Doubling & Halving Master	Flexible Thinking Addition Master	Factor master	Partitioning Master	Subtraction master	Balanced equations
Being able to use strategies to halve and double two and three digit numbers. Seeing doubling and halving as the inverse (opposite) of each other. **Example:** Half of 50 = Half of 200= Double 20 =40 Double 200=400	Adding numbers to 100 using a range of strategies: • Doubles • Near doubles • 10s facts • Place Value/partitioning • When adding a 9 to a number take one from the other side. Students should be able to use and explain flexible thinking strategies for each question. **Example:** 13+7=? 3+7 is 10 plus one more group of 10 makes 20 Or 50+60 is double 50 and 10 more.	Using the factors of the 2s, 5s, and 10s times tables. **This Master skill is to be completed with manipulatives.** This skill is where students begin to make the link between X and ➗being inverse (opposites). Explore divisibility and 'groups of' that can be made using numbers that are multiples of 2, 5 or 10. 25 can be shared into 5 equal groups of 5. 30 can be shared into 3 groups of 10. How many will I have altogether if I have 3 groups of 2?	Partition the number 100 in 5 different ways. (shows number flexibility) STEP2: Using Place Value knowledge to partition two digit numbers in order to mentally add them. **Example:** Adding 36+24 30+20=50 6+4=10 TOTAL: 50+10=60 	Completing simple subtraction problems mentally using a range of strategies • Inverse operation fact eg 10-3=? I know 3+7=10 so the answer is 7. • Known doubles/halves facts • Partitioning/Place Value **Example:** 10-7=? 20-5=? 9-4=? 100-50= 15-3= 30-15= 75-15=	Use knowledge of inverse operation +/- and number facts, with numbers up to 50. eg 10+3=5+? Understand the = sign means "the same as" **Example:** 13+6=30-? 15+?=20+2 25+?=50-? 
Ideas: Halving is the opposite of doubling. X2 means 2 groups of or 'double' a number. ÷2 means to halve a number Make connections with single digit halving facts the students know. For example if you know half of 20 is 10 then what is half of 200? Practice important halving facts we use in everyday life eg half of 50 is 25, half of 30 is 15	**Ideas:** Review doubles, near doubles, 10s facts, the +9 rule (9+3 can be seen as 10+2) and partitioning numbers using place value. Ask/write questions using numbers to 100 that lend themselves to one of the above strategies. 30+30= 50+60= 16+4= 28+9= 57+43= When solving these questions, use language such as **"50 and 60 is like doubling 50 and then adding 10 more".**	**Ideas:** Practise this skill using a combination of multiplication and division facts highlighting how each fact family uses the same numbers organised in different ways. 12÷2=6 12÷6=2 6x2=12 2x6=12 Use a combination of X/÷ and language such as Groups of, shared between, equal groups and groups of to discuss these facts.	**Ideas:** Think of as many ways as you can to break up 100. Use materials and real life situations to explore this skill. Use MAB, icy pole sticks, tens and ones Explore ways to break up 2-digit numbers into tens and ones. Discuss how using this skill makes it easy to quickly add 2 digit numbers mentally in your head. Eg 23+62 20+60= 80 3+2 =5 80+5	**Ideas:** Review doubles, near doubles, 10s facts,partitioning numbers using place value. Ask/write questions using numbers to 100 that lend themselves to one of the above strategies. 10-7=? 20-5=? 25-5= 9-4=? 100-50= 15-3= 100-5= 30-15= 75-15=	**Ideas:** use materials, diagrams and number lines; for example, using number lines to demonstrate that 5 + 2 = 2 + 5, and demonstrating that 2 + 2 + 3 = 7 and 2 + 3 + 2 = 7 and 3 + 2 + 2 = 7 Flip 3 cards and use add/sub operations to create an unbalanced equation, then use inverse operations to make the equation balanced. Eg. 8-? = 2 + 4 Using a combination of 20, 12 and 6-sided dice, create larger unbalanced equations (up to 50). Eg. 19+7 = 42-?

