ozobot edu

bit evo

OZOBOT WINTER OLYMPICS 2018

CREATED BY

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TOPICS

Robotics, Programming, Science

AGES

Grades 4+

METHOD

Color Codes
OzoBlockly

DURATION

45 Minutes (per activity)

2018 WINTER OLYMPICS

OZOBOT EDITION

TORCH RELAY & OPENING CEREMONIES (Feb 9th on NBC)

- Program 2-5 ozobots "passing the torch"
  - Evo - Program the LED to light and move until colliding with the next ozobot, then turn the light off (and next one lights up and begins movement)
  - Bit - Program the LED to light and move until passing with the next ozobot, then turn the light off (and next one lights up and begins movement).
  - Tip: use line and line follow blocks in Ozoblockly or adapt this task for markers.
  - Video this process and save to the Torch Relay video folder
- Each participating classroom should introduce themselves as "Team ___" (country) and the events they've chosen to enter
  - Film this and save the video to the Opening Ceremonies folder to be compiled

EVENT 1: CURLING (Feb 8th-25th on NBC)

Summary: In curling, two teams face off on a rectangular ice surface called a Curling Sheet. At one end lies a target, called The House, with a bull's-eye called the "button".The objective is to slide large granite stones from one end of the Curling Sheet to the other and have them come to a stop as close to the button as possible. Video: https://youtu.be/GTVqtGTfIc8

Ozobot Event Description: Teams will take turns trying to code their Ozobot to get the closest to the button. Teams can knock each other. Each ring has a specific point value. At the end of 4 rounds, the team with the most points is the winner.

EVENT 2: FIGURE SKATING

Summary: Figure skating is an ice sport that combines athletic elements in a combination with perfection and elegance to self-chosen music. Video:

https://youtu.be/2SW_3fiqntM

Ozobot Event Description: Time to try your geometry talents in „turtle graphics" in individual skating or make own choreography in team ice dancing.

- **Single Skating:** There are some skating figures (shapes). Traveling in order from 1 to 5, you must successfully complete one figure prior to moving on to the next. You should try to keep your Ozobot as close to the printed guide segments as possible. Stray too far off course and you will be asked to try again. The one that successfully skates along the most figures within 30 minutes will be awarded a gold medal. In the event that more than one completes all shapes, the gold will be awarded to the fastest one to complete the course. Good Luck!
- **Ice Dancing:** Choose your music and choreography for 2 or more Ozobots for at least 30 seconds within 30 minutes. Take and upload a video.

EVENT 3: ALPINE SKIING (Feb 8th-24th on NBC)

Summary: Alpine skiing, or downhill skiing, is the sport or recreation of sliding down snow-covered hills on skis with fixed-heel bindings. It is characterized by the requirement for mechanical assistance getting to the top of the hill. Video: https://youtu.be/1fhwcSdyloI

Ozobot Event Description: Code Your Ozobot with Ozoblockly to ski downhill on the track and after the last slalom flag, cross the final line and stop. You can also use some happy movements after finishing the race.

EVENT 4: BOBSLEIGH (BOBSLED) (Feb 18th-21st, 24th-25th on NBC)

Summary: Bobsleigh is a sliding sport where teams of two or four race sleds down a long and twisting track of ice. Video: https://youtu.be/UGbOP79EhT0

Ozobot Event Description: Create a bobsled using paper with line track glued together in a circle (You can use line, markers or Ozoblockly) and make a competition. The fastest one or team wins.

CLOSING CEREMONY (Feb 25th on NBC)

- Create medals for your Ozobots and take video of students attaching medals to Ozobots (Ozobots can 'react' with sound (evo)/light at winning a medal!)
- Track all of the Ozobot medals for your country and create a Google Slide (or just caption the above video) to show national standings
  - Save the video/slides to the [Closing Ceremony](#) folder to be compiled

Olympic Curling with Ozobot!

Students will learn about speed, distance, velocity, as well as "if/and/while" statements and the basic rules to the Olympic sport of Curling.

Tags: `speed` `coding` `variables` `block` `coding` `force`

Grades: 4 to 12+
Duration: 45 minutes
Supplies: competition map, 1 Ozobot for each pupil/team, tablet or computer to code within Ozoblockly, ruler

Step #1: Learn About Curling

This video gives an insight to what Curling is, and how it works.
Students will code their Ozobots to move like the stones do in Curling.

YouTube video: https://youtu.be/O_03ZG1L5nc

Educator Tip:

Be sure to go over the rules, as well as remind students about keeping their Ozobot "safe and sound".

Step #2: Preparation

Print both map parts and put it together, so You get half of curling playground.

Foto: Autor: Benson Kua, CC BY-SA 2.0, https://commons.wikimedia.org/w/index.php?curid=8859663

Step #3: Code Ozobot to Move

Students will use the block code Ozoblockly to get their Ozobot move toward the target. They will get only 4 practice runs before the Curling competition.

Educator Tip:

Be sure to go over how to make robot to go more straight… Ozobot might check surface color to get closer to button.

Step #4: Test Runs

Each team will be given 4 test runs, to determine what strategy, speed, time or wahtever is needed to get in the middle of the target, or button.

