (TCP) enabled different machines and networks across the world to assemble data packets.

- In the 1980s that the TCP/IP approach was adapted by researchers and technologists.

- In 1993, the web browser was introduced.

- The late 1990s was the time when thousands of Internet Service Providers has taken up the market and people started using Internet widely.

- Internet now is widely used across the globe.

🞥 Application of Internet:

1. **Email:** E-mail, also known as electronic mail, is the most widely used and successful of Internet applications. Whether judged by volume, popularity, or impact, e-mail has been and continues to be the principle Internet application. The volume of e-mail continues to increase because there are more users, and because users now can attach documents of various types to e-mail messages. Email has become an important part of personal communications for hundreds of millions of people, many of whom have replaced it for letters or telephone calls. In business, e-mail has become an important advertising medium, particularly in instances where the demand for products and services is time sensitive.

2. **Web Browsing:** The web browsing is another application of major importance. Web browser was developed in a highly commercialized environment. It mainly deals with public prospective. Browsers help the user to connect to multiple commercial and non-commercial websites for getting information as well as shopping and other commercial purposes. The examples of web browsers are Internet Explorer, Google Chrome, Mozilla Firefox, etc.

3. **Peer-to-peer:** Peer-to-peer networking is based on sharing of resources, such as hard drives, files, etc. Each computer in this network serves as both client and server as and when needed. Each computer has its own capabilities and responsibilities.

4. **Search engine**: It can be used to search anything and everything. Most popular search engines are Google and yahoo.

5. **Shopping:**
   Shopping has become easier with the advent of internet. You can buy or sell online.

6. **Communication:**
   This is a major role of the internet. It helps people to communicate either with the use of social networking websites or through e mails. Even chatting is a major use of the internet.

7. **Job search:**
   Nowadays, many people search for their jobs online as it is quicker and there is a larger variety of job vacancies present.

8. **Hobbies:**
   Those who are having certain hobbies can try to improve on it by reading up on many aspects of their hobby.

9. **Research:**
   Research papers are present online which helps in the researcher doing a literature review.

10. **Studying:**
    Now right from kinder garden children are exposed to internet and computers. They find many useful things to learn on the internet (though with supervision). Up to doctorate level education, people rely on internet for their education. Online educational books have even reduced the need for a library.

How Internet Works?

The internet works with the help of clients and servers. A device such as a laptop, which is connected to the internet is called a client, not a server as it is not directly connected to the internet. However, it is indirectly connected to the internet through an Internet Service Provider (ISP) and is identified by an IP address, which is a string of numbers. Just like you have an address for your home that uniquely identifies your home, an IP address acts as the shipping address of your device. The IP address is provided by your ISP, and you can see what IP address your ISP has given to your system.

A server is a large computer that stores websites. It also has an IP address. A place where a large number of servers are stored is called a data center. The server accepts requests send by the client through a browser over a network (internet) and responds accordingly.

To access the internet we need a domain name, which represents an IP address number, i.e., each IP address has been assigned a domain name. For example, youtube.com, facebook.com, paypal.com are used to represent the IP addresses. Domain names are created as it is difficult for a person to remember a long string of numbers. However, internet does not understand the domain name, it understands the IP address, so when you enter the

domain name in the browser search bar, the internet has to get the IP addresses of this domain name from a huge phone book, which is known as DNS (Domain Name Server).

For example, if you have a person's name, you can find his phone number in a phone book by searching his name. The internet uses the DNS server in the same way to find the IP address of the domain name. DNS servers are managed by ISPs or similar organizations.

When you turn on your computer and type a domain name in the browser search bar, your browser sends a request to the DNS server to get the corresponding IP address. After getting the IP address, the browser forwards the request to the respective server.

Once the server gets the request to provide information about a particular website, the data starts flowing. The data is transferred through the optical fiber cables in digital format or in the form of light pulses. As the servers are placed at distant places, the data may have to travel thousands of miles through optical fiber cable to reach your computer.

The optical fiber is connected to a router, which converts the light signals into electrical signals. These electrical signals are transmitted to your laptop using an Ethernet cable. Thus, you receive the desired information through the internet, which is actually a cable that connects you with the server.

Furthermore, if you are using wireless internet using wifi or mobile data, the signals from the optical cable are first sent to a cell tower and from where it reaches to your cell phone in the form of electromagnetic waves.

