

CALIFORNIA GATE TEST SAMPLE 4TH GRADE Document

Understanding the California Gate Test Sample for 4th Grade

California gate test sample 4th grade refers to the practice materials and sample assessments designed to prepare fourth-grade students for the California State Gate Test. These tests are part of the state's broader efforts to evaluate student proficiency in core subjects such as English Language Arts (ELA), Mathematics, and Science. For educators, parents, and students alike, understanding the structure, content, and purpose of these sample tests is crucial to ensuring successful preparation and performance. This article provides an in-depth exploration of what the California gate test sample for 4th grade entails, how to utilize these resources effectively, and tips for optimal test readiness.

Overview of the California Gate Test for 4th Grade

What Is the California Gate Test?

The California Gate Test is a standardized assessment administered to students in specific grades to assess their mastery of fundamental skills. For 4th graders, the test primarily focuses on measuring proficiency in language arts, mathematics, and science. The test serves multiple purposes, including identifying students' strengths and weaknesses, guiding instructional planning, and ensuring that students meet the state's academic standards.

Purpose of Sample Tests

- To familiarize students with the format and types of questions they will encounter
- To reduce test anxiety by providing practice opportunities
- To help teachers identify areas where students need additional support
- To align instructional strategies with the test's expectations

Components of the 4th Grade California Gate Test Sample

English Language Arts (ELA)

The ELA section in the sample test typically includes questions on reading comprehension, vocabulary, grammar, and writing skills. Students are expected to read passages and answer

questions that test their understanding, interpret meaning, and analyze texts.

Mathematics

Math sample questions focus on four key domains:

- Number Sense and Operations
- Algebraic Thinking
- Geometry and Measurement
- Data Analysis and Probability

Questions may involve solving word problems, understanding fractions, interpreting graphs, and performing calculations.

Science

Science questions evaluate students' understanding of basic scientific concepts, including life sciences, earth sciences, and physical sciences. The sample tests often include diagrams, experiments, and scenario-based questions.

Structure and Format of the Sample Tests

Question Types

- Multiple Choice
- Short Answer
- Constructed Response (writing brief explanations)
- Performance Tasks (especially in science and math)

Test Length and Timing

The sample tests are designed to mimic the actual test's length, which generally spans 60 to 90 minutes per subject area. Practicing with timed samples helps students develop pacing strategies and manage their time effectively during the real test.

How to Use California Gate Test Sample 4th Grade Effectively

Preparing Students for the Test

Effective preparation involves a combination of practice, review, and confidence-building. Here are strategies to maximize the benefits of sample tests:

- Regular Practice: Incorporate sample questions into weekly learning routines.
- Review Content Areas: Focus on weak areas identified during practice sessions.
- Simulate Testing Conditions: Use timed practice sessions to build stamina and focus.
- Discuss Answers: Review correct and incorrect answers to reinforce learning.
- Encourage Critical Thinking: Promote explanations and reasoning behind answers.

Role of Teachers and Parents

Educators and parents play a vital role in supporting students' test readiness. They should:

- Provide access to sample tests and practice materials.
- Create a quiet, comfortable testing environment.
- Encourage a positive attitude towards testing.
- Help students develop effective test-taking strategies.
- Monitor progress and adjust practice sessions accordingly.

Resources for Accessing California Gate Test Samples

Official State Websites

The California Department of Education offers sample questions, practice tests, and additional resources on their official website. These materials are aligned with current standards and are freely accessible for educators, students, and parents.

Supplementary Practice Materials

Various educational publishers and online platforms provide practice packets, interactive quizzes, and mock tests tailored to the California standards. Some popular resources include:

- EngageNY
- CK-12 Foundation
- Practice Test Websites (e.g., Edulastic, Khan Academy)

Tips for Success on the California Gate Test for 4th Grade

Developing Test-Taking Skills

- Read questions carefully and underline key words.
- Manage time wisely; avoid spending too long on difficult questions.
- Answer easier questions first to build confidence.
- Review answers if time permits, checking for mistakes.

Building Confidence and Reducing Anxiety

Encourage regular practice and celebrate progress. Remind students that the test is an opportunity to demonstrate their learning and that preparation is key to success. Incorporating relaxation techniques, like deep breathing, can also help reduce stress during testing.

