# Forming Equations

**Section A** How many pencils do I have…

1 a) if I buy 15 pencils and then I buy another 8?

b) if I buy *x* pencils and then I buy another 4?

2 a) if I buy 23 pencils and then I buy another 5, and then another 6?

b) if I buy *v* pencils and then I buy another *w*, and then another *x*?

3 a) if I buy 17 pencils and then I lose 11 of them?

b) If I buy *q* pencils and then I lose 6 of them?

4 a) if I buy 14 pencils and then I buy another 6 and then I lose 7?

b) If I buy *f* pencils and then I buy another *g* of them then I lose *h*?

5 a) if I buy 4 packs each containing 7 pencils?

b) If I buy *p* packs each containing 5pencils?

c) If I buy *d* packs each containing *e* pencils?

6 a) if I buy 3 packs each containing 8 red pencils and also 5 packs each containing 7 blue pencils?

b) If I buy *a* packs each containing *b* red pencils and also *c* packs each containing *d* blue pencils?

7 a) if I have £3 to spend, and each pencil costs 15p?

b) If I have £*g* to spend, and each pencil costs 7p?

c) If I have £*y* to spend, and each pencil costs *z* pence?

8 a) if I have £3.60 to spend, and each pack of pencils (costing £1.20) contains 7 pencils?

b) If I have £*u* to spend, and each pack of pencils (costing £*x*) contains *f* pencils?

9 a) if each pencil costs 25p and I spend the change I have after buying 5 comics each costing £1.70 with a £10 note?

b) If each pencil costs *r* pence and I spend the change I have after buying *b* comics each costing *k* pence with a £*h* note?

**Section B: And now without the numbers:**

How many cakes do I have if…

1. I buy *g* cakes and then I buy another *k*?
2. I buy *f* cakes and then I eat *d* of them?
3. my sister buys *m* cakes and I buy *t* more than she does?
4. my mother buys *w* cakes and I buy twice as many as she does?
5. my brother buys *h* cakes, which is *p* more than I do?
6. I buy *x* packets each containing *y* cakes?
7. I buy *e* boxes each containing *f* fruit cakes, and also *h* packets each containing *j* jam-sponge cakes?
8. I buy *p* boxes, and each packet contains *c* chocolate cakes as well as *g* ginger cakes?
9. I buy *d* boxes each containing *m* cakes, and then I eat *w* of them?
10. my uncle shares *k* cakes fairly between my two brothers and me?
11. my uncle buys *t* packets each containing *w* cakes, and shares all the cakes fairly between my four sisters and me?
12. my uncle buys *h* packets each containing *g* cakes; he eats *b* of the cakes and then shares the remaining cakes fairly between me, my *x* brothers and my *y* sisters?

**Section C**

1. Anne has £p. Beth has £5 more than Anne, Colin has twice as much as Anne.
   1. Write down how much Beth and Colin each have.
   2. How much money do all three have in total?
2. A bowler hat costs £t. A beret is half the price of a bowler hat.
   1. How much is 3 bowler hats and 5 berets?
   2. I buy 2 bowler hats and my sister buys 12 berets and we pay with £50. How much change do we get?
3. I buy 5 green pens for m pence. The next day I buy 4 more but the price has increased by 12 pence. How much change do I get from £5?
4. Raj is 3 times as old as his son Jonah, Jonah is r years old.
   1. How old is Raj (in terms of Jonah’s age)
   2. What will the sum of their ages be in 10 years time?
5. Andrew, Oscar and Gemma are given pocket money each week. Gemma receives 80p more than Andrew and Oscar receives 5 times as much as Andrew. If Andrew gets x pence, how much pocket money is given to them altogether each week?
6. Ellie, Harry, Kierra and Omar are given £30 by their Grandmother. Ellie is given a fifth of the money, the rest is divided so that Harry gets £h and Kierra gets twice the amount Harry received less the amount Ellie had. How much does Omar receive?
7. I have m hairs on my head but am losing them at a rate of n hairs per day. After t days I will give p pence to charity for every hair on my head. How much will I donate?
8. The next morning, each of the b boys spends m minutes in the bathroom, each of the g girls spends twice as long as each of the boys. How many minutes were spent in the bathroom in total?
9. My uncle buys h packets each containing g cakes; he eats b of the cakes and then shares the remaining cakes fairly between me, my x brothers and my y sisters?
10. There are j galaxies and k stars in the universe. If the average weight of a star is m kg, what is the average weight of a galaxy?
11. In a game of cricket, England require a total of T runs to win in n overs. After m overs they have scored r runs. How many runs do they need on average in every remaining over if they are to win?
12. As I was going to St Ives, I met a man with w wives. Each wife had x sacks,   
    Each sack had y cats, Each cat had z kits. Kits, cats, sacks, wives. How many of each had this man from St Ives?
13. Make up stories to fit the following equations













