

Overview of Proportional Reasoning and Multiplicative Thinking

	1.0	2.0	3.0	4.0	5.0	6.0	
Fractions	<ul style="list-style-type: none"> identify halves and quarters of an object 	<ul style="list-style-type: none"> make halves, thirds and quarters of objects and sets 	<ul style="list-style-type: none"> compare, add and subtract fractions using linear or area models use equivalent fractions use half & quarter turns 	<ul style="list-style-type: none"> put fractions on number line add, subtract and multiply fractions link $\div 8$ with $\times 1/8$, etc. quantify chance 	<ul style="list-style-type: none"> divide by fractions convert between fractions, decimals, ratios and percentages use fractions for probabilities 	<ul style="list-style-type: none"> recognise rational numbers as a subset of the real numbers decimal expansion of rational and irrational numbers rationalise surd fractions 	
Multiplication	<ul style="list-style-type: none"> skip count by 2s, 5s, 10s 	<ul style="list-style-type: none"> multiplication as repeated addition 	<ul style="list-style-type: none"> learn \times tables build new facts from known facts and number properties use array model 	<ul style="list-style-type: none"> multiply by single digits, tens, powers of ten 	<ul style="list-style-type: none"> multiplication as enlargement and reduction units for area 	<ul style="list-style-type: none"> multiply by integers 	<ul style="list-style-type: none"> calculations with powers and exponents and scientific notation
Division		<ul style="list-style-type: none"> recognise situations of partition and quotient division 	<ul style="list-style-type: none"> divide by single digit numbers using multiplication facts 	<ul style="list-style-type: none"> interpret remainders in context divide by single digit numbers 	<ul style="list-style-type: none"> can't divide by zero 	<ul style="list-style-type: none"> divide by decimals and two digit whole numbers 	
Ratios				<ul style="list-style-type: none"> use ratios to describe relative sizes equivalent ratios 	<ul style="list-style-type: none"> link ratios, fractions, decimals and percents 	<ul style="list-style-type: none"> solve ratio problems with any numbers solve triangles with trigonometry use similar triangles 	
Rates				<ul style="list-style-type: none"> use rates (e.g. speed) with whole numbers in problem contexts 	<ul style="list-style-type: none"> use more complex or abstract rates (e.g. L/100 km, slope) 	<ul style="list-style-type: none"> solve rate problems with any numbers in many contexts 	
Percentages			<ul style="list-style-type: none"> recognise percent as fraction out of 100 	<ul style="list-style-type: none"> estimate and calculate with percent know common % 	<ul style="list-style-type: none"> solve problems involving markups, discounts, percent errors to add percent is to multiply, e.g. +26% is $\times 1.26$ 	<ul style="list-style-type: none"> recognise constant % change as exponential 	
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