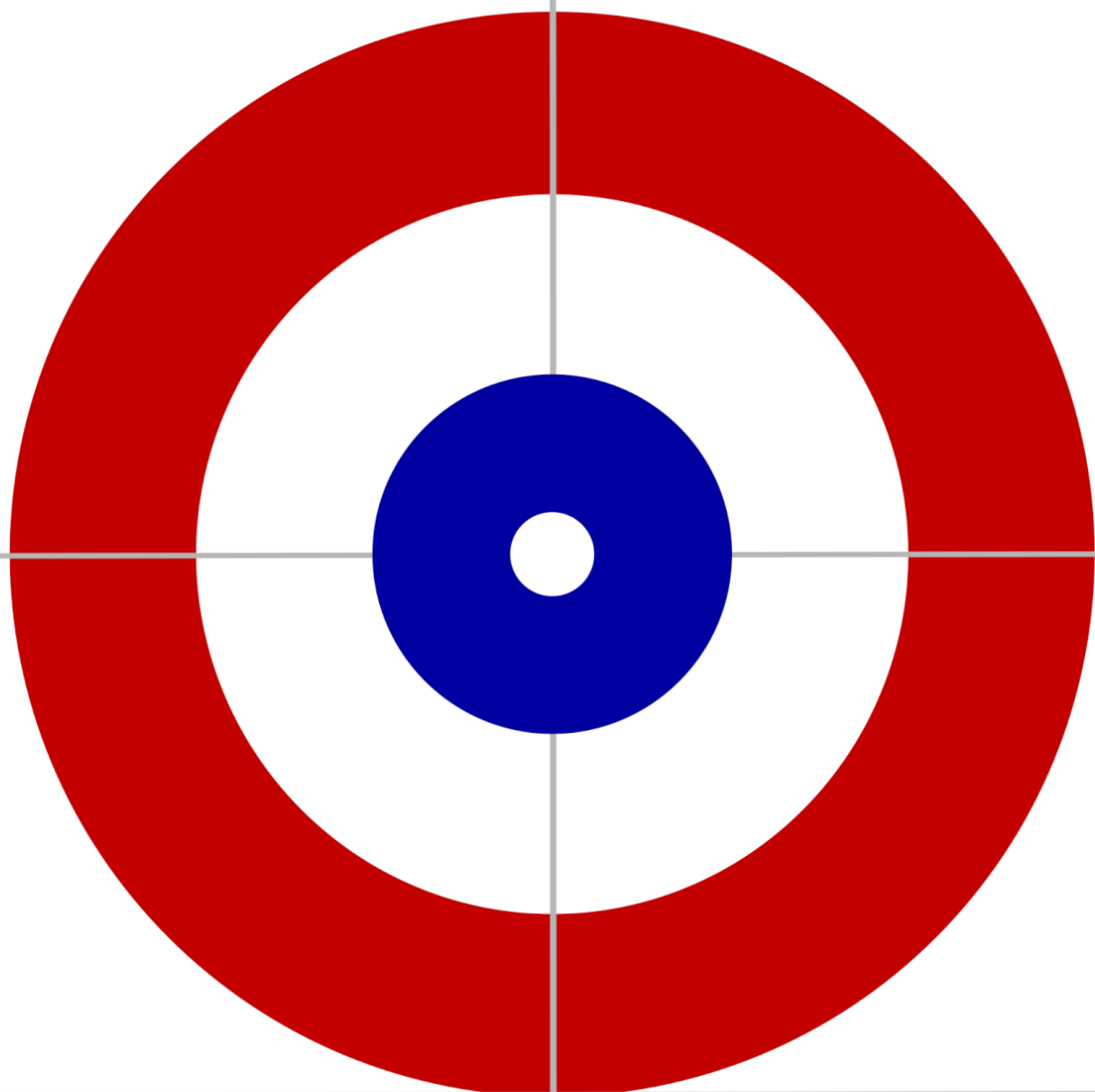**Educator Tip:**
Or use timer for 15 minutes for test runs.

Step #5: Begin Curling Competition

Two or three teams will take turns trying to code their Ozobot to get the closest to the button in one round. Teams can knock each other. The nearest one gets 2 points, the second one gets 1 point, others 0 point. At the end of 4 rounds, the team with the most points is the winner. To get points, Ozobot must be inside of red circle.

Team/Round	I.	II.	III.	IV.	Celkem
Team 1					
Team 2					
Team 3					

Educator Tip:
Or each ring can have a specific point value.

Olympic Single Skating with Ozobot!

Students will learn about shapes, turtle graphics, colors, distance, as well as "loop" statement and the basic rules to the Olympic sport of Figure Skating or Ice dancing.

Tags: shapes coding variables block loop colors turtle graphics

Grades: 4 to 12+
Duration: 45 minutes
Supplies: maps with shapes, 1 Ozobot for each pupil/team, tablet or computer to code within Ozoblockly environment

Step #1: Learn About Figure Skating

This video gives an insight to Physics used by Figure Skating.
Students will code their Ozobots to move and light color in order to given shapes.

YouTube video: https://youtu.be/2SW_3fiqntM

Educator Tip:

Be sure to go over the rules, as well as remind students about keeping their Ozobot "safe and sound".

Step #2: Preparation

Print all maps for each student or team. There is five maps - each containing two shapes (basic and advanced) taken from Shape Tracer 1 & 2 (https://games.ozoblockly.com). You can participate in basic or advanced challenge. 1 square is 1 cm x 1 cm (1 cm = 1 Ozobot step).

