

# Maths Unit Plan



Class: Owlacombe

Teacher: LS

Week beginning: 7<sup>th</sup> January

Length of unit: 2 weeks

Green= yr5 objectives, Blue = yr6 objectives, Black = yr7 objectives

## Unit Block A2

### Big Idea

Children use their understanding of place value and known facts to derive facts and are able to choose an appropriate mental or written strategy to solve calculation, having taken the numbers involved into account. They are able to justify why they have chosen to use a particular strategy and explain their reasoning and conclusions orally and in writing.

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### Curricular targets

#### Mental/Oral focus

- Count from any given number in whole-number and decimal steps, extending beyond zero when counting backwards; relate the numbers to their position on a number line
- Explain what each digit represents in whole numbers and decimals with up to two places, and partition, round and order these numbers
- Use knowledge of place value and addition and subtraction of two-digit numbers to derive sums and differences and doubles and halves of decimals
- Recall quickly multiplication facts up to  $10 \times 10$  and use them to multiply pairs of multiples of 10 and 100; derive quickly corresponding division facts
- Use knowledge of place value and multiplication facts to  $10 \times 10$  to derive related multiplication and division facts involving decimals
- Recognise rapid recall of number facts, including multiplication facts to  $10 \times 10$  and the associated division facts
- Use understanding of place value to multiply and divide whole numbers and decimals by 10, 100 or 1000
- Extend mental methods for whole-number calculations, for example to multiply a two-digit by a one-digit number to multiply by 25, to subtract one near-multiple of 1000 from another
- Calculate mentally with integers and decimals:  $U.t \pm U.t$ ,  $TU \times U$ ,  $TU \div U$ ,  $U.t \times U$ ,  $U.t \div U$
- Calculate mentally with integers and decimals:  $U.t \pm U.t$ ,  $TU \times U$ ,  $TU \div U$ ,  $U.t \times U$ ,  $U.t \div U$
- Identify pairs of factors of two-digit whole numbers and find common multiples

#### Mental/Oral Activities Highlight where these relate to Curricular Targets

- I can work out the answer to any  $x$  and  $\div q$  if I know facts to  $10 \times 10$  how to double and halve and how to  $\times$  by 10
- If you could only know by heart 10 multiplication facts, which would you choose and why?
- Does  $14 \times 12$  give the same answer as  $7 \times 24$ ? Why?
- I know  $32 \times 4 = 128$ . What else do I know?
- Looking at the last digit of a number tells you which numbers it is divisible by. Is this always, sometimes or never true?
- I don't know my  $18 \times$  table. How can I work out  $18 \times 9$ ?
- Double Map to compare numbers
- Circle Map to illustrate factors
- Tree Map to show  $\times$  and  $\div$  facts
- What's lurking under your chair? Each child finds their number and finds their  $\times 10$ , finds another factor, add to correct place on Tree Map
- <http://www.teachers.tv/video/2387> ( $\div$  by 10 or 100)
- 1 min - chn take it in turns to answer as many questions as their group asks in 1 min, each child takes a turn
- What am I? - post-it notes activity
- Whiteboards/Number fans - Show Me
- ITPs
- Chanting
- Tables tests
- Mental Maths test once a week
- Quiz Quiz Trade - revising previous lesson

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Days	Objectives written as questions to investigate	Learning Focus including details of direct teaching, independent and guided activities, resources, differentiation, ICT and TA directed groups	AFL
1	Can children?	<ul style="list-style-type: none"> <li>● count from any given number in whole-number steps</li> <li>● use positive and negative numbers in practical contexts; position them on a number line</li> <li>● add or subtract mentally pairs of two-digit whole numbers, e.g. <math>47 + 58</math>, <math>91 - 35</math></li> <li>● use efficient written methods to add and subtract two- and three-digit whole numbers and <math>\pounds.p</math></li> <li>● recall multiplication and division facts to <math>10 \times 10</math></li> <li>● multiply or divide numbers to 1000 by 10 and then 100 (whole-number answers)</li> <li>● use written methods to multiply and divide <math>TU \times U</math>, <math>TU \div U</math></li> <li>● use decimal notation for tenths and hundredths in the context of money and measurement</li> <li>● order decimals to two places and position them on a number line</li> <li>● use a calculator to carry out one- and two-step calculations involving all four operations; interpret the display correctly in the context of money</li> <li>● use the relationship between m, cm and mm</li>   <li>● explain reasoning using text, diagrams and symbols</li> <li>● solve one- and two-step problems involving whole numbers and decimals and all four operations, choosing and using appropriate calculation strategies</li> <li>● order positive and negative numbers in context</li> <li>● explain what each digit represents in whole numbers and decimals with up to two places, and partition, round and order these numbers</li> <li>● multiply and divide whole numbers and decimals by 10, 100 or 1000; multiply pairs of multiples of 10 and 100 and derive corresponding division facts</li> <li>● use mental methods to find sums, differences, doubles and halves of decimals (e.g. <math>6.5 \pm 2.7</math>, halve 5.6, double 0.34), to multiply a two-digit by a one-digit number, to multiply by 25 and to subtract one near multiple of 1000 from another (e.g. <math>6070 - 4097</math>)</li> <li>● use efficient written methods to add and subtract whole numbers and decimals with up to two places, to multiply <math>HTU \times U</math>, <math>TU \times TU</math> and <math>U.t \times U</math>, and to divide <math>HTU \div U</math></li> <li>● use a calculator to solve problems, interpreting the display correctly</li> </ul>	

