The solution of this $2x + 3y = 4$
system of equations... $5x + 6y = 7$ ...is (-1,2).

The solution of... $7x + 8y = 9$
                              $10x + 11y = 12$ ...is also (-1,2).

Note that the integers in each set of equations are consecutive integers. Investigate whether this is true for other systems of equations with coefficients of consecutive integers, with consecutive even integers, with multiples of an integer, or any other arithmetic sequence.

Prove under what conditions this is always true by solving the system of equations:

$$ax + (a + 1)y = a + 2$$
$$(a + 3)x + (a + 4)y = a + 5$$

Investigate whether it is true for 3 equations of 3 variables such as:

$$x + 2y + 3z = 4$$
$$5x + 6y + 7z = -8$$
$$9x + 10y + 11z = 12$$

Write a report on your findings.