The internet is managed by ICANN (Internet Corporation for Assigned Names and Numbers) located in the USA. It manages IP addresses assignment, domain name registration, etc.

The data transfer is very fast on the internet. The moment you press enter you get the information from a server located thousands of miles away from you. The reason for this speed is that the data is sent in the binary form (0, 1), and these zeros and ones are divided into small pieces called packets, which can be sent at high speed.

🔸 Advantages Of Internet (Benefits):

- **Information, knowledge, and learning**

The Internet contains an endless supply of knowledge and information that allows you to learn about almost any topic or question you may have.

Using a search engine like Google, you can ask virtually any question and find a web page with an answer to that question.

There are also millions of videos on sites like YouTube that help explain various topics and even online courses that can be taken to help teach you about many different subjects.

- **Connectivity, communication, and sharing**

In the past, it would take days and sometimes even months to receive a letter from someone else.

Today, with the Internet, you can send an e-mail to anyone in the world and often have it delivered in less than a minute.

Other forms of communication, such as chat and VOIP, also allow you to have instant communication with anyone in the world.

Online forums are also places where people who share common interests can connect with each other and talk about what they enjoy or ask other experts in the field questions.

- **Address, mapping, and contact information**

With the help of GPS technology, the Internet can help map and direct you to almost every place in the world.

You can quickly route to your location or find businesses in your area that may sell or provide you with a service you need.

Today's search engines are also smart enough to know your location and help give you the most relevant searches for your area.

For example, if you need a plumber and search for plumber, you will be given local plumbers in your area.

- **Banking, bills, and shopping**

The Internet gives you access to your bank account to view your balance, make transactions, and send money. Also, many services enable you to view and pay your bills electronically.

Online shopping is another huge advantage of the Internet, giving anyone with Internet access the ability to find products that interest them and buy them without having to visit a store.

The Internet gives everyone easy access to compare prices between companies and even see what others think about a product through online reviews to help make better purchasing decisions.

- **Selling and making money**

If you are a business or want to sell anything, the Internet is a perfect place to sell most goods.

Because anyone in the world with Internet access can find your website, you have access to more people than you ever could with a local retail store.

The Internet is always on and always available, which means you have the potential of selling goods every day at all times.

The Internet also gives all businesses the ability to advertise their product or service to everyone in the world or specify an exact demographic they want to reach.

There are other ways someone can make money online by performing other online services.

- **Collaboration, work from home, and access to a global workforce**

The Internet is the perfect place to work with other people from around the world. There are dozens of online services that allow you to work with other people and, with the ability to have instant communication; it can even make producing new products and services faster.

An Internet connection provides many people with the ability to work from home or have a virtual office. Today, many businesses allow their employees to work from home using their computers and Internet connection. Working from home can help save people money by not having to pay for child care and save them money and time by eliminating the daily commute to and from work every day.

- **Donations and funding**

With access to a much wider audience, anyone with an Internet connection can quickly make a donation to their favourite charity or help fund projects and ideas that interest them.

Also, those looking for charity can find many online services that help make it easier to help donate or support their causes.

- **Entertainment**

The Internet gives everyone access to an endless supply of entertainment, with access to watch videos, watch movies, listen to music, and even play games online.

- **Internet of Things**

The Internet helps make devices in your home connected and smarter by giving them access to the Internet. For example, the Nest thermostat can be connected to the Internet to help control the heating and cooling in your home. Also, once these devices are connected, they can be controlled remotely using your computer or smart phone. By connecting IOT (Internet of Things) devices to your home, it can become smarter and more efficient and help save energy, money, and time.

- **Cloud computing and cloud storage**

The Internet connects your computers and Internet-enabled devices to cloud services, like cloud computing and cloud storage. With cloud computing, a device can have access to more powerful computers and even supercomputers to perform complex tasks while you or your business works on other tasks.

Cloud storage synchronizes data across any of your Internet-connected devices, so you have access your files from anywhere. It makes backing up information easier and safer — your data is securely stored in a professionally-maintained server. So, if you are using a cloud storage backup service and your home or office burned down, you would not lose all your valuable data

- **Dis-Advantages of Internet (limitations):**

- **Theft of personal information** such as name, address, credit card number etc.
- **Virus threats** nothing but a program which disrupts the normal functioning of your system.
- **Spamming** refers to receiving unwanted e-mails in bulk, which provide no purpose and needlessly obstruct the entire system.