Conclusion

The **California gate test sample 4th grade** serves as an essential tool for preparation, offering students a clear understanding of what to expect and how to approach the actual assessment. By engaging with these sample materials proactively, students can improve their familiarity with test formats, sharpen their skills, and boost their confidence. For educators and parents, providing consistent support, practice opportunities, and constructive feedback is vital to helping students achieve their best. Ultimately, these samples are more than just practice tests—they are stepping stones toward academic growth and success in California's educational system.

California Gate Test Sample 4th Grade: A Comprehensive Guide for Students, Parents, and Educators

Preparing for the California Gate Test Sample 4th Grade can seem daunting for students and parents alike. This assessment plays a crucial role in evaluating a student's understanding of key concepts across subjects like math, reading, writing, and science. Understanding what to expect, how to prepare, and the structure of the test can significantly boost confidence and performance. In this guide, we'll explore the purpose of the California Gate Test Sample for 4th graders, break down its components, offer effective preparation strategies, and provide insights for educators and parents to support their students effectively.

Understanding the California Gate Test Sample for 4th Grade

The California Gate Test Sample for 4th grade serves as a benchmark assessment designed to measure students' mastery of grade-level standards. It acts as both a diagnostic tool and a preview of the types of questions students will encounter on actual state assessments. The sample tests are publicly available resources, allowing students, parents, and teachers to familiarize themselves with

the format, question types, and content areas.

Why is the California Gate Test Sample important?

- Familiarity with Test Format: Students gain experience with timing, question styles, and test directions.
- Content Review: It helps identify areas where students are strong or may need additional support.
- Building Confidence: Practice reduces test anxiety and promotes a positive testing experience.
- Preparation for State Tests: The sample aligns with California's academic standards, ensuring students are prepared for the actual assessments.

Components of the 4th Grade California Gate Test Sample

The test typically covers several core subject areas, each with specific question types designed to assess various skills.

Mathematics

- Multiple-choice questions
- Word problems requiring critical thinking
- Basic operations (addition, subtraction, multiplication, division)
- Fractions, decimals, and basic geometry
- Patterns and number sequences

Reading Comprehension

- Short passages followed by questions
- Questions assessing main idea, details, inference, and vocabulary
- Different genres such as fiction, nonfiction, poetry, and informational texts

Writing and Language

- Grammar and punctuation questions
- Sentence structure and paragraph organization
- Writing prompts or short essay responses

Science (if included)

- Multiple-choice questions on life sciences, earth sciences, and physical sciences
- Diagrams, charts, or experiment observations

Effective Strategies for Preparing for the California Gate Test Sample 4th Grade

Preparation is key to success. Here are strategies for students, parents, and teachers to maximize readiness:

For Students

- Regular Practice: Use the official sample tests and practice questions regularly.
- Understand the Directions: Familiarize yourself with test instructions to save time.
- Review Mistakes: Learn from errors in practice tests to avoid repeating them.
- Develop Test-Taking Skills: Practice pacing to ensure completion within time limits.
- Read Carefully: Pay attention to wording in questions to avoid misinterpretation.
- Use Context Clues: Especially in reading, use surrounding words to understand unfamiliar vocabulary.

For Parents

- Create a Study Schedule: Consistent practice leading up to testing dates.
- Encourage Reading: Build comprehension skills through daily reading activities.
- Support Practice Tests: Set up quiet, comfortable environments for practice.
- Discuss Mistakes: Review incorrect answers together to reinforce learning.
- Build Confidence: Offer encouragement and stress the importance of effort over perfection.

For Educators

- Integrate Practice into Curriculum: Use sample questions during lessons or review sessions.
- Identify Gaps: Use results from practice tests to tailor instruction.
- Teach Test Strategies: Time management, elimination techniques, and question analysis.
- Simulate Test Conditions: Practice under timed, quiet environments to build stamina.
- Use Data for Instruction: Analyze student performance to inform targeted interventions.

Sample Questions and Practice Activities

To give a clearer picture, here are example questions and activities aligned with the California Gate Test Sample for 4th grade:

Math Sample Question:

If Sally has 24 apples and she gives away 7 apples to each of her 3 friends, how many apples does Sally have left?

Options:

A) 3

B) 3

C) 3

D) 3

(Correct answer: 3 apples left)

Practice Activity:

Create similar word problems involving addition, subtraction, multiplication, and division. Use real-world scenarios to help students relate to the problems.

