

CS 105 Algorithmic World

Abstraction

c.andrews Fall 2024







Abstraction

extracting general concepts from complex processes

Purpose

hide the details to help us manage complexity

remove the dependance on details to make our process reusable and flexible

Process Abstraction

generalizing a process to its core concepts, removing the dependance on specific steps

Data Abstraction

removing dependance on specific values

75 Shannon St

Middlebury, VT 05753

↑ Head northwest toward Shannon St

131 ft

↗ Turn right toward Shannon St

249 ft

↗ Turn right onto Shannon St

125 ft

↖ Turn left

203 ft

↖ Turn left toward Weybridge St

0.1 mi

↗ Turn right onto Weybridge St

13 ft

↖ Turn left onto Mill St

0.1 mi

↖ Turn left toward Maple St

0.1 mi

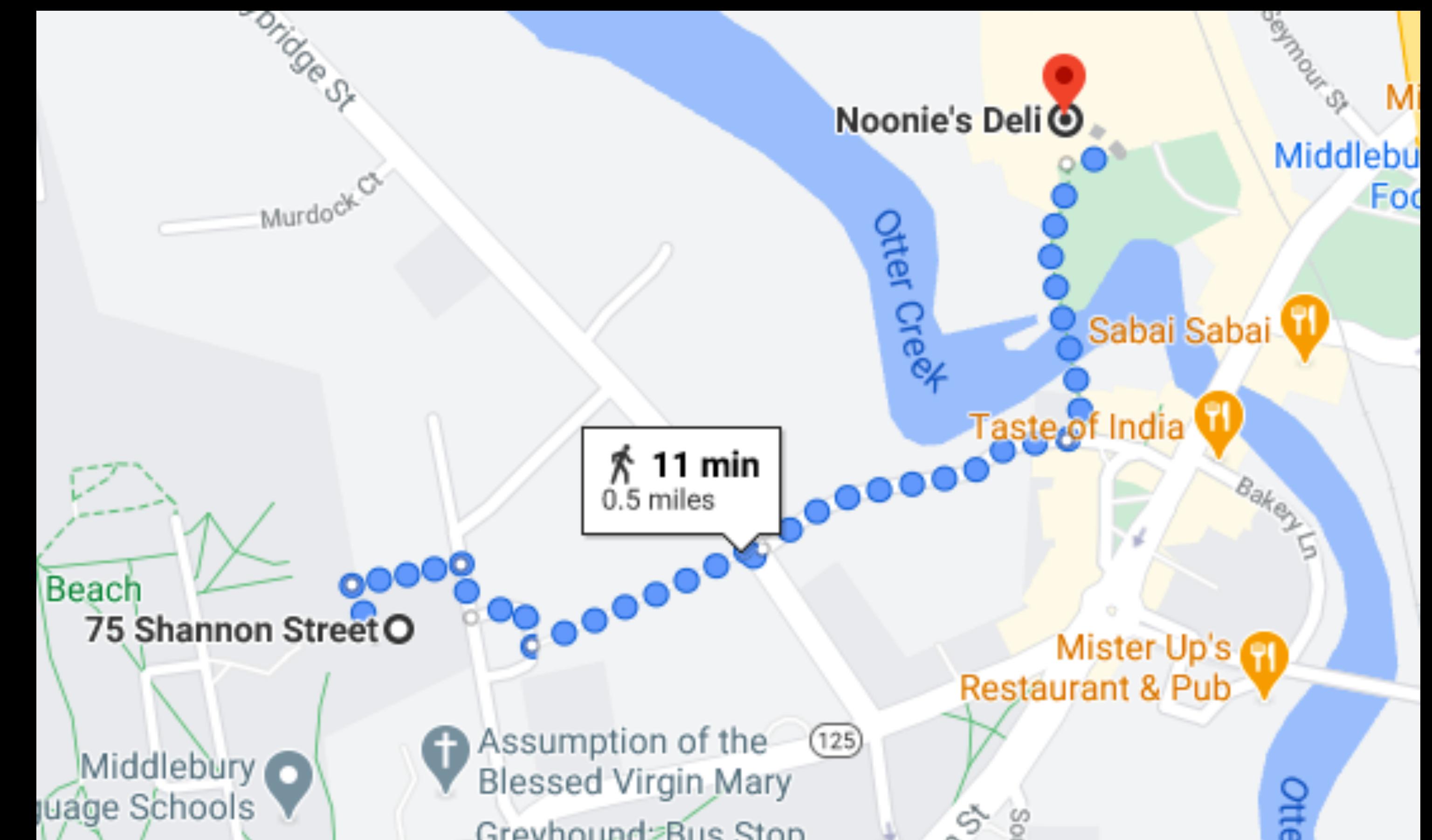
↗ Turn right onto Maple St

Destination will be on the left

118 ft

Noonie's Deli

137 Maple St, Middlebury, VT 05753



Go to lunch at Noonies

CS 105

Go to lunch at Noonies

CS 467

Write abstraction lecture

CS 105

Go to lunch

CS 467

Write abstraction lecture

The Pancake Algorithm

In a large bowl, sift together 1 ½ cups of flour, 3 ½ teaspoons of baking powder, 1 teaspoon of salt and 1 tablespoon of sugar