OZO FIGURE SKATING 1
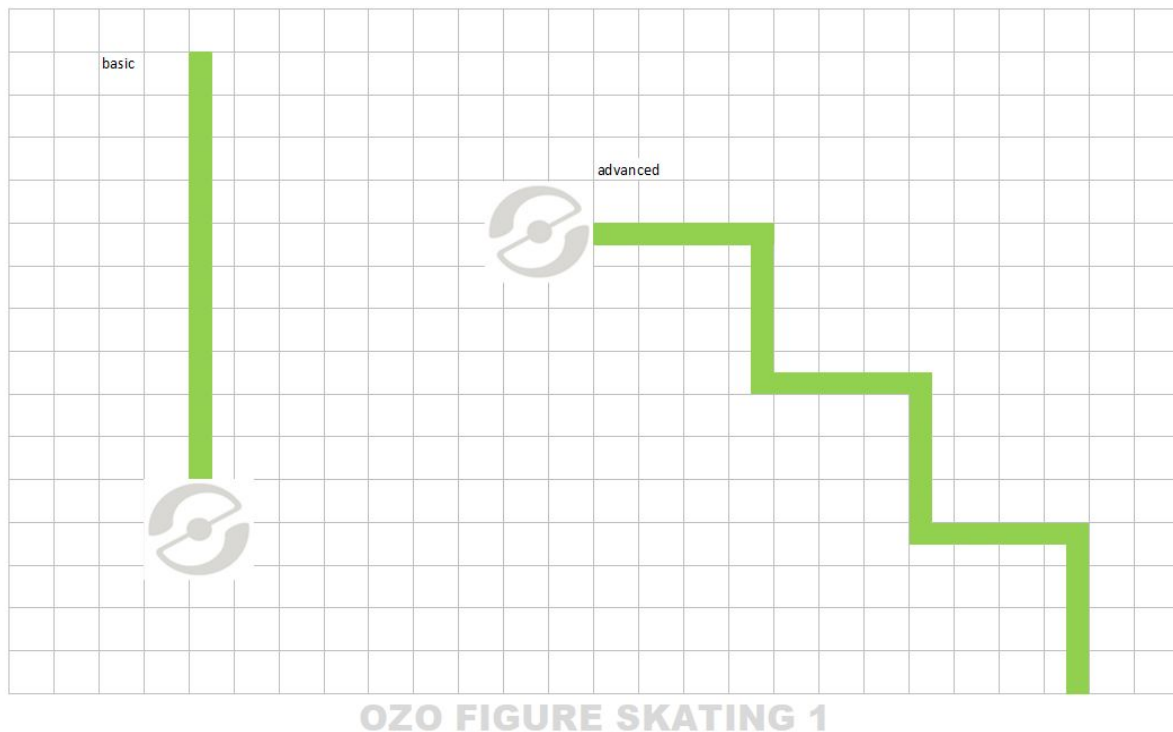
Educator Tip:
Students could play roles (robot and coder) and make the shapes too… Be sure about rules and not using line following. There is one map for Free Skating = own shape creations.

Step #3: Code Ozobot to Move and Color Light

This challenge could be solved in Games Ozoblockly (https://games.ozoblockly.com) or more precise in Ozoblockly (https://ozoblockly.com). No Line Following!

Students will use the block code Games Ozoblockly or Ozoblockly to get their Ozobot move with flashing right color too, so that it moves along the specified curve (without using line following). They should deal one after the other in the right order within 30 minutes.

Educator Tip:

Based on https://games.ozoblockly.com. If using https://ozoblockly.com, there is better to add some waiting block (cca 3 sec) to have time to double click Ozobot and get him to start point.
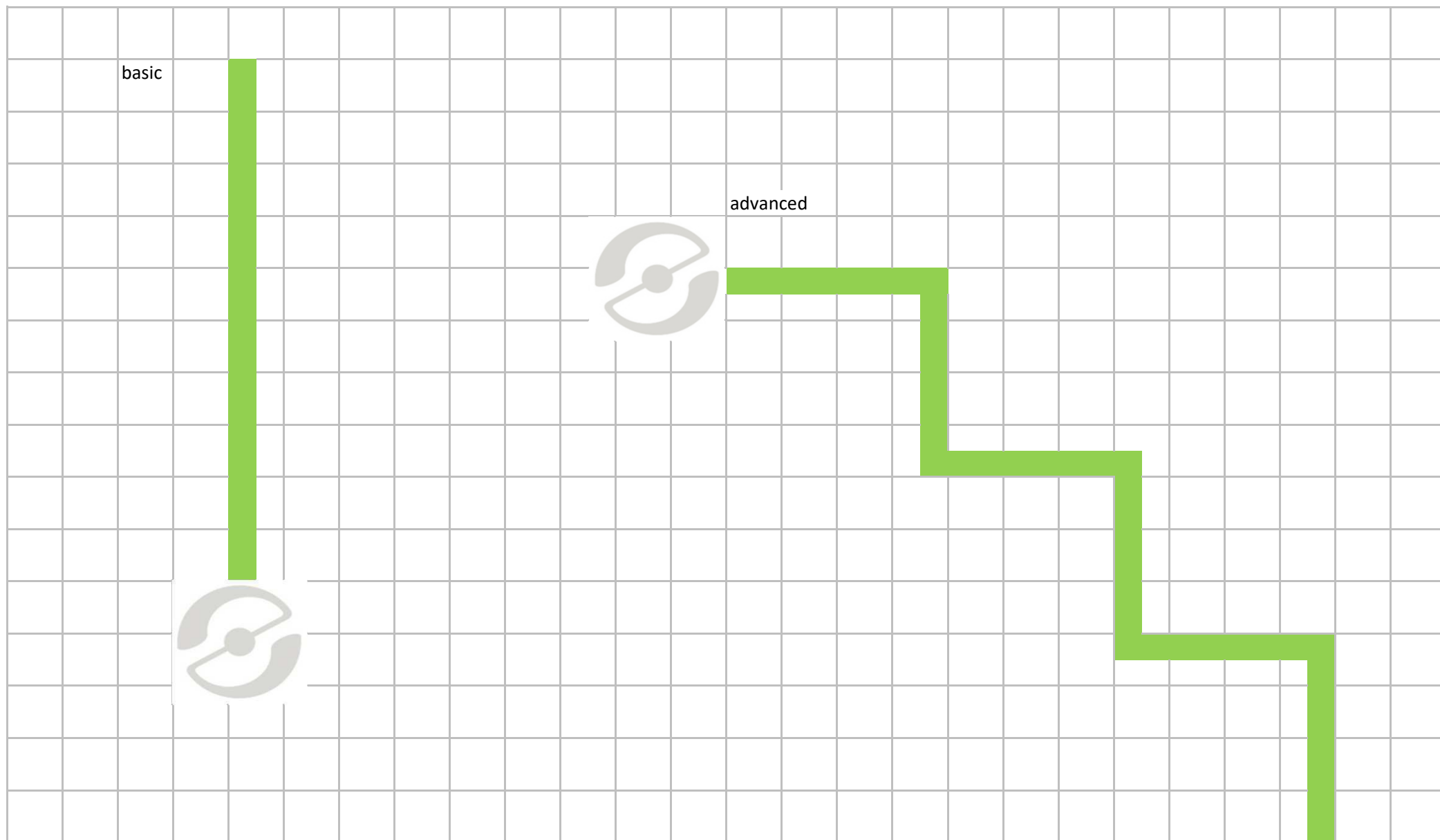There could be some trouble with robots going straight… This should not be counted as an error in Games Ozoblockly. Code rules! In Ozoblockly level 4, there is a possibility to handle directly the power of left and right motor.

