

 PoW vs PoS – Consensus Mechanism Comparison  
  
**Objective/Aim:**  
  
To compare the working principles, advantages, and disadvantages of **Proof-of-Work (PoW)** and **Proof-of-Stake (PoS)** consensus mechanisms used in blockchain networks.

**Apparatus/Software Used:**

* Laptop
* WPS Office
* Google and Internet for research

**Theory/Concept:**

1. ***Proof-of-Work (PoW):***

* In PoW, miners compete to solve complex mathematical puzzles.
* The first miner to find the correct solution gets the right to add a block to the blockchain and is rewarded

with cryptocurrency.

* Used by Bitcoin, Litecoin, etc.

1. ***Proof-of-Stake (PoS)***:

* In PoS, validators are chosen to create a block based on the amount of cryptocurrency they hold and are

willing to “stake” as collateral.

* No mining puzzles are required, making it more energy efficient.
* Used by Ethereum (after The Merge), Cardano, etc.



**Procedure:**

* Study the basic concept of PoW and PoS from blockchain literature.
* Identify their working steps and list them.
* Compare parameters such as energy usage, speed, and security.
* Record findings in a comparison table.

**Observation Table:**

| **Parameter** | **Proof-of-Work (PoW)** | **Proof-of-Stake (PoS)** |
| --- | --- | --- |
| Selection Method | Solving puzzles (mining) | Staking coins (validator selection) |
| Energy Usage | Very high | Very low |
| Hardware Need | Expensive mining rigs | Normal computers / servers |
| Speed | Slower (10 min/block for Bitcoin) | Faster (seconds to minutes) |
| Example | Bitcoin, Litecoin | Ethereum (PoS), Cardano |

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