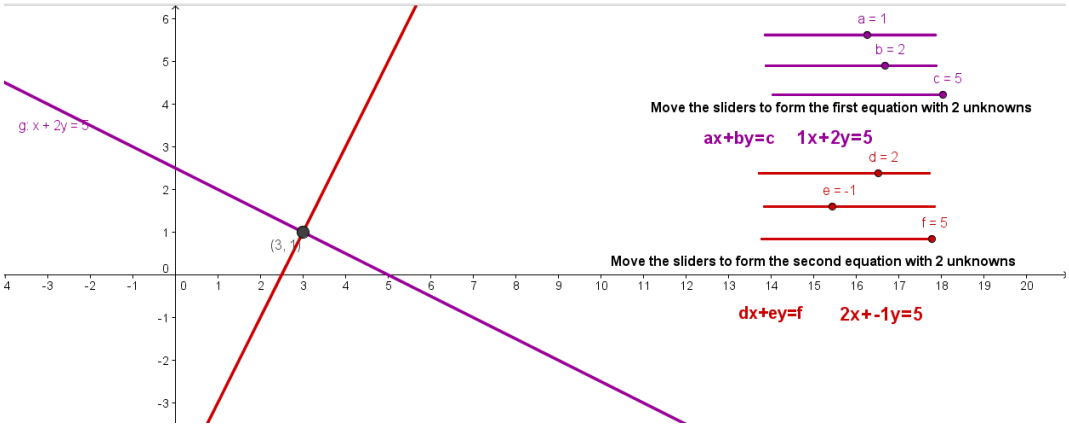
<u>Student Activity:</u> To investigate the solution of two simultaneous equations with two unknowns

Use in connection with the interactive file, 'Simultaneous Equations of 2 Unknowns', on the Student's CD.

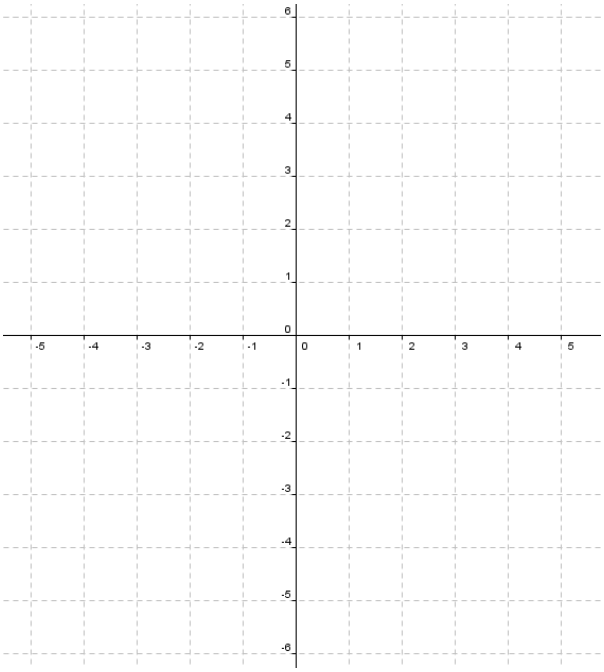


1.

a. Complete the following table:

-x	y=2x+1	y=x+3
-3		
-2		
-1		
0		
1		
2		
3		

b. Draw a graph to represent each of the equations in the above table.



c. Where do the lines representing $y = 2x + 1$ and $y = x + 3$ meet?

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d. Hence, what are the co-ordinates of the point which satisfies both $y = 2x + 1$ and $y = x + 3$?

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e. Hence, solve $y = 2x + 1$ and $y = x + 3$.

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2. Given $2x + y = 6$, write y in terms of x.

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3. What is the minimum number of points required to draw a line?