Step #4: The winner is...

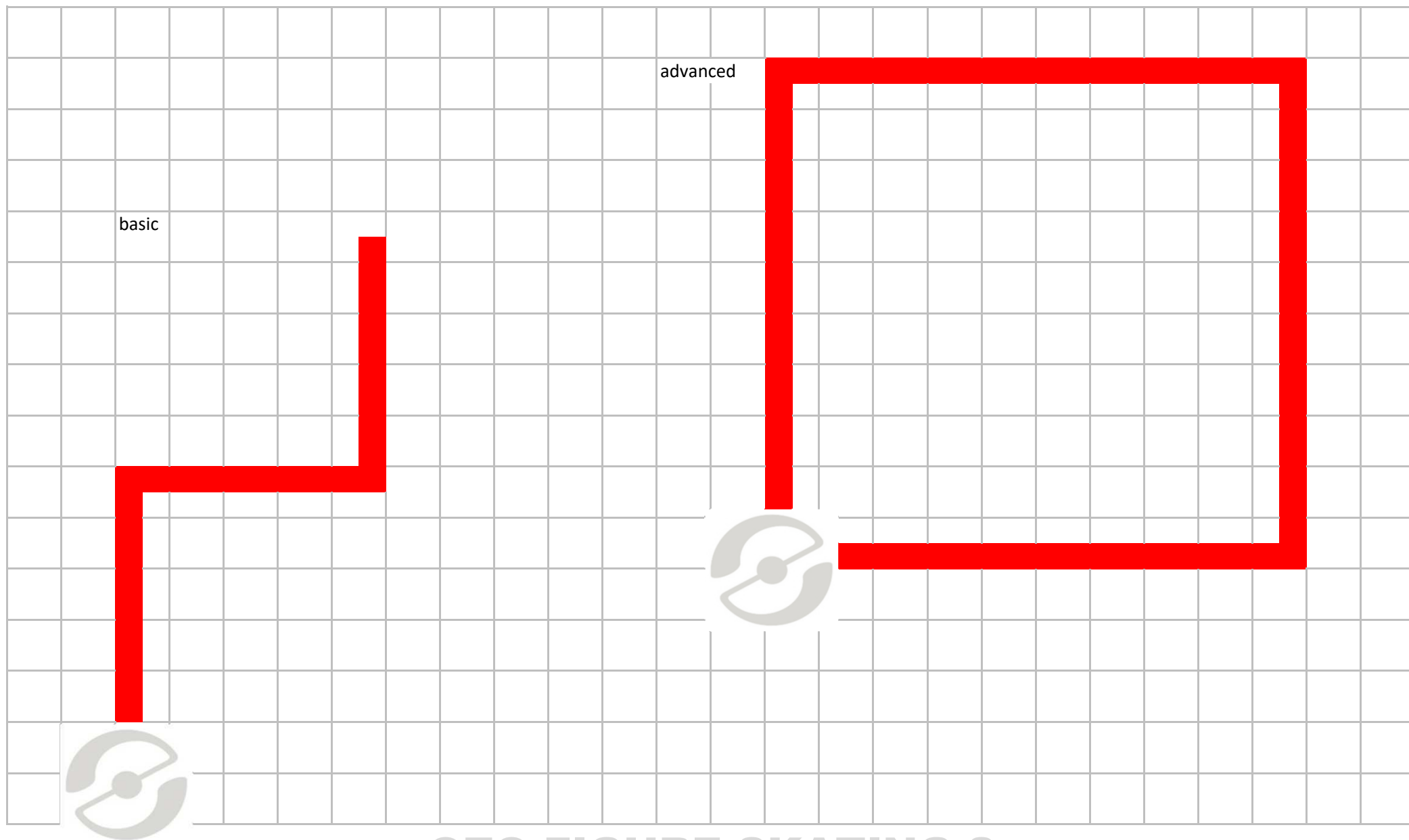The first one, who solves every given shapes get the gold medal!

