

Challenge 5: "Road Rage"

Teacher resources:

Robot constructed in Challenge one. Robot set for modifications.

Measuring devices: Tape measure, metre ruler

Timer

Paper and Pencil

"Town plan"- as per parking bays, these can be constructed as buildings on the floor, drawn on butcher's paper or made from masking tape. In the latest version of this challenge, I produce a map out of butcher's paper with buildings made out blocks to tell when the robots crash, and ask students to make a pen holder to trace the path of the robot through the streets.

For some students, all corners are 45 or 90 degree angles, for other students I add 30 and 60 degree turns.

Butchers paper to do trials.

Thick markers- whiteboard markers are a good size for this.

Teacher notes: This challenge requires students to think in non standard units of measure. These units are based on measurements they take of their own bodies, hands, feet, fingers, heads, etc lengths and widths. Students may need to have time to measure parts of their own bodies and then use these to measure a simple 'track' and then be given another opportunity to take some measurements to refine the measurements they need.

SACSA Outcomes:

Mathematics

Measurement

Key Idea: Students recognise and develop and report on connections between mathematical ideas and representations. They employ logical strategies to solve problems in measurement situations, and reflect on the reasonableness of their answers. [T] [KC1] [KC2] [KC6]

3.4 Selects appropriate attributes and systems to measure for a variety of purposes and reports on how measurement is used in social practice. [In] [T] [C] [KC1] [KC2]

Student Information: If you had no rulers or other measuring devices, you would have to use alternatives to estimate how far something is. You can measure the room in lengths of your foot, or measure your book in finger lengths. Think about how many measurements of different sizes you and your partner could make.

Preliminary work required: Collect the box labelled Challenge 5 from the front of the room. Set the timer to 5 minutes. Measure and record any of the parts of your body you think you might need to estimate other lengths. When the timer goes, pack up and return the Challenge 5 box. Collect the task card.

Task Card: Oh no, some alien has taken all the measuring devices from our world. All you have left is the measurements that you wrote down and now you have to tell your robot how to get through town. Get your robot through the town without crashing if you can. You will need to modify the design of your robot so that he leaves a trail- hopefully not of destroyed buildings!

You may 'make' your own town to use as practice.



Question/ Research/ Reflection:

How many measurements did you take? Which measurements would have made this task easier?

How many changes did you need to make to your programme before getting through town without needing an insurance claim?

At Distance Control/ Teacher notes:

While this challenge can be completed successfully using the at distance control protocols, it generates far more interest and fun as a hands-on activity.