CELEBRATE CREATIVITY

Computer Science (CS) Education Week:

December 3 – 9, 2018

Register to participate in

HOUR OF CODE

https://hourofcode.com/us

You will be entered to win robots!

Register to participate in

BCPS Hour of Code

S.T.E.M. COMPUTER SCIENCE BROWARD

https://tinyurl.com/BCPSHoC2018

Giveaways!

Find Activities

to do with your students for Hour of Code

https://Code.org/learn

https://Code.org/learn/robotics

SPACE IS LIMITED. DON'T MISS OUT!

Pre-register

for your students to attend and/or present at the

Computer Science (CS) Fair

Saturday, May 18, 2019

https://tinyurl.com/attend-csfair2019

Giveaways, Prizes, Surprise Keynote!

@BrowardSTEM
#BrowardCodes
@Codeorg
#HourOfCode

Everyone Join In-

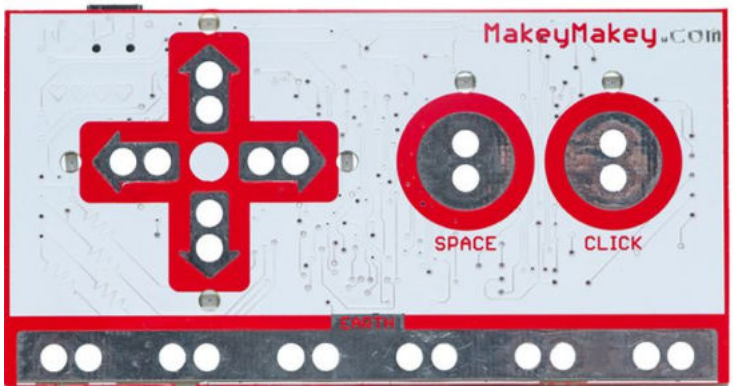
Tweet a selfie video or post

"Creativity is_____. What will you create?"

Tweet pictures

of your students engaged in Hour of Code activities.

ART AND MUSIC WITH MAKEY MAKEY



Guitar Makey Makey remix (RMBroward) - https://scratch.mit.edu/projects/258713679/

Interactive Water Cycle remixed for Makey Makey (RMBroward) - https://scratch.mit.edu/projects/258071827/

Dance Dance Revolution - Scratch V1.1 remix - https://scratch.mit.edu/projects/14044356/

Bongos with Apples - https://apps.makeymakey.com/bongos/

Piano Bananas - https://apps.makeymakey.com/piano/

Large Makey Makey - https://labz.makeymakey.com/cwists/preview/1294x

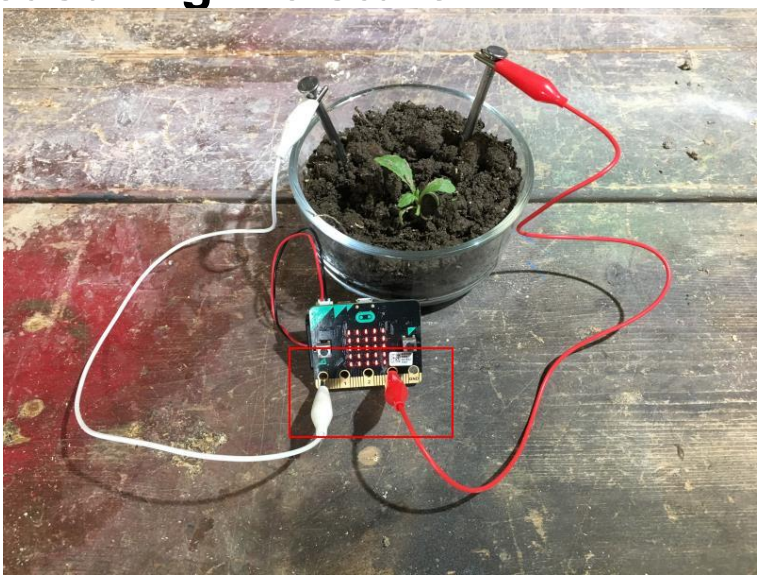
NOTE: To encourage empathy, have students design their controllers based on another student's specification – take into account any limitations.