Educator Tip:

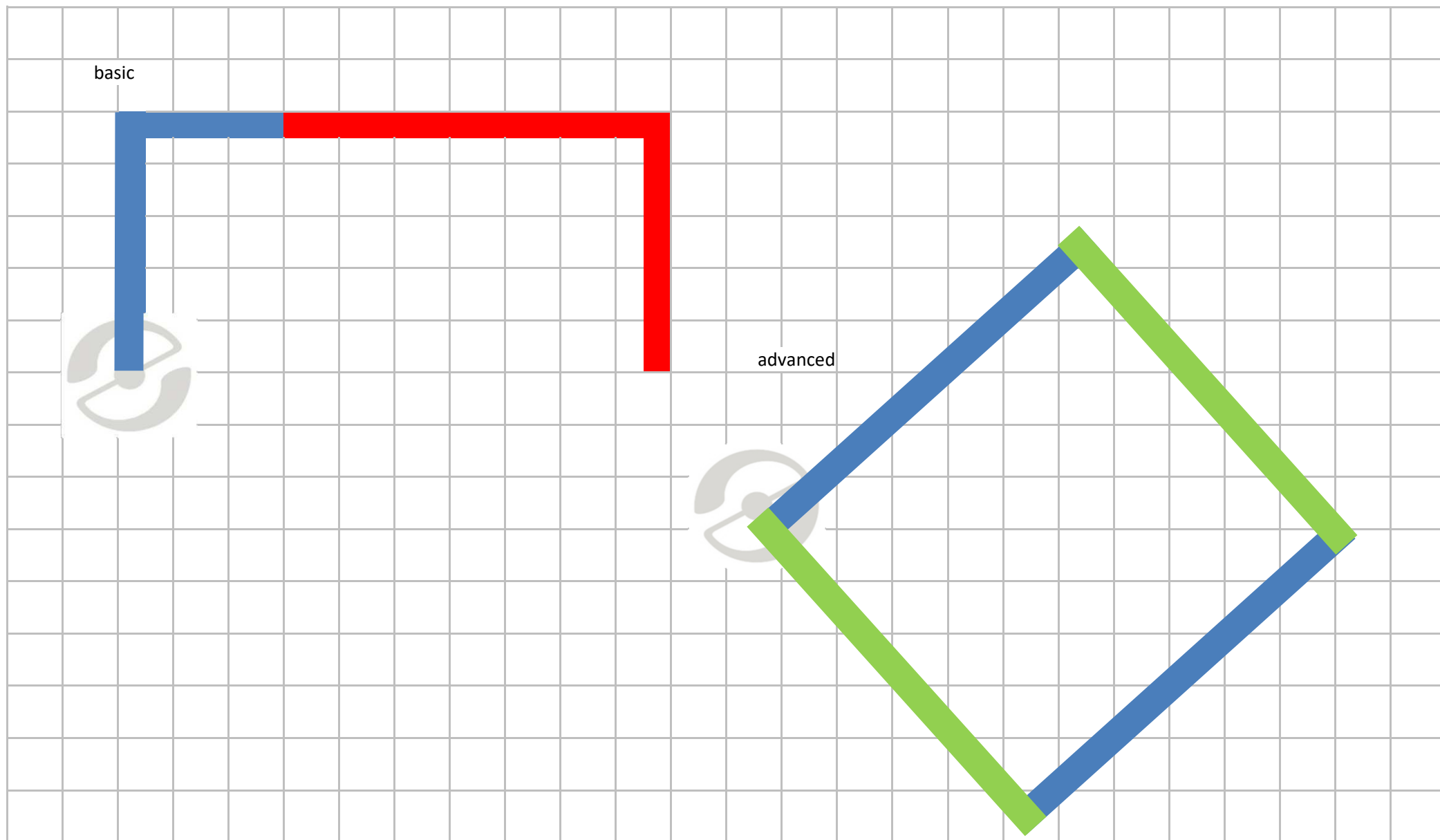It is also possible to assess the code length etc. Students could take a „light painting" photograph.
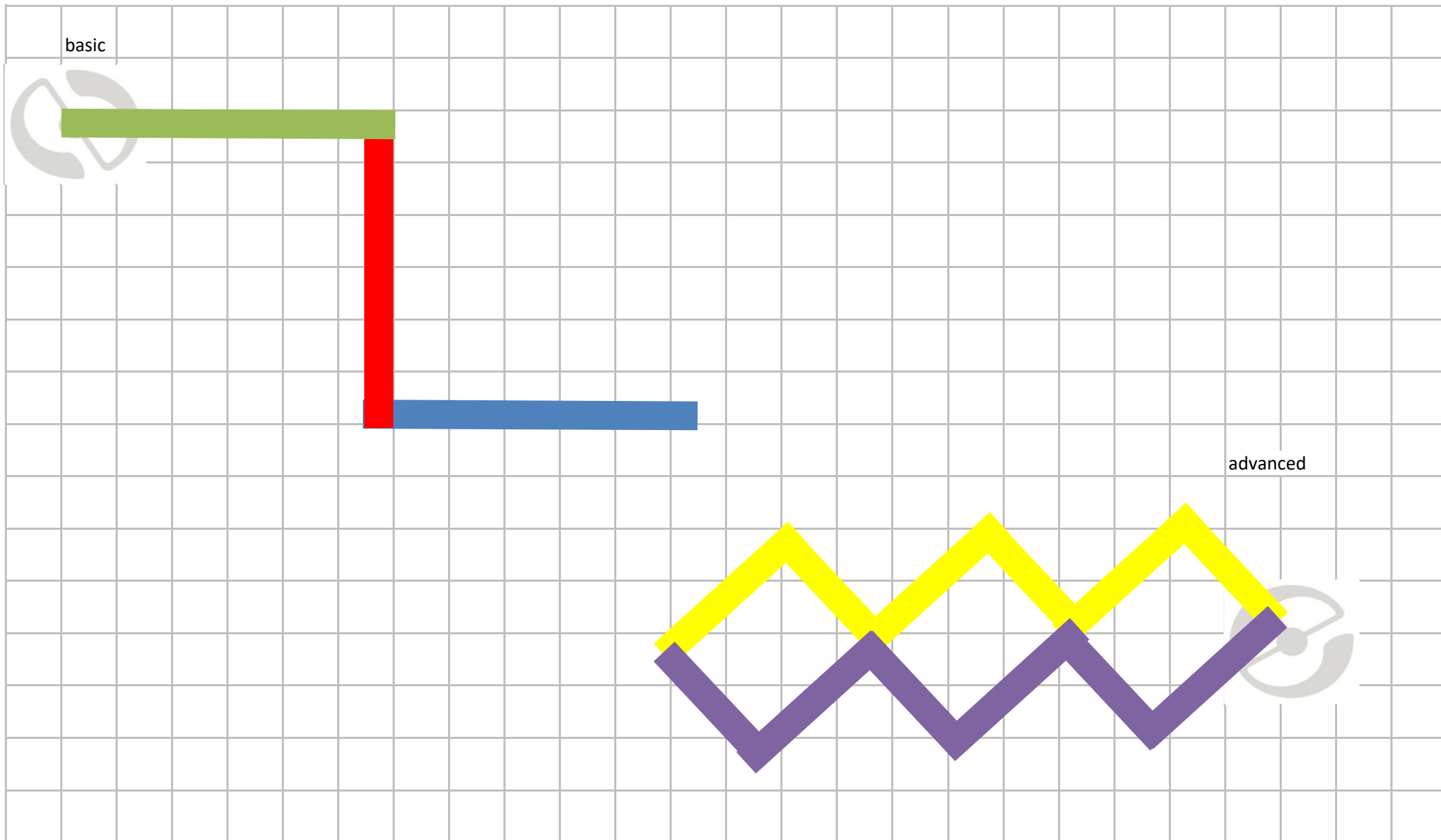
basic

