Find the Rule

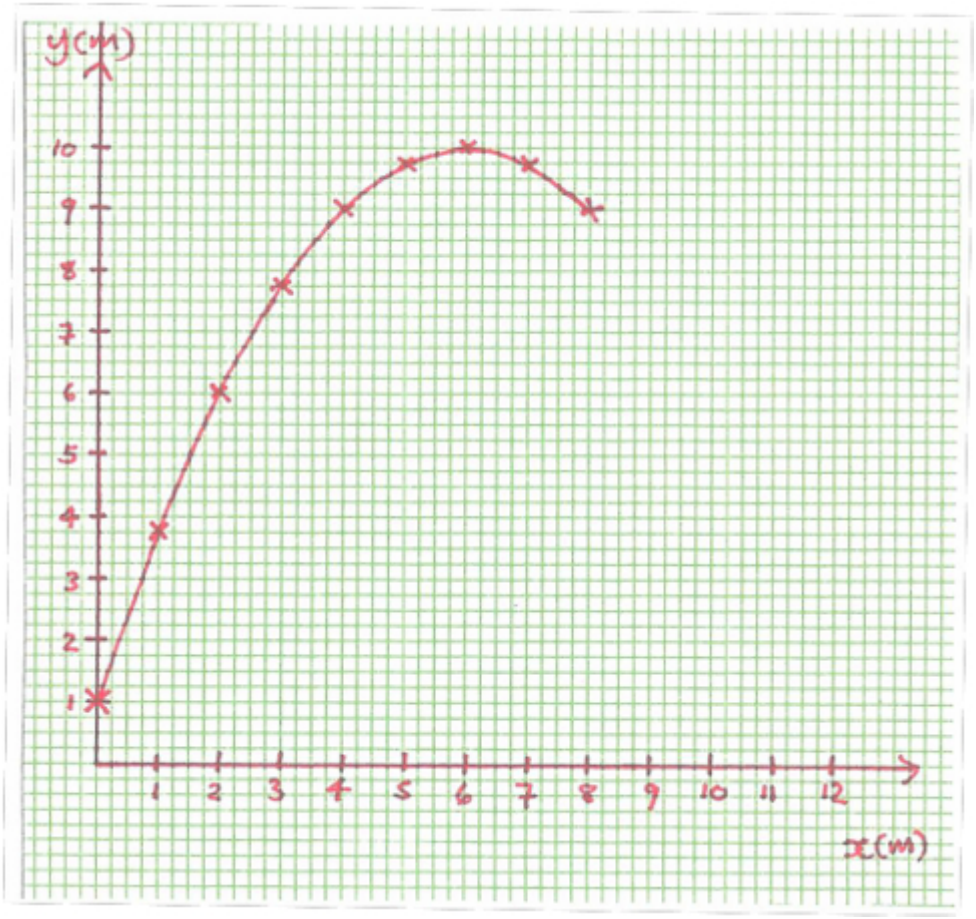
Annotation

Max shows knowledge and understanding of the features of a parabola, that enable him to use a graph to successfully solve a problem, in context. He shows relational thinking, by using the parabola to represent a model of the problem.

Problem: Find the Rule

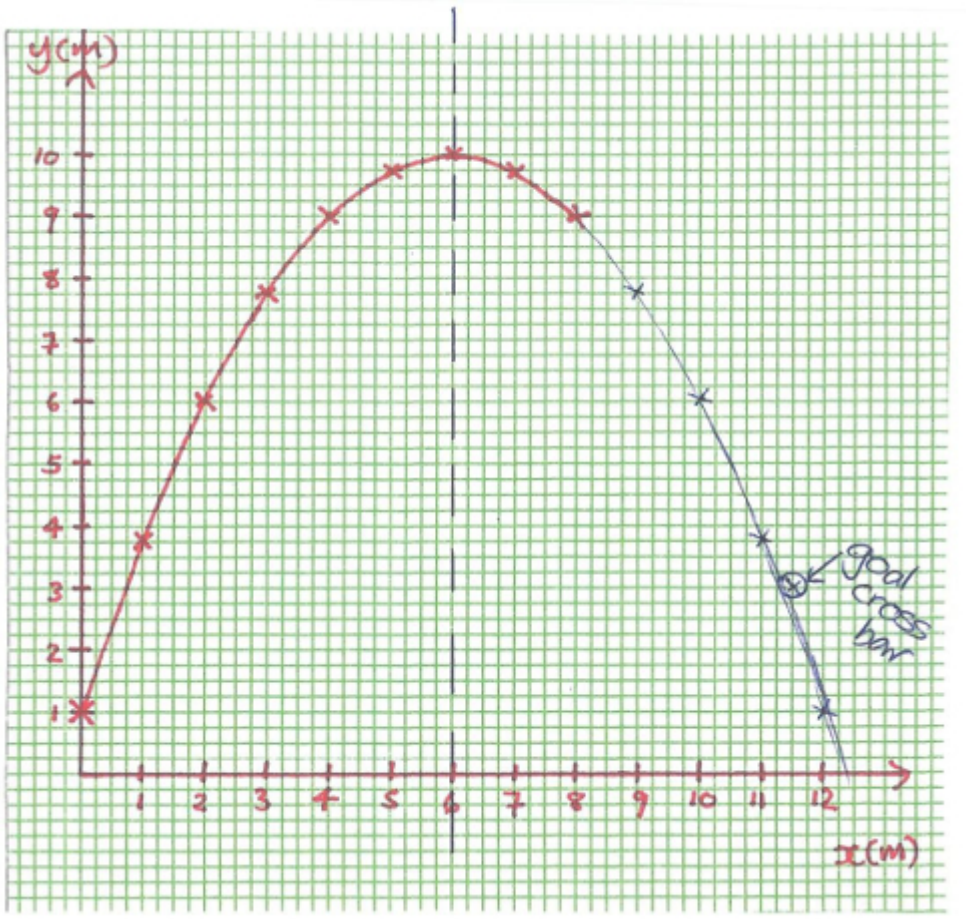
The teacher poses this problem:

In the closing seconds of a rugby game, a player attempts a drop kick, 11.5 m from the goal post. The first part of the path of the ball, once kicked, is shown in the graph below.



The cross-bar of the goal post is 3 m above the ground. If the ball makes it over the cross bar, the kick is successful. Explain, with reasoning, whether the kick is successful or not.

Student Response



Teacher: So Max, tell me about your answer.

Max: It's a miss. Look the graph goes under the cross bar. I drew in the rest of the line and ... I mean curve...and it went under the goal bar.

Teacher: How did you know where to draw the rest of the curve?

Max: Well its gotta be a parabola, only upside down from most of the ones we've done. See how it's a curve...up and over...but it's not a circle and it is steeper at the ends. Well I think it's a parabola. But anyway, there is a mirror line down the middle...so I drew that in. Then I could mark of all the missing crosses by using reflection. And that's it, I put a line no curve in to match the other side.

Teacher: And then how did you finish the question?

Max: Well I wanted to see if he kicked a goal...so I put the goal bar in and it was at 11.5 across and 3 up...and gutted... the ball is under the bar.