In a second bowl mix together 1 egg, 1 ¼ cups of milk, 3 tablespoons of melted butter, and a dash of vanilla

Make a well in the center of flour mixture and pour in the liquid ingredients

Mix until just blended

Heat a lightly oiled griddle over medium high heat

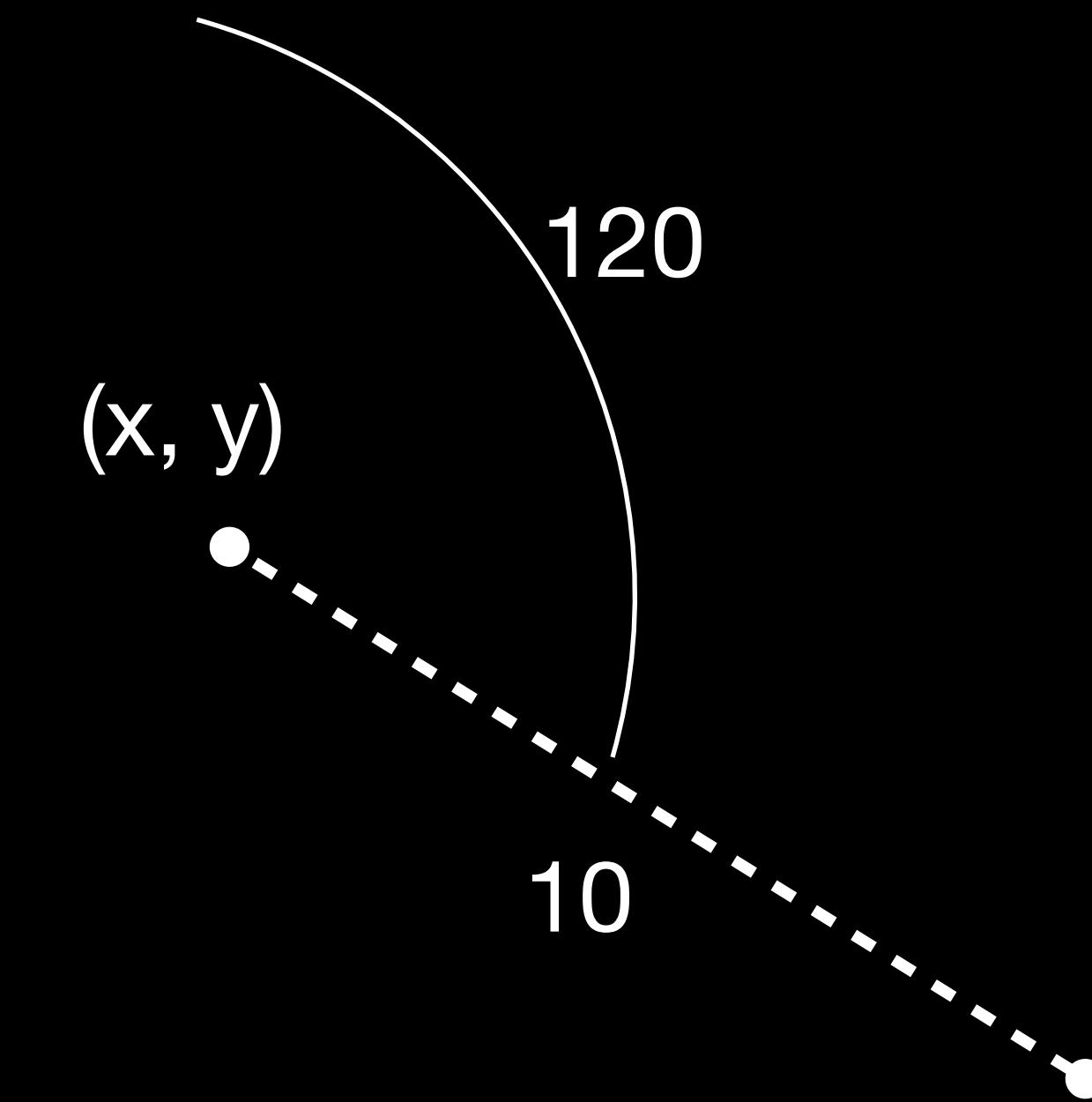
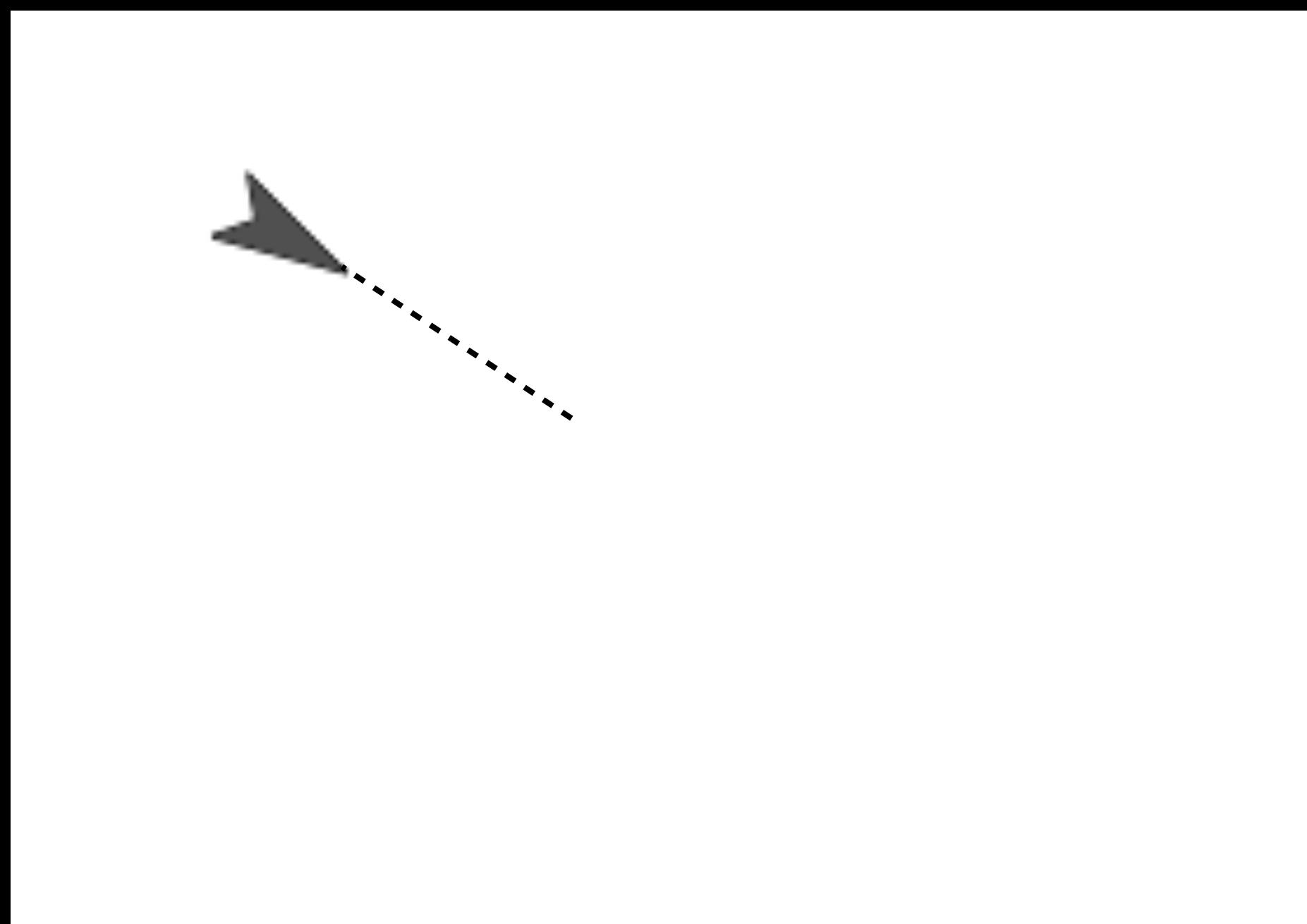
Pour batter onto the griddle, using approximately ¼ of batter per pancake

When bubbles appear or the edges appear dry, flip

When both sides are browned, remove from griddle and serve



move 10 steps



$\text{new } x = x + 10 * \cos(120)$
 $\text{new } y = y + 10 * \sin(120)$

What are the common elements?

What are the details that will change between different uses?

