

Linear Simultaneous Equations

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Task 1 – Elimination

- (1) $x + y = 5$
 $x - y = 1$
- (2) $2x + y = 5$
 $x + y = 3$
- (3) $x + 2y = 10$
 $x + y = 6$
- (4) $3x - y = 14$
 $2x + y = 11$
- (5) $x + y = 6$
 $-x + y = -8$
- (6) $3x + 2y = 11$
 $x + y = 5$
- (7) $x + 2y = 10$
 $2x - y = 5$
- (8) $5x - 3y = 3$
 $x - y = -1$
- (9) $4x + y = 37$
 $x - 2y = 16$
- (10) $3x + 2y = 12$
 $5x + 7y = 31$
- (11) $2x + 3y = 22$
 $7x + 2y = 9$
- (12) $3x - 8y = 4$
 $5x - 7y = -6$
- (13) $-2x + 5y = 23$
 $7x - 3y = 21$

Task 2 – Substitution

- (1) $x = 4y - 7$
 $x = 3y - 1$
- (2) $y = x + 4$
 $y = 3x + 2$
- (3) $x + 2y = 9$
 $x = 3y - 1$

- (4) $x + y = 7$
 $y = 2x + 1$
- (5) $x + 2y = 10$
 $y = x - 4$
- (6) $x - y = 5$
 $y = 2x - 13$
- (7) $2x - y = 5$
 $2y = x - 7$
- (8) $x = 3(y - 1)$
 $2y - x + 1 = 0$
- (9) $y = 2(x + 3)$
 $0 = y - 3x - 5$

Task 3 - Solve each – You decide on a method!

- (1) $x - 3y = 10$
 $2x + y = -1$
- (2) $3y = 2x + 2$
 $2x + y = -10$
- (3) $y = 1 - 5x$
 $1 - 2y = 7x - 10$

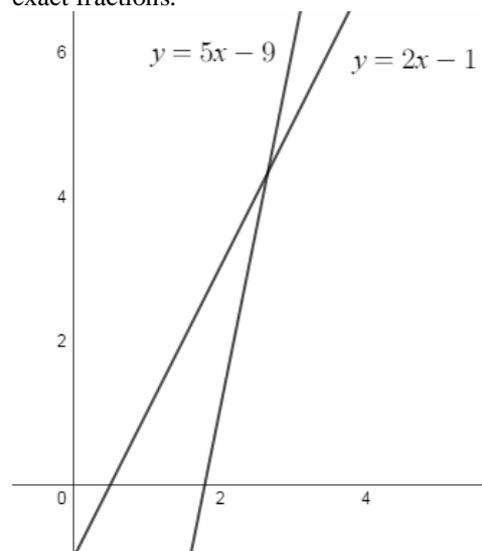
Task 4 – Wordy Questions – Set up and solve simultaneous equations to find each solution

- (1) Fred goes to the cinema twice in one week. The first time he goes he buys two adult tickets and 3 child tickets for £31. The second time he goes he buys one adult ticket and 4 child tickets for £28. By setting up and solving simultaneous equations, find the cost of one adult ticket and the cost of one child ticket.
- (2) The sum of two different numbers is 24 and the difference of the same two numbers is 8. Set up and solve simultaneous equations to find the value of each number.
- (3) Sally is making some cakes on Saturday and again on Sunday. On Saturday she uses 3 packets of Mix A and 2 packets of Mix B to make 28 cakes. On Sunday she makes 9 more cakes using 5 packets of Mix B and 2 packets of Mix A. Find out how many cakes one packet of Mix A and one packet of Mix B will make.

Task 5 – Harder Questions

- (1) $\frac{x}{4} + \frac{2y}{3} = 6$
 $\frac{x}{2} - \frac{y}{3} = 2$
- (2) $0.2x - 0.6y = 1.4$
 $0.7x + 0.5y + 0.3 = 0$

(3) The two lines shown below meet at a point. Write down the coordinates of that point leaving your answers as exact fractions.



(4) Solve the following linear simultaneous equations:

$$y + x = 5$$
$$x + z + 1 = 0$$
$$2y + z = 6$$

(4) The graph below shows two quadratic curves. Prove that the curves meet and write down the coordinates of the point where they meet.