SCIENCE with MICRO:BIT / SENSOR

Code

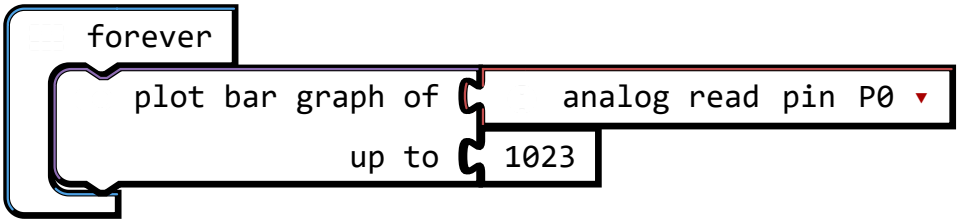
You will code your moisture meter using a pot of dry dirt and wet dirt. This is so you can set the micro:bit to know what both dry and wet conditions are.

Step 1: Measuring moisture



The soil itself has some electrical resistance which depends on the amount of water and nutrients in it. It acts like a variable resistor in an electronic circuit. The water is not conductive but the nutrient content is. The combination of water and soil nutrients makes the soil have some conductivity. So, the more water there is, combined with the nutrients, the less the soil will have electrical resistance.

To measure this, we read the voltage on pin **P0** using `analog read pin` which returns a value between `0` (no current) and `1023` (maximum current). The value is graph on the screen using `plot bar graph`.



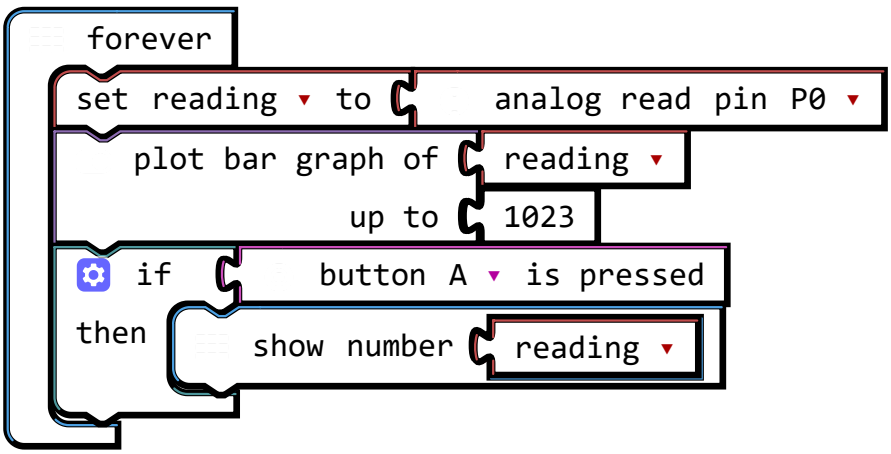
Experiment!

- Insert the nails in the dry dirt and you should see most LEDs turn **off**.
- Insert the nail in the wet dirt and you should see most LEDs turn **on**.

Step 2: Sensor data values

In the previous program, we only have a rough idea of what the sensor value is. It's using just a tiny screen to display it! Let's add code that displays the current reading when button **A** is pressed.

This code needs to go into the `forever` loop. We've also added the variable `reading` to store the reading value.

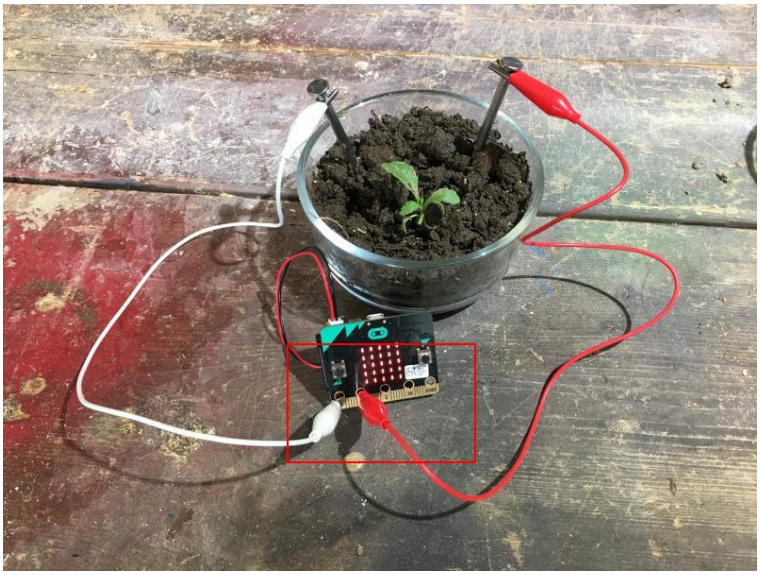


Experiment!

