



Lesson Topic	Mini Golf Desmos			
Learning Outcome	Students will be able to represent coordinates by using a table			
Success Criteria Using SOLO	Uni-structural	Multi-structural	Relational	Extended abstract
	Student is able to identify where the x-coordinate and y-coordinates are input in the table	Student can combine the coordinates to form a line that gets some of the marbles into the hole	Student is able to analyse their solution and refine it, getting all the marbles into the hole	Student can predict the path of the marbles and can create a solution from this
Links with the New Zealand Curriculum	Level 2 Curriculum Level: 7 Learning Area: Mathematics Strand: Algebra Achievement Objective: Students to further develop critical thinking with gradients, lines and coordinates			
Key Competencies	● Thinking - Critical thinking about how to create lines to get marbles to hole ● Relating to others - Working together in a competitive team environment ● Using language, symbols, and texts - Inputting coordinates into a table ● Managing self - Demonstrating RISE values while engaging in task ● Participating and contributing - All voices in the group to be heard			
Prior knowledge	Students are confident in using x and y coordinates and are able to read from a table of results.			
Lesson Sequence 	Session Outline			
	Student Activity		Teacher Activity	
	- Learning how how coordinates can be represented by a table - Complete practice example with teacher		- Explain rules of Mini Golf Desmos, following Mini Golf Desmos Instructions - Go through practice hole, with help from students - Project Mini Golf Marbleslides Scorecard on the board	
	- Create lines based on coordinate points to get the marbles into the holes - Work with group on Holes 1 - 9 - When competition is complete, groups are to share their solutions with each		- Circulate class, encouraging groups - Enter scores on the Scorecard - When competition is finished share student solutions with class, comparing and contrasting solutions	



	other	
Resources	Google+ Post on 1201MAC Community Mini Golf Desmos Instructions Student Desmos Mini Golf Marbleslides Scorecard	
Next Steps	Students will learn about gradient functions - which represent the gradient at each point along a curve. This then leads on to Calculus 2.7.	

Reflection and Analysis

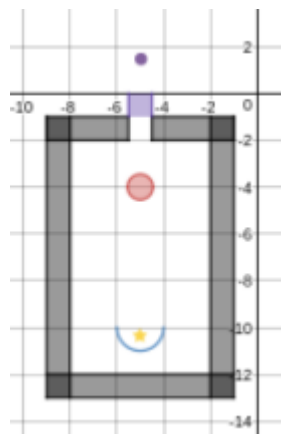
What went well?

The activity was engaging and the students said they enjoyed the activity. It was a great way to finish the term and the activity provided an explicit link between coordinates and tables.

Next term we are moving on to Calculus, which is the mathematics of change. We are going to start by going over gradients, which is why I chose to do this activity - with the gradients of the lines influencing the movement of the marbles.

What still needs work?

There was one group who only made it through two holes. I was checking up on this group throughout the lesson and their lack of progress was not because of off task behaviour, instead it was because they were trying to achieve the impossible - getting a perfect hole in one on the third hole.



Because of the red circle, marbles bounce both left and right, so one line can't get all the balls in the hole. One line can get some of the marbles in, but two lines are needed to get all of the marbles in.

Despite me telling them this, the participants of this group did not accept this and were determined to come up with a solution...

On one hand it was great to see them so engaged in trying to hack the hole, but on the other hand if they were trying to get the best score they should have moved on. This is an important examination strategy that I will cover before the externals: if you are spending too long on a problem - move on.