advanced

OZO FIGURE SKATING 1

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advanced
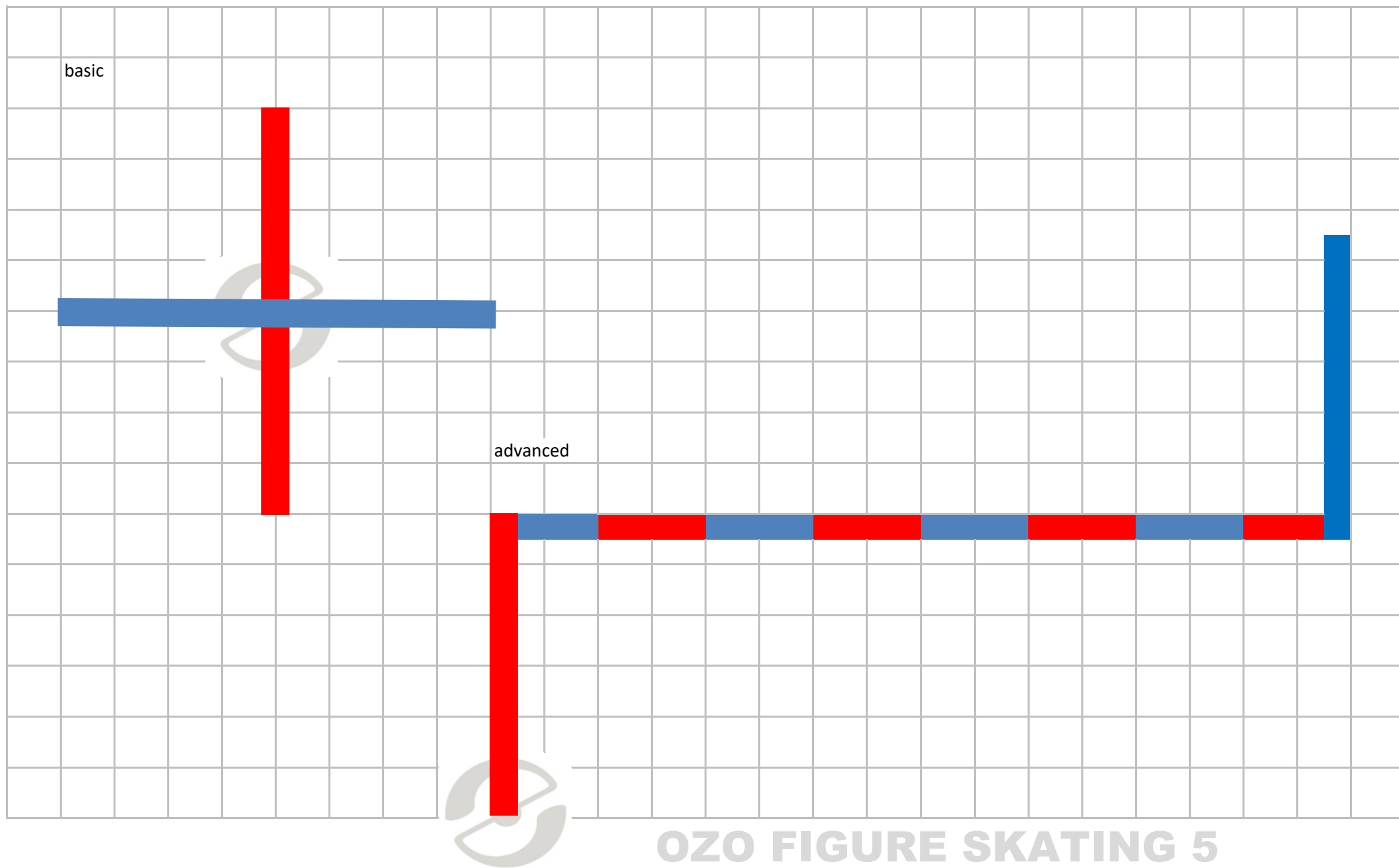
basic

OZO FIGURE SKATING 2

basic

advanced

OZO FIGURE SKATING 3

basic

advanced

OZO FIGURE SKATING 4

basic

advanced

OZO FIGURE SKATING FREE

Olympic Ice Dancing with Ozobot!

Students will learn about teamwork, communication and also speed, distance, timing, choreography as well as "loop" statement and the basic rules to the Olympic sport of Figure Skating or Ice dancing.

