Strand:	Number	Sub-Strand:	Number Operations

or 0248043888

BASIC 8

WEEKLY LESSON PLAN – WEEK 3

Content Standard:	B8.1.2.2 Apply the understanding of the addition, subtraction, multiplication and division of		
	(i) whole numbers within 10,000, and		
	(ii) decimals up to 1/1000, to solve problems and round answers to given decimal places.		
Indicator (s)	B8.1.2.2.1 Add and subtract more than four-digit numbers.	**Performance Indicator:** Learners can add and subtract more than four-digit numbers.	
	B8.1.2.2.2 Multiply or divide multi-digit numbers by 2- and 3-digit numbers.		
	B8.1.2.2.3. Create and solve story problems involving decimals on the four basic operations.		
Week Ending	26-01-2024		
Class	B.S.8	**Class Size:**	**Duration:**
Subject	Mathematics		
Reference	Mathematics Curriculum, Teachers Resource Pack, Learners Resource Pack, Textbook.		
Teaching / Learning Resources	Poster, Pictures, place Value 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 using expanded form to add and subtract whole numbers.	1. Assist Learners to add and subtract whole and decimal numbers using expanded form. 2. Learners brainstorm to use place value chart to add and subtract whole numbers and decimals. 3. Assist Learners to solve word problems involving addition and subtraction of more than 4- digit whole numbers and decimals. **Examples:** **1.** Subtract 2684 from 6795. **Solution:** The numbers are arranged in column form	Engage Learners in solving more examples of word problems involving addition and subtraction more than 4-digit numbers and decimals. **Exercise;** (i) Shelly has a basket full of fruits to sell. She has 326 fruits with her. She sells 180 in the morning and 75

(i) Ones are subtracted, 5 – 4 = 1

(ii) Tens are subtracted, 9 – 8 = 1

(iii) Hundreds are subtracted, 7 – 6 = 1

(iv) Thousands are subtracted, 6 – 2 = 4

Hence, difference = 4,111

2. Subtract 6732 from 9340 **(with borrowing).**

Solution:

The numbers are arranged in column form

(i) Ones are subtracted, 0 < 2, so 1 ten is borrowed from tens.

Now 1 Ten or 10 + 0 = 10, 10 – 2 = 8

(ii) Tens are subtracted, 3Tens – 3Tens = 0

(iii)Hundreds are subtracted, 3 Hundreds < 7 Hundreds so, 1 Thousand is borrowed,

so 10 Hundreds + 3 Hundreds = 13 Hundreds,

13 Hundreds – 7 Hundreds = 6 Hundreds.

(iv) Thousands are subtracted, 8Thousands – 6Thousands = 2Thousands

Hence, difference = 2,608

3. What is the difference between 40712 and 7549? **(with borrowing)**

Solution:

The numbers are arranged in column form

(i) 2 < 9, 1T or 10 is borrowed 10 + 2 = 12, 12 – 9 = 3

(ii) 0 < 4, 1H or 10T is borrowed 10T + 0 = 10T, Now 10T – 4T = 6T

(iii) 6H – 5H = 1H

in the evening. How many fruits are still left with her to be sold?

(ii) Neil fill 437 litres of water in the tank. His family uses 359 litres of water in a day. How much water is still left in the tank?

Find the sum:

(i) 15 thousands + 14 hundreds + 3 tens

(ii) 14 ten thousands + 4 thousands + 3 hundreds + 13 tens

(iii) 27 thousands + 37 thousands + 27 tens

(iv) 3 ten thousands + 14 thousands + 18 hundreds.

(iv) 1 Tth is borrowed, 10Th – 7Th = 3 Th

(v) 3Tth – 0 = 3Tth

So, difference = 33,163

4. Subtract 2 3 7 4 1 2 from 6 4 9 5 2 3 **(without borrowing)**

Solution:

Numbers are arranged in column form

 (i) 3 – 2 = 1 Ones

(ii) 2 – 1 = 1 Tens

(iii) 5 – 4 = 1 Hundreds

(iv) 9 – 7 = 2 Thousands

(v) 4 – 3 = 1 Ten thousands

(vi) 6 – 2 = 4 Hundred thousands

Therefore, difference = 412111

5. Subtract (with borrowing) 6 5 6 2 9 from 3 2 3 4 7 8

Solution:

Numbers are arranged in column form

9Save

(i) Ones: 8 < 9, IT or 10 is borrowed 10 + 8 = 18, 18 - 9 = 9

(ii) Tens: 6T - 2T = 4T

(iii) Hundreds: 4H < 6H, 1 th or 10H is borrowed, 10H + 4H = 14H, 14H - 6H = 8H

(iv) 2Th < 5Th, 1Tth or 10Th is borrowed 10Th + 2Th = 12Th, 12Th -

5Th = 7Th

(v) 1Tth < 6Tth,1Hth or 10Tth is borrowed 10Tth + 1Tth = 11Tth, 11Tth - 6Tth = 5Tth

(vi) 2Hth remained as it was.