- Insert the nails in the dry dirt, press **A** and note the value. You should see a value close to around `250` for dry dirt.

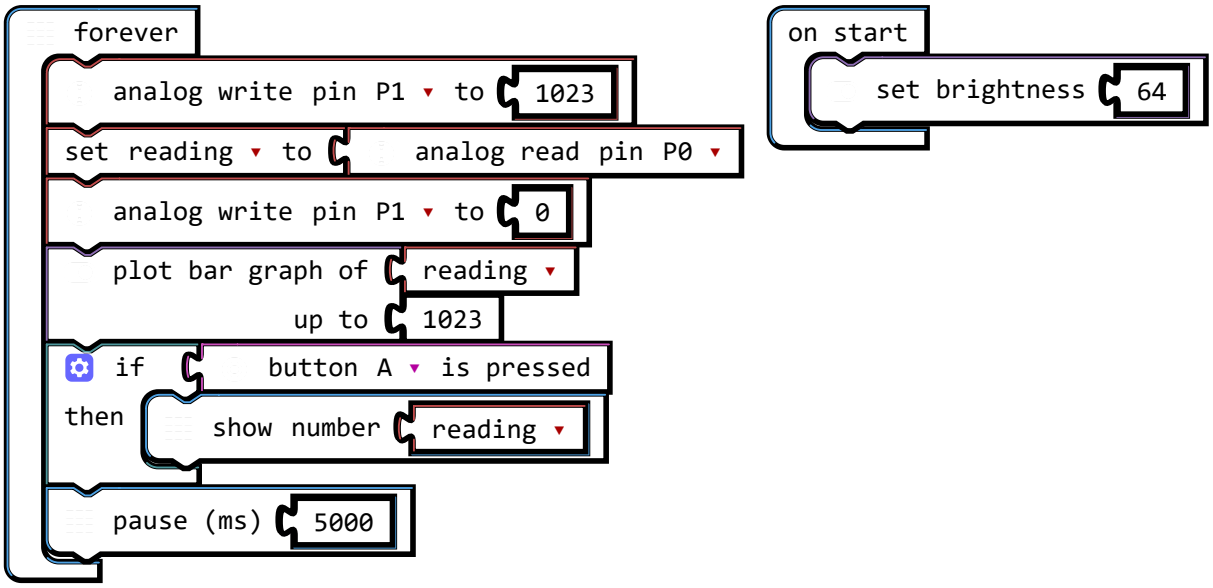
- Insert the nails in the wet dirt, press **A** and note the value. You should see a value somewhere near `1000` for wet dirt.

Step 3: Don’t waste energy!



We want our soil probes to work for a long time and to save our battery power, so we need to tweak our code so our moisture sensor doesn’t use too much energy.

- Our circuit connects directly to the **3V** pin so it is always using electricity. Instead, we will connect it to **P1** and turn that pin **high** only while the measurement is taken. This saves electricty and also avoids corrosion of the probes.
- We will also lower the brightness of the screen to lower the energy consumption from the LEDs.
- Soil moisture changes very slowly so we don’t need to measure it all the time!!! Let’s add a **sleep** of 5 seconds in the loop as well.

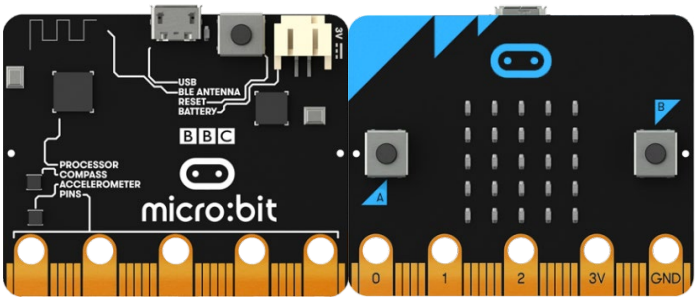


Experiment!

- Using the dry soil and wet soil pots, test that your circuit still works. Remember you'll have to wait up to 10 seconds to see a change!

Coding PE Activities with the BBC Micro:bit

The Micro:bit is a pocket-sized computer 70 times smaller and 18 times faster than the original BBC Micro computers used in schools. It has 25 red LED lights that can flash messages and be used to create games.



