Lesson Guide
In
Elementary Mathematics
Grade 6

Chapter II
Rational Numbers
Addition and Subtraction of Decimals
Lesson Guides in Elementary Mathematics
Grade VI

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The Lesson Guides in Elementary Mathematics were developed by the Department of Education through the Bureau of Elementary Education in coordination with the Ateneo de Manila University. These resource materials have been purposely prepared to help improve the mathematics instruction in the elementary grades. These provide integration of values and life skills using different teaching strategies for an interactive teaching/learning process. Multiple intelligences techniques like games, puzzles, songs, etc. are also integrated in each lesson; hence, learning Mathematics becomes fun and enjoyable. Furthermore, Higher Order Thinking Skills (HOTS) activities are incorporated in the lessons.

The skills are consistent with the Basic Education Curriculum (BEC)/Philippine Elementary Learning Competencies (PELC). These should be used by the teachers as a guide in their day-to-day teaching plans.
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Estimating Sums/Differences of Whole Numbers and Decimals

I. Learning Objectives

Cognitive: Estimate sums and differences of whole numbers and decimals
Psychomotor: Write the numbers in column correctly with the decimal point aligned
Affective: Decide wisely

II. Learning Content

Skill: Estimating Sums and Differences of Whole Numbers and Decimals
Reference: BEC PELC II.C.1
Materials: counters, paper bag, index card
Value: Giving wise decision

III. Learning Experiences

A. Preparatory Activities

1. Drill: Rounding Off
   a) Divide the class into four groups.
   b) Let each group stand by rows.
   c) As the teacher flashes a number card, player 1 in each group taps the board.
   d) The first to tap the board, has the chance to answer the problem.
   e) If the given answer is wrong, other players can steal. A point is given for a correct answer.
   f) The group with the most number of points wins.

2. Review: Matching Game
   a) Provide the following cards to each group.
   
<table>
<thead>
<tr>
<th>tenths</th>
<th>hundredths</th>
<th>thousandths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ten thousandths</td>
<td>ones</td>
<td></td>
</tr>
</tbody>
</table>
   
   b) Teacher flashes decimal number and its rounded off number:

   Ex.: \( 84.815 = 84.8 \) = tenths

   c) The group will identify the place value the number is rounded to by flashing the card.
   d) The group with the most number of correct answers wins.

3. Motivation

   You were asked by your mother to buy some groceries after class. Without computing, how would you know that the money given to you is enough or not? Why?

B. Developmental Activities

1. Presentation

   a. Strategy 1 – Role Playing
1) Divide the class into groups.
2) Provide an activity card to each group for them to act out or role play.
   Ex.: Ron has $12,720 in his savings account. He wants to buy a stereo and
   speakers while they are on sale. The stereo costs $9,889.99 and the
   speakers cost $915.50. About how much of his savings will be left after the
   purchase?
3) They have to act out also the following:
   a) What information is given in the problem?
   b) What should be done first so that Ron will have an idea of the following:
      • About how much will he pay?
      • About how much will be left of his savings?
4) Have them compute the actual answer and compare it with the estimated
   answer.
5) Have each group present its work in front.

b. Strategy 2 – “Pass It On” Game
   1) Teacher prepares the following:
      Situation Card:
      Your group has $15,395.20. You will order 3 items from a mail order
      catalog.
      
      **MAIL ORDER CATALOG**
      
      | Items                  | Prices |
      |------------------------|--------|
      | Stand Fan              | $2,485.00 |
      | Printer                | $6,000.00 |
      | CD/Cassette Player     | $5,750.00 |
      | Computer Table         | $2,500.00 |
      
      a) The class should be grouped by column.
      b) Provide each group the situation card, a mail-order catalog, and order
         card.
      c) The first pupil in the row selects 3 items and writes these with the
         corresponding prices on the order card, then passes this to the pupil next
         to him.
      d) The second pupil writes the rounded off amount for each item, then
         passes the order card to his teammate.
      e) The third pupil gives the estimated sum of all the items.
      f) The fourth pupil gives the estimated difference.
      g) The fifth pupil computes the actual sum and difference, then compares it
         with the estimated sum and difference.
      h) As soon as all members of the group are finished, they submit their
         answers to the teacher for checking.
      i) The first group to finish with correct answers wins.

