

# **AI & Machine Learning**

## **Lesson 6**

### **Introduction to AI Lab**

# Warm Up

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## Writing Prompt:

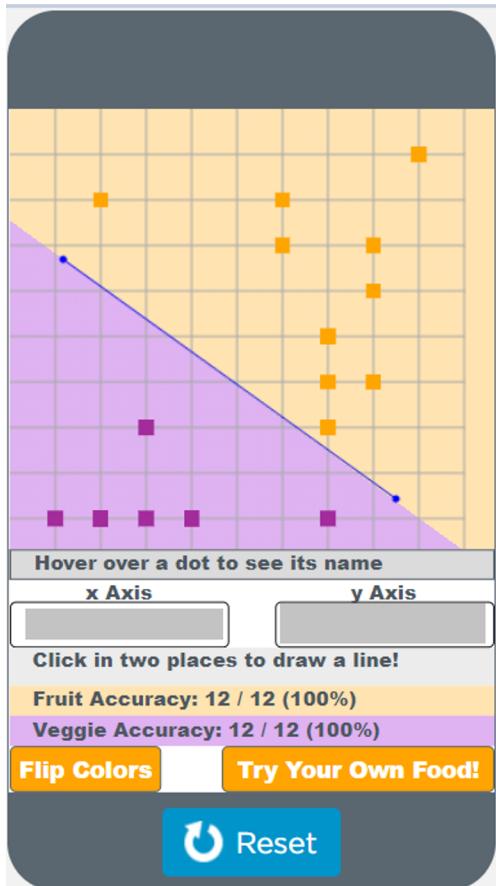
Yesterday we compared fruits based on how sweet they were and how easy they were to eat. What is another feature we could have used to compare foods?



# Code.org

Log into code.org

Navigate to code.org  
Lesson 6 Level 1 -  
Fruit Explorer



Read the instructions and experiment with this widget to see how it works

## Do This

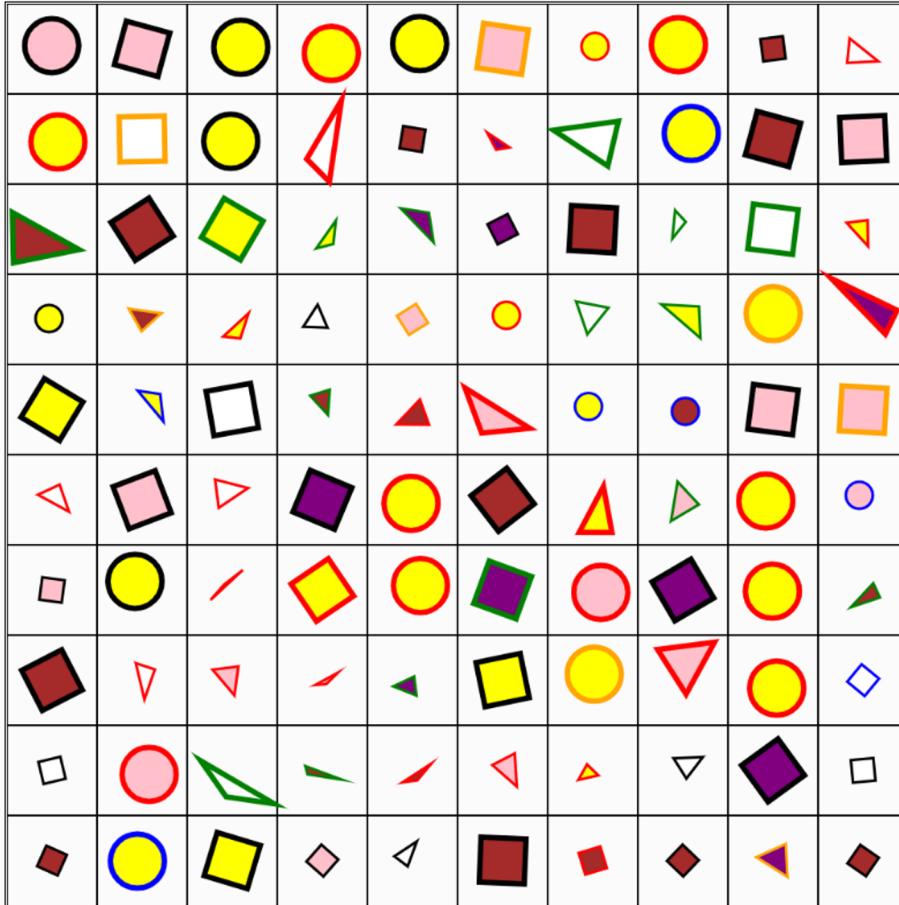
Using the dropdowns to adjust the features, draw a line that creates a model that correctly classifies at least 80% of the fruits and 80% of the veggies

# Rhetorical Question of the Day

How can you use AI Lab to create an accurate machine learning model?

