

The Window Maker

Topic: Simultaneous Equations

This problem challenges the students to formulate and solve simultaneous equations.

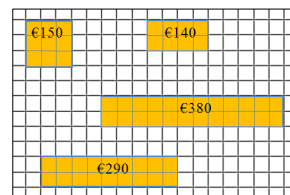
Year Group: 2nd Year
Level: Higher

Presenting the Task

A store in my town sells windows. When the shop owner is calculating the cost of the window for the customer he factors in the number of small glass panels used (each small square) and the number of small lengths of the frame (each small length).

Can you calculate the cost of 1 unit length of frame AND the cost of 1 unit² of glass, using the information below?

Note to student:



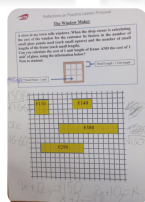
Flow of the Lesson

Prior Knowledge

- Perimeter of a rectangle
 $2l + 2w$
- Area of a rectangle
 lw
- Forming an equation using a single variable
 $x + 6 = 18$
- Solving linear equations

Lesson Aim

- Begin the process of solving a pair of simultaneous equations
- Develop equations in two variables
- For students to be able to approach problem solving with more confidence



Simultaneous Equations

DATE: 17

Forming Equations

$9p + 12l = 380$

$18a + 24y = 690$

$17p + 24l = 18p + 24l$

$1p = 2l$

$9 \times 10 = €90$

$€150 - €90 = €60$

$€60 \div 12 = €5 = l$

Solution 1

$€150$

$€140$

$€10 = l$ (panel)

$9 \times 10 = €90$

$€150 - €90 = €60$

$€60 \div 12 = €5 = l$

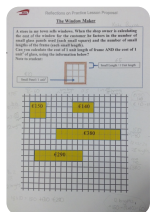
Prior Knowledge & Posing the Task
5 minutes

Students working on the problem
15 minutes

Presentation of Solutions & Ceardaíocht
15 minutes

Summing up & Reflection
5 minutes

Reflecting on the Learning



Students had a good command of the prior knowledge of perimeter and area of rectangles. Students are reasonably comfortable coming to the board to explain their workings on the task. The majority of students used the problem solving strategy of method trial and error. Students tended to link a single variable, either the perimeter or the area, to the cost. They struggled to see the relationship between the two variables and the cost. It is noted that further lessons are required to develop mathematical fluency when working with or forming simultaneous equations; however, student feedback indicates that the short-term goals of the lesson were achieved: "I learned how to put equations together". "I learned that if you have a problem try another way to figure it out and that there is not always one solution."



Lesson plan developed by Amiee Doyle, Joanne Bolger and Anne Sinnott, Creagh College, with thanks to Shane Flanagan MDT and the students from Creagh College, Co. Wexford.

To download this lesson plan visit www.projectmaths.ie/mc2017

