

# Web3 and Blockchain Basics: Setup Wallet and Explore DApps

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**Task:** Mandatory Task – Web3 and Blockchain Basics

**Network Used:** Sepolia Testnet

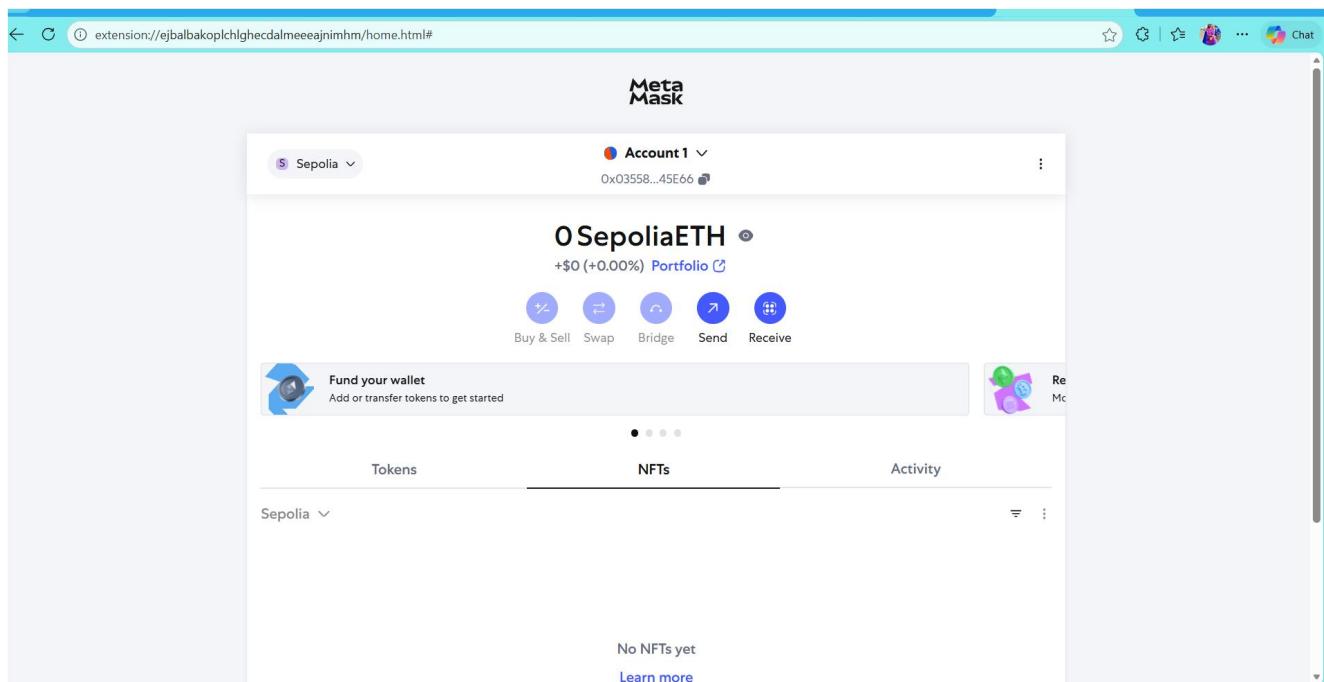
## Step 1: Understanding Blockchain & Web3 Concepts

### Blockchain Basics:

- Blockchain is a **distributed ledger** storing data in blocks linked cryptographically.
  - Consensus mechanisms:
    - ◆ **Proof of Work (PoW):** Miners validate transactions by solving complex puzzles.
    - ◆ **Proof of Stake (PoS):** Validators stake coins to validate blocks.
- **Smart Contracts:**
  - Self-executing code running on the blockchain.
  - Require **gas fees** to execute transactions.
  - Immutable once deployed.
- **Web3 vs Web2:**
  - **Web2:** Centralized; data controlled by companies.
  - **Web3:** Decentralized; users control data via wallets.
  - Wallets store **private/public keys**, enabling ownership of digital assets and interaction with DApps.

