Equations

1. Together David and Alan have £30. David has £6 more than Alan. How much does each person have?

2. Amanda sat two maths tests. In the second test she scored 10 less than she did in the first test. Her total mark for both tests was 92. How much did Amanda score in each test?

3. Sarah buys a necklace and a pair of earrings. The necklace costs £35 more than the pair of earrings. Sarah paid £81 for both items. How much did each item cost?

4. Stephen buys a toaster and a kettle. The kettle cost £8 less than the toaster. Together the items cost £42. How much did the kettle cost?

5. Asma, Samia and Sidra are sisters. Samia is 4 years older than Asma and Sidra is 9 years older than Asma. Altogether their ages total 31. Let Asma's age be x.

   (a) Write down expressions for Samia's and Sidra's ages in terms of x.
   (b) Calculate how old each sister is.

6. Michael goes shopping. He buys a shirt, a pair of trousers and a suit. The trousers cost £5 less than the shirt and the suit cost four times as much as the shirt. Altogether Michael spent £145. Let x be the cost of the shirt.

   (a) Write down expressions for the cost of the trousers and the suit in terms of x.
   (b) How much did Michael spend on each item?

7. Zaheer, Imran and Faisal play cricket. In one innings Imran scored 25 runs more than Zaheer and Faisal scored three times as much as Zaheer. Altogether they scored 130 runs. How much did Faisal score?

8. Jane has twin sisters, June and Jean. The twins are 3 years older than Jane. Altogether their ages total 42. How old is each girl?

9. Debbie goes jogging each morning. On Tuesday she ran 2 km less than she did on Monday and on Wednesday she ran 5 km more than she did on Monday. Over the three days Debbie ran 27 km.
Let x represent how far Debbie ran on Monday.

 (a) Write down expressions for how far Debbie ran on Tuesday and Wednesday.
 (b) How far did Debbie run each day?

10. A bath towel and two hand towels cost a total of £26. The bath towel cost £5 more than the hand towels.
Calculate the cost of the bath towel.

11. John and James have the same number of sweets.
John has 4 packets of sweets and 6 loose sweets.
James has two packets of sweets and 28 loose sweets.

 (a) How many sweets are in a packet?
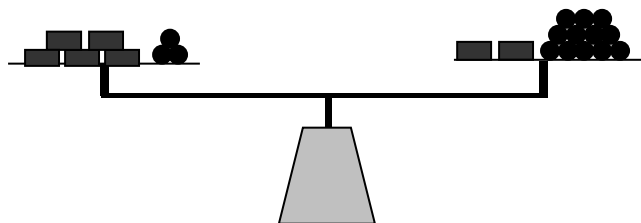 (b) How many sweets does each boy have?

12. A group of people visited a tower.
5 climbed the stairs to the top while the rest used the lift.
The lift had to make 7 trips to get the rest to the top and was fully loaded each time.

On the way down, 41 people in the group used the stairs and only 4 trips of the lift were needed to bring the rest down. The lift was fully loaded each time.

 (a) How many people did the fully loaded lift take?
 (b) How many people were in the group?

13. The diagram below shows a pair of scales that are evenly balanced.

On the scale are some solid metal blocks and some small metal spheres. Each small sphere weighs 10 grams.

Let the weight of each block be represented by x.
Calculate the weight of each block.

14. To visit some historical ruins, a ravine has to be crossed. The ravine can be crossed either by using a rope bridge or a cable car.
   A group of tourists want to visit the ruins.

   On the way to the ruins 6 people cross the rope bridge and the cable car makes 5 journeys fully loaded. On the way back the cable car makes 2 journeys fully loaded and 30 people cross the rope bridge.

   (a) How many people can the cable car hold?
   (b) How many tourists are in the group?

15. A vineyard stores its wine in barrels.
   One barrel can fill 20 one-litre bottles and 8 wine boxes or 50 one-litre bottles and 2 wine boxes.

   (a) How many litres does a wine box hold?
   (b) How many litres does a barrel hold?

16. A newsagent sells football cards.
   The cards can be bought in packs or individually.

   Christiano buys 5 packs of cards and 8 individual cards.
   Carlos buys 2 packs of cards and 26 individual cards.

   If Christiano and Carlos have the same number of cards,
   How many are in a pack?