ATBASH CIPHER

The **Atbash cipher** is a simple substitution cipher that is one of the earliest known encryption techniques. It works by mapping each letter of the alphabet to its reverse. For example, 'A' becomes 'Z', 'B' becomes 'Y', and so on. This technique is a special case of the substitution cipher where the key is the reverse of the alphabet.

The formula can be described as:

* Encryption Formula:

C=Reverse(P)

where Reverse denotes the mapping of each letter to its reverse.

* Decryption Formula:

P=Reverse(C)

where Reverse is the same mapping used for encryption.

Atbash Cipher Table

Here's a visual representation of the Atbash cipher substitution:

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

#### Encryption

**Plaintext:** HELLO WORLD

1. **Atbash Mapping:**
   * **A** ↔ **Z**
   * **B** ↔ **Y**
   * **C** ↔ **X**
   * ...
   * **H** ↔ **S**
   * **E** ↔ **V**
   * **L** ↔ **O**
   * **O** ↔ **L**
   * **W** ↔ **D**
   * **R** ↔ **I**
   * **D** ↔ **W**
2. **Encrypt Each Character:**
   * **H** → **S**
   * **E** → **V**
   * **L** → **O**
   * **L** → **O**
   * **O** → **L**
   * (Space remains unchanged)
   * **W** → **D**
   * **O** → **L**
   * **R** → **I**
   * **L** → **O**
   * **D** → **W**
3. **Result:**
   * **Ciphertext:** SVOOL DLIOW

#### Decryption

To decrypt the message, apply the same Atbash cipher:

**Ciphertext:** SVOOL DLIOW

1. **Atbash Mapping (Same as Encryption):**
   * **S** → **H**
   * **V** → **E**
   * **O** → **L**
   * **L** → **L**
   * **D** → **W**
   * **L** → **O**
   * **I** → **R**
   * **W** → **D**
2. **Decrypt Each Character:**
   * **S** → **H**
   * **V** → **E**
   * **O** → **L**
   * **O** → **L**
   * **L** → **O**
   * (Space remains unchanged)
   * **D** → **W**
   * **L** → **O**
   * **I** → **R**
   * **O** → **L**
   * **W** → **D**
3. **Result:**
   * **Plaintext:** HELLO WORLD