

Ratio

Introduction to ratios

- ① A bag contains red balls and black balls only. The number of black balls to the number of red balls is in the ratio 3:2.

There are 18 black balls. Work out the number of balls in the bag. (3 marks, ★)

You know 18 black balls are equal to 3 parts.

NAILIT!

In ratio questions, find the total number of parts by adding the numbers in the ratio together.

- ② Three daughters are aged 15, 17 and 18 years. They are left £25 000 in a will to be divided between them in the ratio of their ages. Calculate how much each daughter will receive. (3 marks, ★)

WORKIT!

Divide 3.5 kg in the ratio 4:3

- 1 Work out the total numbers of parts:
 $3 + 4 = 7$.
- 2 Work out the value of one part:
 $3.5 \div 7 = 0.5$ kg.
- 3 Work out the value of each part of the ratio: 4×0.5 and 3×0.5 .

2 kg and 1.5 kg

- ③ A farm has total area of 800 acres. 40% of the area is devoted to arable crops. The rest is devoted to cattle and sheep in the ratio 9:7.

Work out the land area in acres devoted to sheep. (3 marks, ★★★)

First work out the area devoted to livestock (60% of 800 acres). Divide your answer in the ratio given.

- ④ Given that $3x + 1 : x + 4 = 2 : 3$, find the value of x . (3 marks, ★★★)

- ⑤ A wood has pine, oak and ash trees.

The numbers of pine trees and oak trees are in the ratio 5:8.

The numbers of oak trees and ash trees are in the ratio 2:3.

The total number of trees in the wood is 300. Find the number of ash trees. (4 marks, ★★★)

Using a multiplier for the second ratio, find a new three-part ratio for all three tree types. Then work out how many parts there are in total.