# Activity





# Writing Prompt

We're going to practice using AI Lab to classify shapes.

Based on these images, what are some features you think we can use to train a machine learning model?

# Introduction to AI Lab



AI and Machine  
Learning

Introduction to  
AI Lab

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# Code.org

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Lesson 6 Level 2 -  
Recognizing Shapes

## Do This

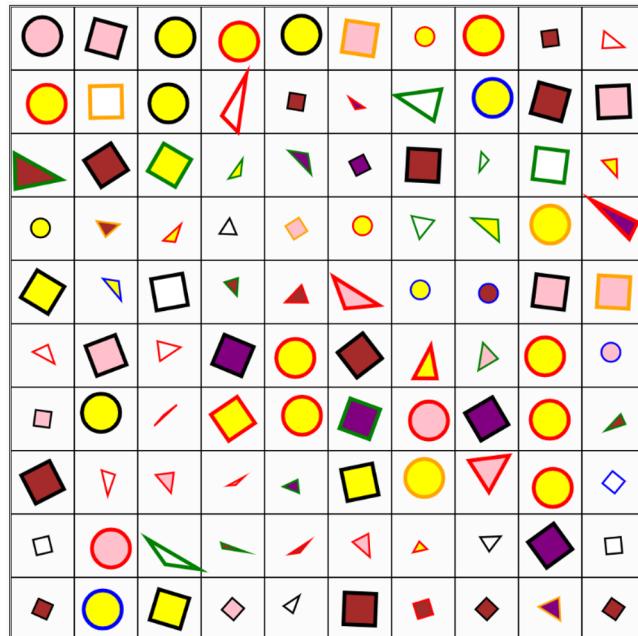
1. Click on each column and look at the right panel to notice patterns that AI Bot found in the data.

Try to create sentences like “When AI Bot sees \_\_\_\_\_, it tends to be a \_\_\_\_\_ shape”

Don’t press the Train button yet!

# Writing Prompt

What types of patterns did AI Bot notice?



## Do This

Using the hot spots in data as a guide, select one or two features to use in your model.

Then press the Train button to train your model

# Training and Testing in AI Lab

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AI and Machine  
Learning  
Training and  
Testing in AI Lab

# Gather These Materials

You should have:

Activity Guide - Training a Model in AI Lab (on Schoology)

Code.org

Pen/Pencil

Activity Guide - Training a Model in AI Lab

CODE

**Level 2: Recognizing Shapes**

Explore AI Lab to create models that can classify a shape. You should train multiple models from the same dataset and keep track of the accuracy by filling in the table below.

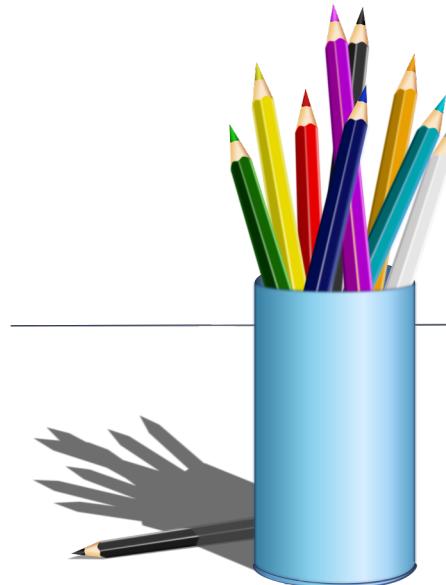
Features	Accuracy
sides	
fill color	
border color	
border color, fill color	
sides, background color	
sides, background color, size	
sides, border color, fill color, background color, size	

**Level 3: Pizza Recommendations**

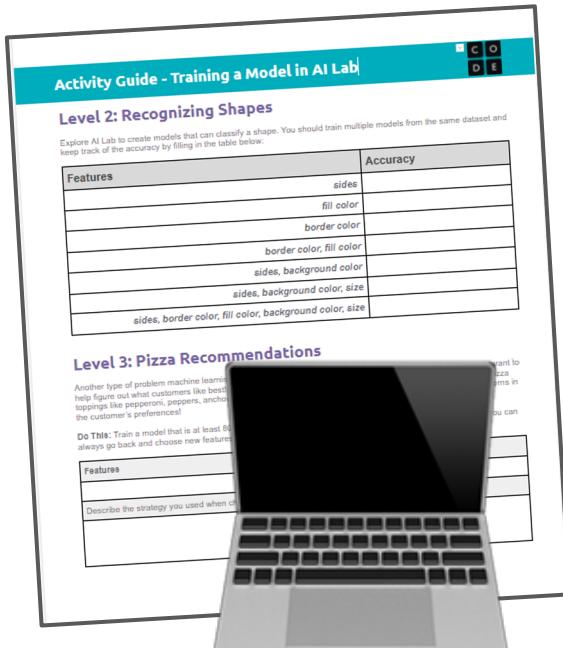
Another type of problem machine learning can help figure out what customers like best! Help figure out what customers like best toppings like pepperoni, peppers, anchovies, etc. based on the customer's preferences!