There are two programmable buttons that can be used to control games or pause and skip songs on a playlist. It has an accelerometer, so it can detect motion and knows when you're on the move. The built-in compass knows which direction you're heading in and it can use a low energy Bluetooth connection to interact with other devices and the Internet. Using these inputs, outputs and sensors, let's put a Computer Science spin on an old classic...

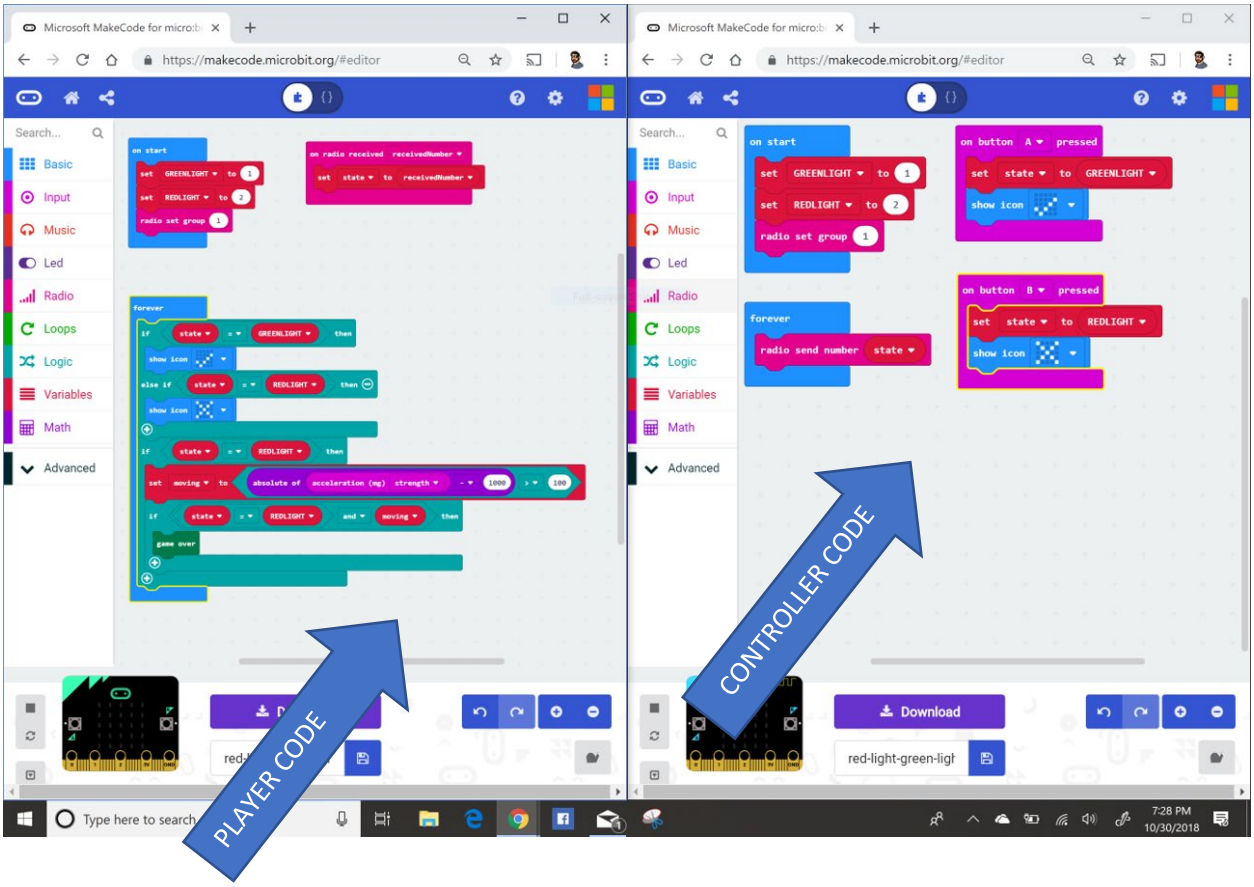
Red Light, Green Light, 1-2-3!!!

This is the classic “Red Light, Green Light” game where one person is a virtual stoplight and gives commands to the other players to either stop or go.