Reading Comprehension Sample:

Read the passage about a local park and answer the question:

"The green park was filled with children playing and families having picnics. The tall trees provided shade, and the pond reflected the bright blue sky."

Question:

What is the main idea of the passage?

A) The park is a busy place with many activities.

B) The park is very small.

C) The pond is the biggest feature of the park.

D) Children do not like the park.

(Correct answer: A)

Practice Activity:

Read short passages and answer questions about main ideas, details, and vocabulary. Practice summarizing paragraphs in your own words.

Additional Resources and Tools for Success

- Official Practice Tests: Available on the California Department of Education website.
- Educational Apps and Games: Focused on math and reading skills.
- Reading Books and Libraries: To improve comprehension and vocabulary.
- Math Workbooks: Covering grade-specific topics.
- Online Tutorials and Videos: Explaining complex concepts in an engaging way.

Final Tips for Success

- Stay Positive: Approach practice tests as opportunities to learn, not just assessments.
- Maintain a Routine: Consistent study habits help build confidence.
- Get Plenty of Rest: Ensure students are well-rested before test days.
- Eat Nutritious Meals: Proper nutrition supports concentration and energy.
- Encourage Questions: Support students in seeking help when concepts are unclear.

In conclusion, the California Gate Test Sample 4th Grade is an invaluable tool that helps students, parents, and teachers prepare effectively for upcoming assessments. By understanding its structure, practicing regularly, and employing strategic test-taking techniques, students can approach the test with confidence and competence. Remember, the goal is to demonstrate understanding and growth, so maintaining a positive attitude and a supportive environment are essential components of success. With diligent preparation and a proactive mindset, 4th graders can excel and build a strong foundation for future academic achievements.

QuestionAnswer What is the California Gate Test for 4th grade students? The California Gate Test is an assessment designed to evaluate 4th grade students' understanding of core subjects like math, reading, and science to ensure they meet state academic standards. How can I prepare for the California Gate Test sample questions for 4th grade? Students can prepare by reviewing their

class notes, practicing sample questions available online, and working on past test papers to familiarize themselves with the test format and key topics. Where can I find sample questions for the California Gate Test for 4th graders? Sample questions can be found on the official California Department of Education website, educational resource sites, or through teacher-provided practice materials. What subjects are covered in the California Gate Test for 4th grade? The test typically covers subjects such as mathematics, English language arts (reading and writing), science, and social studies. How long is the California Gate Test for 4th graders? The test duration varies but generally lasts around 1 to 2 hours, depending on the specific assessment and testing schedule. Are there any tips for 4th graders to do well on the California Gate Test? Yes, students should get plenty of rest before the test, read each question carefully, manage their time wisely, and answer the questions they know first. Is the California Gate Test for 4th grade mandatory? Yes, it is part of the state's standardized testing requirements to assess student progress and school performance. How can parents support their children in preparing for the California Gate Test? Parents can help by encouraging regular study routines, providing practice materials, offering encouragement, and ensuring their children have a good understanding of the tested subjects.

Related keywords: California gate test, 4th grade sample questions, California standardized testing, elementary school assessments, 4th grade practice tests, California test prep, grade 4 academic standards, California testing sample, 4th grade exam practice, California assessment sample questions

microsoft test manager tutorial

Microsoft Test Manager Tutorial: A Comprehensive Guide to Efficient Test Management

In the world of software development, ensuring the quality and reliability of your applications is paramount. Microsoft Test Manager (MTM) is a powerful tool designed to streamline the testing process, enabling teams to plan, execute, and track testing efforts with ease. Whether you're a beginner or looking to enhance your testing workflows, this **Microsoft Test Manager tutorial** will provide you with a step-by-step guide to harnessing MTM's full potential for your projects.

Understanding Microsoft Test Manager

Before diving into the tutorial, it's essential to grasp what Microsoft Test Manager is and how it integrates into the broader Visual Studio ecosystem.

What is Microsoft Test Manager?

Microsoft Test Manager is a test management tool integrated with Visual Studio Team Services (VSTS) and Azure DevOps. It provides an intuitive interface for managing test plans, creating and executing test cases, and tracking testing progress. MTM supports both manual and exploratory testing, making it versatile for various testing scenarios.

