Question 14 **(10 marks)**

On a Saturday afternoon, three separate family groups visit their local cinema to watch a feature movie. The cinema names this as DollarDay where the ticket prices for adults, children and pensioners are charged in whole dollar amounts.

The table below indicates the number of people in each category and the total paid for each family group.

Group	Adults	Children	Pensioners	Total cost
1	2	4	–	$108
2	3	6	–	$162
3	2	5	2	$152

Let a = the price for each adult ($)
c = the price for each child ($)
p = the price for each pensioner ($)

(a) Formulate the equations that can be used to determine the ticket prices. (1 mark)

(b) Using the equations formed, determine the total cost for a group consisting of 1 child accompanied by 2 pensioners. (2 marks)

(c) Solve simultaneously the equations formulated in part (a). (2 marks)

(d) Explain the geometric interpretation of the equations and the simultaneous solution.
(2 marks)

Now assume that the price for an adult is greater than the price for a child and that the price for a pensioner is the lowest priced ticket.

(e) Determine the ticket prices for adults, children and pensioners on DollarDay. (3 marks)