2. Fixing Skills
   Round to the nearest tenths and solve for the answer.
   a) 18.95
   b) 129.235
   c) 9.2875
   d) 989.15
   - 9.25
   + 16.41
   - 6.834
   - 451.85

3. Generalization
   How do you find the estimated sum and difference of whole numbers and decimals?
B. Application
Solve the problem.
1) Rhoda bought 2.5 kg of lanzones. She found that her brother brought home 1.75 kg of lanzones. Her family ate around 2.75 kg. About how many kg of lanzones were left?
2) Mother bought 4.75 kg of fish. She cooked 1.25 kg for *escabeche* and roasted 1.5 kg of fish for their family gathering. About how many kg of fish were uncooked?
3) Jethro has ₱250 for his daily allowance. He spent ₱95.50 for fare, ₱75.75 for food, and saved the rest. About how much is his savings?

IV. Evaluation
A. Arrange the numbers in column. Round off the numbers to the nearest hundredths then find the estimated sum and difference.
1) \(36.5 + 18.91 + 55.41 = N\)
2) \(₱285.15 + ₱27.35 + ₱627.30 = N\)
3) \(8.941 - 8.149 = N\)
4) \(639.27 - 422.30 = N\)
5) \(48.21 + 168.2 = N\)

B. Solve the problems. Round to the nearest whole number then give the estimated sum and difference.
1) Tony weighs 58.36 kg and Rey weighs 43.85 kg. About how much more does Tony weigh?
2) The sweater costs ₱395.95 and the t-shirt costs ₱525.85. About how much do both cost?
3) Shane ran 3.75 km and Cathy ran 7.09 km. About how much farther did Cathy run?
4) Mona bought a watch for ₱1,895.60 and a ring for ₱2,512.50. She gave the cashier 5 ₱1,000-peso bills. About how much change did she receive?

V. Assignment
1) Round the numbers to the nearest tenths and solve for the answer.
   a) \(7.13 + 8.57 + 23.09 = \)
   b) \(29.81 + 35.16 + 41.95 = \)
   c) \(873.22 + 128.55 + 456.19 = \)
2) Analyze and solve.
   a) Father gave mother three thousand pesos for the different bills due for payment. Electric bill – ₱1,792.58; water bill – ₱874.44, and telephone bill – ₱422.83. About how much will be left of the amount given by Father?
   b) Mrs. Lungul bought 3 blouses for ₱432.85, a dress for ₱825.85, a pair of pants for ₱478.25. About how much is left of her ₱2,000?

Adding and Subtracting Decimals

I. Learning Objectives

Cognitive: Add and subtract whole numbers and decimals

Psychomotor:
1. Write addends in column correctly
2. Write subtrahend and minuend in column correctly

Affective: Use resources wisely
II. Learning Content

Skill: Adding and subtracting whole numbers and decimals
Reference: BEC PELC II.C.2
Value: Wise use of resources

III. Learning Experiences

A. Preparatory Activities

1. Drill
   Give the missing number. (Oral)
   a) □ + 36 = 81
   b) 58 + □ = 90
   c) 24 + 59 = □
   d) 93 - □ = 48
   e) □ - 27 = 55
   f) 71 – 43 = □

2. Review
   Game: Guess and check.
   a) Group the class in pairs.
   b) Teacher flashes an activity card. Ex. 5.684 + 2.795
   c) Player 1 for each group will give the estimated answer mentally.
   d) Player 2 checks the answer by solving it using pencil and paper.
   e) The group with the most number of correct answers wins.

3. Motivation
   Present the following on the board:
   85.03 + 105 + 16.005 – 28.79 = N
   Ask: What is the fastest way to solve the problem? Why?

B. Developmental Activities

1. Presentation
   Present the lesson through the following:

   a. **Strategy 1 – Matching Game**
      Mechanics:
      1) Divide the class into 2 groups.
      2) The first group will be given problem cards.
      3) The second group will be holding the answer card.
      4) The pupils raise the cards they are holding when the teacher gives the go signal.
      5) Pupils should try to find their partner by pairing the problem card with the correct answer card.
      6) The first pair to match correctly wins.

