Strand:	Number	**Sub-Strand:**	Number Operations

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BASIC 8

WEEKLY LESSON PLAN – WEEK 2

Content Standard:	B8.1.2.1 Apply mental mathematics strategies and number properties used to solve problems				
Indicator (s)	B8.1.2.1.1 Multiply and divide by power of 10 including decimals and the benchmark fractions B8.1.2.1.2 Apply mental mathematics strategies and number properties to do calculation B8.1.2.1.3 Apply mental mathematics strategies to solve word problems.	**Performance Indicator:** Learners can multiply and divide decimals by powers of 10			
Week Ending	19-01-2024				
Class	B.S.8	**Class Size:**		**Duration:**	
Subject	Mathematics				
Reference	Mathematics Curriculum, Teachers Resource Pack, Learners Resource Pack, Textbook.				
Teaching / Learning Resources	Poster, Pictures, Chart, video.	**Core Competencies:**	• Ability to reflect on approaches to creative task and evaluate the effectiveness of tools used • Ability to select the most effective creative tools for working and preparedness to give explanations		

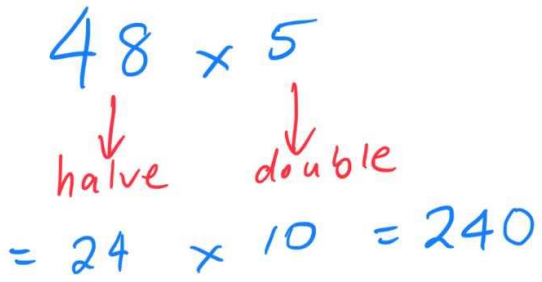
DAY/DATE	**PHASE 1 : STARTER**	**PHASE 2: MAIN**	**PHASE 3: REFLECTION**
MONDAY	Demonstrate multiplying decimals by powers of 10 (10, 100, 1000)	1. Assist learners to practice solving more examples of multiplying decimals by powers of 10. 2. Learners brainstorm to explain "benchmark fractions" 3. Assist Learners to identify decimal names of benchmark fractions converted to decimals or Percentages. 4. Engage Learners in finding the product when a decimal number is multiplied by 10, 100, 1000,1/10,1/100,1/1000. **Multiplying decimal numbers by 10, 100, 1000 …** To multiply a decimal number by 10, 100, 1000 … all you have to do is **move the decimal point to the right of the decimal as many positions as the number of zeros.** For example: 3.154 x 100	Through questions and answers, conclude the lesson. **Exercise;** 1. $10^2 \times 0.007 =$ 2. $10^3 \times 2.01 =$ 3. $10^5 \times 4.1 =$ 4. $10^5 \times 41.59 =$ 5. $3.06 \times 10^4 =$

		Since the 100 has two zeros, we will move the decimal point two places to the right. Therefore, the result is 315.4 **Dividing decimal numbers by 10, 100, 1000 …** To divide a decimal number by 10, 100, 1000 … all you have to do is **move the decimal point to the left as many positions as the number of zeros.** For example: 84.2 / 10 Since 10 has one zero we will move the decimal point one position to the left. Therefore, the result is 8.42	
TUESDAY	Assist Learners to practice dividing decimals by powers of 10.	1. Discuss with the Learners about the strategies and tricks of mental mathematics. 2. Learners brainstorm to identify the uses of mental maths tricks and strategies. 3. Discuss examples of mental maths with the Learners. **Mental Math—- Tricks and strategies** 1. Mental Math strategies for addition: Break a big number into smaller parts to simplify addition. **For example, how will we do it in our head if someone asks us to add 35 and 59?** • We break 34 and 58 into small numbers. 35 is 30 + 5 and 59 is 50 + 9 • It is now easy for us to add 30 and 50. 30 and 50 add up to 80 • We know that 5 + 9 is 14 • Finally, we add 80 and 14 to our brain • So, the answer is 94 Abacus mental math might be tricky for many students. **For that, let us try this Mental Math trick with another example. Let us use this technique to add up 68 and 45** • We break 68 and 45 into smaller numbers. 68 is 60 + 8 and 45 is 40 + 5 • It is now easy for us to add 60 and 40. 60 + 40 is 100 • We know that 8 + 5 is 13 • We add up 100 and 13 in our brain • The answer turns out to be 113	Individual Learners brainstorm to apply halving and doubling to determine the product given product of two given numbers.

		Now let us try adding up three-digit numbers using this technique. Add 175 + 258 • 175 is 100 + 70 + 5 • 258 is 200 + 50 + 8 • First, let us begin by adding 100 and 200. It comes out to be 300. • Now, if we add 70 and 50, how much is that? We know that 7 + 5 is 12. So, 70 + 50 is 120. • Now let us add 5 and 8. It is 13. • Finally, we add up 300, 120, and 13. What is 120 + 13? That's 133. • And if we add 300 to 133. The answer is 433. • We can confirm our answer by taking a calculator and adding 175 and 258. The answer is 433. **Another example: Add 548 and 678** • We break 548 into 500, 40 and 8 • We divide 678 into 600, 70 and 8 • Let us add up 500 and 600. The result is 1100. • Add 70 and 40. We get 110. • Now let us add up 8 and 8. We get 16. • Add all the results. 1100 + 110 + 16 = 1226 2. Mental Math strategies for subtraction: Break a big number into smaller ones to simplify subtraction. **For example, subtract 38 from 75.** • Split 75 into 70 and 5. Split 38 into 30 and 8. • 70 – 30 = 40 • 5 – 8 = -3 • 40 – 3 • So, the answer is 37. 3. **Mental Math strategies for multiplication: What is** six times four? We know that it equals 20 because we have learned **multiplication tables. But suppose we don't know the tables, and we are asked to solve this simple multiplication equation. How will we proceed?** • Multiplication means repeated addition. So, six times 4 means that we add 4 six times. • 4 + 4 + 4 + 4 + 4 + 4 = 24. So, six times four is 24. The value for 4 times six is the same.	