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<p>2</p>	<p>What might some people think that 0.39 is bigger than 0.4? How could you convince them that this is not the case? How many numbers can you think of that would round to 5? (Use decimal notation for tenths, hundredths and thousandths; partition, round and order decimals with up to three places, and position them on the number line Order a set of fractions by converting them to decimals)</p>	<ul style="list-style-type: none"> <li>use rounding and inverse operations to estimate and check calculations</li> </ul> <p>Lesson 1: Display question. Ask chn to be able to convince me by the end of lesson. Teaching: p.16-17 <i>Number at KS2</i> - ordering length of classroom objects, place value game p.18-19 <i>Number at KS2</i> - who can make biggest/smallest number. Look at length of snakes on board, discuss value of each digit. Order a set of given numbers in pairs and add to a blank number line. Groups: HA - order fractions by converting to decimals p.40-41 <i>Maths Out Loud</i>, p.22-23 <i>Multiplication Makes Bigger etc.</i> MA - ordering numbers using dice/place value cards p.44 <i>Abacus Activity Book yr5</i>, <i>Get Between Them Game</i> p.58 <i>Abacus yr7</i>. LA - with teacher. Plenary - use AFL questions <a href="http://www.teachers.tv/video/2388">http://www.teachers.tv/video/2388</a></p> <p>Lesson 2: Display question and take 10 answers and discuss. - <a href="http://www.teachers.tv/video/2391">http://www.teachers.tv/video/2391</a> - Maths Mansion</p> <p>Give each child number and label 4 corners of room 10, 3, 7 and 5. Ask chn to stand in the corner they think their number would round to if it was the nearest whole. Come up with any rules. Look at selection of numbers on board in money and round each to nearest pound (i.e. whole number and also nearest tenth). HA - LS, Springboard TH, rest - DT. Practise rounding using textbooks. Plenary - use AFL questions</p>	<p>What decimal is equal to 25 hundredths?</p> <p>Write the total as a decimal:</p> $4 + \frac{6}{10} + \frac{2}{100} =$ <p>Write a number in the box to make this correct: 6.45 = 6 + 0.4 + <input type="text"/></p> <p>Write the value of the 5 in 12.53 as a fraction. Now write it as a decimal. On the number line, which of these numbers is closest to 1? 0.1 0.9 1.2 1.9 Tell me a number that lies between 4.1 and 4.2. What value does the 7 represent in each of these numbers? 3.7, 7.3, 0.37, 7.07 What if I put a £ sign in front of each of them? What if they are all lengths given in metres?</p> <p>The distance to the park is 5 km when rounded to the nearest kilometre. What is the greatest/least distance it could be? How would you give somebody instructions to round distances to the nearest kilometre? What did you look for first when you ordered these numbers? Which part of each number did you look at to help you? What do you do when numbers have the same digit in the same place? Can you explain this to me using a number line? Which numbers did you think were the hardest to put in order? Why? Tell me a number that lies between 3.12 and 3.17. Which of the two numbers is it closer to? How do you know?</p>
<p>5</p>	<p>Use efficient written methods to multiply and divide whole numbers and decimals with up to two places Use efficient written methods to multiply and divide integers and decimals by a one-digit integer, and to multiply two-digit and three-digit integers by a two-digit integer Use standard column procedures to multiply two-digit and three-digit integers by a one-digit or two-digit integer; extend division to dividing three-digit integers by a two-digit integer</p>	<p>Practise x by 10, 100, 1000. Give chn examples of numbers to multiply. Discuss different methods. Demonstrate grid and vertical. Relate to a problem e.g. 27 yr5 chn going to Eden Project cost £4.35 each, total cost? Provide opportunities for practise e.g. creating numbers using dice and number cards, relate to word problems, write a textbook page for someone else for answer, organising a class trip, Abacus book, games e.g. p.74 <i>Number at KS2</i>, <b>Flow map</b> showing sequences using multiplication, Testbase</p> <p><b>Circle Map</b> of division, discuss what we know, add info to same piece of paper (Kagan Structures). Use word and practical problems to get to grips with what division means. Link to multiplication. Demonstrate chunking. Write a leaflet to explain to your parents how chunking works. Look at teacher's tv - write own tv show to teach yr4 how to do chunking.</p> <p>The remainder in a division is always/sometimes/never bigger than the divisor?</p>	<p>Find two numbers between 3 and 4 that total 7.36. Use a written method to check your answer. Two numbers have a difference of 1.58. One of the numbers is 4.72. What is the other? Is this the only answer? What tips would you give to someone to help with column addition/subtraction? Which of these calculations are correct? Which are incorrect? [Show an incorrect calculation, e.g. one with misaligned decimal points.] What has this person done wrong? How would you help them to correct it?</p> <p>Look at these long-multiplication calculations. They have mistakes in them. Tell me what is wrong with each calculation. How should it be corrected? Make up an example of an addition or subtraction involving decimals that you would do in your head and one that you would do on paper. Explain why.</p>
<p>2</p>	<p>Solve multi-step problems, and problems involving fractions,</p>		