DO THIS: Train a model that is at least 80% accurate. Always go back and choose new features.

Features
Describe the strategy you used when training your model.



# Do This



1. Explore AI Lab to create models that can classify a shape.
2. You should train multiple models from the same dataset and keep track of the accuracy by filling in the table on your activity guide

## Result

Accuracy

Predict **shape** based on **border color**, **fill color**.

90.00%

Details

## Writing Prompt

This model with ‘border color, fill color’ is 90% accurate.

What would happen if we tried to use this model in the real-world? Do you think it would be just as accurate?

Predict shape based on sides, border color, fill color, background color, size.	90.00%
Predict shape based on sides.	100.00%

## Writing Prompt

Training with all possible features created a model that was less accurate than just training on one feature. Why do you think this happened?

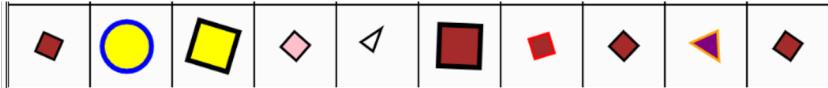
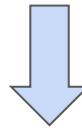
# Accuracy Screen

✓ Correct

✗ Incorrect

Features Actual A.I. Prediction

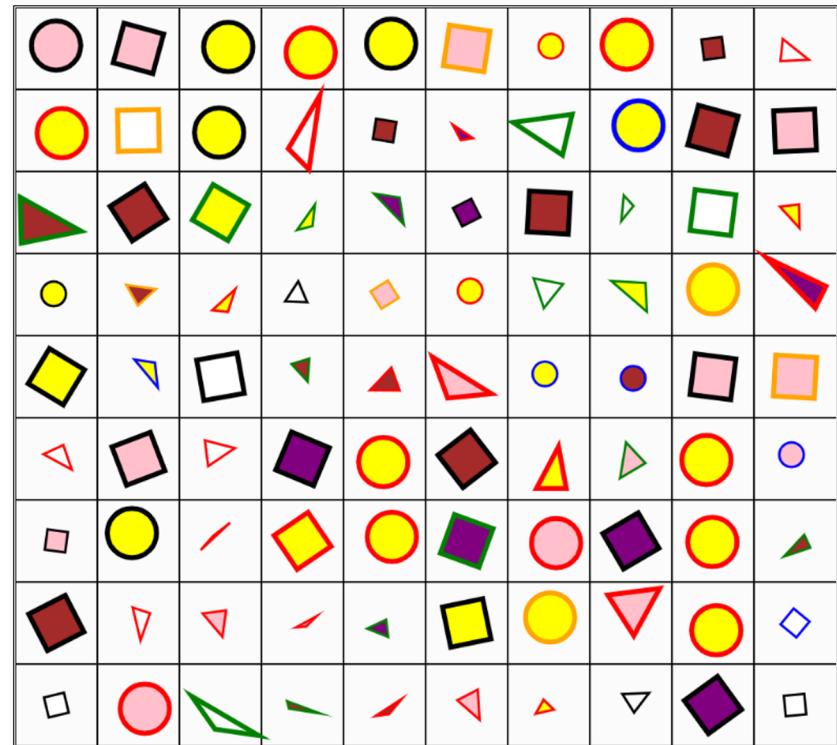
sides	border color	fill color	background color	size	shape	shape
4	red	brown	white	small	square	triangle

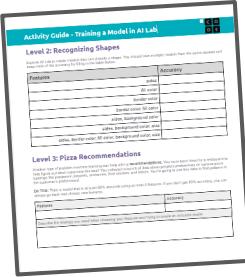


## Writing Prompt

Looking at the training data, why did AI Bot think this small brown shape with a red border was a **triangle**?

# Training Data





# Overview

1. Another type of problem machine learning can help with is **recommendations**.
2. You have been hired by a restaurant to help figure out what customers like best! You collected a bunch of data about people's preferences on various pizza toppings like pepperoni, peppers, anchovies, fried chicken, and others. You're going to use this data to find patterns in the customer's preferences!

