Difference between:

**Temporary Table:**

1. Exists only for the duration of the session or transaction.
2. Stored physically in tempdb or memory during the session.
3. Explicitly created with CREATE TABLE or DECLARE.
4. Useful for intermediate calculations and indexing.
5. Data can be modified, and schema persists within the session.
6. Visible only to the session that created it (unless explicitly global).
7. Independent of the underlying base tables.

**View:**

1. Permanent database object tied to its definition.
2. Does not store data; only stores the SQL query definition.
3. Created using CREATE VIEW.
4. Acts as a virtual table, querying underlying data each time.
5. Data cannot be stored or indexed directly in most cases.
6. Accessible to multiple sessions unless restricted.
7. Automatically updates when underlying tables change.

**Materialized View:**

1. Permanent database object with stored query results.
2. Physically stores data retrieved by the query.
3. Created using CREATE MATERIALIZED VIEW.
4. Faster queries due to precomputed results.

**Common Table Expression (CTE):**

1. Exists only for the duration of the query.
2. Temporary result set stored in memory.
3. Defined using WITH.
4. Optimized for readability and reusable query logic.
5. Not stored in the database.
6. Limited to the query block where it is defined.
7. Always executes against current data in the underlying tables.