## Step 2: Setting Up MetaMask Wallet

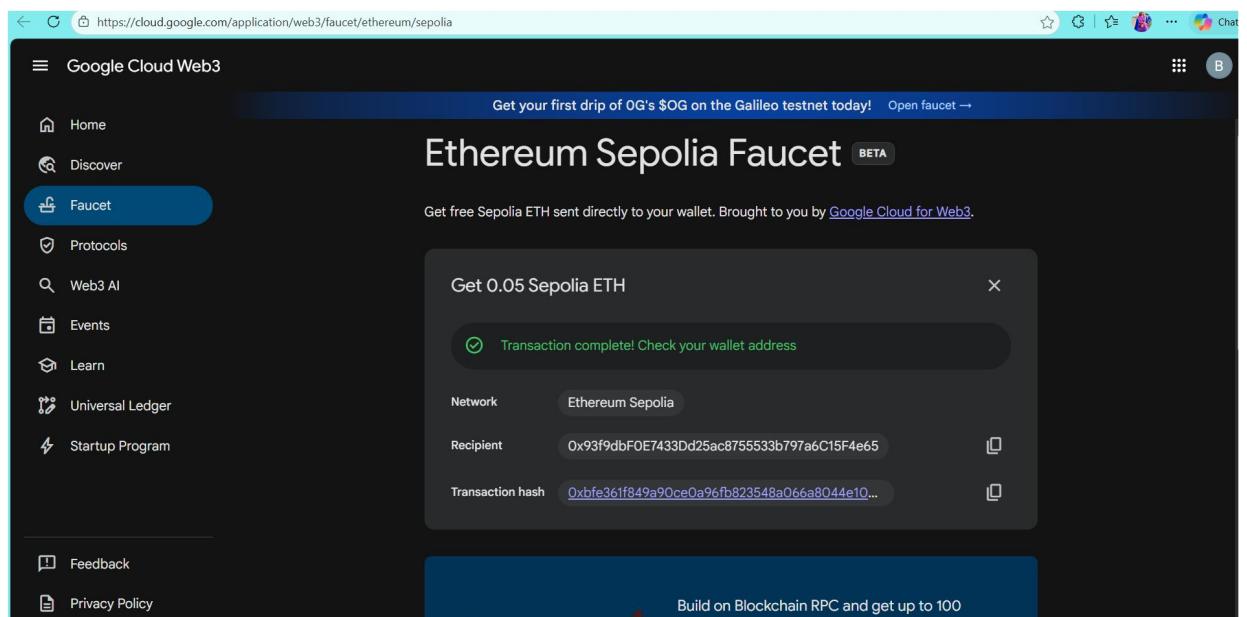
- Installed MetaMask from the official website: <https://metamask.io>.
- Created a new wallet with a strong password.
- Backed up the **seed phrase securely offline**.
- Add Sepolia: Network details - Name: Sepolia, RPC: <https://rpc.sepolia.org>, Chain ID: 11155111, Symbol: ETH, Explorer: <https://sepolia.etherscan.io>.



## Step 3: Acquire Sepolia Testnet ETH

- Copied my **MetaMask public address**.
- Visited a **Sepolia faucet**.
- Entered my wallet address and requested testnet ETH.
- Waited a few minutes until ETH appeared in MetaMask.
- Verified the transaction on **Sepolia Etherscan**: <https://sepolia.etherscan.io>

TRANSACTION HASH: 0xd8566546ebabded94907f90cfecb92069ffac790a7dae676c4a6a95124428a14