**Homework**

**Section A** How many pens do I have if I buy

1 a) 3 red pens and 7 blue pens?

b) 4 red pens and *x* blue pens?

2 a) 10 red pens, 5 blue pens and 9 green pens?

b) 6 red pens, *a* blue pens and *b* green pens?

3 a) 12 red pens, but I lose 8 of them?

b) *p* red pens, but I lose 4 of them?

c) 20 blue pens, but I lose *g* of them?

d) *t* purple pens, but I lose *w* of them?

4 a) 3 packets of red pens, each containing 9 pens?

b) 5 packets of yellow pens, each containing *d* pens?

c) *a* packets of yellow pens, each containing 12 pens?

d) *p* packets of yellow pens, each containing *q* pens?

5 a) 7 packets of orange pens, each containing 3 pens, and 5 packets of blue pens, each containing 8 pens?

b) 8 packets of orange pens, each containing *h* pens, and 5 packets of blue pens, each containing *q* pens?

c) *u* packets of orange pens, each containing 4 pens, and *f* packets of blue pens, each containing 9 pens?

d) *w* packets of orange pens, each containing *v* pens, and *g* packets of blue pens, each containing *h* pens?

How many pens do I buy if

6 a) I have 90 pence, and each pen costs 15 pence?

b) I have *d* pence, and each pen costs 20 pence?

c) I have 75 pence, and each pen costs *x* pence?

7 a) I have £4.20, and each pen costs 60 pence?

b) I have £3.50, and each pen costs *r* pence?

**Section B**

1. If I have  packets of Pringles and  packets of walkers, how many packets of crisps do I have altogether?
2. I have  packets each containing  crisps. How many crisps do I have?
3. I have carrots but  of them are too long. How many acceptable carrots do I have?
4. I share  alphas equally between  students. How many alphas does each student get?
5. I own a triangular piece of land with base meters and height  meters. Find the area.
6. I have  watermelons,  grapes and  oranges. How many pieces of fruit do I have?
7. I have  tables and  chairs. I sell them all for  pounds each. How much money do I make?
8. Connie has pairs of shoes and Poly has  pairs of shoes. They both put their shoes into boxes which contain  pairs of shoes each. How many boxes do they use between them?
9. The Hotel Mathematica has u floors and v rooms on each floor. If there are w guests staying, how many rooms in the hotel are empty?
10. My rose bush is currently h centimetres tall. It grows by s centimetres every day. How tall will it be in t days time?
11. Alan eats apples and  oranges per day. In his room he has  boxes of fruit, each of which contains  pieces of fruit. For how many days will he have enough fruit without having to buy more boxes?
12. \*A school bus has *n* children on when it sets off. At the first stop p children get off and at the next stop a third of the remaining children get off. How many children are still on the bus?
13. \*Homer Simpson is driving the Springfield monorail but something goes horribly wrong. Every time he hits the brake, the train gets v times faster. If he hits the brake b times, how many times faster will the train be travelling than its original speed?