		Let us find the value for six times five. • 5 + 5 + 5 + 5 + 5 + 5 = 30 • So, 6 times 5 is 30. • It is the same as 5 times 6. **Another example: What is seven times three?** • 3 + 3 + 3 + 3 + 3 + 3 + 3 = 21 • So, seven times three is 21. **Let us step a little, using these Mental Math tricks with two-digit numbers. What are 20 times 13?** • Sometimes it might be useful to think of Math in terms of money. So, imagine if you have 13 twenty-dollar bills. • What is the value of 13 twenty-dollar bills? We know the value of five twenty-dollar bills is 100. Another set of five-dollar bills is another 100. So, that is ten twenties. We have three twenties left over. • Three twenties are sixty. • Let us add up all the results. • 100 + 100 + 60 = 260 • So, 13 times 20 or 20 times 13 is 260. • Another way we can get the same answer is if we break down 13 into 10 + 3 and multiply the smaller parts with 20. • 20 (10 + 3) = (20 * 10) + (20 * 3) • 200 + 60 = 260. So, we get the same answer this way. • (100 – 1) 80 • (100*80) – (1*80) • 8000 – 80 • (7900 + 100) – 80 = 7900 + 20 = 7920 • So, the answer to 99 times 80 is 7920. We will get the same value if we confirm the answer using a calculator. 4. **Mental Math strategies for division: Let us divide 324 by 2. How can we do so mentally?** • The trick is to divide the first two digits, 32 by 2. We get 16. • Now divide the third digit four by 2. We get 2. • Combine the two results. The answer is 162. • We get the same result if we solve this equation using a	

		calculator. **Let us try this trick on another example. Let us divide 144 by 2.** • Divide the first two digits, 14 by 2. We get 7. • Now divide the third digit, 4 by 2. We get 2. • Combine the two results. We get 72. • These Mental Math tricks will seem easier with more practice. **Uses of Mental Math** 1. Increased focus and concentration: Mental Math makes our brain put effort. It is like going to the gym. We can lift one pound weight or lift a fifty pound weight. Lifting a one-pound weight is like using our calculator. It takes almost no effort. But if we practice Mental Math, it is like an exercise for our brain. It increases our cognitive skills and helps us focus with increased concentration. 2. Avoid distractions: It helps us learn to avoid distractions while focusing on a task. Solving Mental Math problems need all our focus and attention. We can't get distracted because then we won't remember what step in the Math problem we are at. Especially in today's era when everyone is always on mobile phones, and electronic devices and our attention capacity is getting smaller and smaller, this skill is so important. 3. It increases our self-confidence: There is an improvement in our self-confidence and self-esteem when we start doing Mental Math Practice. This is especially true for those who have Math anxiety or those who think we are not good at Math. So, when they start learning Mental Math, it completely changes their attitude around the thinking they have built up for years. 4. It improves our learning memory: Working memory is a specific type of memory. There is short-term memory, long-term memory, and there is working memory. Working memory is the one we use as we are solving a problem. When we are doing Mental Math practice, we have to remember all the steps and the solution to every step to apply it to the next step. We start with easier problems and step up to the harder ones. Our working memory gets enhanced in the process. 5. Mental Math practice stimulates both sides of our brain simultaneously. It helps increase the connection between both brain hemispheres, especially in younger students whose brains are still developing. When we	

		are solving a Math problem, the calculating part is done on the left side of the brain, and the right side of the brain visualizes the problem being solved. This trains both sides of the brain to work simultaneously.	
THURSDAY	Assist Learners to play a mental paly game.	1. Learners brainstorm to apply mental maths strategies to play mental maths word games. 2. Demonstrate on how to use short methods and sundry tables to develop fluency in solving Problems. 3. Assist learners to use cumulative and distributive properties to **Doubling and halving** It works by halving one number (the larger one works best) and doubling the other number. For example 48 x 5  **7. Distributive property** The distributive property states that when you are multiplying a number by a certain sum or difference, you can multiply the number by each term in the sum or difference and then add the products together. For example: 10 x (24 + 16) = 10 x 24 + 10 x 16 = 240 + 160 =400 Algebraically the distributive law looks like this:	Reflect on the importance of using mental maths word games.

		$a(b+c) = ab + ac$ This is a great mental math strategy to use for something like 99x 4 99×4 $= (100 - 1) \times 4$ $= 100 \times 4 - 1 \times 4$ $= 400 - 4$ $= 396$	

Name of Teacher: **School:** **District:**