



10.6 Project: enter a hard game

Competing · Robot club · about 25 min

Name _____

Class _____

Date _____

What this lesson is about

Light Cycles, Rescue Line or Capture the Flag: how to practise one properly, and the line and gripper rehearsal.

- The three
- The rehearsal
- How to get good at any of them
- Where next

Questions

6 marks in all

1. Which game do you play on your own, after Module 7, using the line and the gripper at once? [1 mark]

- ☐ A Rescue Line
- ☐ B Light Cycles
- ☐ C Capture the Flag
- ☐ D Shuttle Relay

2. Put the steps for getting good at a game in order. [1 mark]

Number the lines 1 to 5 to put them in the right order.

- ___ Change one thing at a time
- ___ Then play people
- ___ Print, race, read
- ___ Beat one bot
- ___ Read the game page

3. You change your top speed and your turning gain together, and the next race is better. What have you learned? [1 mark]

- ☐ A Very little: you cannot tell which change helped
- ☐ B Both changes helped
- ☐ C The speed change helped
- ☐ D You should always change two things

4. What does this program print? [1 mark]

```
for cx in [200, 160, 100]:  
    print(cx, round((cx - 160) * 0.35, 1))
```

5. In the carry-home task, when should the jaws close? [1 mark]
- ☐ A Once the robot has stopped with the ball in reach
 - ☐ B At the very start, so they are ready
 - ☐ C As soon as the line comes into view
 - ☐ D When the robot reaches the green zone
6. In the rehearsal, `line()` sees nothing and the robot runs `drive(25, 0, 40)`. What is it doing? [1 mark]
- ☐ A Creeping forward while turning clockwise to find the line again
 - ☐ B Stopping until the line comes back
 - ☐ C Reversing along its path
 - ☐ D Sliding sideways

The task: carry it home

Follow the black line to the red ball, pick it up with the gripper, and carry it into the green zone at the end without dropping it. The line bends to the right, so driving straight up the mat misses the ball by 15 cm: the line is the only way to it.

```
from bugbot import *
connect()
set_cv('line')

gripper("open")

# follow the line first: steer by where it is and where it is going,
# and slide sideways onto it if you drift
while position()[1] < 40:
    seen = line()
    if seen:
        cx, angle = seen
        drive(35, (cx - 160) * 0.15, (cx - 160) * 0.15 + angle * 1.5)
    else:
        forward(20)
    wait(0.1)

stop()
```

Plan your program here, then type it in and press Run.



Do it on the robot

www.bugbotlab.com/learn/10-6-project-enter-a-hard-game/

The simulator checks it and tells you when it passes. Nothing to install, no account.