

15. Ratio & Proportion

1. School theatre visits are arranged for parents, teachers and pupils.

The ratio of parents to teachers to pupils **must** be 1 : 3 : 15.

- a) 45 pupils want to go to the theatre.
How many teachers must accompany them?

1 KU

- b) The theatre gives the school 100 tickets for a play.

What is the maximum number of pupils who can go to the play?

3 RE

2. A coffee shop blends its own coffee and sells it in one-kilogram tins.

One blend consists of two kinds of coffee, Brazilian and Columbian, in the ratio 2 : 3.

The shop has 20 kilograms of Brazilian and 25 kilograms of Columbian in stock.

What is the maximum number of one-kilogram tins of this blend which can be made.

3 RE

This is a question from 1990 and is unlikely to be asked today.

However, if you can do it, you are demonstrating a good understanding of ratio and proportion

3. Each of the examples below gives information about the relation between the frequencies of two musical notes.



When note 2, of frequency f_2 , is a **perfect fifth** above note 1, of frequency f_1 ,

their frequency ratio $f_2 : f_1 = 3 : 2$ i.e. $\frac{f_1}{f_2} = \frac{3}{2}$



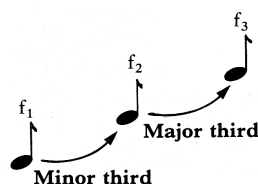
When note 3, is a **perfect fourth** above note 2, their frequency ratio $f_3 : f_2 = 4 : 3$

- a) In a given piece of music, note 2 is a **perfect fifth** above note 1,
And note 3 is a **perfect fourth** above note 2.

Show that the frequency ratio of note 3 to note 1 is 2 : 1.

4 RE

- b) It is also known that, when one note is a **minor third** above another note, their frequency ratio is 6 : 5.



For the notes shown opposite, the second note is a **minor third** above the first and the third note is a **major third** above the second.

If note 3 is a **perfect fifth** above note 1, find the frequency ratio of a **major third**.

Show all your working.

4 RE