The player chosen as the current the stoplight says, “Green Light!” and turns away from the other players. The other players move toward the stoplight player, from a distance set at the beginning of the game and try to touch them. The stoplight player can at any time say, “Red light!” and then turn around to face the other players. If the stop light player sees anyone still moving, they call them out and they are finished playing until a new game is started. The stoplight player repeats the red light, green light cycle. If one of the other players happens to touch the stop light player before they can turn around when saying “Red Light!”, then the current stoplight player moves to the beginning of the course and the other player becomes the stoplight. The game continues until only the stoplight player remains.

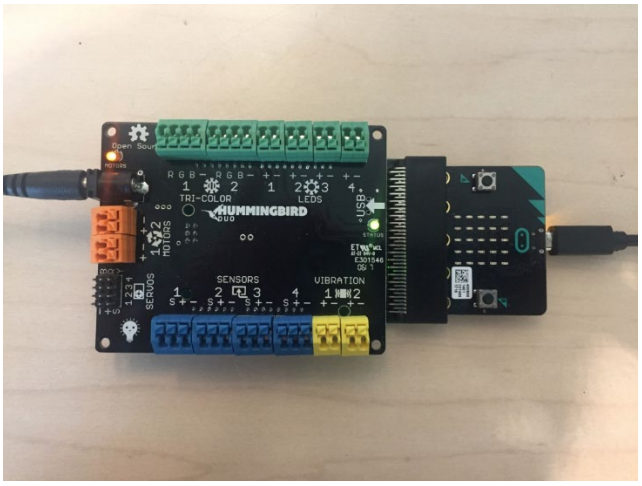
In this remake of the game, we will use a Micro:bit, its radio, and the accelerometer to enforce these rules!

The Code:



Micro:bit & Hummingbird:

https://www.hummingbirdkit.com/learning/hummingbird-and-microbit



Find This Project and more at: https://makecode.microbit.org/v1/projects

MORE ABOUT MICROBIT!

https://sway.office.com/aIRFapeuz42SQOVW?ref=Link

TEAM NAME:_____

Ozobot Through Florida

Planning Document

Group Member 1 :_____

Group Member 2:_____

Group Member 3:_____

RESEARCH: Significant Person in Florida's History

1. Who did you select as your significant person/group in Florida's History?

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2. How did this person or group arrive in Florida? Were they born in Florida or did they travel to Florida? If they traveled to Florida, when did they arrive?

_____
_____
_____
_____

3. Why is this person or group significant (important) to Florida? What contributions did they make that impacted (made a difference to) Florida?

_____
_____
_____
_____
_____
_____
_____
_____

4. What interesting facts did you learn about this person?

_____
_____
_____
_____

5. **TIMELINE**: List at least 3 important events in this person's life (not including the date they were born and the date they died). Be sure to put the dates in chronological order.

DATE	EVENT
	Born
	Died

RESEARCH: Florida Industry

1. What Florida Industry did you select?

   _____

2. What about Florida (its climate, location, etc.) makes it ideal (good) for this particular industry?

   _____
   _____
   _____
   _____

3. How did this Florida Industry begin?

   _____
   _____
   _____
   _____

4. What Significant people or groups impacted (made a difference to) this Florida Industry?

   _____
   _____
   _____
   _____

5. What interesting facts did you learn about this Industry?

   _____
   _____
   _____
   _____

6. **TIMELINE**: List at least 4 important events related to this Florida Industry. Be sure to put the dates in chronological order.