So, difference = 257849

6. Find the difference between two numbers, 1 4 2 7 1 3 and 3 7 4 3 9.

Solution:

The numbers are arranged in column form.

142713 is greater than 37439, so 37439 will be subtracted from 142713.

Difference = 105274

(i) Ones are subtracted

3 < 9, so 1 ten is borrowed.

Now 1T or 10 + 3 = 13, 13 - 9 = 4

(ii) Tens are subtracted, 1T < 3T, so 1H is borrowed.

Now 1H or 10T + 1 = 11,

11 - 3 = 8, answer is 11 - (3 + 1) = 7

(iii) Hundred: 6H – 4H = 2H

(iv) Thousands: 12Th – 7Th = 5Th

(v) Ten thousands: 3Th - 3Th: = 0

(vi) Hundred thousand: 1Hth – 0 = 1Hth

Therefore, 142713 - 37439 = 105274

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3. Find the difference.

For examples:

(i) 4 ten thousands - 24 thousands

    4 ten thousands →   40 thousands

  - 24 thousands   → - <u>24 thousands</u>

                16 thousands

(ii) 6 thousands 3 hundreds – 4 thousands 17 hundreds

    6 thousands 3 hundreds →   5 thousands + 13 hundreds

  - 4 thousands 17 hundreds → <u>- 5 thousands + 7 hundreds</u>

                           6 hundreds

(iii) 43 lakhs – 17 lakhs 23 hundreds

  43 lakhs   →   42 lakhs + 100 hundreds

  - 17 lakhs 23 hundreds →   - <u>17 lakhs + 23 hundreds</u>

                   25 lakhs + 77 hundreds

                or, 25 lakhs 77 hundreds

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<td>**TUESDAY**</td>
<td>Discuss with the Learners about the meaning of "area model multiplication".</td>
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1. Discuss examples of area model multiplication with the Learners.
2. Demonstrate on how to use area model or "Expand and Box method" to multiply and divide more than four (4) digit numbers.
3. Assist learners to multiply whole numbers using the vertical place value method.
4. Learners in multiplying whole numbers using the lattice method.

What is an Area Model?
An area model is a rectangular diagram or model used in mathematics to solve multiplication and division problems, in which the factors or quotient and divisor determine the rectangle length and width.

To make the calculation simpler, we can divide one wide region of the rectangle into several smaller boxes using number bonds. After

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Engage Learners in solving more examples of multiplying whole numbers using lattice method.

Exercise;

Solve the following using area model;

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that, we add to get the total field, which is the result or quotient.

Follow these steps to multiply two 2-digit numbers using the area model:

- In expanded form, write the multiplicands as tens and ones.

- For example, 27 is the same as 20 and 7, and 35 is the same as 30 and 5.

- Create a 2 x 2 grid or a box of two rows and two columns.

- On the top of the grid, write the words of one of the multiplicands (box). Each cell has one on the top.

- Write the words of the other multiplicand on the left side of the grid. Each cell has one on each side.

- In the first cell, write the product of the number on the tens. Then, in the second and third cells, write the product of the tens and ones. In the fourth cell, write the product of the ones.

- To get the final product, combine all of the partial products.

Long division is often regarded as one of the most difficult topics to teach. Fortunately, we can teach techniques for the long division area model to make multi-digit division easier to understand and execute.

One of these methods is the Box Method, also known as the Area Model. It's a method focused on mental math that will help you understand numbers better. Students solve the equation by subtracting multiples until they reach zero, or as near as possible to zero.

Benefits of Teaching With the Area Model/Rectangular Array Model For Division or Rectangular Array Division

- When taught the "open-ended" way, the Area Model for Division offers entry points for all students to begin solving larger division problems, regardless of their multiplication fact knowledge.

- Students will relate division to "taking away" from what we have to build as many "equal classes" as possible by using and illustrating the "boxes" for the area/rectangular division model. (The rectangles are a symbolic representation of an actual box or group of something in my teaching.)

- Students can double-check their work by using the very same division form, but starting with a different number.

- Students should be encouraged to solve the problem "in a certain way" in order to improve their comprehension of the model and performance. (When working on example problems in small or large groups, I ask students who have "solved" the division problem if they can solve it in a different way using the same method.)

What is a Rectangular Model For Division?

An area model is a rectangular diagram or model used in mathematics to solve multiplication and division problems, in which the factors or quotient and divisor determine the rectangle's length and width.

