Teacher Guide: Text Coding Puzzles
https://www.tynker.com/hour-of-code/

Time: 60+ minutes
Grades: 6+
Difficulty: Advanced

Students will learn to code as they complete fun game-like puzzles. They'll use Python or JavaScript to navigate a character. Each puzzle introduces new concepts and slightly more challenging scenarios, building on what students have already done. Although students feel like they're playing a game, they're learning computational thinking and the basics of text-based coding.

Activity Requirements

- Laptops, desktops, or Chromebooks with a Web browser and an Internet connection

Objectives

Students will be able to apply these concepts:

- Use JavaScript and Python text-coding languages to program
- Sequence steps in a program
- Use loops for repetition
- Apply conditional logic to navigate a character
- Break down a problem and create an algorithm to solve it

U.S. Standards

- **CSTA:** 2-AP-13, 2-AP-19, 3A-AP-17, 3A-AP-21, 3A-AP-22, 3B-AP-10, 3B-AP-11,
- **CS CA:** 6-8.AP.12, 6-8.AP.13, 9-12.AP.12, 9-12.AP.14, 9-12.AP.16
- **ISTE:** 1.1.c, 1.1.d, 1.4.d, 1.5.c

U.K. Standards

Key stage 3

Pupils should be taught to:

- understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem
- understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns

Key stage 4

All pupils must have the opportunity to study aspects of information technology and computer science at sufficient depth to allow them to progress to higher levels of study or to a professional career.

All pupils should be taught to:

- develop their capability, creativity and knowledge in computer science, digital media and information technology
- develop and apply their analytic, problem-solving, design, and computational thinking skills
- understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to report a range of concerns

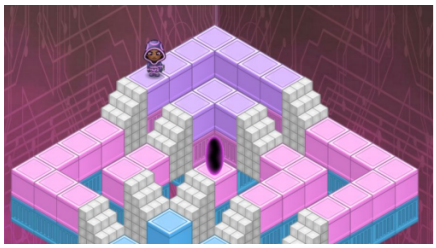
How to Prepare

- **Sign Up for a Teacher Account** - Although an account is not required, creating a free teacher account will allow you to access teacher guides, answer keys, and tons of additional resources. You'll also be able to create free accounts for your students, monitor their progress, and see their projects.

- **Create Student Accounts** - From your teacher account, you can easily create free student accounts for your students. This will allow them to save their projects and progress, so they can continue coding when they get home! Again, this is not necessary to complete an Hour of Code.
- **Try It Out** - Play around with Tynker before your Hour of Code to familiarize yourself with the puzzles and the Tynker Workshop.

Lesson Guide
It is important to strike a balance between students learning independently and collaboratively. Students often learn programming well when they work in pairs. They can help each other and catch mistakes that the other student makes. We suggest that you read directions aloud as a class, then allow students time to experiment on their own for each step of the project.

Puzzle Options
Puzzles are listed in order from easiest to most difficult. Note that Counter Hack and Toxic Jungle are best for older students who already have some experience with programming and are looking to take the next step with more complicated and challenging puzzles that use text-based coding.



Counter Hack - Advanced (6+). In this puzzle set, students will learn the basics of JavaScript while also solving computational thinking challenges. They will navigate special agents Skyla and Nero through complex worlds to reach portals.
Puzzle Solutions

Toxic Jungle - Intermediate (7+). In this fun puzzle set, students will learn the basics of Python. They will help Archie and Feather collect sachets of pixie dust and try to save the floating islands from toxic haze! Additionally, students will learn programming concepts such as loops, conditionals, and Python syntax.
Puzzle Solutions

Lesson Wrap-Up
Encourage students to continue working on the puzzles outside of class and to explore other content in Tynker's Hour of Code, such as games, coding projects, and apps that students can build themselves. In our experience, kids love the opportunity to create projects and experiment with programming, and will voluntarily continue projects at home.

Tell your students that they can create an account on Tynker for free and use it to save and share their projects, play coding puzzles, and make many more projects on their own.

Hour of Code Certificate
Be sure to download a personalized certificate for your students when they complete this activity.

Teacher Guide to Tynker Hour of Code
Tynker's activities combine structured components to support multiple learning styles. This experience emphasizes that programming requires not only knowledge of how to use a language, but also creativity and critical thinking to figure out how to build projects. Tynker is offering a wide variety of activities appropriate for all grades and experience levels.

What Tynker Provides

- Self-contained, game-based activities that students can complete with minimal support
- A combination of structured and open-ended activities that teach and allow students to create
- Puzzle solutions for all of our puzzles so you can give hints to any students who get stuck
- Common Core alignment for all activities
- A customized Hour of Code certificate for each activity that will show up in the student dashboard when a student completes an hour of programming

Why Students Love Tynker

- Tynker puzzles use game-based learning to teach programming and computational thinking concepts in a fun way
- Tynker text-based activities provide students the opportunity to build a stronger mastery of JavaScript and Python syntax, while also allowing them to become better prepared for rigorous computer science high school courses
- Tynker tutorials guide students through all the steps to create storytelling projects, games, animations, and much more
- Tynker makes it easy to create exciting projects using code
- Tynker's high quality media assets give students tons of creative options

Recommended Setup and Logistics

- Ideal environment: a computer lab, library, or classroom with your class
- Students can work individually or in pairs
- Students should have headphones if possible, but if not, you can turn the computer volume down
- Set up a free teacher account on tynker.com prior to the activity and add your students so you can track their progress and share a class showcase—and so students can continue working at home! (Note: Creating a teacher account is optional. You can complete your Hour of Code with Tynker without creating an account.)

We hope you take a look at all of our Hour of Code activities to figure out which one is right for your class. Join the global movement and host your Hour of Code with Tynker!