      Ex. Problem Card

      Tina bought a pair of shoes for ₱495.50, a coat for ₱527.20, and a pocketbook for ₱94.75. How much change did she receive from her ₱2,000?
7) Have the pair read and solve the problem on the board to check if their cards match.
8) Teacher emphasizes the processes involved in the problem.

Valuing: Stress on the wise use of resources like money. Avoid extra expenditures. Buy only things that are really needed.

b. Strategy 2 – Guess and Check
1) Divide the class into three groups.
2) The teacher puts the problem cards on the table face down.
3) A player for each group picks a card, reads the problem, then writes his/her guess answer on the board.
4) He/She then compares his/her answer to the answer of his/her teammates.
5) The leader of the group solves the problem.
6) The number of correct answers given will be the group’s point.
   a) In a 400 m relay, the times for the team members were 13.0 seconds, 12.9 seconds, 15.4 seconds, and 8.0 seconds. What was the total time for the team?
   b) Miggy bought 11 kg of pork for his carinderia. On Monday, he used 2.75 kg and on Friday, he used another 1.5 kg. How many kg of pork was left?
7) Give emphasis on the operations used in the problem.

2. Fixing Skills

Solve the following:
   a) \(16 + 15.56\)
   b) \(37.21 - 19\)
   c) \(32.587 + 19.63\)
   d) \(95.2 - 27.58\)
   e) \(285 - 18.295 = \) ___
   f) \(5.98 + 25 + 16.3 = \) ___

3. Generalization

How do you find the sum and difference of whole numbers and decimals?

C. Application

Write in column, then compute.

1) \(39 + 18.9 - 15.6 = N\)
2) \(89 - 29.341 + 14 = N\)
3) \(62.5 + 3.96 + 93 = N\)
4) \(30.1 + 120 - 97.639 = N\)
5) \(19.61 - 8.75 + 2.95 = N\)

IV. Evaluation

Solve the problems.
1) Add 82.839 to the difference of 189 and 158.84.
2) The sum of 15.16, 97 and 68.3 is _____.
3) Add the difference of 25 and 16.82 to the sum of 43 and 18.28.
4) Cris kept track of the number of kilometers he drove as a taxi driver.
Driving Record
Mon – 365.7
Tue – 149.35
Wed – 296.5
Thu – 213.86

a) How far did Cris drive for 4 days?
b) How much farther did Cris drive on Monday and Tuesday than on Wednesday and Thursday?

V. Assignment

Solve.
1) \(89 - 84.63 + 74.13 = N\)
2) \(105.89 - 49 + 29.834 = N\)
3) What is the answer when 215 is added to 15.398?
4) What is the answer when 612 is added to the difference of 65 and 47.982?

Adding/Subtracting Decimals through Ten Thousandths without Regrouping

I. Learning Objectives

Cognitive: Add/subtract decimals through ten thousandths without regrouping (with concrete/visual models)
Psychomotor: Use 10 x 10 grid, number line, and strips of paper in adding/subtracting decimals
Affective: Practice keeping things/objects properly for future use

II. Learning Content

Skill: Adding/subtracting decimals through ten thousandths without regrouping
Reference: BEC PELC II.C.3
Materials: strips of paper, 10 x 10 grid, number line, Show-Me-Board
Value: Orderliness

III. Learning Experiences

A. Preparatory Activities

1. Mental Computation – Drill

Find the sum for each problem. Then fill in the boxes so that each row and column have the same sum.

a) \[
\begin{array}{ccc}
7 & 4 & 5 \\
3 & & 7 \\
6 & & \\
\end{array}
\]
The sum is _____.

b) \[
\begin{array}{ccc}
6 & 3 & \\
5 & & \\
2 & 8 & \\
\end{array}
\]
The sum is _____.

c) \[
\begin{array}{ccc}
4 & & 9 \\
6 & & \\
8 & 3 & \\
\end{array}
\]
The sum is _____.
2. **Review**

Find the sum or difference.

1) \(0.975 + 0.325\)  
2) \(2.92 + 7.68\)  
3) \(7.22 + 0.99\)  
4) \(0.5674 + 0.0825\)  
5) \(0.4488 - 0.2773\)  
6) \(1.84 - 0.523\)  
7) \(20.91 - 9.213\)  
8) \(5.285 - 0.627\)

3. **Motivation**

Present a simple story.