Online Resources: Videos to Watch: Halving Video: https://www.youtube.com/watch?v=VsyIB2O6Iws Practice: Halving Numbers Game: https://wordwall.net/resource/625605/halving https://wordwall.net/resource/45072/halving Doubling/Halving practise quiz:*set to lvl 4 or 5 then select double/halving option https://www.topmarks.co.uk/maths-games/daily10 Identifying Double or Half Game: *bigger numbers https://www.cokogames.com/doubling-and-halving-game-for-kids/play/ Doubling and Halving within 50: https://wordwall.net/resource/23842976/doubling-and-halving-within-50 Challenging- Halving game: https://wordwall.net/resource/24539532/halving Multipliy by 2/double https://wordwall.net/resource/55597123/multiply-by-2-doubles-halves Practice Zone: *choose bigger numbers in settings https://www.math-salamanders.com/doubling-and-halving.html Spinner Halving: multiples of 5 https://wordwall.net/resource/24835897/halving-numbers-multiples-of-5 Choose your own activity: https://mathszone.co.uk/category/number-facts-x%C3%B7/doubling-and-halving/	**Online Resources:** Videos to Watch: Near Doubles Video: https://www.youtube.com/watch?v=9TsO04MTnBM Partitioning Video: https://youtu.be/ytf4E0KnWYA Practice: Adding 2-digit numbers https://www.mathplayground.com/ASB_Canoe_Puppies.html Adding 2-digit numbers: https://matheasily.com/2-digit-addition.html Online addition BINGO: adjust level to make harder https://matheasily.com/addition-bingo.html Daily 10 Game *Select Level 2-addition*: https://www.topmarks.co.uk/maths-games/daily10 Number Bonds- select to 50, then 100 https://matheasily.com/number-bonds.html	**Online Resources:** Videos to Watch: Inverse Operations: https://www.youtube.com/watch?v=0q09uiOfdmM Inverse Operations: https://www.youtube.com/watch?v=RsR8zwWj_Bw Solving division using inverse operations: https://www.youtube.com/watch?v=uC_yV4yzlXY Practice: Fact Families Practice: https://www.iknowit.com/lessons/c-fact-families-multiplication-division-to-10s.html Missing Factor Game: https://matheasily.com/factor-game.html Number Fact families: set to x÷ https://www.topmarks.co.uk/number-facts/number-fact-families Tables practice 2s, 5s and 10s: https://wordwall.net/en-gb/community/2-5-10-times-table	**Online Resources:** Videos to Watch: Simple Addition using partitioning: https://www.youtube.com/watch?v=5-M9CmaGoIA Addition using partitioning:https://www.youtube.com/watch?v=ytf4E0KnWYA&pp=ygUjcGFydGl0aW9uaW5nIHRvIGFkZCAyIGRpZ2l0IG51bWJlcnM%3D Partitioning: https://youtu.be/PWe65U7ZAW0?si=8WPJR-956IIB1VTI Practice: Level 3 Partitioning: https://www.topmarks.co.uk/maths-games/daily10 Addition using partitioning: Select Numbers up to 50. https://www.topmarks.co.uk/maths-games/robot-more-or-less	**Online Resources:** Videos to watch: Mental HARDER- 2-digit numbers: https://www.youtube.com/watch?v=JcWWjqMYJqo HARDER- 2-digit numbers: https://www.youtube.com/watch?v=CGzLcfIAskE Some Strategy Posters to try: https://drive.google.com/file/d/1AqVUaOlVoZHPDCMNc2T4do0XIo0FIwGe/view?usp=sharing Mental Math Tricks - Subtraction https://www.k5learning.com/blog/using-mental-math-tricks-subtraction Practice: Level 1-4 Subtraction: https://www.topmarks.co.uk/maths-games/daily10 Dice Subtraction Sheet: https://drive.google.com/file/d/1kjkJ1sHzkJXMkazyUtjz8LvkhgYuND3V/view?usp=sharing	**Online Resources:** Practice: Missing Numbers: easier https://matheasily.com/math-crossword-puzzles.html Missing Numbers: hard https://matheasily.com/addition-subtraction-100.html Picture Puzzles: https://matheasily.com/picture-puzzles.html

Ideas