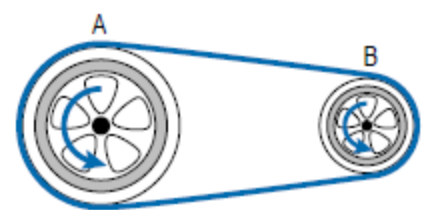# Problems involving Ratio and Proportion

- In a country dance there are 7 boys and 6 girls in every line. 42 boys take part in the dance.
    - How many girls take part?

- Some children voted between a safari park and a zoo for a school visit. The result was 10 : 3 in favour of the safari park. 130 children voted in favour of the safari park.
    - How many children voted in favour of the zoo?

- The risk of dying in any one year from smoking is about 1 in 200 of the population. The population of the UK is about 58 million.
    - How many people are likely to die this year from smoking?

- A boy had £35 in birthday money. He spent some of the money. He saved four times as much as he spent.
    - How much did he save?

- There are 3 chocolate biscuits in every 5 biscuits in a box. There are 30 biscuits in the box.
    - How many of them are chocolate biscuits?

- A recipe for mushroom soup uses 7 mushrooms for every 1⁄2 litre of soup.
    - How many mushrooms do you need to make 2 litres of soup?
    - How much soup can you make from 21 mushrooms?

- 10 bags of crisps cost £3.50.
    - What is the cost of 6 bags of crisps?

- £1 = 12.40 Danish kroner.
    - How much is £1.50 in Danish kroner?

More Challenging

- To make orange paint, you mix 13 litres of yellow paint to 6 litres of red paint to 1 litre of white paint.
    - How many litres of each colour do you need to make 10 litres of orange paint?

- Flaky pastry is made by using flour, margarine and lard in the ratio 8 : 3 : 2 by weight.
    - How many grams of margarine and lard are needed to mix with 200 grams of flour?

- A square and a rectangle have the same area. The sides of the rectangle are in the ratio 9 : 1. Its perimeter is 200 cm.
    - What is the length of a side of the square?

- The chocolate bars in a full box weighed 2 kg in total. Each bar was the same size. Eight of the bars were eaten. The bars left in the box weighed 1.5 kg altogether.
    - How many chocolate bars were in the original box?

- A and B are two chain wheels. For every 2 complete turns that wheel A makes, wheel B makes 5 complete turns. Wheel A makes 150 turns.
    - How many turns does wheel B make?

- A 365 g packet of coffee costs £2.19.
    - How much per 100 g of coffee is this?

Problems involving Ratio and Proportion

- £1 is worth 3 Australian dollars (A$). A girl changed £50 into Australian dollars, went on holiday to Australia and spent A$ 96. At the end of the holiday she changed the Australian dollars back into £.
  - How much did she get?

- The cost of a take-away pizza is £6. A pie chart is drawn to show how the total cost is made up. The cost of labour is represented by a sector of 252° on the pie chart.
  - What is the cost of labour?

- Cinema tickets for one adult and one child cost a total of £11.55. The adult's ticket is one-and-a-half times the price of the child's ticket. How much does each ticket cost?

Even More Challenging

- 2 parts of red paint mixed with 3 parts of blue paint make purple paint.
  - What is the maximum amount of purple paint that can be made from 50 ml of red paint and 100ml of blue?
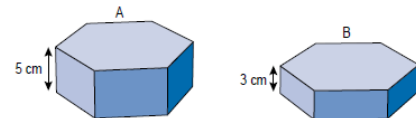
- A recipe for jam uses 55 g of fruit for every 100 g of jam.
  I want to make ten 454 g jars of jam.
  - How many grams of fruit do I need?

- A boy guessed the lengths of some objects. He divided each guessed length by the measured length to produce an accuracy ratio. The accuracy ratio for object A is 0.71: 1 (to 2 d.p.).
  - Find the accuracy ratio for each other guess.
  - Which guess was the most accurate?
  - Which guess was the least accurate?

	Guess	Actual length
A.	5 cm	7 cm
B.	40 cm	53 cm
C.	3 m	2 m
D.	10 m	7.8 m
E.	20 m	25 m

- Prisms A and B have the same cross-sectional area.
  Prism A is 5 cm high and has a volume of 200 cm3.
  - What is the volume of prism B?

- Take a two-digit number. Reverse the digits. Is it possible to make a number that is one-and-a half times as big as the original number?
  - Justify your answer.
  - Find a two-digit number that is one-and-three quarters times as big when you reverse its digits.

- The Queen Mary used to sail across the Atlantic. Its usual speed was 33 miles per hour. On average, it used fuel at the rate of 1 gallon for every 13 feet sailed.
  - Calculate, to the nearest gallon, how many gallons of fuel the ship used in one hour of travelling at its usual speed. (There are 5280 feet in one mile.)