Linda does not easily throw things or objects like paper bags, plastic spoons and forks, pieces of strings or ribbons, Christmas or birthday wrappers, and others. She neatly stores them in a box or cabinet for future use.

**Discussion:**

1) What does Linda do with used things or objects?  
2) What kind of girl is she?  
3) Do you also recycle things/objects? Why?

**B. Developmental Activities**

1. **Presentation**

a. **Activity 1 – Pair Activity**

One day, Debbie, Linda’s younger sister needed 4 pieces of ribbon for her project. Linda gave her yellow, pink, blue, and red ribbons with lengths 0.2 m, 0.48 m, 0.3 m, and 0.15 m respectively.

How long are the yellow and blue ribbons if put together?

**Discussion:**

1) Analyze the problem.  
2) Identify the lengths of the yellow and blue ribbons.  
3) Let the pupils find the sum using strips of paper.  
4) To show: \(0.2 m + 0.3 m = N\)

- Let each pair of pupils bring out 1 strip of paper to represent 1 metre.  
- Fold the strip of paper into 10 equal parts.

| 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |

- Color/shade the 0.2 m or 2 parts with yellow crayon then shade/color the 0.3 m or 3 parts with blue crayon.  
- Let them count the shaded portion.  
- So, \(0.2 m + 0.3 m = 0.5 m\)

There is another way of writing \(0.2 + 0.3\) to find the sum. How?

Let pupils write this on their “Show-Me-Boards.” Let them discuss/explain the placement of decimal points and what place value should be added first, second, and so on.

\[
\begin{align*}
0.2 & \quad m \\
+ & \quad 0.3 \quad m \\
\hline
0.5 & \quad m
\end{align*}
\]

Provide other examples. Let them solve in their “Show-Me-Boards.” Let each partner guide, help and check each others solution and answer.

Ex.: \(0.5 + 0.1 + 0.25 = \)

\[
\begin{align*}
0.26 & \quad + \quad 0.33 =
\end{align*}
\]
b. **Activity 2 – Group Activity**

Debbie compared the red and pink ribbons. Which is longer? By how much?

**Discussion:**
1) Let them identify the lengths of the red and pink ribbons. Identify also the operation to be used and write the mathematical sentence.
   \[0.48 \text{ m} - 0.15 \text{ m} = N\]
2) Guide each group to find the difference using a 10 x 10 grid.
   a) Bring out a 10 x 10 grid. Count the number of squares in the grid. What part of the grid is one square, 2 squares, 12 squares, and so on.
   b) Shade/color the part of the grid that represents the length of the pink ribbon. Color it with pink or lighter shade of color.
   c) Guide the pupils to take away 0.15 m from 0.48 m, which is the shaded part. Let them shade 0.15 m with red or any dark color.
   d) Let them count the remaining portion that is shaded with pink or lighter color. What part of the whole is that?

So \(0.48 - 0.15 = 0.33 \text{ m}\)

![Grid representation of 0.48 m and 0.15 m]

e) There is another way of solving the difference of the decimals. How? Let them show on the board and explain the steps in finding the difference.

**STEPS:**
1) Write in vertical column.
2) Align the decimal points.
3) Subtract starting from the right.
4) Put the decimal point in the answer.

f) Provide other examples:
   Ex.: \(0.76 - 0.25\) \(0.58 - 0.3\) \(0.29 - 0.13\)

---

c. **Activity 3 – Pair/Group Activity**

Finding the sum or difference using a number line.

Ex.: \(0.21 + 0.34 + 0.42\)

1) Draw a number line to represent 1 whole. Divide it into 100 equal parts. Each part is 0.01.
   a) Count 0.21 in the number line. Mark that part. Then, count 0.34 and label/mark it. Then, count 0.42 and label/mark it.
   b) Altogether count the labeled part. What is the sum?
   c) Let pupils find out how to add decimals without using the number line. Let them discuss/explain their methods/solutions.
0.21
+ 0.34

0.42

2) 0.67 – 0.2 = ___
   a) Make another number line to represent 1 whole. Divide it into 100 equal parts.
   b) Count 0.67 then label/mark it.
   c) From 0.67 take away/subtract 0.2. Guide the pupils to realize that 0.2 = 0.20.
   d) Count the remaining part from 0.67.
   e) Again, let them find out how to get the difference without using the number line.

