



## World Robot Olympiad 2018

### Example of an Explorer Challenge

**This document contains an example of a WRO Explorer Challenge based on the 2018 Elementary game.**  
It is an idea to simplify the current games for beginners at your National Level. There is no international tournament.

The rules and missions are suggestions to work with in your country.  
You may work differently with other rules or missions to attract beginners.

We thank a lot our friends from South Africa who developed this challenges for us.  
They ran such an Explorer Challenge in the last years and you may want to contact  
Danie Heymans for practical questions: [danie@handsontech.co.za](mailto:danie@handsontech.co.za).



## **ENTRY LEVEL “EXPLORER” CHALLENGE – WRO 2018 Int.**

**1.0** - “EXPLORER” is based on the WRO Elementary table challenge with simplified tasks and a platform for multiple attempts to keep improving your score.

**1.1** - This challenge is to cater for beginners who would also like to participate but are not yet ready for WRO.

**1.2** - It is also a great challenge to use for Inter School Competitions.

**2.0** - An option is to have the “Explorer” category at all the Regional competitions and qualifiers will get the opportunity to participate at the National Competition.

**2.1** - The challenge has been designed on the 2018 WRO Elementary competition mat – “Reduce Food Waste” using the same elements.

**3.0** – It is recommended that participants only compete in the Robot Explorer Category for **one** year at WRO Provincial and National level.

(They then need to move onto WRO Regular or Open Category)

**3.1** - The age groups will be Elementary 7 – 12 years and Junior High 13 -15 years in the year of the competition (No Senior High)

**3.2** – In Elementary, elements being “partly in” counts for score. In Junior, elements need to be “completely in” for the score to count.

**4.0** - Registration is for you the member country to determine at Regional and National level. Please note that there is no Explorer at the International WRO events.

**4.1** – It is recommended to have 2 participants in a team.

**4.2** – The recommended challenge/competition time is approximately 3 hours. The team retains their highest score as their final score.

**5.0** - As with WRO, the challenge has been released for you to practice and prepare but the differences are:

**5.1** - You arrive at your competition/challenge event with a Standard prebuilt NXT or EV3 driving base as per building instruction booklet in the storage box.

(Any other driving base needs to be approved by email with your host organiser)

**5.2** - No sensors or mechanical pieces are to be attached to the model before competition starts (These parts may be pre-assembled to attach once allowed time starts)