Tags: `choreography` `coding` `variables` `colors` `timing` `Ozoblockly`
Grades: 4 to 12+
Duration: 45 minutes
Supplies: 2 or more Ozobots for each team, tablet or computer to code within Ozoblockly environment, mp3 player/mobil phone or other audio device to play music

Step #1: Learn About Figure Skating

This video gives an insight to Physics used by Figure Skating.
Students will code their Ozobots to move and light color in order to given shapes.

YouTube video: https://youtu.be/2SW_3fiqntM

Educator Tip:

Be sure to go over the rules, as well as remind students about keeping their Ozobot "safe and sound".

Step #2: Preparation

Make group of 2 or more students with 2 or more Ozobots.

Educator Tip:

Headphones will be appreciated when looking for music and testing purposes. Students can make some pretty dress for ozobots too.

Step #3: Music choosing & scenario

Students will choose music for their Ice dancing and suggest their choreography scenario (eg. timeline) for at least 30 sec.

Educator Tip:

Remember all cool effects, that can Ozobot do like color flashing and moving.

Step #4: Choreography code

Each team will code own choreography in Ozoblockly environment (https://ozoblockly.com).

Educator Tip:

Remember, that the code could be flashed in more than one Ozobot in the same time.
There is possibility of using OzoGroove application for iOS or Android device.

Step #5: Begin Ice Dancing Competition

Team by team will show own performance and takes a video. The jury will sing the individual performances from 0 to 10 point.

Educator Tip:

The jury is made from students or other teachers.

Olympic Slalom with Ozobot!

Students will learn about speed, distance, variables, as well as "if/and/while" statements and the basic rules to the Olympic sport of Alpine Skiing.

Tags: `surface color` `coding` `variables` `block` `loop` `colors` `Ozoblockly`

Grades: 4 to 12+
Duration: 45 minutes
Supplies: slalom map, 1 Ozobot for each student/team, tablet or computer to code within Ozoblockly environment, stopwatch

Step #1: Learn About Alpine skiing

Alpine skiing, or downhill skiing, is the sport or recreation of sliding down snow-covered hills on skis with fixed-heel bindings. It is characterized by the requirement for mechanical assistance getting to the top of the hill.

YouTube video: https://youtu.be/1fhwcSdyloI

Educator Tip:
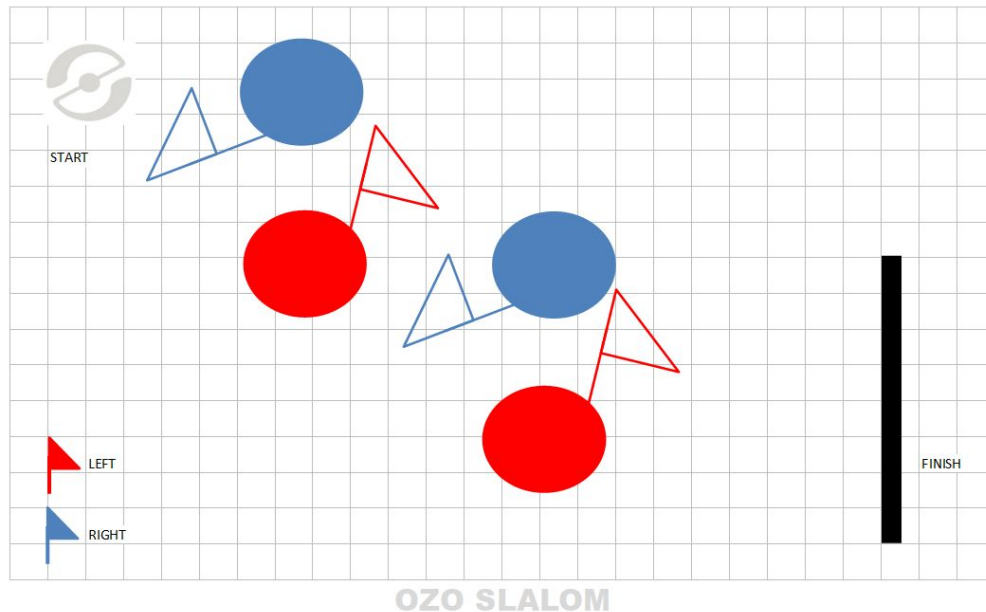Be sure to go over the rules, as well as remind students about keeping their Ozobot "safe and sound".

Step #2: Preparation

Print slalom map or make your own. There are 4 slalom flags.

Educator Tip:
You can print maps for students preparation too or print only test and competition map. Map might be printed in black and white too. You can put more maps together.

Photo: Tonje Sekse competes in the 2011 women's slalom event at Trysil in Norway. Photo © Ola Matsson

OZO SLALOM

Step #3: Code Ozobot to Move

Students will use the block code Ozoblockly to get their Ozobot move from start, around the slalom flags to the finish. On the blue flag, there Ozobot should go to the right and on the red to the left. Ozobot could pass the blue and red dots. After the last flag must head to the finish. Ozobot should pass the finish line!

Educator Tip:
There could be used loop or variables. Ozobot might check surface color to go around the flag.

Step #4: Test Runs

Each team will be given 4 test runs, to determine what strategy, speed, time or whatever is needed to get the slalom finished.

Educator Tip:
Or use timer for 15 minutes for test runs.

Step #5: Begin Slalom Competition

Each student/team will have 2 or 3 rides. Each student / team will have 2 or 3 rides. Two better one are counted. The fastest wins, use the stopwatch.

Educator Tip:
Optional two or more teams compete at once on own maps. It is also possible to assess the code length etc.