- **Pornography** This is perhaps the biggest threat related to children's healthy mental life. A very serious issue concerning the Internet.
- **Bullying, trolls, stalkers, and crime** Anyone who has spent time on the Internet has encountered trolls or abusive people. Another issue that has increased over the years is cyber bullying.
- **Addiction, time waster, and causes distractions** Surfing and playing games on the Internet can quickly become very addictive. Doing so can lead to spending a lot of frivolous time on the Internet, instead of doing something productive. On this same note, the Internet can hamper workplace productivity as well.
- **Never being able to disconnect from work** The Internet is great for giving its users the ability to work from anywhere. However, you may be expected to be available to work at any time of the day, even if you had not previously agreed to be available. For example, you may be at home and get a notification that you have received an important work-related e-mail and then end up working on the content of that e-mail without getting paid.
- **Identity theft, hacking, viruses, and cheating** With access to billions of computers, computer hackers and malicious users can hack accounts and steal personal information that could be used for identity theft. The Internet also connects all computers to each other, so hackers can scan millions of computers and quickly identify what computers are vulnerable to attack.
- **Spam and advertising** It's great that the Internet can facilitate reaching a much wider audience than traditional advertising methods (e.g., newspaper, TV, and radio). However, because digital advertising can be sent on a massive scale, you might see more spam in your inbox than junk mail in real life.
- **Depression, loneliness, and social isolation** Social networking sites can also lead to depression as many people tend to compare their lives with others. The Internet and online games facilitate communication with others. Although you may find new connections around the world, you may also find yourself disconnecting from those in your real life
- **Health issues and obesity** As with watching TV, spending too much time on the computer surfing the Internet or playing games can also lead to obesity and an unhealthy lifestyle.
- **Buying things that you don't need** The Internet reduces the barriers for consumers to make purchases, so users may find themselves purchasing products without putting much thought into whether they should. Also, for some people, buying items on the Internet can become so addictive that it causes serious debt.
- **Though, internet can also create havoc, destruction and its misuse can be very fatal, the *advantages* of it outweigh its *disadvantages*.**
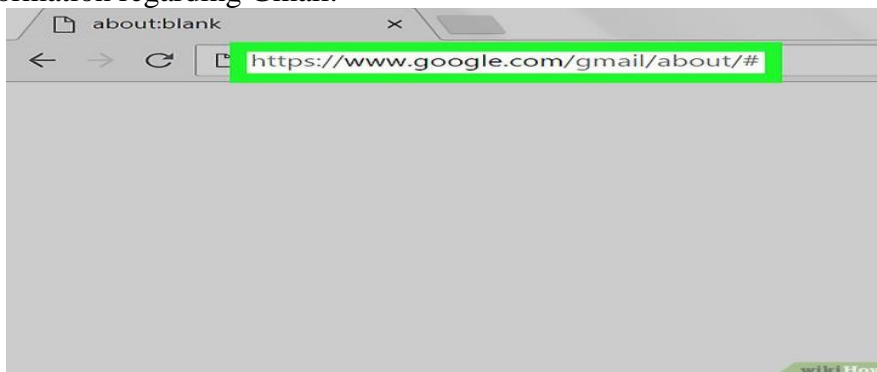
✦ <u>Creating a Gmail account</u>

Do you want to make a new free Google email account? Whether you want to set up a new Gmail account for yourself, your child, or a friend, this can be done in just a few minutes.

Creating a Gmail account is the same as creating a Google account, so you'll get access to other features such as Sheets, Docs, and the ability to sync your web browsing sessions on Chrome.

Things You Should Know

- You can create a Gmail account for yourself, your child, or a friend.

- On desktop, go to Gmail. Click "Create an account". Enter your name, a Gmail address, password, and account recovery options.

- On a phone or tablet, open the Gmail app. Tap "Sign in" → "Google" → "Continue" → "Create an account".

1. **Go to https://www.google.com/gmail/about in a browser.** This will open a page with information regarding Gmail.