2. Fixing Skills
Find the sum or difference. (Pupils may work in pairs and may use 10 x 10 grid, number line or strips of paper to help them find the answer.)
   a) 0.27 + 0.61
   b) 0.13 + 0.22 + 0.45
   c) 0.261 + 0.03
   d) 0.005 + 0.24 + 0.3142
   e) 0.4213 + 0.06 + 0.1042
   f) 0.8 – 0.3
   g) 0.57 – 0.4
   h) 0.095 – 0.02
   i) 0.6318 – 0.02
   j) 0.4572 – 0.1041

3. Generalization
How do we add/subtract decimals through ten thousandths without regrouping?

C. Application
   1) Linda’s brother cut 2 extra pieces of wire so Linda can keep them. How long are the pieces of wire if one measures 0.4 m and the other is 0.25 m?
   2) Linda’s father found a 0.75 m piece of wood, he cut 0.5 m from it. How many metres of wood was left?

IV. Evaluation
   a. Add or subtract.
   1) 0.□17  2) 0.□24□  3) 3.□82□
      0.1□1
      - 0.1□34
      - □3□
      + 0.230
      0.74□
      1.63□
      0.96□
   b. Write the next three terms.
   4) 2.0121, 2.0232, 2.0454, ______, ______, ______
   5) 1.011, 2.022, 3.033, ______, ______, ______

V. Assignment
Find the sum or difference.
   1) 0.549 – 0.014
   2) 0.6531 + 0.124
   3) 0.56 + 0.0023 + 0.2
   4) 0.783 – 0.53
   5) 0.205 + 0.6124
   6) 0.31 + 0.42 + 0.16
   7) 0.4738 – 0.2514
   8) 0.9276 – 0.302
   9) 0.07 + 0.009 + 0.4
  10) 829 – 0.314
Adding/Subtracting Decimals through Ten Thousandths with Regrouping

I. Learning Objectives

Cognitive: Add/subtract decimals through ten thousandths with regrouping
Psychomotor: Write the sum/difference through ten thousandths correctly
Affective: Help others in need

II. Learning Content

Skill: Adding/subtracting decimals through ten thousandths
Reference: BEC PELC II.C.3
Materials: flash cards, manila paper
Value: Helpfulness

III. Learning Experiences

A. Preparatory Activities

1. Drill
   (flash cards) – mental computation
   Give the sum/difference of the following:
   
   \[
   \begin{align*}
   7538 & \quad 8230 & \quad 9417 \\
   -2441 & \quad -3756 & \quad -3260
   \end{align*}
   \]

2. Review: Mental Computation Drill (Flash cards) on Adding/Subtracting Decimals Through Ten Thousandths Without Regrouping
   a. Teacher divides the class into 6 groups (per column).
   b. Teacher flashes an equation, say, 2.45 + 3.24 = ___.
   c. The first student in each group solves mentally the given equation. The first one to give the correct answer orally gets 1 point for his/her group.
   d. Continue this until everyone in each group has participated in.
   e. The group with the highest number of points wins.
   Sample equations: (May be given vertically or horizontally.)
   
   \[
   \begin{align*}
   2.72 & \quad 9.2845 & \quad 12.23 + 6.4456 = \text{_____} \\
   +15.264 & \quad -6.163 & \quad 85.67 - 4.21 = \text{_____}
   \end{align*}
   \]

B. Developmental Activities

1. Presentation
   Present the lesson through the following:

   a. Strategy 1
      Bentong, a neighbor, came home one afternoon with a problem: “From the sum of 0.2784 and 0.5869, subtract 0.3854.”
      
      1) Guide the pupils in analyzing the problem by asking the following questions:
      * What is being asked?
      * What are given?
      * What operations will be used?
      * What is the question?
      2) Teacher writes the equation horizontally on the board, for example, \((0.2784 + 0.5869) - 0.3854 = N\), then asks a volunteer to solve the equation, step-by-step. Let the pupil explain his work.
3) Teacher emphasizes the importance of aligning the decimal points properly and correctly before adding or subtracting.
4) Discuss the value of helping others in need.

b. **Strategy 2 – 4 Square Grouping**
What is the answer when 9.8546 is added to the difference of 8.2504 and 5.9897?