What is the Area Model Division?

The area of a shape is the amount of space it takes up.

We can measure the area of a rectangle with a length of 32 units and a width of 23 units by multiplying 32 by 23. In other words, the product 32 x 23 can be represented geometrically as the area of a rectangle with a length of 32 units and a width of 23 units.

- Similarly, a division problem like 555 ÷ 15 can be represented geometrically as the missing dimension of a rectangle with an area of 555 sq. units and a length of 15 units on one side.

- The rectangle can be subdivided into smaller rectangles by measuring the length of each smaller rectangle again and again. To get the desired length, add these lengths together.

- Consider a smaller rectangle with a height of 15 units and a length of 20 units as a starting point. As a result, the rectangle's area is 300 square units, and the rest of the rectangle is 555 – 300 or 255 square units.

We now have a sub-division area of 255 square units. Since 15 x 10 = 150, a new rectangle with a height of 15 units and a length of 10 units can be drawn.

Finally, 15 x 7 = 105 is found. As a result, the shaded rectangle above has a height of 15 units and a length of 7 units, totaling 105 square units.

As a result, the rectangle's length is 20 + 10 + 7 units, or 37 units. As a result, 555 ÷ 15 = 37.

		Area Model Division With Remainders	
		Arrays are objects that are grouped into columns and rows. The columns are vertical and the rows are horizontal. The number being divided is the dividend, and the divisor indicates how many numbers are in each group. When you divide something, it doesn't always divide evenly, and some numbers are leftover. These numbers that are leftover are remainders. You can see the remainder when splitting with arrays, which will help you visualize the math.	
THURSDAY	Learners brainstorm to create word problems involving decimals on the four basic operations.	1. Demonstrate solving examples of word problems involving decimals. 2. Assist Learners to solve word problems on data presented in a table. 3. Learners in small groups to discuss and solve more examples of decimal word problems. **Solving Decimal Word Problems** Example 1: If 58 out of 100 students in a school are boys, then write a decimal for the part of the school that consists of boys. Analysis: We can write a fraction and a decimal for the part of the school that consists of boys. | fraction	decimal
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$\frac{58}{100}$	0.58 | Answer: 0.58 Example 2: A computer processes information in nanoseconds. A nanosecond is one billionth of a second. Write this number as a decimal. Analysis: We can write a one billionth as a fraction and then as a decimal. | fraction	decimal
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$\frac{1}{1\,000\,000\,000}$	0.000000001		Through questions and answers, conclude the lesson. **Exercise;** **i)** Kofi bought 8 notebooks at GH₵12.00 each. Ama bought 12 pens at GH₵ 5.00 each. How much altogether they spend on the items? ii) A man gave an amount of GH₵ 2477.25 to be shared equally among his three children. How much did each receive? iii) On Adwoa's birthday, the father bought her a pack of chocolate containing 250 bars. If Adwoa took 90 bars of the chocolates and gave the rest to

Answer: A nanosecond, one billionth of a second, is written as 0.000000001 in decimal form.

Example 3: Five swimmers are entered into a competition. Four of the swimmers have had their turns. Their scores are 9.8 s, 9.75 s, 9.79 s, and 9.81 s. What score must the last swimmer get in order to win the competition?

Analysis: We must order these decimals from least to greatest. Then we must determine how the least compares with the winning score.

Step 1:

9 . 8 0 ③
9 . 7 5 ①
9 . 7 9 ②
9 . 8 1 ④

Step 2: The least decimal is 9.75. Now we must determine how 9.75 compares with the winning score.

Answer: The last swimmer must get a score less than 9.75 s in order to win.

Example 4: To make a miniature ice cream truck, you need tires with a diameter between 1.465 cm and 1.472 cm. Will a tire that is 1.4691 cm in diameter work? Explain why or why not.

Analysis: We must compare and order these decimals to help us solve this problem. Specifically, we need to determine if the third decimal is between the first two.

Step 1: Let's start by writing one decimal beneath the other in their original order. We will place an arrow next to 1.4691 so that we can track its value.

1 . 4 6 5 0
1 . 4 7 2 0
1 . 4 6 9 1 ←

Step 2: Now let's order these decimals from least to greatest.

her four friends to

share equally, how many bars of chocolates did each receive?

iv) MrsYaboi bought 25.25 metres of cloth for her five children. If they share the

material equally, how many metres of cloth did each receive?

1.4 6 5 0 ①

1.4 6 9 1 ② ←

1.4 7 2 0 ③

Step 3: Now we must determine if the third decimal (indicated by the arrow) is between the first two.

Answer: A tire that is 1.4691 cm in diameter will work since 1.4691 is between 1.465 and 1.472.

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