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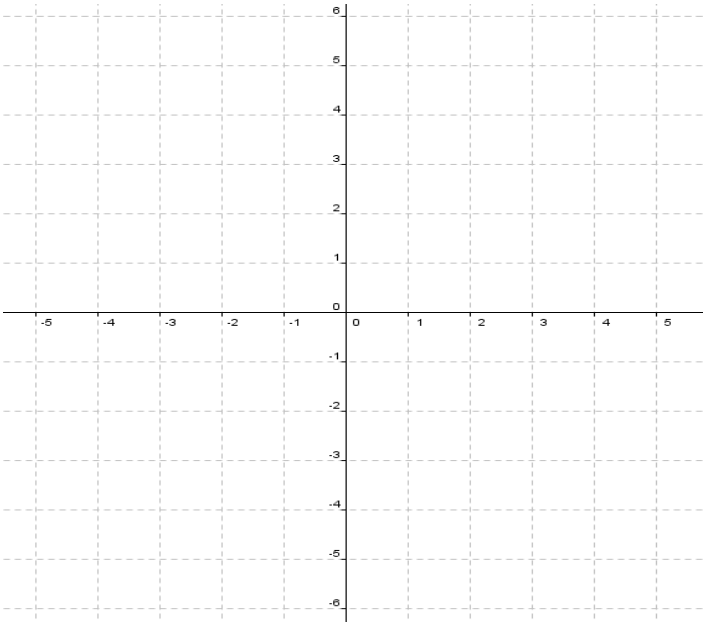
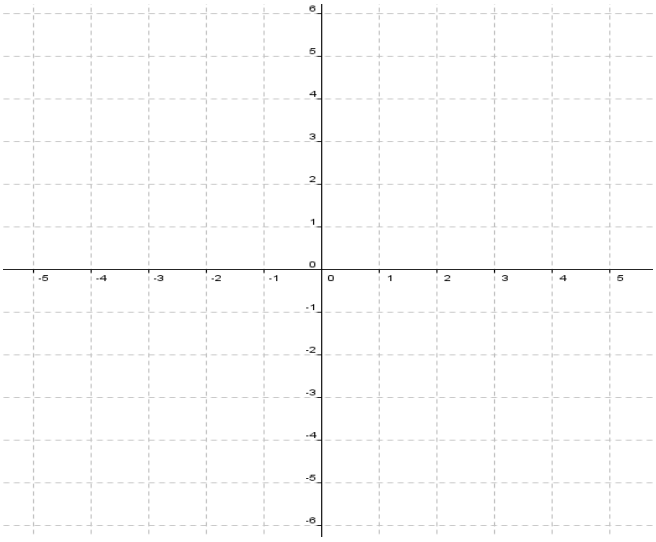
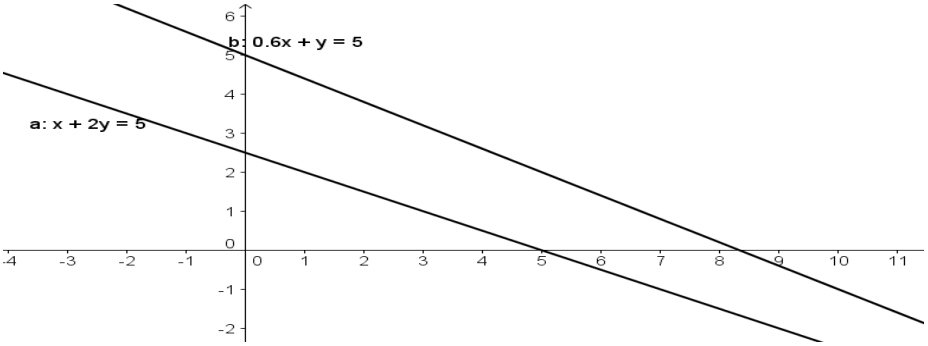
4. Using the same axes and scale, draw the lines $x + y = 3$ and $3x + y = 7$. Where do these lines intersect? Hence, solve this set of equations.



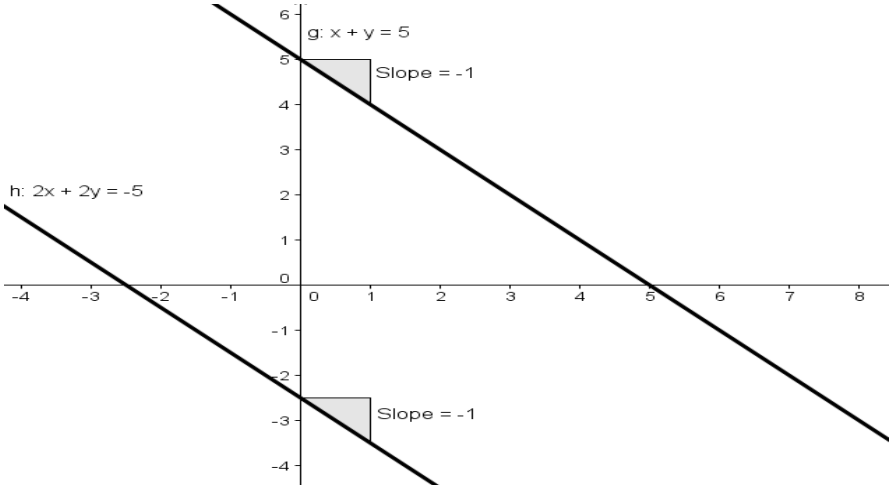
5. Using the same axes and scale, draw the lines 2x + 3y = 5 and 1x + 3y = 2.5. Where do these lines intersect? Hence, solve this set of equations.



6. From looking at the diagram below, is it possible to determine if x + 2y = 5 and 0.6x + y = 5 form a set of simultaneous equations.



7. Given that the lines *g* and *h* have each slope of 1, as represented on the diagram below, are there any points that satisfy both the equations x + y = 5 and -2x - 2y = 5? Explain your answer.



The following equations can be done graphically or algebraically

8. In the school canteen, 1 roll and 2 pieces of fruit cost €4.20 and 3 rolls and 1 piece of fruit cost €9.60. Write two equations in terms of x and y to represent this information. Solve these equations to find the cost of a roll and the cost of a piece of fruit.

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9. John is the owner of a shop. If he hires 4 sales assistants and 1 security guard, his daily payroll is €480, while 2 sales assistants and 1 security guard require a daily payroll of €300. Write two equations in terms of x and y to represent this information. Solve these equations. What are the daily wage of a sales assistant and the daily wage of a security guard?

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10. The sum of two numbers, a and b, is 45 and their difference is 3. Write two equations in terms of a and b to represent this information. Solve these equations to find the two numbers.

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11. 5 oranges and 3 apples cost €2.10 and 3 oranges and 1 apple cost €1.10. Write two equations in terms of x and y to represent this information. Solve these equations to find the cost of an orange and the cost of an apple.

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12. There are a number of rabbits and budgies in a cage. Altogether there are 29 heads and 98 legs. Represent this problem as two equations and solve the equations. How many of each type of animal are in the cage?

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13. Write a story that the following set of simultaneous equation could represent:
    $2x+y = 11$ $x-2y = 3$

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Challenge

14. A car park charges €a to enter and €b per hour after that. John pays €14 for 4 hours parking and Sara pays €20 for 6 hours parking. Write two equations in terms of a and b to represent this information. Solve these equations to find the cost to enter the car park and the cost per hour of parking.

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