1) Have each group discuss the following questions:
   a) What is asked in the problem?
   b) What operations will be used?
   c) What is the number sentence?
   d) In subtraction:
      - In what place does subtraction begin?
      - What is regrouped to make subtraction possible?
      - What is the new minuend?
   e) In addition:
      - How do you add the decimals?

**2. Generalization**
How do you add/subtract decimals through ten thousandths with regrouping?

**C. Application**
Find the sum/difference.

<table>
<thead>
<tr>
<th></th>
<th>1) 0.3564</th>
<th>2) 0.41</th>
<th>3) 0.1459</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.13</td>
<td>0.364</td>
<td>0.2736</td>
</tr>
<tr>
<td>+</td>
<td>0.2834</td>
<td>0.1567</td>
<td>0.3273</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>4) 0.5323</th>
<th>5) 0.7436</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- 0.1485</td>
<td>- 0.247</td>
</tr>
</tbody>
</table>

**IV. Evaluation**

A. Solve for the missing number.

1) □ + 0.362 = 0.841
2) 0.56 + □ = 0.9365
3) □ - 0.4553 = 0.189
4) 0.743 - □ = 0.58
5) 0.8644 - 0.3729 = □

B. Write the number sentence then solve.
1) Subtract 0.2758 from 0.7289
2) Add 0.1352 to the sum of 0.3416 and 0.1235
3) Add 0.3793 to the difference of 0.8496 and 0.4567

C. The area of five cities in the Philippines are given on the table.

<table>
<thead>
<tr>
<th>Name of City</th>
<th>Area in Square Kilometres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legaspi</td>
<td>204.20</td>
</tr>
<tr>
<td>Laoag</td>
<td>127.47</td>
</tr>
<tr>
<td>Tagbilaran</td>
<td>32.7019</td>
</tr>
<tr>
<td>Cebu</td>
<td>291.2</td>
</tr>
<tr>
<td>Iligan</td>
<td>775.76</td>
</tr>
</tbody>
</table>

Source: www.wikepilipinas.com
Cebu. Compare the sum to the area of Iligan. Find the difference.

V. Assignment

1. Perform the indicated operation.
   a. 0.104 0.3361 0.7244 0.8923
   b. 0.215 0.1529 -0.258 -0.3586
   c. + 0.156 + 0.4163

2. Find the missing number.
   a. 0.1456
   b. 0.2403
   c. -0.5682
   d. + 0.3019 + 0.1564

3. Write the number sentence then solve.
   a. Subtract 0.4358, from the sum of 0.5147 and 0.3977.
   b. What will you subtract from 0.9283 to get 0.4739?
   c. Subtract the sum of 0.2514 and 0.3897 from 0.8331.

Adding and Subtracting Mixed Decimals with Regrouping

I. Learning Objectives

   Cognitive: Add and subtract mixed decimals with regrouping
   Psychomotor: Write solutions to addition and subtraction equations involving mixed decimals with regrouping correctly
   Affective: Be honest to people you deal with

II. Learning Content

   Skill: Adding and subtracting mixed decimals with regrouping
   Reference: BEC PELC II.C.4
   Materials: flash cards
   Value: Honesty

III. Learning Experiences

   A. Preparatory Activities

      1. Drill: Reading Mixed Decimals
         Flash cards:
         [193.3194, 3.091, 13.416, 8.7352]

      2. Review
         Adding/subtracting decimals without regrouping
         Game:
a) Divide the class into 6 groups (per column).
b) First student in each column solves mentally the operation given by the teacher.
c) The first to answer correctly gets 1 point for his/her group.
d) Continue flashing cards until everyone in the group has participated.
e) The group with the most number of points wins.

Examples:
1) \(2.143 + 1.3\)
2) \(3.5 + 1.021\)
3) \(2.0008 + 3.14\)
4) \(7.958 \div 3.512\)
5) \(9.274 - 4.132\)

3. Motivation
Mother has ₱1,000. She went shopping in a mall. She bought 3 pairs of stockings worth ₱153.75 and a bag which cost ₱426.85. How much change did she receive?

