



# Drawing with Turtle

Create your own spirograph in Wipple.

**Duration:** 1 hour

**Required Materials:** Spirograph

**MA DLCS Standards:** 6-8.CT.b.1, 9-12.CT.a.1, 9-12.CT.d.5

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## Students will be able to...

- Familiarize themselves with the Wipple Playground.
- Move the Turtle using the forward, backward, left, and right commands to draw a shape.
- Express repetition using the repeat command and draw a spirograph.
- Recognize repeat as a form of abstraction; without repeat, code must be duplicated and changed in multiple places.

## Lesson Plan

1. **Warm up: Spirograph (10 mins)** — Distribute spirographs to each table. Tables work to draw a spirograph and discuss how often the shape repeats. Each table brainstorms instructions to draw their shape and exchanges with another table. Students discuss whether their instructions were effective and how they could make them more effective.
2. **Guided practice: Setting up Wipple (10 mins)** — In partners, direct students to open their computers and go to [wipple.org](http://wipple.org). Follow the instructions in the slideshow so that all students can make the turtle draw a line. Then, students use the other commands (backward, left, and right) to draw a square.
3. **Turn and talk: The repeat command (5 mins)** — Partners turn to another partner group and count how many instructions they have in their program.

Then, students discuss how they could potentially use fewer instructions (listen for words like “repeat” and “again”).

4. **The repeat command (5-10 mins)** — Direct attention to the board and introduce the repeat command. repeat takes a number of times and runs the code between the braces ( { } ) that number of times. Demonstrate how to draw a square using repeat, and then ask the students to follow.
5. **Partner activity: Spirograph (20-25 mins)** — With a partner, students use the movement and repeat commands to draw a spirograph of their own. When they are finished, ask them to save a photo of their spirograph using the camera button.
6. **Exit ticket (5 mins)** — Ask students to answer the questions in the slideshow on their own. You may use a Google Form or other online survey. Make sure to record their name and their partner’s name.