# Test Management Notes

**Focus**: Test Planning, Test Metrics, Test Estimation

## 1. Test Planning

**Definition:**
Describes the objectives, resources and processes for a test a project. It documents and schedule test processes, serves as a communication between team members and stakeholders and helps to ensure that test activities are able to meet the established criteria. It defines *what* will be tested, *how* it will be tested, *who* will do it, and *when*.

**Key Elements to Cover:**

- Scope & Objectives
- Approach / Strategy (e.g., risk-based, analytical)
- Entry & Exit Criteria (Definition of Ready/Done)
- Roles & Responsibilities
- Schedule & Milestones
- Risks and Contingencies

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## 2. Test Metrics

**Definition:**
Test metrics are measurable values that provide information about the progress, quality, and effectiveness of testing activities. They help teams track testing status, identify risks, and make informed decisions during the software development lifecycle. Simply put, test metrics are numbers or data points that show how well testing is going.

**Key Metrics (examples):**

- **Test coverage** → % of requirements or code covered by tests
- **Defect density** → defects per module
- **Pass/fail rate** → executed test cases vs passed/failed
- **Defect detection percentage (DDP)** → effectiveness of testing
- **Mean Time to Defect (MTTD)** → how quickly defects are found

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# 3. Test Estimation

**Definition:**
It is the process of predicting time, effort and resources required to accomplish testing activities in a project.

**Estimation Approaches:**

- **Expert Judgment:** Relying on the knowledge and experience of senior testers or project managers to estimate the effort.
  Example**:** A QA lead says, "Based on my past 3 projects, writing and executing 100 test cases for a login module usually takes 5 days."
- **Metrics-based Estimation**: Using historical project data or industry benchmarks to calculate effort.
  Example**:** If past data shows that on average one test case takes 30 minutes to design and execute, then 200 test cases ≈ 100 hours.
- **Planning Poker / Wideband Delphi**: Breaking testing activities into smaller, manageable tasks and estimating each separately. Then summing them up for the total.
  Example**:** If past data shows that on average one test case takes 30 minutes to design and execute, then 200 test cases ≈ 100 hours.
- **Work Breakdown Estimation**: A collaborative estimation technique where team members use story points or numbers on cards to estimate effort. They discuss differences until reaching consensus.
  Example**:** For a user story "Implement shopping cart checkout":
  Tester A says its 5 points, Tester B says 8 points. They discuss why, and finally agree on 6 points.

## Three-Point Estimation Technique

It's a time/effort estimation method used in project management and testing to deal with uncertainty.
Instead of giving just one estimate, you provide **three values**:

1. **Optimistic estimate (O):**
   The **best-case** scenario — if everything goes smoothly, how quickly can it be done?
2. **Most likely estimate (M):**
   The **realistic** scenario — what you expect under normal conditions.
3. **Pessimistic estimate (P):**
   The **worst-case** scenario — if problems occur, how long could it take?

The weighted average is calculated using the **PERT formula**:

$$\mathbf{E} = \frac{\mathbf{O} + \mathbf{4M} + \mathbf{P}}{6}$$

Where:

- **E** = Expected effort/duration
- **O** = Optimistic
- **M** = Most likely
- **P** = Pessimistic

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# Learning Outcomes

- Learned how to define what and how to test via Test Planning.
- Understood how specific metrics help track test progress and quality.
- Learned about estimation methods to forecast testing effort effectively.