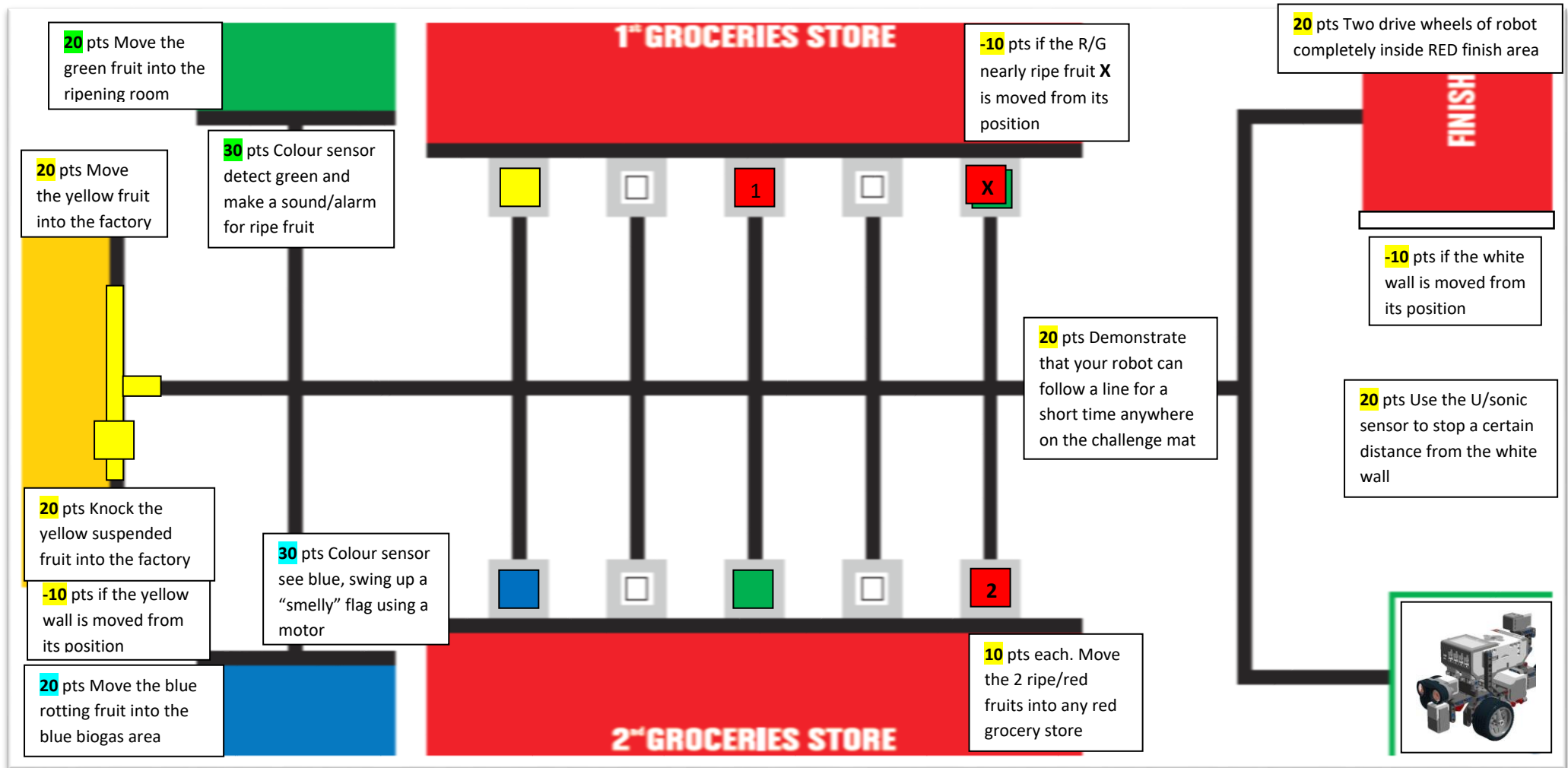
**5.3** - You have to re-program your robot on the day from the beginning (No pre-written or saved programs/My Blocks may be used, no programs on the robot or PC)

**5.4** - Referees will check this before the start and failure to adhere will result in possible penalties or disqualification.

**5.5** - Scoring happens on a continuous basis until the end of competition time. (Can limit the number of scoring opportunities e.g. 4 registered scores in 3-hour time)

**6.0** – A fun idea is for the team to have their team name on a small flag/banner attached to the robot on an axle.

## “EXPLORER” CHALLENGE WRO 2018 – REDUCE FOOD WASTE



### COMPETITION RULES: Brief

- 1 – Arrive with a prebuilt NXT or EV3 robot which is a basic driving base. Build instructions inside the box. **No sensors or LEGO assemblies attached**
- 2 – You have to re-program your robot on the day from the beginning (No pre-written or saved programs may be used)
- 2 – Mechanical sensor parts/assemblies may be prebuilt to attach as soon as the challenge time starts.
- 3 – The robot may be altered/changed during the competition to complete the challenges.
- 4 – The Robot needs to start in the GREEN start area (all wheels completely inside) and finish in the RED FINISH area (two drive wheels completely inside)

5 – You may register a maximum of 4 scores during the competition time allowed. Your highest score in the 3 hours will be your final score.

*Example: if your score is 85 pts and the referee has seen it, register 85 points as your first score, then try and improve on your last registered score.*

## **THEME: REDUCE FOOD WASTE**

### **SCORING OPTIONS:**

Place the different coloured fruit in their boxes and the walls according to the challenge mat map.

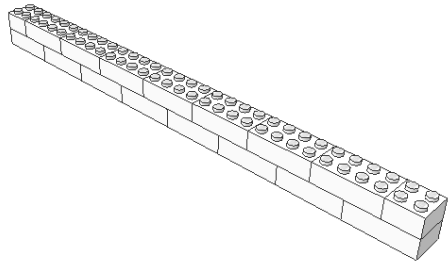
***The points may be scored in any order! (It is not compulsory to follow the order below except for start and finish scores)***

*For Elementary partly in counts for score. For Junior, ages 13 -15 only completely in scores will count!*