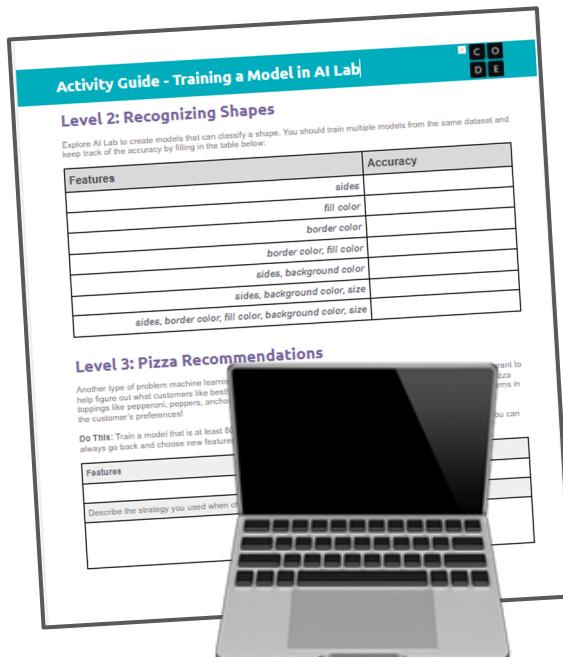


# Code.org

Log into code.org

Navigate to code.org  
Lesson 6 Level 3 -  
Pizza Recommendations

# Do This



1. Train a model that is at least 80% accurate using at most 4 features.

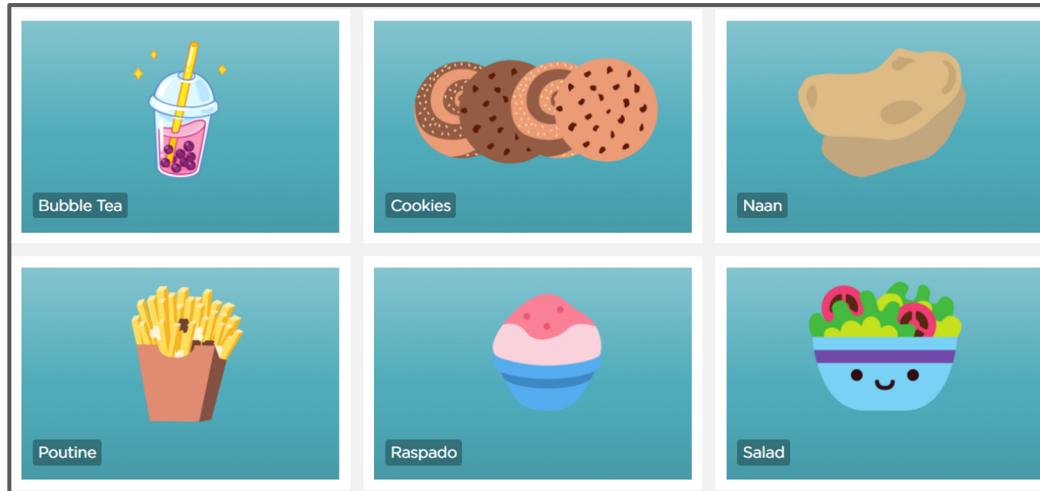
2. If you don't get 80% accuracy, you can always go back and choose new features.

Be sure to record your results on your activity guide

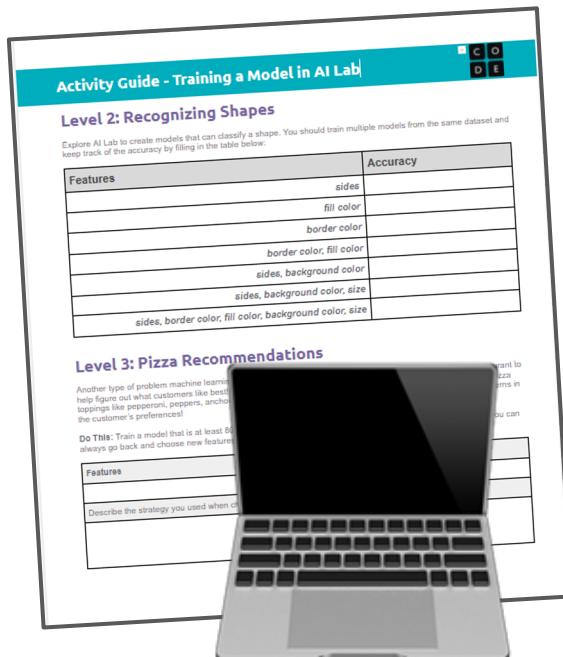


# Code.org

Navigate to [code.org](https://code.org)  
Lesson 6 Level 4 -  
Dataset #4: You Choose



# Do This



- Select a dataset.
- Investigate how you can train a recommendation model for your situation.
- Keep track of your model on your Activity Guide.

# Wrap Up





## **Writing Prompt:**

What is one example from today of how humans can influence the machine learning process?



# **Question of the Day, Revisited**

How can we use machine learning to  
make recommendations?