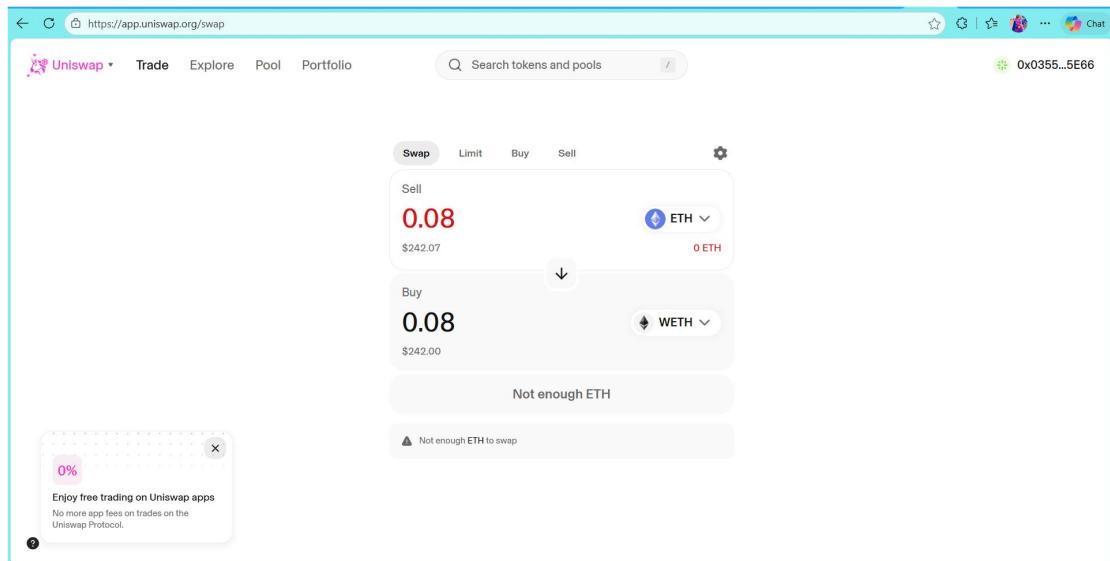


The screenshot shows the Etherscan interface for the Sepolia Testnet. At the top, there's a search bar and navigation links for Home, Blockchain, Tokens, NFTs, and More. Below that, the specific token page for ChainLink Token (LINK) is shown. The page includes sections for Overview (Max Total Supply: 1,000,000,000 LINK, Holders: 535,199), Market (Onchain Market Cap: ~, Circulating Supply Market Cap: ~), and Other Info (Token Contract (with 18 decimals): 0x779877a7b0d9e8603169ddbd7836e478b4624789). A transaction history section is present, filtered by a specific token holder (0x03558913180157Bbd3411c4DEA63294155945E66), showing one transaction found with a balance of 25 LINK.

## Step 4: Interacting with a DApp (Uniswap Testnet)

- Visited **Uniswap Testnet**: <https://app.uniswap.org/#/swap>.
- Connected MetaMask wallet to the DApp.
- Swapped a small amount of **ETH → WETH** (Sepolia test tokens).
- Confirmed the transaction in MetaMask (observed gas fee and estimated time).
- Monitored transaction status on **Sepolia Etherscan**.

The screenshot shows the Uniswap Testnet Swap interface. At the top, there's a navigation bar with links for Uniswap, Trade, Explore, Pool, and Portfolio. A search bar is also present. The main area has tabs for Swap, Limit, Buy, and Sell. The Swap tab is active, showing input fields for Sell (ETH) and Buy (Select token). Below these fields is a button labeled "Select a token". To the right, there's a sidebar with a green circular icon and the address 0x0355...5E66. It displays a balance of \$0.00 and a welcome message: "Add funds to start trading". Below this are three buttons: "Buy crypto" (Purchase with a debit card or bank account), "Receive crypto" (Move funds from another wallet), and "Transfer" (Move funds from a trading platform). A small note at the bottom left says "Enjoy free trading on Uniswap apps. No more app fees on trades on the Uniswap Protocol."



## Step 5: Learning Reflection

During this task, I gained **hands-on experience** with blockchain, Web3 wallets, and decentralized applications (DApps). Unlike traditional Web2 systems, where data is stored and controlled by centralized servers, blockchain ensures that all transactions are **transparent, verifiable, and immutable**. This distributed nature removes the need for intermediaries and gives users full control over their assets.

Setting up MetaMask reinforced the importance of **wallet security**. Backing up the seed phrase and never sharing private keys are critical to prevent loss of funds. I also learned that test networks like **Sepolia** allow experimentation in a safe, risk-free environment, making it ideal for beginners.

Interacting with Uniswap highlighted the lifecycle of a blockchain transaction. Approving the wallet, estimating gas fees, submitting the transaction, and waiting for confirmation helped me understand **on-chain activity** and transaction latency. I observed that even testnet transactions require gas fees (though minimal), illustrating how blockchain ensures network security and prevents spam.

Smart contracts on the DApp performed automatic execution without intermediaries, emphasizing their potential for automating trust in decentralized systems. This experience clarified why smart contracts are considered the backbone of Web3.

Overall, the task helped me **demystify blockchain operations**, wallet setup, and DApp interactions. It provided a clear understanding of how users interact with decentralized systems and prepared me to explore advanced concepts like NFT creation, token swaps, and DeFi protocols in the future.