Key Features of Microsoft Test Manager

- Test Planning: Create and organize test plans, test suites, and test cases.
- Test Execution: Execute manual tests and record results efficiently.
- Test Tracking: Monitor testing progress and generate detailed reports.
- Exploratory Testing: Conduct ad-hoc testing sessions with session-based testing capabilities.
- Integration: Seamlessly connects with Azure DevOps for continuous testing workflows.

Setting Up Microsoft Test Manager

Getting started with MTM involves installing and configuring the tool for your environment.

Prerequisites

- Visual Studio Enterprise or Professional edition (with test management features).
- Azure DevOps account or TFS (Team Foundation Server) setup.
- Appropriate permissions to access test management features.

Installing Microsoft Test Manager

- Download the Visual Studio Installer from the official Microsoft website.
- Choose the edition that includes testing tools (e.g., Visual Studio Enterprise).
- During installation, select the "Testing Tools" workload to install MTM.
- Complete the installation and launch Visual Studio.
- Connect to your Azure DevOps project or TFS server within Visual Studio.

Creating and Managing Test Plans

A well-structured test plan is the foundation of successful testing. MTM simplifies organizing your testing efforts through test plans and suites.

Creating a Test Plan

- Open Microsoft Test Manager from Visual Studio or the Azure DevOps portal.
- Navigate to the "Test Plans" section.
- Click "New Test Plan" and provide a descriptive name, description, and start/end dates.
- Associate the test plan with a specific build or release if needed.
- Save the test plan to begin adding test cases.

Organizing Test Suites

Test suites help categorize test cases based on features, modules, or testing strategies.

- **Static Test Suites:** Manually organize test cases into logical groups.
- **Requirement-Based Test Suites:** Link test cases to specific requirements or user stories.
- **Query-Based Test Suites:** Dynamically generate test cases based on queries.

Adding Test Cases

- Within your test suite, click "New Test Case" or import existing cases.
- Define the test case steps, expected results, and associated requirements.
- Assign priority, owner, and other metadata to facilitate management.
- Save the test case to include it in your suite.

Executing Tests with Microsoft Test Manager

Once your test cases are organized, the next step is executing tests and recording results.

Manual Test Execution

- Open the test plan and select the test suite to execute.
- Click "Run" on the test case you wish to execute.
- Follow the test steps as documented, marking each step as "Passed" or "Failed."
- If a test fails, record detailed bug information directly from the test runner.
- Complete the test run, and the results will be saved automatically.

Using Action Recording and Data Collection

MTM allows capturing detailed logs and screenshots during test execution, aiding in defect analysis and reproducibility.

Exploratory Testing

For ad-hoc testing, MTM offers session-based testing:

- Schedule a testing session with session details.
- Conduct testing while documenting observations and findings.
- Record bugs and issues discovered during the session.

Tracking and Reporting Testing Progress

Effective test management requires insight into testing status and quality metrics.

Monitoring Test Results

- Navigate to the "Test Results" section in MTM or Azure DevOps.
- Review individual test case outcomes and overall progress.
- Filter results by tester, status, or test plan for detailed analysis.

Generating Reports

MTM provides various built-in reports to visualize testing status:

- Test Results Summary
- Test Case Progress and Trends
- Bugs and Defects Reports

Integrating with Bug Tracking

During testing, bugs can be logged directly from MTM, linked to specific failed test cases, ensuring traceability and quick resolution.

Advanced Tips and Best Practices

Maximize your testing efficiency with these expert tips:

Automate Repetitive Tests

Integrate MTM with automated testing frameworks like MSTest, NUnit, or Selenium to run

automated tests alongside manual efforts.

Maintain Test Cases Regularly

Keep your test cases updated with application changes to ensure relevance and accuracy.

Use Tags and Filters

Leverage tags and filters to quickly locate and execute specific test cases based on criteria like priority, feature, or owner.

Collaborate Effectively

Encourage team collaboration by sharing test plans and results, and conducting regular review meetings to discuss testing progress.

Conclusion

Microsoft Test Manager is an essential tool for teams aiming to implement structured and efficient testing workflows. From creating comprehensive test plans and organizing test suites to executing tests and tracking outcomes, MTM provides a centralized platform that enhances test visibility and quality assurance. By following this **Microsoft Test Manager tutorial**, you can streamline your testing process, improve defect detection, and deliver higher-quality software products. Remember to stay updated with the latest features and best practices to maximize your testing success with MTM.

