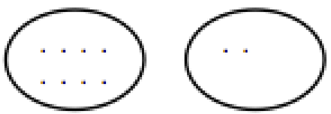
Year 3 Maths Planning (Weekly) **Term: Summer 1 Week: 2 (Lessons 6 to 10)**

DAY	We Are Learning To (WALT):	MODEL / INTRODUCTION	INDEPENDENT WORK	PLENARY
M	Mental: Know facts for multiplying and dividing by 2 Main: Understand multiplication and division as inverses Sum006	Mental: Show the children the 2-times-table and corresponding division facts. Have them recite it in a silly voice of their choice. Play gunfighters with it: split class in to two teams and have them line up opposite each other. Give children at the front of the row a calculation from the board. Chid who answers quickest gets a point for their team. First two join back of line. Repeat. (Leave facts up throughout so that children are learning, not being tested) Main: More able children to attempt to use a given multiplication or division sentence to derive 3 related sentences without listening to teacher. TA to monitor their progress. If confident, allow to finish; if insecure send back to carpet to listen to teacher e.g. given 4 X 0.3 = 1.2, derive 0.3 X 4 = 1.2, 1.2 ÷ 4 = 0.3 and 1.2 ÷ 0.3 = 4 Teacher (with remainder of class): Explain that we will be looking at multiplication and division as 'arrays' and using each array to write 4 related number sentences, all using the same numbers Revise how an array is a grid – it has columns and rows A column is vertical and a row is horizontal Use children to make an array e.g. 4 rows of 2 What 2 multiplication and 2 division sentences can we make from this array? (4 X 2 = 8, 2 X 4 = 8, 8 ÷ 4 = 2 and 8 ÷ 2 = 4) Repeat this model for several arrays, including squares e.g. 2 X 2 = 4 / 4 ÷ 2 = 2, 3 X 3 = 9, 9 ÷ 3 = 3 etc and how these can only be written one way Model how to complete independent work Emphasise the need to have the numbers in the correct order in each number sentence (can give children clue that divisions always start with greatest number and multiplications always end with the greatest number, although this is not true when working with decimals) With more able children who were secure on higher ability work explain area and perimeter Go through PowerPoint covering the following: • Multiplication as arrays and how this is the same as calculating area • Explain perimeter as the length of the fence around a field and area as the space inside the field and how to calculate perimeter by totalling the length of all of the sides and calculate area by multiplying a long side by a short side, and write as cm^2 • Model how to find perimeter and area of two rectangles • Model how to find perimeter and area of two irregular shapes by counting squares Remind children to write perimeter as cm and area as cm^2	Lower ability – derive 2 multiplication and 2 division sentences from arrays (multiplying and dividing by 2, 3, 4 and 5) Middle ability – derive 2 multiplication and 2 division sentences from arrays (multiplying and dividing by 6, 7, 8 and 9) Higher ability – use known facts to calculate with decimals e.g. 4 X 0.3 = 1.2, 0.3 X 4 = 1.2, 1.2 ÷ 4 = 0.3 and 1.2 ÷ 0.3 = 4 G+T – calculate area and perimeter Extension – make up own arrays and related multiplication and division sentences on pupil whiteboards or draw own shapes to calculate area and perimeter of	Ask the class to split themselves in to groups, with each group being an array Tell class that all children in the class need to be in a group; no one can be left out Ask children to give a multiplication sentence or division sentence that could come from their array G+T – draw a shape of their own for a partner to calculate the area and perimeter of

