

# The Water Rocket

# Topic: Quadratic Graphs

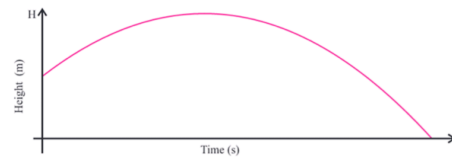
This problem relates the flight path of a water rocket projectile with a parabolic function.

Year Group: 5<sup>th</sup> Year

Level: Leaving Certificate Higher

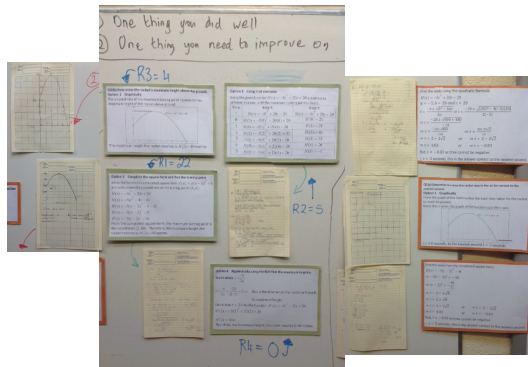
## Posing the Problem

A mathematics student builds a water rocket and launches it from the roof of the school. It is determined that the height above the ground from the moment it is launched can be modelled by the function:  $H(t) = -5t^2 + 20t + 20$ , which is sketched below:



- Determine the height of the school roof.
- Determine the rockets maximum height above ground.
- Determine the time the rocket was in the air for, correct to the nearest second.

## Presenting the Students' Work



Presentation of  
Solutions & Ceardaíocht  
20 minutes



## Reflecting on the Learning

Teachers and students involved in *Lesson Study* found it valuable. Working with other teachers and discussing students' approaches was beneficial for both teachers and students involved as it facilitated:

- Higher order thinking
- Predicting correct values for solutions
- Identifying Patterns
- Representing data
- A broad review of the curriculum
- Mathematical conversations
- Learning intentions
- Literacy/ Maths terminology
- Numeracy
- AFL
- AQL
- Respecting Differences
- Students' understanding that there are multiple methods to solve a problem
- Confidence building
- Working with others:
- Communication



Developed by Michelle Kelly, Grainne O'Rourke and Alice Mooney, with thanks to Julie Reilly MDT and the students from Maynooth Education Campus, Co. Kildare.

