Using Ratios. *Stg E6* props & rats   Name: _____
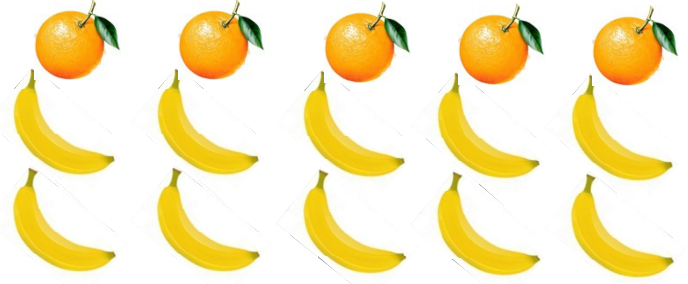
First of all, let's figure out what a **'ratio'** is. It's not be confused with that thing on the mantelpiece that you listen to for the weather. Nor is it a character from Hamlet – that was *Ho*ratio. Different altogether. A mathematical ratio simply **compares two numbers** in a bigger set. E.g. In my fruit bowl I have **3** bits of fruit:

Clearly there is one orange and 2 bananas. **A Ratio of 1 to 2 (1:2)**

But what if I went shopping for the kids' lunches. Sam likes an orange every day; Liam and Mungo take a banana each, every school day:

Now there are 5 oranges and 10 bananas in my fruit bowl. Has the ratio of oranges to bananas changed though? No, **the ratio is the same**: For every 1 orange there are 2 bananas!

Both 5 and 10 can be divided by 5, as you can see when all the fruit is spread out.

Let's have a look at some simple ratios:

There are **3** red (or dark) parts to **2** yellow ones; 3:2 **...** (we could also say that 3 out of 5 are red. The ratio of dark parts to all parts is 3:5)   **Try writing the ratios for these:**

there are ___ orange to ___ blue triangles.   Ratio: __:__

there are ___ triangles to ___ brown dots.   Ratio: __:__

there are ___ squares to ___ triangles.   Ratio: __:__

there are ___ brown to ___ tan triangles.   Ratio: __:__

there are ___ blue to ___ red dots.   Ratio: __:__

there are ___ circles to ___ triangles.   Ratio: __:__

there are ___ circles to ___ triangles.   Ratio: __:__

there are ___ circles to ___ squares.   Ratio: __:__
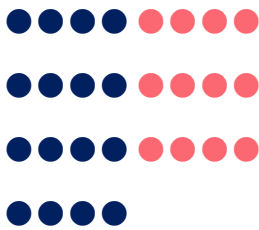
there are ___ circles to ___ squares.   Ratio: __:__

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Alright, what if the numbers you start with are bigger: For example, in your class you might have **28** kids. **16** of them are boys and **12** are girls. So the ratio of boys to girls is **16:12** – the total set has **28**. But we don't stop there – the real trick is to **simplify** the ratio. Have a look at the diagram below:

● ● ● ● ● ● ● ●
● ● ● ● ● ● ● ●
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In this set of 28, we can see that there are **16 blue** (or dark) ones and **12 pink** (or light) ones. We start with a ratio of **16:12** Can we simplify these numbers? Well to help us, we can try some numbers out:

Can you divide them by 2? – Yes, but we still end up with large chunks like 8:6
How about by 3? – Not really, 3 goes into 12 but *not* 16. How about 4? BINGO!

We can say that in the set shown the ratio of dark to light dots is **4:3** 16 ÷ 4 = **4**, 12÷ 4 = **3 -** For every **4 blue** ones there are **3 pink** ones. Ok, try some for yourself. They are wrapped in words, so carefully pick out the numbers you need. You can use you maths book to do your working out if you like – work quietly with a buddy – how might they figure it out? Remember to show the **simplest** ratio. OK, go for it – only this time NO DOTS FOR YOU! (Mwa ha haaa!)

1. I have a collection of marbles. **24** are Kermit green, **32** are bullfinch pink. What is the ratio of green to pink ones? _____:_____

2. From a packet of **20** chocolate biscuits in total, Dad ate **8** of them by himself. The others got to share out the rest. What ratio of biscuits did Dad eat compared to the rest of the family? _____:_____

3. In our class we figured out that there is a 4:3 ratio of people with brown eyes compared to those with blue eyes. There are **9** people with blue eyes, how many have brown? _____. (Take your time … 3 x ? = 9?) How many kids in the class are there? _____

4. A cheese shop orders specialty packs of 12 with 5 wedges of Gouda and the rest is Brie. What is the ratio of Gouda to Brie? _____:_____

5. Some juice concentrate instructions say to mix the 50ml sachet with 200ml of cold water. What is the ratio of concentrate to water? _____:_____

6. The 2-stroke oil mix for your bike is **50**ml for every **litre** of petrol. How many litres of gas could we make with a 250ml bottle of oil? _____

7. In your summer job packing strawberries, the boss says you are allowed to eat **2** strawberries for every **5** punnets you pack. What ratio of berries to punnets is that? _____:_____   If you ate 20 strawberries, how many punnets did you pack? _____

8. In your school **5** *out of* **15** teachers are really annoying. What is the ratio of annoying teachers to non-annoying teachers? _____:_____   (No, it's not 1:0 – cheeky)

9. A school day is **6** hours. A whole day is **24** hours. What is the ratio of school hours to watching You-Tube hours? _____:_____   in 72 hours during the week how many hours do you spend at school? _____   (No, not 1 million – man, you're cheeky today!)

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