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.	• 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

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• 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 • 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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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, and know basic FDP conversions (1/2, ¼, 1/5, 1/10). 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 and as a ratio, including three part ratios. Express a ratio in its simplest form, including three part ratios. **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. Find missing parts of ratios given information on other parts.

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What subject specific language will be used and developed in this topic?	What opportunities are available for assessing the progress of students?
• Fraction, decimal, percentage, conversion, improper fraction, mixed number, remainder, increase, decrease, depreciate, interest, mode, median, range, mean, raw data, tally, discrete, continuous, bar chart, pie chart, angle, protractor, proportion, ratio, simplest form, part, express	• Mini whiteboards for conversions. Students allocated a value, create a human number line • Mid-term target questions • End of half term assessment **Misconceptions include:** • Assumption that 1/20=0.2=20% • Percentage 'of' vs percentage increase/decrease • Confusion between mean, median and mode • Not leaving gaps between bars on a bar chart • Ratio vs proportion • Keeping ratio in the same order as the wording of the question

Fractions, Decimals & %	R	A	G
Convert between fractions, decimals and percentages			
Recall basic FDP conversions: ½, ¼, 1/5, 1/10			
Find a fraction of an amount			
Find a percentage of an amount (non-calculator method)			
Calculate simple percentage increase/decrease			

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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			

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			