DATE	EVENT
Approximate Date	Industry began

RESEARCH: Significant Event in Florida's History

1. What significant event of Florida's History did you select?

   _____

2. Date of Event:_____

3. Where did the Event take place:_____

4. What caused this event?

   _____
   _____
   _____
   _____

5. What Significant people or groups are related to this event?

   _____
   _____
   _____
   _____

6. Why is this event significant (important) to Florida? What effect did this event have on Florida and its people?

   _____
   _____
   _____
   _____
   _____
   _____
   _____
   _____

7. What interesting facts did you learn about this Event?

   _____
   _____
   _____
   _____

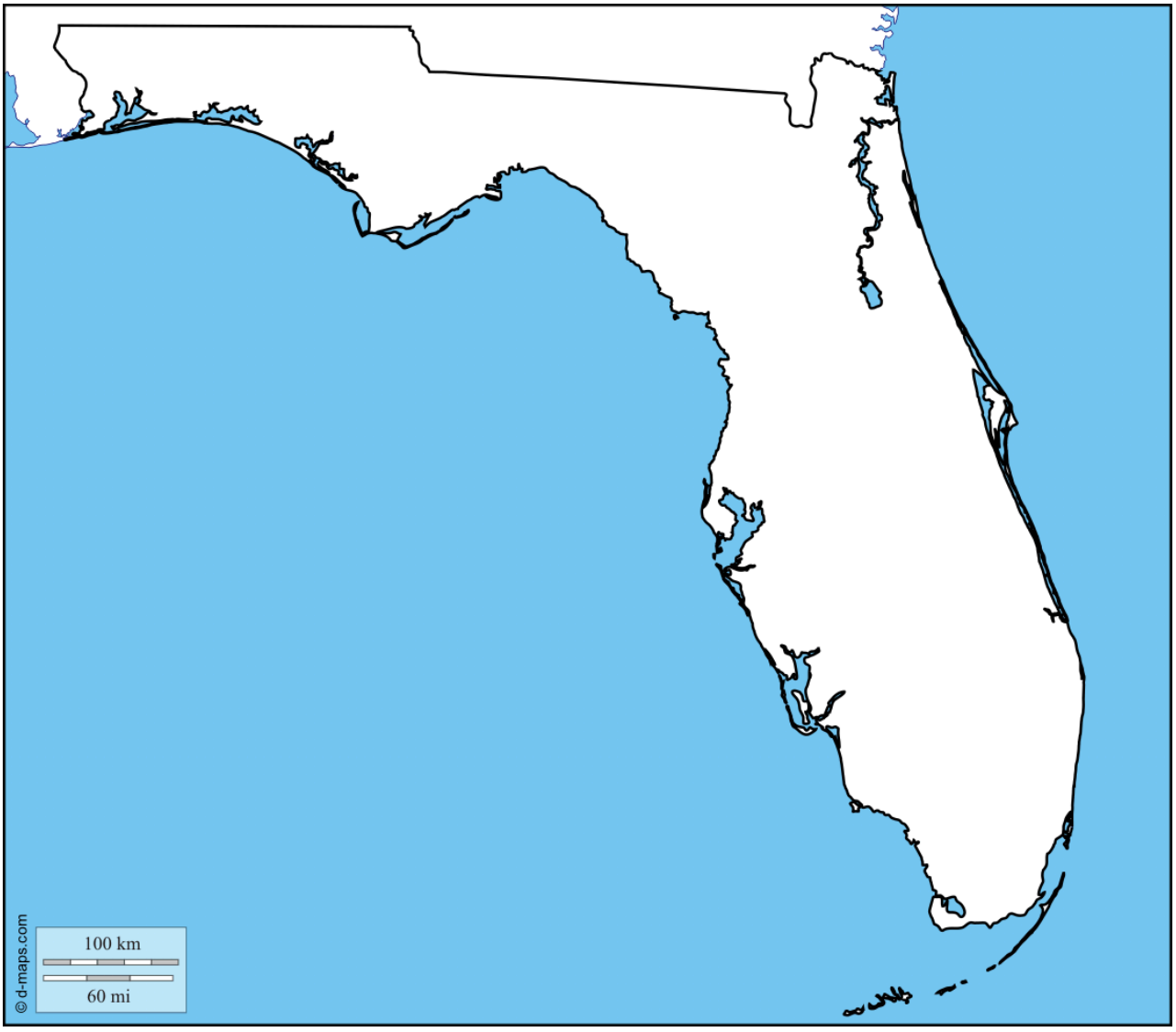
What symbols will you use on your map to represent the significant Florida person, event, and industry you have selected? DRAW those symbols in the table below and include the city in which you will place the symbol. Be sure to specify in which order your ride will make the stops. You can do this by numbering them as Ride Stop number 1, Ride Stop number 2, and Ride Stop number 3.

MAP KEY

Significant Person	Florida Industry	Significant Event
Ride Stop #: 1 2 3	**Ride Stop #: 1 2 3**	**Ride Stop #: 1 2 3**
LOCATION:	**LOCATION:**	**LOCATION:**

RIDE MAP

Draw the symbol for your significant Florida person, event, and industry you have selected on the map below. Be sure to place it in the city in which you would like it placed.



Sample SCRIPT:

START LOCATION: City where your school is located

First Stop:

Location: Jacksonville, FL

Introduce Your Significant Person:

Henry Flagler was a very wealthy businessman who had made his fortunes as part owner of Standard Oil, one of the largest US oil companies of that time. Flagler and his ailing wife came to Jacksonville, Florida in 1879 because his wife's doctor believed the warm climate would help her condition. Flager's first wife died two years later, but he liked Florida so much that he decided to stay.