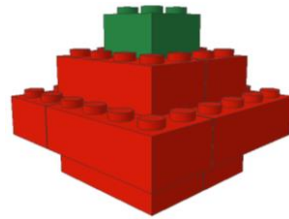
- Name your robot in the brick screen area (where it says EV3) A name to be used will be given on the day of competition ----- 10 pts
- 
- Name the program to be used. A name to be used will be given on the day of competition (e.g. Rotten fruit!) ----- 10 pts
- 
- Start the robot, with all wheels inside the START square. Use a touch sensor to start the robot and wait for 1 second to go! ----- 10 pts
- 
- Move the robot towards the white wall and use the ultrasonic sensor to stop a certain distance away before turning ----- 20 pts
- 
- If the *NEARLY* ripe double green/red fruit is moved from its position ----- - 10 pts
- 
- Move the 2 x red fresh fruits into the red grocery store ----- 10 pts each (20pts)
- 
- Move the green fruit into the green ripening room ----- 20 pts
- 
- Use the colour sensor to see/detect the green room and make an alarm sound for ripe fruit ----- 30 pts
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- Move the blue rotting fruit into the blue biogas plant area ----- 20 pts
- 
- Use the colour sensor to see blue/biogas and swing up a “smelly” flag using the EV3 “medium” or NXT “third” motor ----- 30 pts
- (Make your own “smelly” flag)
- 
- Move the 2 yellow ugly fruits into the yellow factory area without disturbing the yellow wall ----- 20 pts each (40 pts)
- 
- If the white or yellow walls are moved from their positions (- 10 pts each) ----- - 20 pts
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- Finish with the 2 drive wheels of the robot completely inside the red FINISH square ----- 20 pts

EXPLORER Elements:

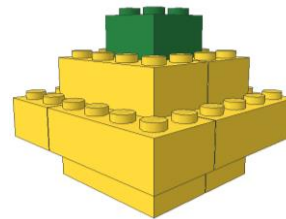
1 x WHITE wall



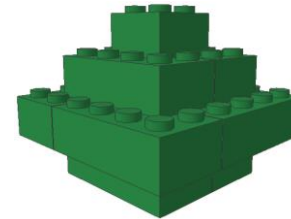
2 x Fresh Red Fruits



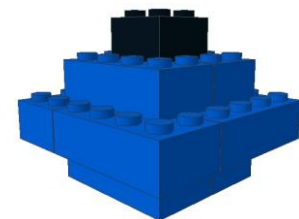
2 x Ugly Yellow Fruits



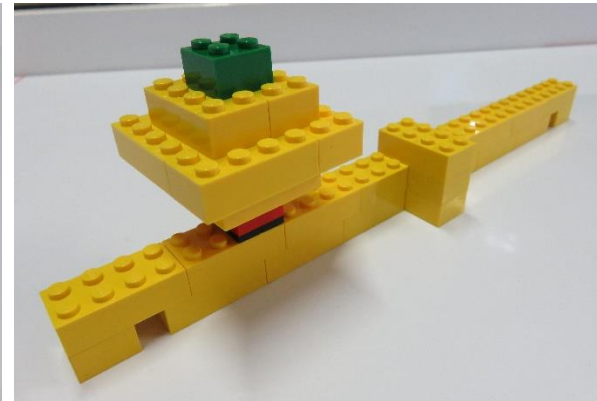
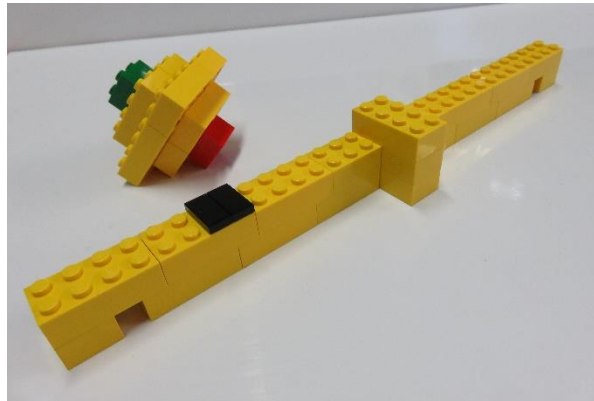
1 x Unripe Green Fruit



1 x Rotten Blue Fruit



1 x YELLOW wall built as below (A yellow fruit with a red 2x2 LEGO piece as a base is placed on top of the yellow wall on a flat plate square)



The X fruit is a RED fruit placed on top of a GREEN fruit making it double the height.