B. Developmental Activities

1. Presentation
a. Work on the problem together.
   1) Ask:
      a) What does the problem ask for?
      b) What are the given facts?
      c) What will you do to solve for the answer?
   2) Translate the problem into a number sentence. Then show the solution on the board.
      a) ₱153.75
      b) ₱1000.00
      + 426.85
      ₱580.60
      - 580.60
      ₱419.40
   3) How much change did she get? What if she received ₱520.40?
   4) What do you think will mother do? Why? If you were given an extra change, would you return it? Why?
   5) Have pupils solve more exercises:
      a) 7.4205
      c) 51.312
      - 2.7589
      - 3.5286
      - 27.649
      b) 8.1043

b. Activity: Create your own problem.
   1) Divide the class into groups of four.
   2) Let each group create word problems involving mixed decimals on the following:
      a) 2 addition problems (1-step, with regrouping)
      b) 2 subtraction problems (1-step, with regrouping)
      c) 2 addition/subtraction problems (2- to 3-steps, with regrouping)
   3) Afterwards, the group exchanges problems with another group and solves the problem set assigned to them.
   4) A few groups may present their word problems in class later on.

2. Fixing Skills
Solve the indicated operations.
   a) 2.638
   b) 18.25
   c) 23.672
   d) 36.05
   + 12.964
   - 7.863
   + 5.969
   - 18.968
3. **Generalization**
   How do you add/subtract mixed decimals with regrouping?

C. **Application**
   A. Solve as indicated.
   1) The difference between 95.827 and 58.39 is ______.
   2) Find the sum of 18.125 and 10.05.
   3) When 1.853 is added to 43.86, the sum is ______.
   4) When 35.20 is subtracted from 63.47, the difference is ______.
   5) What is the sum when 8.39 is added to the difference of 45.89 and 35.028.

B. The table below shows the distance from kilometre zero (Rizal monument in Luneta, Manila) to major points in Luzon destinations in kilometres.

<table>
<thead>
<tr>
<th>Destination</th>
<th>Distance (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batangas City</td>
<td>111.62</td>
</tr>
<tr>
<td>Alaminos, Laguna</td>
<td>78.6</td>
</tr>
<tr>
<td>Malolos, Bulacan</td>
<td>44.3</td>
</tr>
<tr>
<td>Naga City</td>
<td>449</td>
</tr>
<tr>
<td>Calamba, Laguna</td>
<td>54.5</td>
</tr>
<tr>
<td>Baguio City</td>
<td>246</td>
</tr>
<tr>
<td>Obando, Bulacan</td>
<td>16.25</td>
</tr>
<tr>
<td>Daet, Camarines Norte</td>
<td>350</td>
</tr>
<tr>
<td>Tuguegarao, Cagayan</td>
<td>483</td>
</tr>
<tr>
<td>Tagaytay City</td>
<td>56</td>
</tr>
</tbody>
</table>

(Source: [www.dotpvc.gov.ph](http://www.dotpvc.gov.ph))

Based from the table, answer the following.

1.) How far is Tagaytay City from Calamba, Laguna?
2.) What is the difference between the distance of Daet, Camarines Norte and Batangas City from Manila?
3.) Obando, Bulacan is how many kilometres away from Daet, Camarines Norte?
4.) How far is Tuguegarao, Cagayan from Malolos, Bulacan?
5.) Batangas City is how many kilometres from Calamba, Laguna?