Second Stop:

Location: Palm Beach Inn, Palm Beach, FL

Introduce Your Significant industry:

Flagler liked Florida and its warm climate but found the hotels and transportation system in Florida to be inadequate. For this reason, Flagler decided to build several very nice hotels in Florida and then worked on building a railroad system so that tourists could easily get to them.

Flagler encouraged fruit farming and settlement along his railway line and made many gifts to build hospitals, churches and schools in Florida.

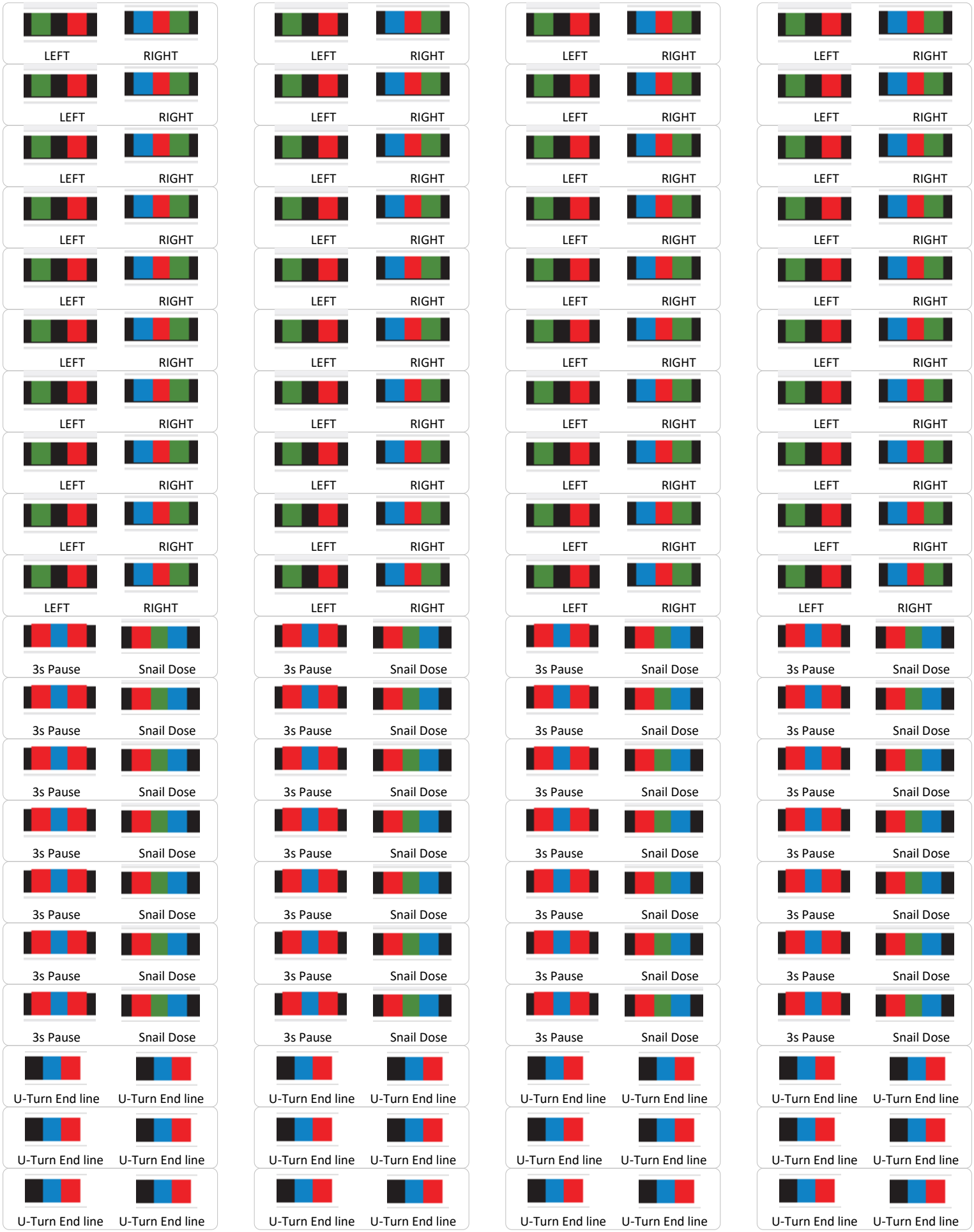
Third Stop

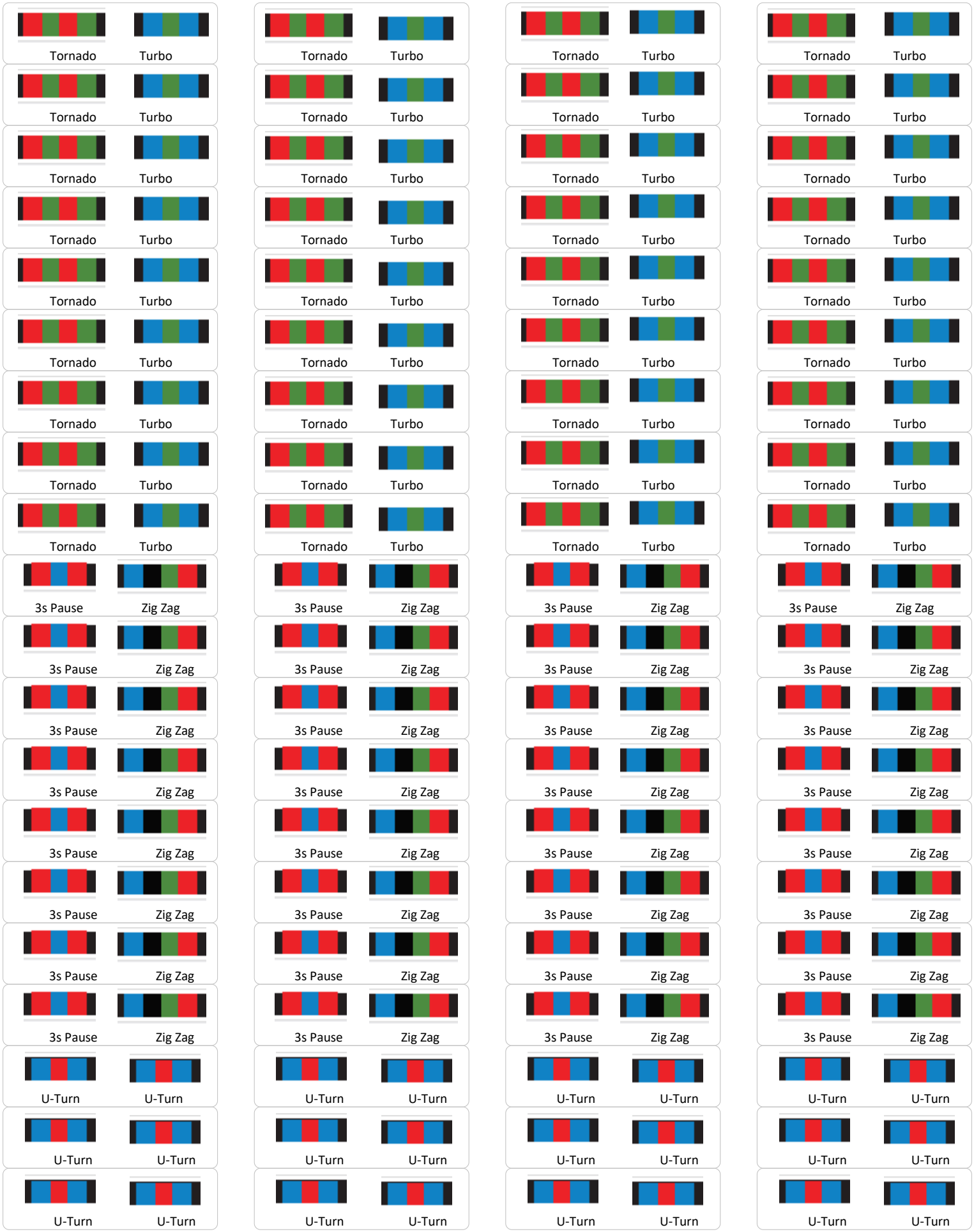
Location: Key West, FL

Introduce Your Significant Historical Event:

In 1912, the Florida Overseas Railroad was completed to Key West.

END LOCATION: Back at your school


LEFT
RIGHT
3s Pause
Snail Dose
U-Turn End line


Tornado
Turbo
3s Pause
Zig Zag
U-Turn