Simultaneous Equations (Exam Type Questions)

1. A small printing company sends out letters to customers every day.

On Monday they sent out 20 first class letters and 15 second class letters and the charge for postage was £19·50.

On Tuesday they sent out 18 first class letters and 25 second class letters and the charge was £23.30.

How much will it cost on Wednesday to send 10 first class letters and 30 second class?

2. A concert hall sells two types of tickets, stall tickets and balcony tickets. When **all** seats are sold the concert hall holds a total of 640 people.

(a) Let ***s*** be the number of stall tickets and ***b*** the number of balcony tickets.

From the information above write down an equation connecting ***s*** and ***b***.

(b) On a particular night a concert is sold out (all seats are taken) with stall tickets priced at £8.50 and balcony tickets at £12.20. The total takings at the box office for that night was £6143.

From this information write down a second equation connecting ***s*** and ***b***.

(c) Hence find how many stall and balcony seats are in this concert hall.

3. In a fast food restaurant Ian buys 3 burgers and 4 portions of French fries and it costs £5.64. Sarah buys 2 burgers and 3 portions of French fries and it costs £4.01.

Jack had a voucher to receive one burger and one portion of fries for free.

How much would it cost Jack for 5 burgers and 3 portions of French fries?

4. A hotel owner is buying some new duvets for his hotel.

One week he bought 7 double duvets and 12 single duvets which cost £168.

The next week he bought 4 double duvets and 9 singles for £111.

The hotel owner was given a 14% discount on his next order for 5 double duvets and 5 single duvets.

How much did he pay for this third order?

5. Find the point of intersection of the lines with equations

$$5x - 2y = 16 \text{ and } 3x + 5y = -9$$

6. Clare has baked 60 scones to sell at the school fayre. Some are fruit scones (f) and some are treacle scones (t).

(a) Write down an equation using f and t to illustrate this information.

She sells the fruit scones for 25p and the treacle scones for 20p each.

She sells all the scones for a total of £13.25.

(b) Write down another equation using f and t to illustrate this information.

(c) Hence, find **algebraically** the number of treacle scones Clare sold.

7. At the funfair coloured tokens are awarded as prizes in some of the games. These tokens can be saved up and exchanged for larger items.

3 green tokens and 4 red tokens have a total value of 26 points.

5 green tokens and 2 red tokens have a total value of 20 points.

Dave has 10 green tokens and 10 red tokens.

Does he have enough points to exchange for a large soft toy with a points value of 75?

8. In a week Peter downloads 5 tracks and 4 films and pays £21.23.

In the same week Frank downloads 7 tracks and 3 films and pays £18.49.

Calculate how much Richard would pay if he downloaded 3 tracks and 2 films.

9. Solve, **algebraically**, the equations

$$3x + 2y = 13$$

$$x = y + 1$$