If you're creating a Gmail account for your child and want to manage the account's privacy settings and content filters, you'll need to follow slightly different steps:

- Go to https://www.google.com.
- Click **Sign in → Create account → For my child**.
- Enter your child's information to create their account.

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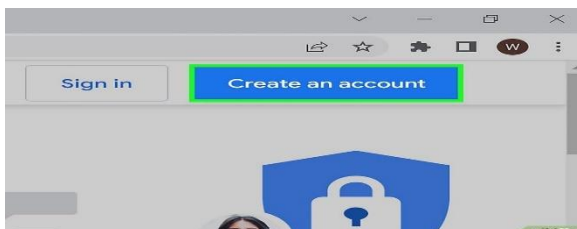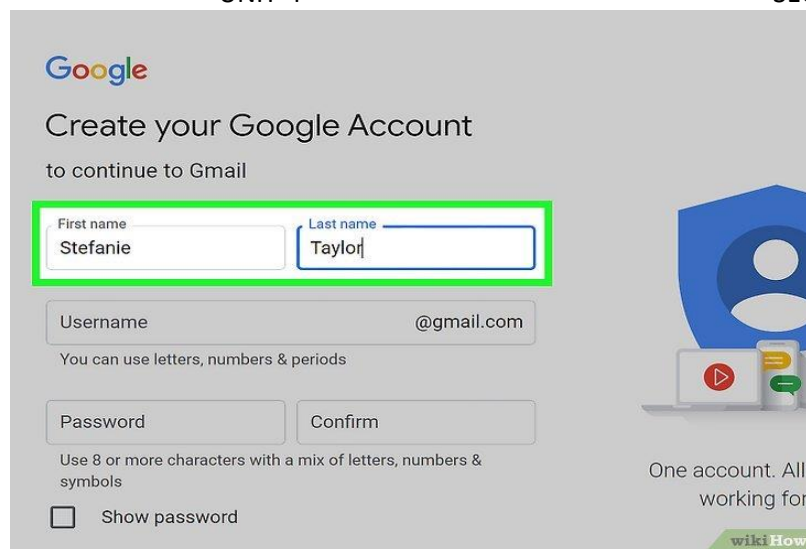
Click Create an account**.** This will be a blue button at the top-right corner of the window. You can also find this in the middle of the screen, next to **For work**.

You'll be redirected to the Google Account creation page.

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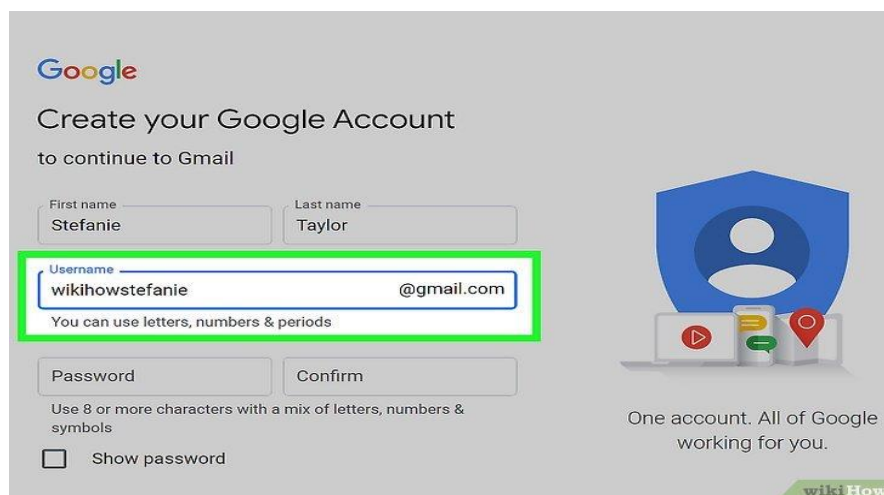
Enter your first and last name. Type your first name into the "First name" text box near the top of the page, then enter your last name in the "Last name" box next to it.