Microsoft Test Manager tutorial: A Comprehensive Guide to Streamlining Your Testing Process

Microsoft Test Manager (MTM) is a powerful tool integrated within the Azure DevOps suite, designed to facilitate efficient test planning, management, and execution. Whether you are a QA professional, a developer, or a project manager, mastering MTM can significantly enhance your testing workflows, improve defect detection rates, and ensure higher quality software releases. This tutorial aims to provide an in-depth overview of Microsoft Test Manager, guiding you through its features, setup, best practices, and real-world applications.

Introduction to Microsoft Test Manager

Microsoft Test Manager is a dedicated testing management environment that helps teams plan, execute, and track testing activities seamlessly. Originally part of Visual Studio Test Professional, MTM is now integrated within Azure DevOps, offering a unified platform for Agile testing, exploratory testing, and manual test case management.

Key Features of Microsoft Test Manager

- Test Planning: Create and organize test plans, test suites, and test cases.
- Test Execution: Run manual tests, record results, and capture screenshots.
- Test Management: Track defects, manage test configurations, and generate reports.
- Integration: Seamlessly connect with Azure DevOps for continuous integration and automated testing workflows.
- Exploratory Testing: Record exploratory sessions with detailed notes and recordings.

Setting Up Microsoft Test Manager

Before diving into testing, proper setup of MTM is essential.

Prerequisites

- A valid Azure DevOps account with appropriate permissions.
- Installed Visual Studio Test Professional or access via Azure DevOps.
- Access to a test environment or lab machines.

Installation and Configuration

- Download and Install: Download Microsoft Test Manager from the Visual Studio downloads page or via Azure DevOps.
- Connect to Azure DevOps: Launch MTM and connect it to your Azure DevOps project by signing in with your credentials.
- Configure Test Environments: Set up test machines, configurations, and network environments to align with your testing needs.

Tips for Effective Setup

- Organize your test plans hierarchically for easier management.
- Maintain a clear mapping between test environments and real-world configurations.
- Regularly update test artifacts to ensure they reflect current application versions.

Creating and Managing Test Plans

Test planning is the foundation of effective testing.

Creating a Test Plan

- In MTM, navigate to the "Test Plans" section.
- Click "New Test Plan" and provide a descriptive name, start/end dates, and any relevant details.
- Assign ownership and stakeholders.

Organizing Test Suites

- Static Test Suites: Manually added test cases grouped logically.
- Requirement-based Suites: Linked to user stories or requirements for traceability.
- Query-based Suites: Dynamic grouping based on queries.

Best Practices

- Break down large test plans into smaller, manageable suites.
- Link test cases to user stories or bugs for better traceability.
- Regularly review and update test plans to reflect current project scope.

Designing and Managing Test Cases

Creating effective test cases is critical to uncovering defects early.

Writing Test Cases

- Clear, concise steps with expected results.
- Use descriptive titles and tags for easy filtering.
- Include preconditions and postconditions.

Reusing Test Cases

- Modularize test steps for reuse across different test cases.
- Attach relevant documentation, screenshots, or scripts.

Organizing Test Cases

- Group related test cases into shared test suites.
- Use labels and tags for categorization.

Tips for Effective Test Cases

- Prioritize test cases based on risk and impact.
- Keep test cases up-to-date with application changes.
- Incorporate exploratory testing notes within test cases or as separate sessions.

Test Execution and Result Recording

Executing tests efficiently and accurately recording results is vital.

Running Manual Tests

- Select a test case from your test suite.
- Follow each step, observing the actual behavior.
- Record outcomes: Passed, Failed, Blocked, or Not Applicable.
- Capture screenshots or record videos if needed.

Recording Defects

- Link defects directly to failed test cases.
- Provide detailed descriptions, steps to reproduce, and severity.
- Attach logs or screenshots to aid debugging.

Managing Test Runs

- Use test configurations to run multiple test cases under different environments.
- Schedule and assign test runs to team members.
- Monitor real-time progress and results.

Pros and Cons of Test Execution Features

Pros:

- Streamlined process for manual testing.
- Rich media capture for detailed documentation.
- Easy defect linkage and traceability.

Cons:

- Manual process can be time-consuming for large test suites.
- Limited automation capabilities within MTM itself.

