Y9 Maths Knowledge Organiser Topic 13: Ratio 2

What must I be able to do?	Key vocabulary	
You may need to revise the following: • Year 7 Topic 14: Ratio 1 **New content:** ☐ Recognise and solve problems that involve direct proportion including recipes ➢ Sparx M478	**Direct Proportion**	When two things are in direct proportion to each other, when one increases the other will increase at the same rate
	Inverse Proportion	When two things are inversely proportional, when one increases the other will decrease at the same rate

Proportionality

Questions involving proportion can take many forms. Technically, anything written as a ratio or fraction involves proportion but there are also numerous applications of this such as best value, recipes, exchange rates, sharing in a ratio and many more.

In questions where things are proportional, the key aspect is that if you scale one quantity up or down by **multiplying or dividing** then the other quantity scales the same way. This **does not work** for **addition or subtraction**!

Recipes

Here are the ingredients to make 9 flapjacks

Ingredients for 9 flapjacks
45 g of oats
72 g of butter
63 ml of syrup
81 g of sugar

a) What amount of oats are needed for 27 flapjacks?

This is a good example of how proportion works. We know the values for 9 flapjacks and we need it to be 27 flapjacks.

$27 \div 9 = 3$

We need 3 times as many of each ingredient so 3 x 45 g = 135 g of oats needed.

	Oats	Quantity	
x 3 ↓	45 g	9	↓ x 3
	?	27	

b) What amount of sugar is needed for 30 flapjacks?

This could be done the same way as the last one but it will be a more awkward multiplier.

$30 \div 9 = 3\frac{1}{3}$ so 81 g x $3\frac{1}{3}$ = 270 g of sugar.

Alternatively if 81 g makes 9 flapjacks we could scale down to 1 flapjack (÷ 9) and then back up to 30 (x 30).

	Sugar	Quantity	
÷ 9 ↓	81 g	9	↓ ÷ 9
x 30 ↓	9 g	1	↓ x 30
	270 g	30	

x 9

Quantity	Sugar
9	81 g
30	270 g

x 9

We could also recognise that the sugar is always 9 times the value for quantity (81 ÷ 9 = 9)