If you're creating a Gmail account for a friend, enter their information in the fields provided.
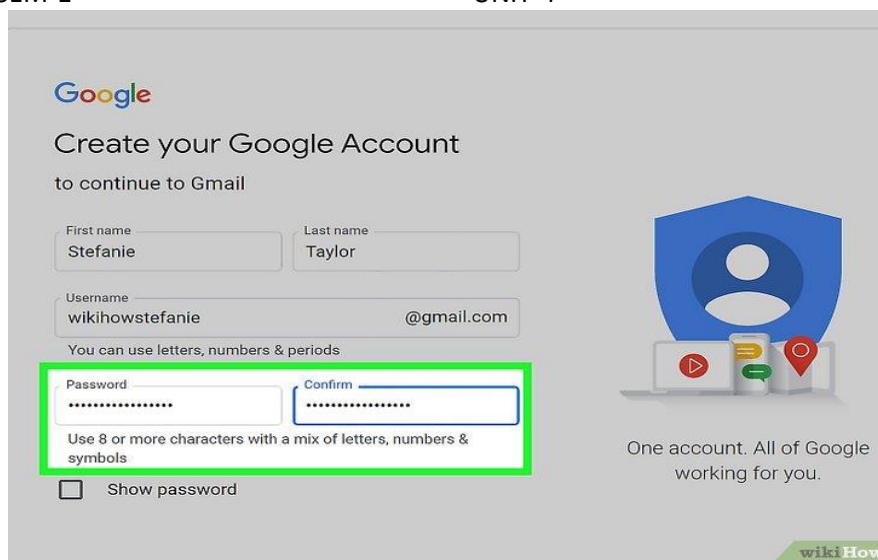
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Create a Gmail username. In the "Username" field, type in the username you want to use for your email address. You can use letters, numbers, and periods. This is the name which appears before the "@gmail.com" section of the address.

a. You must enter a unique username that isn't being used by someone else. If it's taken, you'll see: **That username is taken. Try another.**
b. If the username you want is taken, try using a period to separate names, or add a number at the end.
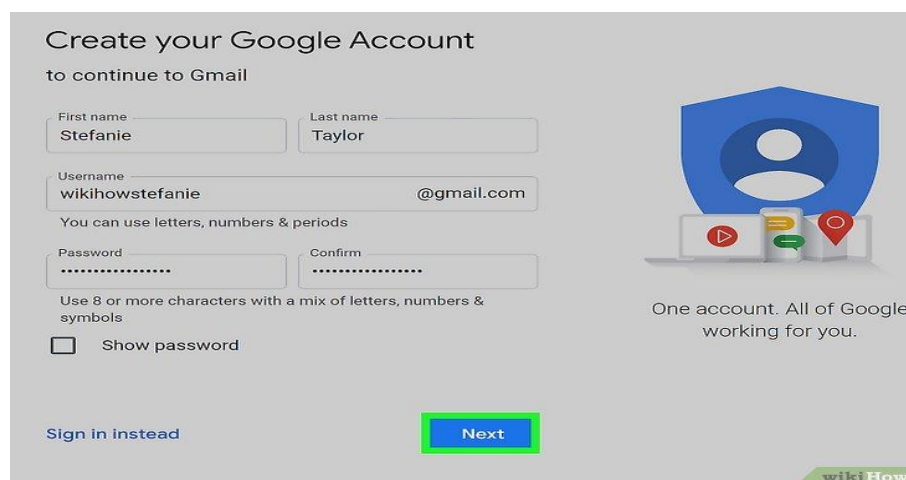
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Enter and confirm your new password. Type your preferred password into the "Password" text box near the bottom of the page, then type the same password into the "Confirm password" box to the right of the first password box.

- These passwords must match before you can proceed. Make sure to use a strong password to avoid any unauthorized access to your account.
- Check the box next to **Show password** to toggle password visibility.

6.

Click Next. This is the blue button at the bottom of the page.

7.

Enter account recovery options. While not mandatory, you can add up to two types of account recovery options to your Gmail profile:

- **Phone number**: Type your phone number into the "Phone number" field near the top of the page.
- **Recovery email address**: Type any other email address into the "Recovery email address" field near the top of the page.

8.

Add your date of birth. Click the "Month" drop-down box and select the month of your birthday, then type the day and year into the "Day" and "Year" text boxes, respectively.

9.

Select a gender and click $\boxed{\text{Next}}$. Click the "Gender" drop-down box, then select one of the gender options in the resulting drop-down menu. Then, click the blue button at the bottom of the page.

