

Practical applications of simultaneous equations

Year 11 General Maths
Units 1 and 2

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Learning Objectives

By the end of the lesson, I hope that you understand and can apply the following to a range of questions from the Unit 1 and 2 General Mathematics course.

- To solve practical problems using simultaneous equations.



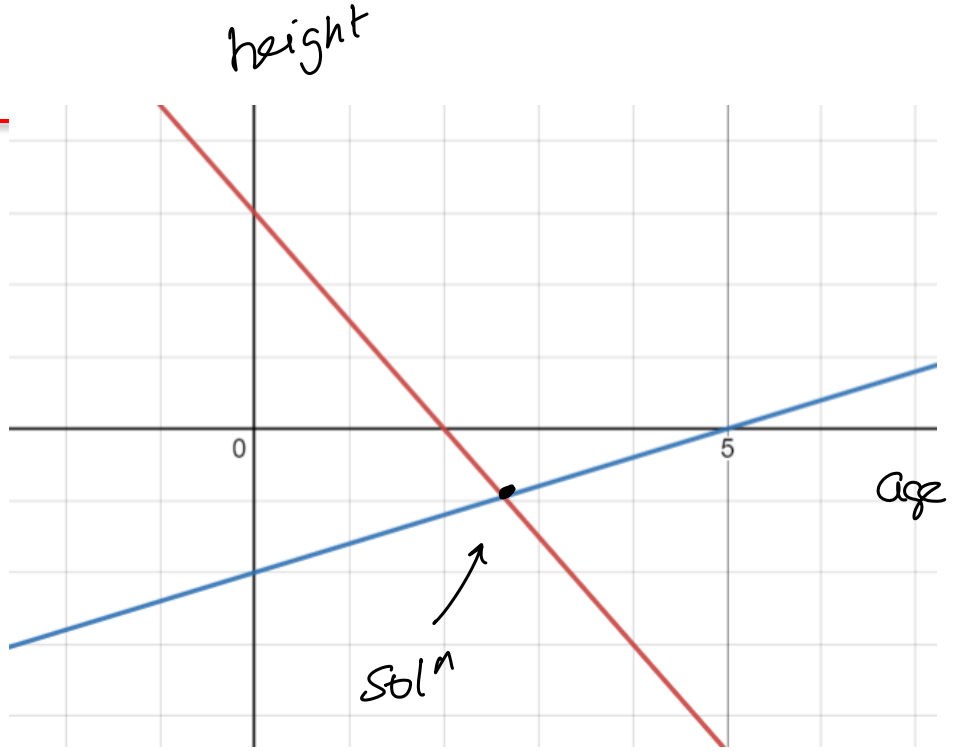
Recap

In the last lesson we looked at what simultaneous equations were. Namely, two straight line drawn on a set of axes such that they **might** cross in one location.

We identified that the lines might be written in a number of ways but that we can use the CAS to solve the set of simultaneous equations.

The solution is a coordinate (which should be written as a coordinate) where the two lines cross (or intersect).

What practical situations would every use simultaneous equations?



age = -1
height = 3

(-1, 3)

x = -1

y = 3



Example

Mark buys 3 roses and 2 gardenias for $15.50. Peter buys 5 roses and 3 gardenias for $24.50.

How much did each type of flower cost?

1. $3r + 2g = 15.50$
2. $5r + 3g = 24.50$

$\therefore$ rose cost $2.50

gardenias costs $4



Example

Ian bought 6 plain croissants and 6 chocolate croissants for $46.20. Anne bought 5 plain croissants and 3 chocolate croissants for $30.10.

How much was each type of croissant?

1. $6p + 6c = 46.20$
2. $5p + 3c = 30.10$

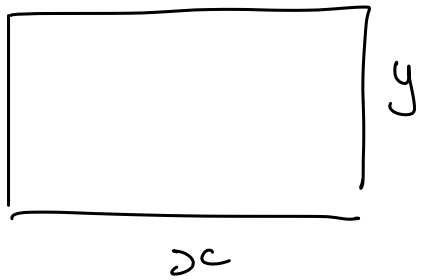
$\therefore$ plain costs $\$3.50$

chocolate costs $\$4.20$



Example

The perimeter of a rectangle is 48 cm. If the length of the rectangle is three times the width, determine its dimensions.



$$2x + 2y = 48$$

$$x = 3y$$

$\therefore$ $x = 18$ length $= \underline{\underline{18}}$

$y = 6$ width $= \underline{\underline{6}}$



Example

Tickets for a movie cost $19.50 for adults and $14.50 for children. Two hundred tickets were sold, giving a total of $3265.

How many children's tickets were sold?

a = adult

c = child

$$19.50a + 14.50c = 3265$$

$$a + c = 200$$

$\therefore$ adults = 73

children = 127



Example

Tickets to a football game cost $26.95 for adults and $6.00 for children. In one morning, 498 tickets were sold, giving a total of $9692.

How many adult tickets were sold?

a = adults

c = children

$$26.95a + 6c = 9692$$

$$a + c = 498$$



Learning Objectives: Reviewed

By the end of the lesson, I hope that you understand and can apply the following to a range of questions from the Unit 1 and 2 General Mathematics course.

- To solve practical problems using simultaneous equations.



Work to complete

The work I am asking to be completed for this topic is shown below.

This is the minimum work which should be completed. The more questions which are answered the better your chance of success in exams. Questions towards the end of the exercises and in the Chapter Review are the best practice you can do.

Questions to complete:
Exercise 5I:

