## Lessons 30–34 – Activity Sheet

## Getting Started

## Your car will be tested by the Egg Family

## The Egg Family consists of three ‘four good eggs’, two adults and two children

## The Egg family have thin shells so they consider safety of utmost importance

## They want to get to their destination quickly, but in one piece!

## Success Criteria

* Design and build a self-driving car
* Develop an algorithm for a self-driving car to complete and autonomous lap of the track
* Test and refine the algorithm so it reacts to changes.

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| **Chassis** | | **Body and Cabin** | | **Electronics** | |
| **Item** | **Reason** | **Item** | **Reason** | **Item** | **Reason** |
| 5mm Perspex | Cut 4 x 50mm diameter wheel |  |  | Ultrasonic Sensor | Collision avoidance |
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## Pro-tip

* No one vehicle has everything, so you need to decide on what your primary goal is going to be:
  + Speed
  + Safety
  + Style
  + Intelligence
* Use paper and your previous design and create templates of components you need to manufacture
* You have four sessions so split yourself into development teams and focus on different aspects but remember to communicate so that everything works together

## Test Time

* Does the Egg Family fit in the car?
* How quickly does the car get around the track?
* Does it complete a lap safely?
* What further actions need to be taken?

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| **Test Run Number** | **Lap Time** | **Number of Collisions** | **Notes/Changes to be made** |
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## Stretch Tasks

* Consider how you can speed up the run?
* What additional materials could you use to improve styling and weight?
* Consider how you can you make your car more intelligent by combining the different sensors or making modifications to the track

## Final Thoughts

* During the last few lessons we have designed and built our self-driving car from scratch
* We have looked at the key design considerations and built our vehicle with the materials available
* We have made our vehicle smart by utilising sensors to detect the environment
* We have designed the algorithms to make use of these sensors and then tested and refined our design
* We have worked together and used our communication skills to be an effective team