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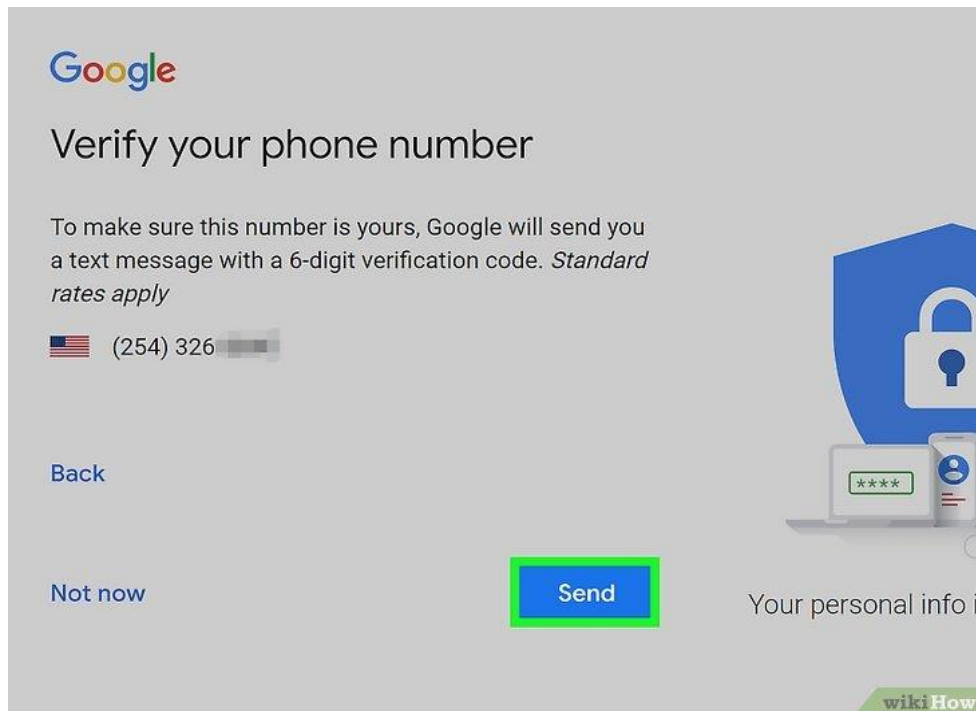
Verify your phone number. If you added a phone number as an account recovery option, you'll need to verify your number.

- Click **Send** when prompted. Enter the verification code into the field. This will be in the format: **G-000000**. Click **Verify**.
- You may see the **Get more from your number** page. You can opt to receive video calls and messages with your number, and make Google services more relevant to you. To opt out, click **Skip**.

11.
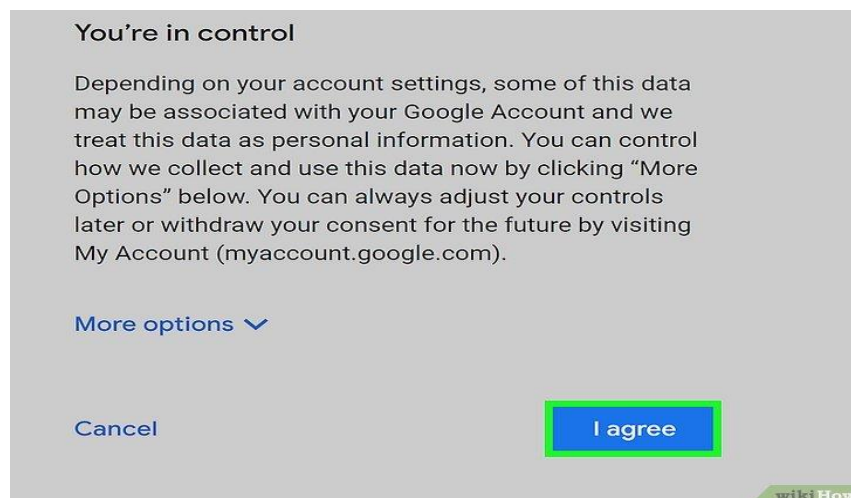
Scroll down and click I agree. You must agree to Google's Privacy and Terms to create an account.

- Click **More options** to personalize your Google experience now. You can customize your **Web & App Activity**, **Ad personalization**, and **YouTube History**.You'll be signed into your new Google account. To use Gmail and access your inbox, click **Gmail** next to **Images**. Be sure to log out if you're using a public computer.

Google Form: