Simultaneous Equations: Special Cases

1

Show that $6x - 4y = 5$ and $y = 1.5x + 2$ have no solution.

Reason _____

2

Line L goes through (1, 4) and (3, 10).
Line M goes through (0, 2) and (2, 8).
Do L and M meet? Show how you know.

Answer _____

3

At a café, Ana pays £7.50 for 3 teas and 2 cakes. Ben says he paid £14 for 6 teas and 4 cakes at the same prices.
Explain why Ben must be wrong.

Reason _____

4

The lines $y = 2x + 1$, $4x - 2y = 6$ and $x + y = 7$ are drawn on one grid.
Find every point where two of the lines meet. Give exact values.

Answer _____

5

$2x + 3y = 24$ and $6x + 9y = 72$ have infinitely many solutions. Find all the solutions where x and y are both positive integers.

Answer _____

6

The lines $kx + y = 5$, $2x + 3y = 1$ and $x - y = 3$.
(a) Find k so that all three lines pass through one point.
(b) Find k so that the first and the last have no solution.

Answer _____

7

$kx + 2y = 3$ and $8x + ky = 6$.
Find the value of k for which there is (a) no solution, (b) infinitely many solutions.

Answer _____

8

$px + qy = r$ and $2px + 2qy = 3r$, where p and q are not both 0.
(a) Show that there is no solution when $r \neq 0$.
(b) What happens when $r = 0$?

Reason _____