DAY	We Are Learning To (WALT):	MODEL / INTRODUCTION	INDEPENDENT WORK	PLENARY
Tu	Mental: Know facts for multiplying and dividing by 5 Main: Divide with remainders Sum007	Mental: Show the children the 5-times-table and corresponding division facts. Have them recite it in a silly voice of their choice. Play gunfighters with it: split class in to two teams and have them line up opposite each other. Give children at the front of the row a calculation from the board. Chid who answers quickest gets a point for their team. First two join back of line. Repeat. (Leave facts up throughout so that children are learning, not being tested) Main: TA to model for G+T how to express quotients as fractions: A quotient is a posh word for the answer to a division question When we divide we sometimes get a remainder. This remainder can be shown as a whole number. Example: 13 ÷ 2 = 6r1 However, this remainder can also be shown as a fraction. Example: 13 ÷ 2 = 6 ½ To calculate what fraction a remainder is you: • make the divisor (the number you are dividing by) the bottom number • make the remainder the top number To calculate a remainder as a decimal, you convert the fraction to a percentage (fraction out of 100) and convert the percentage to a decimal Revise how division is the inverse (opposite) of multiplication Revise how we have previously learnt to use jumps on a number line to do division Today we are going to use the same strategy, but without a number line because it is quicker not to draw number lines and jumps Have children read 5 ÷ 2 as 'how many jumps of 2 to get to 5?' Model how to divide with remainders by: • counting up in multiples of the divisor until you go past the number you are dividing • crossing out this final jump and seeing how big your final jump needs to be e.g to calculate 5 ÷ 2, the working out would be 2, 4, ~~6~~, so we need to do jumps of 2 and a final jump of just 1, so 5 ÷ 2 = 2r1 Complete some examples correctly, and then do a couple with these deliberate mistakes: • write the answer as the number you land on followed by the remainder e.g. 5 ÷ 2 = 4r1 • go past the number you are dividing e.g. 5 ÷ 2 = 3 • having a remainder that is larger than the divisor e.g. 11 ÷ 2 = 4r3 Ask children to complete a couple of examples (dividing with numbers below 5) on their pupil whiteboards. Remind children to turn their boards face down when finished and not to show their boards until you ask them to (to prevent copying). Children who are confident to begin work.	Lower ability – divide by 2, 5 and 10 with remainders Middle ability – divide by 3, 4 and 6 with remainders Higher ability – divide by numbers 7, 8 and 9 with remainders Gifted and talented – express quotients as fractions and decimals Extension – make up own division sentences on pupil whiteboards	In ability pairs give children a question each to do Each child to take it turns to calculate the division sentence, explaining what they are doing as they work out the answer

DAY	We Are Learning To (WALT):	MODEL / INTRODUCTION	INDEPENDENT WORK	PLENARY
W	Mental: Know facts for multiplying and dividing by 3 Main: Round remainders up or down depending on context Sum008	Mental: Show the children the 3-times-table and corresponding division facts. Have them recite it in a silly voice of their choice. Play gunfighters with it: split class in to two teams and have them line up opposite each other. Give children at the front of the row a calculation from the board. Chid who answers quickest gets a point for their team. First two join back of line. Repeat. (Leave facts up throughout so that children are learning, not being tested) Main: G+T children to attempt solve rounding remainders problems without listening to teacher TA to monitor their progress. If children successful, allow them to carry on / if struggling send them to the carpet to listen to teaching of how to solve these problems If some children could still work on basic division with remainders, model for them how to do this on a number line and have them start work on this Revise how it is quicker not to draw number lines and jumps, and instead use the following method: Have children read 5 ÷ 2 as 'how many jumps of 2 to get to 5?' Model how to divide with remainders by: • counting up in multiples of the divisor until you go past the number you are dividing • crossing out this final jump and seeing how big your final jump needs to be e.g to calculate 5 ÷ 2, the working out would be 2, 4, ~~6~~, so we need to do jumps of 2 and a final jump of just 1, so 5 ÷ 2 = 2r1 Model how to round remainders up or down setting work out as in following examples: 5 ÷ 2 = 2r1 11 ÷ 3 = 3r2 29 ÷ 5 = 5r4 2, 4, ~~6~~ 3, 6, 9, ~~12~~ 5, 10, 15, 20, 25, ~~30~~ Revise how children would have learnt division as 'groups of' Show children how to represent a rounding remainders problems using 'groups of' i.e. circles and dots, where the circle represents the box, team, bunch of flowers, table etc. For example: 8 children can sit at a table. There are 10 children. How many tables are needed?  For each example, model how to do working out using numbers *and* diagrams Model for G+T how to solve problems involving scaling up or down in proportion	Lower ability – divide by 2, 5 and 10 with remainders by jumping on a number line Middle ability – solve rounding remainders problems (divide by 2, 5 and 10) Higher ability – solve rounding remainders problems (divide by numbers 2 to 10) Gifted and talented – solve ratio word problems that require scaling up or down	Have children in pairs so that each child in the pair worked on the same thing In partners children to compare their work and discuss any mistakes that they made or any differences between their work, (**without changing their answers** so teacher can see where they went wrong)