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	<p>decimals and percentages; choose and use appropriate calculation strategies at each stage, including calculator use</p> <p>Solve problems by breaking down complex calculations into simpler steps; choose and use operations and calculation strategies appropriate to the numbers and context; try alternative approaches to overcome difficulties; present, interpret and compare solutions</p> <p><b>Teach these through other objectives...</b>          (Use a calculator to solve problems involving multi-step calculations          Use bracket keys and the memory of a calculator to carry out calculations with more than one step; use the square root key</p> <p>Use knowledge of rounding, place value, number facts and inverse operations to estimate and check calculations          Use approximations, inverse operations and tests of divisibility to estimate and check results          Use approximations, inverse operations and tests of divisibility to estimate and check results)</p>	<p>p.80-81 <i>Number at KS2</i> - open-ended division problems, p.70-71 <i>Maths Out Loud</i>.</p> <p>"Looking at the last digit in a number, tells you which numbers it is divisible by. Is this always, sometimes or never true?", "A number is divisible by 5 if it ends in a 5 or 0. Prove it!" How many different ways can you find to calculate <math>12 \times 16</math>? Which of these do you think is the most efficient? Debate/voting: written vs mental calculation for given sums</p>	<p>Would you use a mental, written or calculator method to solve each of these? Explain your choice.  <math>23.5 \times \square = 176.25</math>          How many cartons of juice costing 30p each can I buy with £2?          What is the total cost if I buy food costing £3.86 and £8.57?          How do you know whether you need to add, subtract, multiply or divide?          What clues do you look for?          How did you decide what to do first?          Make up a word problem that could be solved using these calculations:  <math>2 \text{ m} - (24.2 \text{ cm} \times 5)</math>  <math>(\text{£}30.35 + \text{£}47.11) \div 6</math>  <math>2 \text{ hours} - 45 \text{ minutes}</math></p> <p>What calculation can you key into your calculator to solve this problem?          A piece of ribbon 2.1 metres long is cut into six equal pieces. How long is each piece?          What is the answer?          My calculator shows:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">3.5</div> <p>My question was about money. Complete this:          3.5 means £3 and ... pence.          What if my question was about length? Complete this:          3.5 means 3 metres and ... centimetres.          What if my question was about weight? Complete this:          3.5 means 3 kilograms and ... grams.</p> <p>Roughly, what answer do you expect to get? How did you arrive at that estimate?          Do you expect your answer to be greater or less than your estimate? Why?          Find two different ways to check the accuracy of this answer.</p> <p>What would be the best approximation to work out <math>4.4 \times 18.6</math>? Give your reasons.          Roughly, what answer do you expect to get? How did you arrive at that estimate? Do you expect your answer to be greater or less than your estimate? Why?          This answer is wrong. How can you tell?          Find two different ways to check the accuracy of this answer.          Should the answer be a multiple of 5? How could you check?</p>
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Children who have achieved above expectations	Children who have not yet met expectations