

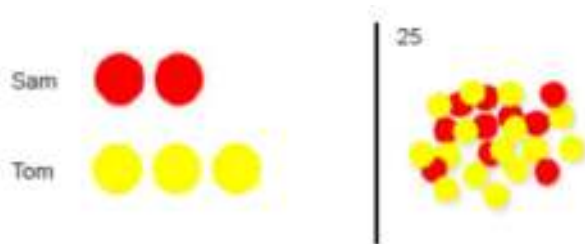
Ratio, Proportion and Scaling Up or Down

Upper KS2 (use of concrete resources still applies)

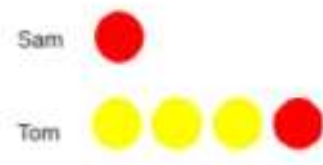
Ratio

(The following problem has been solved using double sided counters but could equally be drawn using bars.)

Sam and Tom have football stickers in the ratio of 2 to 3. Altogether they have 25 stickers. If Sam gives half of his stickers to Tom, how many will Tom have?



Step 1 Represent the ratio
Step 2 Recognise that if together the counters have a value of 25 then one has a value of 5

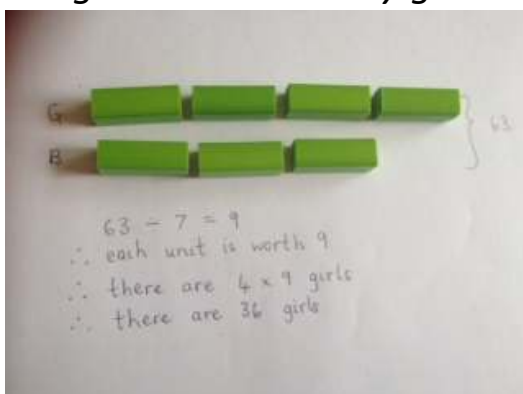


Step 3 Give half of Sam's stickers to Tom

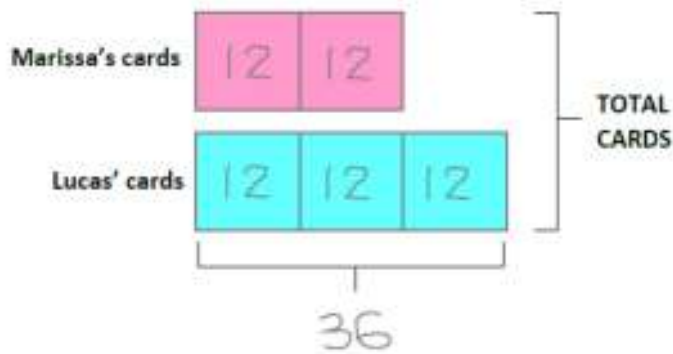
Step 4 Multiply 5 by 4 to give the total value of Tom's stickers

Answer: $5 \times 4 = 20$

At a dance there are 4 girls to every 3 boys. There are 63 children altogether? How many girls are there?



Marissa and Lucas share some Lego cards in the ratio of 2:3. If Lucas has 36 Lego cards, how many cards are there altogether?



Proportion

In a class, 18 of the children are girls.

A quarter of the children in the class are boys.

Altogether, how many children are there in the class?



The bar represents the whole class



Folding the bar into quarters allows us to represent the boys as a proportion of the whole class



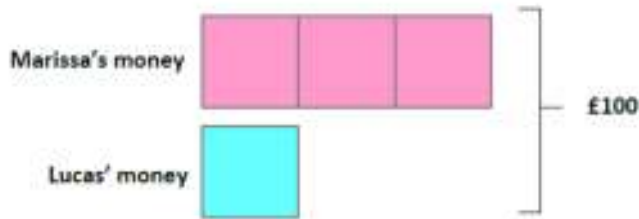
The rest of the class must be girls



There are 18 girls so each of the three girl sections must equal 6 and so the boy section must also be 6. $6 \times 4 = 24$, there are 24 children in the class.

Scaling

Marissa and Lucas have £100 between them. Marissa has three times more than Lucas. How much money does Marissa have?



Seeing this visually makes it very clear that the £100 needs to be divided equally into 4 parts. Marissa has 3 of those parts: $£25 + £25 + £25 = £75$

Lucy, Amy and Jane are baking cakes for a cake sale. Jane bakes 24 cakes. Lucy bakes twice as many cakes as Jane and Amy bakes 3 times as many cakes as Jane. How many do they bake altogether?

Jane:

Lucy:

Amy:

$$24 \times 6 = 144$$

Example problems:

<p>Seven in every nine packets of crisps in a box are salt and vinegar. The rest are plain. There are 63 packets of salt and vinegar crisps. How many packets of plain crisps are there?</p>	<p>A gardener plants tulip bulbs in a flowerbed. She plants 3 red bulbs for every 4 white bulbs. She plants 60 red bulbs. How many white bulbs does she plant?</p>
<p>Shannon and Amir share £56 in the ratio of 3:5. How much money does each person get?</p>	<p>90 sweets are shared between three bowls (a, b and c) in the ratio of 1:2:3. How many more sweets does bowl b have than bowl a?</p>
<p>The farmer has 24 animals There are three times as many sheep as cows. How many Sheep? How many cows?</p>	<p>The farmer has 42 animals There are twice as many ducks as cows and three times as many sheep as cows. How many Sheep? How many cows? How many ducks?</p>