KESTEVEN AND SLEAFORD HIGH SCHOOL

Mathematics Scheme of Learning
Year 7 – Term 5/Fractions, decimals & %/Statistical diagrams & averages/Proportion

Intent – Rationale

This term there is a focus on improving students' confidence in working between different forms of expressing non-integer values to use in varying contexts. They will need to understand their place value to use in the statistics topic which follows.

Year 7 have an awareness of averages from Key Stage 2 but will develop their knowledge of appropriate applications of the different measures and how to compare.

Using their improved understanding of fractions student will be able to express amounts as a fraction of a whole and progress to expressing as a ratio. Proportion is an important foundation to many mathematical topics

Sequencing – what prior learning does this topic build upon?	Sequencing – what subsequent learning does this topic feed into?
- KS2 pupils will be able to simplify fractions and convert fractions to be in comparable denominators - KS2 pupils will be able to compare and order fractions, including fractions >1 - KS2 pupils will be able to add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions - KS2 pupils will be able to multiply simple pairs of proper fractions, writing the answer simplest form - KS2 pupils will be able to divide proper fractions by whole numbers - KS2 pupils will be able to convert between simple fractions, decimals and percentages - KS2 pupils will be able to multiply and divide one-digit numbers with up to two decimal places - KS2 pupils will be able to interpret and construct pie charts and line graphs and use these to solve problems - KS2 pupils will be able to calculate and interpret the mean as an average. - KS2 pupils will be able to solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts	- Year 8 Term 1 use of decimals in area and perimeter calculations, Term 2 fraction calculations, Term 3 percentage increase/decrease. - Year 8 Term 2 statistics, averages from a frequency table - Year 8 Term 2 proportion

- KS2 pupils will be able to solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

What are the links with other subjects in the curriculum?	What are the links to SMSC, British Values and Careers?
Design and Technology: • Use ratios, fractions and percentages - Scaling drawings, analysing responses to user questionnaires. • Presentation of data, diagrams and bar charts - Construct and interpret frequency tables; present information on design decisions. Business • Percentages • Average rate of return • Profitability ratios (gross profit margin and net profit margin) Geography • Select and construct appropriate graphs and charts to present data e.g. pie charts • Understand and correctly use proportion and ratio, magnitude and frequency • Use appropriate measures of central tendency and spread (median, mean, range, mode and modal class)	• C2 - Equivalence of fractions, decimals and percentages and the validity of comparisons between them. Link to Food nutrition labelling and healthy eating. • GB4e - Solving real life problems, a chance to put new skills in to context and reflect on how mathematics is relevant to everyday life • GB4e - Use of statistics as a way of measuring and making sense of the world around us. • GB4e - Comparing data sets, using statistical data to make judgements
What are the opportunities for developing literacy skills and developing learner confidence and enjoyment in reading?	**What are the opportunities for developing mathematical skills?**
The Number Devil by Hans Magnus Enzensberger *Age 11+* The quirky and unusual story of a young boy who hates maths at school, but who discovers a new side to the subject when he meets an unusual mathematician in a dream. This book takes you on an adventure through creative mathematical thinking, with great illustrations along the way.	• Place value problems with values in mixed forms • Students calculate averages of relevant data or from data they have collected. • Proportion vs ratio, identifying language used

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Mathematics Scheme of Learning
Year 7 – Term 5

Intent – Concepts

What knowledge will students gain and what skills will they develop as a consequence of this topic?
Know Convert between fractions, decimals and percentages. Find a fraction of an amount. Find a percentage of an amount (non- calculator method). Calculate simple percentage increase/decrease. Identify the mode from raw data and a frequency table. Find the median and range of raw data. Find the mean of raw data. Know the difference between discrete and continuous data. Draw and interpret a bar/line chart and a pie chart. Explain what is meant by proportion and ratio. Represent amount as a proportion. Express a ratio in its simplest form. **Apply** Solve worded problems finding fractions/percentages of amounts. Use finding a fraction of an amount knowledge to calculate angles to draw in a pie chart. Begin to make conclusion statement using averages to justify Calculate the frequency when given an angle which is a factor of 360 in a pie chart Create a ratio from a worded problem. **Extend** Best buys – compare offers for fraction and percentage of amounts off. Compare data sets and justify conclusions using averages. Calculate the frequency when given any angle in a pie chart Solve worded problems using proportion and ratio.

What subject specific language will be used and developed in this topic?	What opportunities are available for assessing the progress of students?

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• Fraction, decimal, percentage, improper fraction, mixed number, increase, decrease, depreciate, interest, mode, median, range, mean, raw data, tally, discrete, continuous, bar chart, pie chart, angle, protractor, proportion, ratio, simplest form.	• Mini whiteboards for conversions. Students allocated a value, create a human number line • Mid-term target questions • End of half term assessment

Fractions, Decimals & %	R	A	G
Convert between fractions, decimals and percentages			
Find a fraction of an amount			
Find a percentage of an amount (non-calculator method)			
Calculate simple percentage increase/decrease			

Statistics	R	A	G
Identify the mode from raw data and a frequency table			
Find the median and range of raw data			
Find the mean of raw data			
Know the difference between discrete and continuous data			
Draw a bar chart/line chart			
Draw and interpret a pie chart			

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Proportion	R	A	G
Explain what is meant by proportion and what is meant by ratio			
Represent amounts as a proportion			
Form a ratio			
Express a ratio in its simplest form			

Intent – Concepts

Lesson title	Learning challenge	Higher level challenge	Suggested activities and resources
Fractions, Decimals, Percentages	Recap ordering decimals, division of integers. Check recall of known conversions eg 10% 1/10 0.1		KMB Y7 FDP PPT Mini white board for recap Human number line for ordering. Starter: Pizza Fractions.
	Converting between fractions and decimals	Ascending/descending when given mix of fractions and decimals	
	Converting between decimals and percentages	Converting from fraction to percentage	
	Find a fraction of an amount		Peaches today Peaches tomorrow -NRich activity CJT PP
	Find a percentage of an amount, use for percentage increase/decrease	Calculate an amount with interest or depreciation	
Statistics	Language – raw data, discrete, continuous		KMB Y7 Statistics PPT

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	Ordering data, finding the mode, range and median		
	Finding the mean from raw data	Finding missing data value when the mean has been adjusted	Starter: Mean from a bar chart Starter: Combining two means
	Collate raw data in a tally chart leading to frequency table. Draw a bar chart and line chart.	Comparative bar charts	
	Draw a pie chart – recap fractions of amounts.	Interpreting a pie chart to find frequency	
Proportion	Explain what is meant by proportion and what is meant by ratio "comparing part to whole" "comparing part to part"		KMB Y7 Proportion PPT Visual image eg rectangle split in to squares of two colours
	Represent amounts as a proportion		
	Form a ratio		
	Express a ratio in its simplest form	Three-part ratio and 'given two ratio' problems	