S2 Topic 11: Ratio and Proportion

1) Learn to simplify ratios

$\div 5$ 15: 25 $\div 5$

3: 5

$\div 7$ 42:14 $\div 7$

6: 2

$\div 2$ $\div 2$

3: 1

$\div 2$ 60:72 $\div 2$

30:36

$\div 3$ $\div 3$

10:12

$\div 2$ $\div 2$
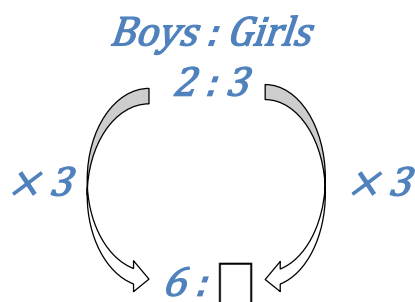
5:3
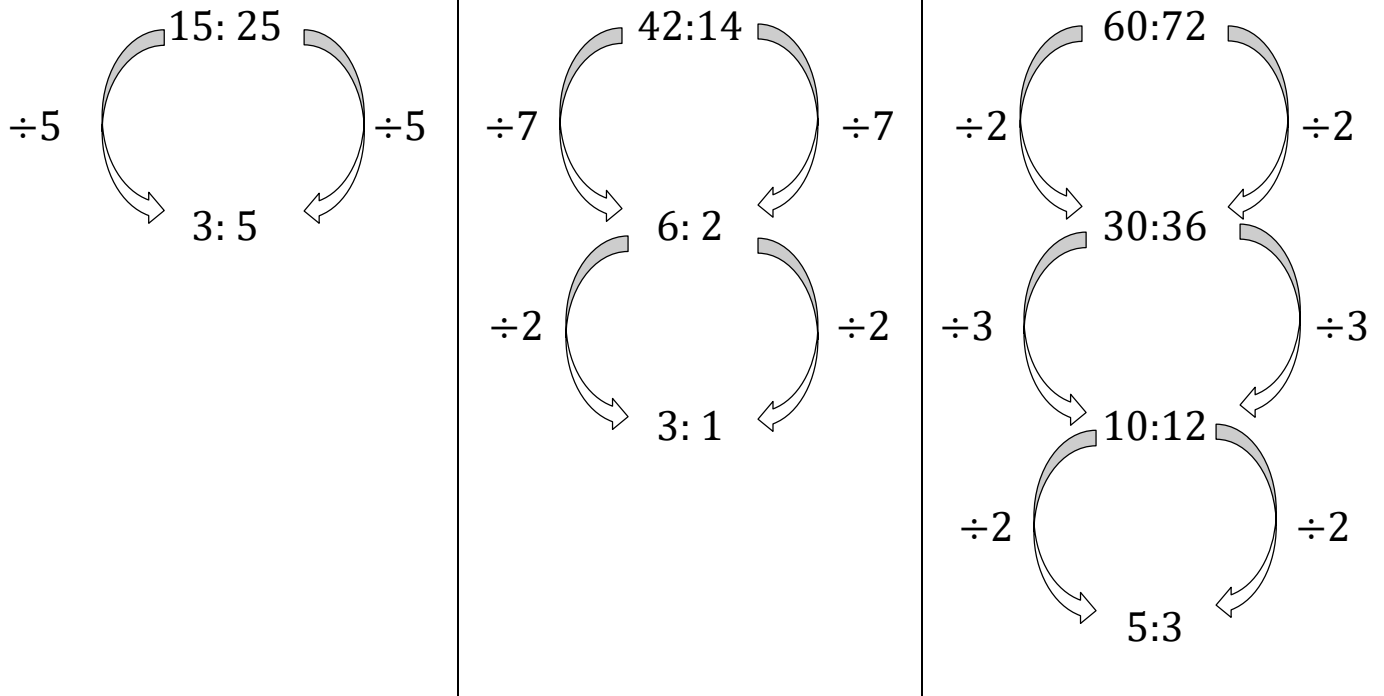
Note that the same ratio may be simplified via different routes to arrive at the same answer e.g. the third example could have been divided by 2 and then by 6.
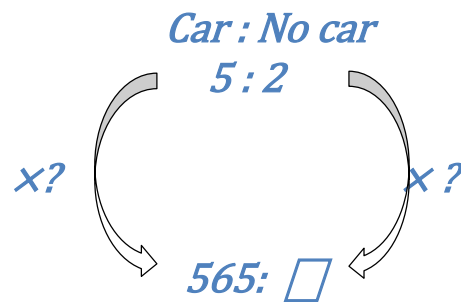
2) Learn to solve problems involving ratios

a) In a group of friends, the ratio of boys to girls is 2:3. If there are six boys in the group, how many girls are there?

Boys : Girls

$\times 3$ *2 : 3* $\times 3$

6 : ☐

There are 3 × 3 = 9 girls in the group

b) In a village the ratio of households with cars to households without cars is 5:2. If 565 people have cars, how many do not?

Car : No car
5 : 2

×? ( ) × ?

565: ☐

The issue here is that, in question a) above, most people can see immediately that two is multiplied by three to make six but in this question it is less obvious what 5 is multiplied by to make 565.

It is necessary to find this out by division: 565 ÷ 5 = 113

Car : No car
5 : 2

× 113 ( ) × 113

565: ☐
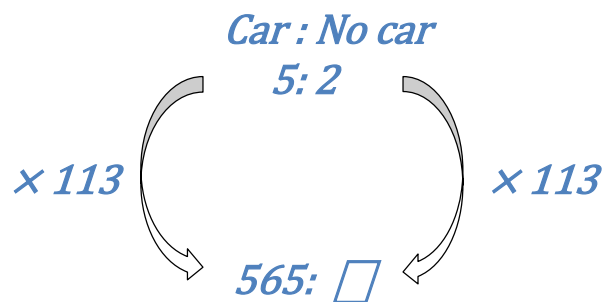
113 × 3 = 226 households do not have a car

3) Learn to share an amount in a given ratio

Share £625 in the ratio 3:2

3 + 2 = 5 shares altogether

625 ÷ 5 = 125

One person gets 3 × 125 = £ 375

The other gets 2 × 125 = £ 250

4) Learn to solve problems involving direct proportion

If four horses eat 26kg of hay in a day, how much hay will eleven horses eat?

One horse eats 26 ÷ 4 = 6.5kg of hay per day

Eleven horses eat 11 × 6.5 = 71.5kg of hay per day

Note: this assumes identical horse which all have the same appetite!