# 🚀 n8n Ultimate Cheat Sheet (Beginner → Expert)

## 🔹 1. Core Concepts

**Workflow** = Collection of nodes that run in sequence.

**Node** = Single step (trigger, data transform, API call, etc.).

**Trigger Node** = Starts workflow (manual, schedule, webhook, etc.).

**Execution** = One full run of your workflow.

**Credentials** = API keys or logins stored securely.

**Expressions** = {{ $json.fieldName }} → Access workflow data dynamically.

## 🔹

## 2. Common Node Types

|  |  |
| --- | --- |
| **Trigger** | Manual, Cron (every 1hr), Webhook |
| **Logic** | IF, Switch, Merge, SplitInBatches |
| **Data** | Set, Function (JavaScript), Code |
| **Integration** | Gmail, Slack, OpenAI, Airtable |
| **HTTP Request** | Any REST API call |
| **Storage** | Google Sheets, Notion, PostgreSQL |
| **Trigger** | Manual, Cron (every 1hr), Webhook |

## 🔹 3. Expressions (Superpower Feature)

Access incoming JSON:  
{{ $json.name }} → gets name field

Access parameters:  
{{ $parameter.myInput }}

Access workflow meta:  
{{ $workflow.id }} , {{ $now }} , {{ $binary }}

👉 **Pro Tip:** Use **Expression Editor** (click “gear” icon) → test expressions live.

## 🔹 4. Fast Workflow Patterns

**Basic API call workflow**  
Trigger → HTTP Request → Set → Email

**Data enrichment**  
Google Sheets (input) → HTTP Request (API) → Merge → Notion

**Error-handling loop**  
Trigger → SplitInBatches → IF (check) → Error path → Notification

## 🔹 5. Self-Hosting Commands (Docker)

# Quick start

docker run -it --rm \

p 5678:5678 \

v ~/.n8n:/home/node/.n8n \

n8nio/n8n

# With environment variables

docker run -d \

p 5678:5678 \

e N8N\_BASIC\_AUTH\_USER=myUser \

e N8N\_BASIC\_AUTH\_PASSWORD=myPass \

v ~/.n8n:/home/node/.n8n \

n8nio/n8n

## 🔹 6. Debugging Tricks

Use **Manual Execution** first.

Add **Set Node** to inspect raw data.

Use **NoOp** (empty node) to pause workflow in testing.

Add “Error Trigger” to catch workflow errors.

## 🔹 7. AI & Advanced

**OpenAI Node** → text, embeddings, image generation.

**AI Agent Setup**:

Trigger → OpenAI (Chat) → Memory node → Action nodes (API calls).

Combine with **RAG (retrieval)** → load PDF, docs, DB → feed into OpenAI.

## 🔹 8. Keyboard Shortcuts

Ctrl + Enter → Execute workflow

Ctrl + S → Save workflow

Spacebar → Drag canvas

Delete → Remove node

## 🔹 9. Expert Habits

**Always version your workflows** → export JSON to Git.

**Use environment variables** for API keys.

**Re-use workflows** by creating **Sub-Workflows**.

**Check execution history** for failed jobs.

Start simple → refactor into modular workflows.

## 🔹 10. Learning Path (1 → Expert)

**Day 1–2:** Build first workflow (trigger + API + email).

**Week 1:** Practice with **10 integrations** (Google, Slack, Notion, Sheets, APIs).

**Week 2:** Master **expressions, IF/Switch, SplitInBatches**.

**Week 3:** Deploy on **Docker/VPS** → secure with basic auth + HTTPS.

**Week 4:** Explore **AI workflows** (OpenAI, LangChain, memory).

**Ongoing:** Join community, study templates, refactor your workflows.