

HIAS MOODLE+ RESOURCE

Year 6 Unit Plan: 6.6

Spring Term

HIAS Maths Team
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Final version

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Overview

In this document

Year 6 Unit Plans linked to Medium Term Overview

Points to consider when using this resource

These unit plans provide an example of how medium term planning could be developed into units of work. These unit plans will need to be adapted to meet the needs of students. The unit plan provides an outline of a possible learning journey with suggestions of types of tasks that could be used. They also identify key prior learning, some common misconceptions and an indication of key skills students need to develop towards competency. It is assumed that teachers will make use of appropriate mathematical representations (manipulatives, visuals and symbolic) to support conceptual understanding for students alongside procedural fluency.

Year 6 Unit 6.6 Plan – Fractions and Ratio. Geometry (angle / pie charts)

This unit is about the relationship between fractions, decimals and percentages and making the link with pie charts. Pupils will be encouraged to look for efficient strategies to solve problems by understanding how fractions, decimals and percentages are linked together using the language of part and whole. Pupils will learn about ratio and proportion in context as well as recalling facts about angles within a range of different shapes.

Session	Unit Objectives	Types of task
1-10	- Know that $1/10 = 0.1$ and $1/100 = 0.01$ - Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. - Associate a fraction with division ($3/8 = 3 \div 8$) and calculate decimal fraction equivalents e.g. 0.375) for a simple fraction (e.g. $3/8$) - Identify the value of each digit to three decimal places and multiply and divide numbers by 10,100,1000 where the answers are up to three decimal places. - Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. - Solve problems involving ratio and proportion - Solve problems involving unequal sharing and grouping using knowledge of factors and multiples. They might use the notation a:b to record their work.	Compare fractions, decimals and percentages – Make links to where the fractions, decimals and percentages are on a numberline and a fraction wall. Possible task: <i>explain how to solve $1\frac{2}{4} \times 10$ using decimals?</i> Use stem sentences to encourage pupils to say facts such as: $50\% \text{ of } 480 = 240 = \frac{1}{2} \text{ of } 480$. Use the fraction wall and numberline to find fraction equivalences and use this to solve problems such as, ‘what is 12.5% of 56’? We can also solve this as 56 divided by 8 as 12.5% is the same as an eighth. Place value: When identifying the place value of decimal numbers make a possible link to measure – dividing by 10, 100 and 1000. Use a Place value chart focusing upon hundredths and thousandths. Include the models and images of numberlines and dienes zooming in on the numberline to show the relationship between 1 and 0.1, and 0.1 and 0.01. Use place value counters only if pupils understand the proportional size. Ratio and proportion: Explore the concept of ratio and proportion through simple problems. ‘I was eating a packet of skittles that had red and yellow skittles only. For every red skittle there were 2 yellow skittles. How many yellow skittles were there if I had 8 red skittles? How many skittles were in the packet altogether? Vary this task using what if questions. ‘What if for every blue skittle there were 5 red skittles? Use models and images to show what is happening each time. Continue to vary for challenge. If I told you there were 64 skittles in the packet and for every 2 red skittles there are 6 blue skittles. How many red skittles are in the packet? How many blue skittles are there? What could this look like? A ratio of 2:6.

		Make the links with division. How would we know that 435 cannot be divided by 6? All multiples of 6 are even? All multiples of even numbers are even. An even number can be divided by 2 but this does not mean it can always be divided by 4. Why? Encourage pupils to explain using simple numbers and concrete resources such as numicon. Key Facts Focus: Teach the Fractions key facts from the Year 5 number facts document. Use place value cards and dienes to show the relationship between 0.1 and 0.01. Show decimals on a numberline and use a zooming in technique to show how decimals are connected. <i>If the thousand cube represented one, what would the hundred square represent?</i> Ensure pupils are secure with 50% is the same as $\frac{1}{2}$ which is the same as 0.5. Continue with key facts such as $\frac{1}{4}$, $\frac{1}{5}$
11-15	• Interpret and construct pie charts and use these to solve problems, including comparison problems. • Draw given angles, and measure them in degrees ($^{\circ}$) • Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons.	Show pupils a simple pie chart and make links with the image of a fraction as part of a shape. A quarter of the pie chart is coloured, and a quarter is the same as 25%. Continue with other fractions such as $\frac{1}{2}$. Encourage pupils to reason about the fraction that is shown in a pie chart such as the amount coloured in is $\frac{1}{2}$ of a quarter so therefore it must be an eighth. Solve problems such as <i>'the following pie charts show how pupils from two different schools travel to school. St Helens Primary School has 252 pupils in total and St Marks Primary School has 158 pupils in total. Use the pie chart to identify which school has the greatest number of pupils that walk to school.</i> <i>If I told you that 35 pupils walked to school, can you use the pie chart to tell me the total number of pupils in the school?</i> Model how to use a protractor to draw angles. Practise number facts to 90, 180 and 360 to find missing angles. Use knowledge of angles within a given shape to find missing amounts. Know that the angles within a triangle should total 180 degrees and should total 360 degrees within a quadrilateral etc.

Check and refresh	Watch out for...	Building fluency
Number facts for Year 5 fractions and all other year groups are secure. Pupils' conceptual understanding of decimals. Pupils ability to divide and multiply numbers by 10, 100 and 1000 including decimal numbers such as 0.3 divided by 100. Part/whole language associated with fractions, decimals and percentages.	Pupils thinking that hundredths are larger than tenths. This must be visually shown on a numberline as well as using concrete resources. Efficient strategies are not used to find percentages of amounts. Pupils not looking for relationships but simply dividing every number by 10 to find 10% and then 100 to find 1%.	Links between fractions, decimals and percentages and application to calculations. If I am trying to find 12.5% of an amount is it easier to see it as $\frac{1}{8}$? Practise different ways of making 90, 180 and 360 to support the teaching of angles

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