Integrating Automated Testing with Microsoft Test Manager

While MTM excels at manual testing, integration with automated testing frameworks enhances overall efficiency.

Integration with Visual Studio Test Automation

- Use Visual Studio Test tools to develop automated test scripts.
- Link automated tests to test cases in MTM.
- Run automated tests as part of continuous integration pipelines.

Benefits of Integration

- Reduces manual effort.
- Ensures consistency between manual and automated testing.
- Facilitates comprehensive test coverage.

Limitations

- Setup can be complex for beginners.
- Requires scripting knowledge for automation.

Reporting and Tracking

Effective reporting provides insights into testing progress and quality metrics.

Built-in Reports

- Test Run Summary
- Test Results Trend
- Defect Status and Age
- Requirements Traceability Matrix

Custom Reports

- Use Azure DevOps Analytics or Power BI for tailored dashboards.
- Export data for external analysis.

Best Practices

- Regularly review reports to identify bottlenecks.
- Use metrics to prioritize testing efforts.
- Maintain up-to-date dashboards for stakeholder visibility.

Best Practices for Using Microsoft Test Manager

- Plan Early: Incorporate testing early in the development lifecycle.
- Maintain Test Artifacts: Keep test cases and plans updated with application changes.
- Leverage Linkages: Connect requirements, test cases, defects, and build versions.
- Automate Where Possible: Use automation to handle repetitive and regression testing.
- Collaborate: Engage team members through shared test plans and results.
- Review Regularly: Conduct test reviews and retrospectives for continuous improvement.

Common Challenges and How to Overcome Them

Challenge: Managing Large Test Suites

Solution: Break down into smaller, manageable suites; use query-based suites for dynamic grouping.

Challenge: Keeping Test Cases Up-to-date

Solution: Establish a review cycle aligned with development sprints; assign ownership.

Challenge: Integration Complexity

Solution: Invest in automation and continuous integration pipelines; use documentation and training.

Challenge: Limited Automation within MTM

Solution: Use external automation tools integrated with Azure DevOps, such as Selenium or Coded UI.

Conclusion

Microsoft Test Manager is a robust tool that, when used effectively, can significantly boost your testing efficiency, coverage, and traceability. Its comprehensive features for test planning, execution, defect management, and reporting make it indispensable for teams adopting Agile and DevOps practices. While there are challenges, especially around automation and managing large test repositories, with proper setup, training, and best practices, MTM can become a cornerstone of your software quality assurance process.

By following this tutorial, you should now have a clear understanding of how to leverage Microsoft Test Manager to streamline your testing operations, improve collaboration, and ultimately deliver higher quality software to your users. Remember, continuous learning and adaptation are key to maximizing the benefits of MTM in your projects.

QuestionAnswer What are the main features of Microsoft Test Manager (MTM)? Microsoft Test Manager (MTM) provides features such as test planning, manual test execution, test case management, bug tracking integration, and collaboration tools to streamline the testing process within Visual Studio and Azure DevOps. How do I create and organize test plans in Microsoft Test Manager? In MTM, you can create test plans by navigating to the 'Test Plans' hub, clicking 'New Test Plan,' and defining its name and details. You can then add test suites and test cases to organize tests based on requirements, features, or test types for better management. Can I automate tests using Microsoft Test Manager, and how is it integrated with other tools? While MTM primarily supports manual testing, it integrates seamlessly with Visual Studio and Azure DevOps, enabling automation through test scripts and frameworks like MSTest, Selenium, or CodedUI. Automated tests can be linked to test cases for comprehensive test management. What are the best practices for using Microsoft Test Manager effectively? Best practices include maintaining detailed and reusable test cases, organizing tests into logical suites, utilizing shared steps for common actions, integrating with bug tracking, and regularly updating test plans based on project changes to ensure thorough testing coverage. Is Microsoft Test Manager suitable for Agile development environments? Yes, MTM is well-suited for Agile teams as it supports iterative testing, easy integration with Azure DevOps Agile tools, and flexible test planning, allowing teams to adapt testing activities to sprint cycles and continuous delivery workflows.

Related keywords: Microsoft Test Manager, TFS testing, test planning, test case management,

automated testing, test execution, bug tracking, test lab management, test reporting, test automation tools

Read the full article online: [Microsoft test manager tutorial](#)