START

LEFT

RIGHT

FINISH

OZO SLALOM

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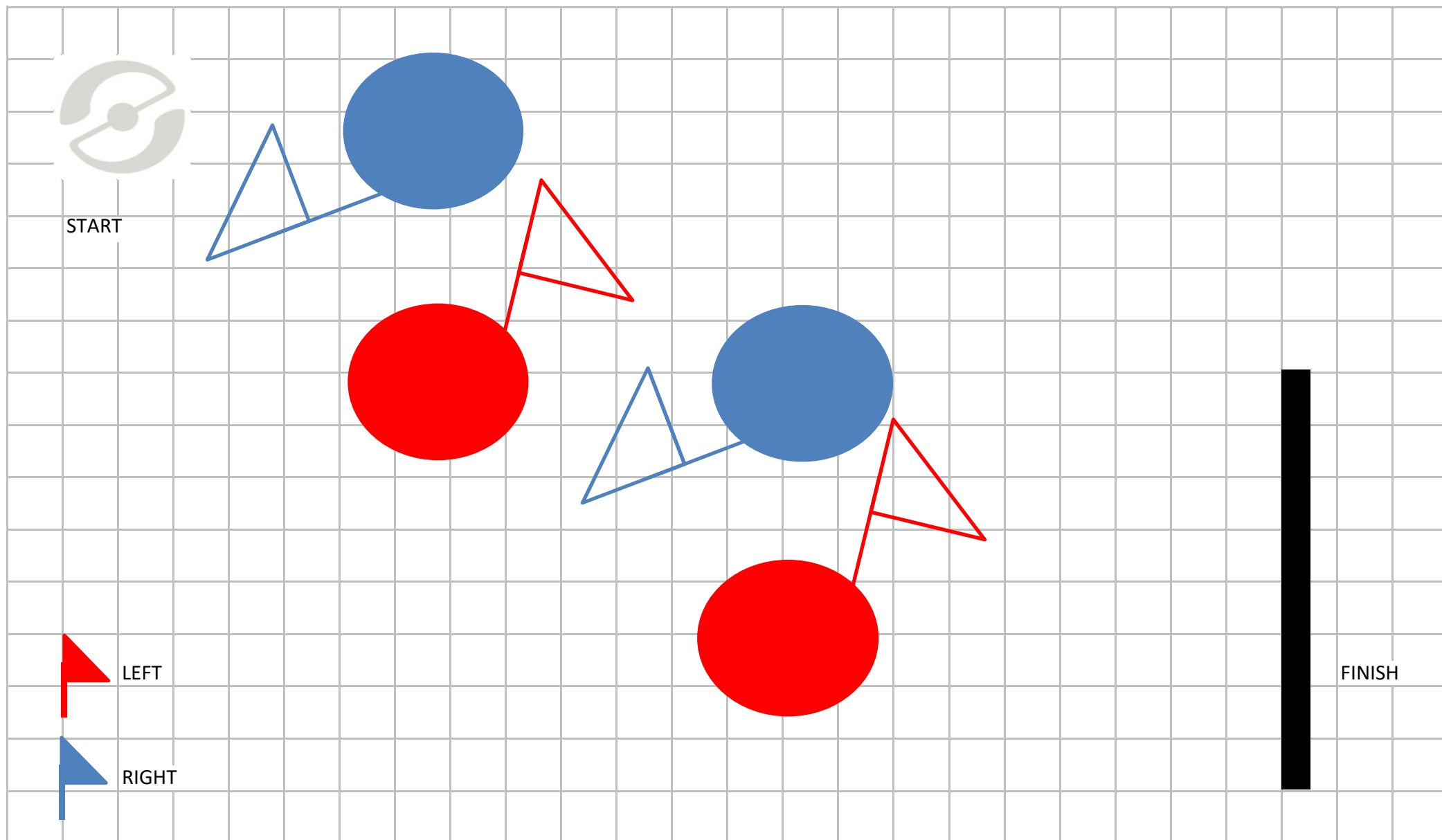
Olympic Bobsled
with Ozobot!

Students will learn about about distance, speed, coding basics, line following and the basic rules to the Olympic sport Bobsled.

Tags: `line following` `coding` `Ozo Codes` `OzoBlockly`

Grades: 1 to 12+
Duration: 45 minutes
Supplies: printed template or sheets of paper, 1 Ozobot for each student/team, scissors, paper glue tape or glue, red, green, blue, black markers, Ozo Codes reference http://files.ozobot.com/stem-education/ozobot-ozocodes-reference.pdf, optional PC/tablet for Ozoblockly coding, other marker colors

Step #1: Learn About Bobsleigh

Bobsleigh is a sliding sport where teams of two or four race sleds down a long and twisting track of ice.

YouTube video: https://youtu.be/UGbOP79EhT0

Educator Tip:

Be sure to go over the rules, as well as remind students about keeping their Ozobot "safe and sound".

Step #2: Preparation

Print a template or use other sheets of paper. Each student or group should have scissors, paper glue tape or glue, color markers in red, green, blue and black. Other colors of markers are optional. Make start and finish line with paper glue tape (distance about 1,5 - 2 meter).

Educator Tip:

On template sheet there is a squared line in the middle of „bobsled", that should be the following line for Ozobot.

Students will use scissors to make the bobsled (see fig.) for one or more Ozobot. With marker they can draw one or more colors line in the middle.

If they like to code and rule Ozobots behavior, eg. speed, they should use black line and red, green, blue and black marker to use Ozo Codes.

After finishing the line, glue paper strips with shorter side together.

Educator Tip:

You need to extend the line to the edge of the paper. Paper strip should be cca 3,5 cm wide. There could be bonded more strips together.

Step #4: Testing

It is time to test, if the „bobsled" is moving forward. Put one or more Ozobot to the line and see, what is happen? If it does not work, try figure out why and repair it!

Educator Tip:

The bonding must not be too heavy.

Step #5: Begin Bobsled Competition

All teams will prepare their bobsleds for the start on the start line. Ozobots will turn on in hands and will placed in the bobsled of the starter. Wins the one, who rolls over the finish line first!

OZO BOBSLED