DAY	We Are Learning To (WALT):	MODEL / INTRODUCTION	INDEPENDENT WORK	PLENARY
Th	Mental: Know facts for multiplying and dividing by 4 Main: Multiply and divide by 10 and 100 Sum009	Mental: Show the children the 4-times-table and corresponding division facts. Have them recite it in a silly voice of their choice. Play gunfighters with it: split class in to two teams and have them line up opposite each other. Give children at the front of the row a calculation from the board. Chid who answers quickest gets a point for their team. First two join back of line. Repeat. (Leave facts up throughout so that children are learning, not being tested) Main: TA to take G+T children and work with them on multiplying and dividing by 10, 100 or 1,000 with numbers with decimal places Give children a laminated sheet to use to multiply by 10, 100 or 1,000: X ÷ X 10 move numbers **1** place to the **left** ÷ by **10**, move numbers **1** place to **the right** X **100** move the numbers **2** places to **the left** ÷ by **100**, move numbers **2** place to **the right** X **1,000** move the numbers **3** places to **the left** ÷ by **1,000**, move numbers **3** place to **the right** TTh Th H T U t h th • Teacher with remainder of class: Explain that today we will be learning to multiply and divide by 10, 100 or 1,000. Explain that we do this by moving the 'place' of the digits With the examples below emphasise the importance of zero as a place value holder where it is needed: • 7 X 10 (and 10 X 7 – revise how multiplication is commutative) • 8 X 100 (and 100 X 8) • 50 ÷ 10 (10 ÷ 50 is not the same – division is not commutative) • 900 ÷ 100 • 65 X 100 (and 100 X 65) • 32 X 1,000 (and 1,000 X 32) • 7,100 ÷ 100 • 2,000 ÷ 1,000 Give children sheet similar to the one above, but simplified e.g. without TTh, tenths etc	Lower ability – multiply and divide by 10 and 100 Middle ability – multiply and divide by 10, 100 **and 1,000** Higher ability – multiply and divide by 10, 100, 1,000 **and 10,000** Extension – make up own number sentences multiplying and dividing by 10, 100 or 1,000	In partners give children 2 questions to do each, at level of differentiation above Partners take it in turns to explain to each other how they would do the calculations and to listen to the explanation Model a good answer e.g. To calculate 2 X 10 I will move both digits one place to the left and write a zero in the units column

DAY	We Are Learning To (WALT):	MODEL / INTRODUCTION	INDEPENDENT WORK	PLENARY
F	Mental: Know facts for multiplying and dividing by 6 Main: Use strategies to solve problems Sum010	Mental: Show the children the 6-times-table and corresponding division facts. Have them recite it in a silly voice of their choice. Play gunfighters with it: split class in to two teams and have them line up opposite each other. Give children at the front of the row a calculation from the board. Chid who answers quickest gets a point for their team. First two join back of line. Repeat. (Leave facts up throughout so that children are learning, not being tested) Main: Revise how the word inverse means opposite Explain how we can use inverses to 'work backwards' and undo steps in calculations Model how we can use two strategies to solve function machine problems: • using inverses e.g. to solve the following problem, divide 15 by 3 because division is the inverse of multiplication • using trial and error e.g. to solve the following problem, try 6 X 3, when that doesn't work try another number, until you get the correct answer  Emphasise the need to check that the answer is correct by working checking e.g. does 5 X 3 = 15 Emphasise that children need to show their working out, not just the answer so that I know what strategies they used. Emphasise that showing their working out and / or making mistakes is a good thing	Lower ability – solve **one-step** function machine problems, multiplying and dividing by **2, 5 or 10** and working with numbers **below 50** Middle ability – solve **one-step** function machine problems, multiplying and dividing by **3, 4 or 6** and working with numbers **within** hundreds boundaries Higher ability – solve **one-step** function machine problems, multiplying and dividing by **7, 8 or 9** and working with numbers **crossing** hundreds boundaries G+T - solve **two-step** function machine problems Extension – make up own function machine problems on pupil whiteboards for a partner to solve	On pupil whiteboards each child to make up their own function machine problem for a partner to solve Swap boards and solve each other's problems Discuss if agree with each other's answers and which strategy used to solve the problem e.g. inverses or trial and error