IV. **Evaluation**

1. Find the sum/difference.
   a) \[ \begin{array}{c}
   4.371 \\
   2.784
   \end{array} \] + \[ \begin{array}{c}
   5.439
   \end{array} \] = \[ \begin{array}{c}
   12.594
   \end{array} \]
   b) \[ \begin{array}{c}
   82.756
   \end{array} \] + \[ \begin{array}{c}
   9.283
   \end{array} \] + \[ \begin{array}{c}
   15.547
   \end{array} \] = \[ \begin{array}{c}
   107.586
   \end{array} \]
   c) \[ \begin{array}{c}
   72.034
   \end{array} \] - \[ \begin{array}{c}
   37.289
   \end{array} \] = \[ \begin{array}{c}
   34.745
   \end{array} \]
   d) \[ \begin{array}{c}
   81.503
   \end{array} \] - \[ \begin{array}{c}
   46.736
   \end{array} \] = \[ \begin{array}{c}
   34.767
   \end{array} \]

2. Complete the magic square. Each row, column, and diagonal must have the same sum or total.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.1</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.9</td>
</tr>
</tbody>
</table>

3. Put the decimal point in the addends, minuend, and subtrahend so the answer will be correct.
\[
\begin{align*}
25.8 + 7.6 &= 33.4 \\
25.8 - 7.6 &= 18.2 \\
2.58 + 7.6 &= 10.18 \\
44.32 + 3.98 &= 48.30 \\
4.432 + 39.8 &= 44.232
\end{align*}
\]

V. Assignment

1. Perform the indicated operation.
   a) \(17.568 + 2.937 + 5.382\) \\
   b) \(25.15\) \\
   c) \(91.421\) \\
   d) \(83.273 - 2.937 - 45.854\)
   \[\begin{align*}
   &+ 5.382 \\
   &= + 37.75
   \end{align*}\]

2. Supply the missing number.
   a) \(8.256 + 4.183\) \\
   b) \(15.63 + 9.278\) \\
   c) \(91.421 - 41.563 - 17.321\) \\
   d) \(83.1403 - \) \\
   \[\begin{align*}
   &+ 3.9278 \\
   &= 17.321 \\
   &= 46.2945
   \end{align*}\]

3. Read, analyze, and solve for the answer.
   a) Chad had the following increase in weight for the past 3 months:
      March – 1.8 dg; April – 5.02 dg
      May – 7.4 dg
      What was his weight at the end of May, if his weight in February was 358.4 dg?
   b) Mrs. Jose had 15 metres of curtain materials. She cut 3.45 metres for the bathroom
      and 8.25 metres for the kitchen. How many metres of cloth were not used?
   c) Multiply 0.47 and the difference of 0.81 and 0.26.

Different Properties of Addition to Compute Sums Mentally

I. Learning Objectives

Cognitive: Apply the different properties of addition to compute sums mentally
Psychomotor: Write accurate answers
Affective: Keep oneself physically fit

II. Learning Content

Skill: Applying the different properties of addition to compute sums mentally
Reference: BEC PELC II.C.5
Materials: charts/illustrations
Value: Keeping oneself physically fit
III. Learning Experiences

A. Preparatory Activities

1. Mental Computation

Give the sums of all the numbers found on each slice of the pie. Let each team add the numbers mentally. The team who answers first and gets all the answers correctly will be declared the winner.

![Pie Chart]

2. Review

What are the different properties of addition? What is the definition of each? Give examples for each property.

Tell what property of addition is used in the following equations:

a. Closure Property
c. Associative Property
b. Commutative Property
d. Zero or Identity Property of Addition

_____ 1) $43 + 5 = 5 + 43$
_____ 2) $3 + 0 = 3$
_____ 3) $(4 + 2) + 9 = 4 + (2 + 9)$
_____ 4) $16 + 17 = 17 + 16$
_____ 5) $0 + 200 = 200$
_____ 6) $7 + 9 = 16$
_____ 7) $8 + (5 + 17) = (8 + 5) + 17$
_____ 8) $205 + 12 + 3 = 3 + 205 + 12$

3. Motivation

Why is exercise good for the body? What form of exercise do you do? How do you keep yourself physically fit?

B. Developmental Activities

1. Presentation

a. Activity 1 – Pair Activity
1) How far is Remy’s house from Fe’s house?

2) Remy walks to school for 55.3 minutes. Fe rides a bike in going to school. It takes her 13.7 minutes to reach the school. Helen rides a jeep in going to school and it takes her 8 minutes. How many minutes do the 3 friends spend in going to school?

Discussion:

a) How did you find the answer without using paper and pencil? Number 1? Number 2?

b) What number sentence did you use to make it easier for you to solve? Number 1? Number 2?

c) Is 2.5 + 1.75 the same as 1.75 + 2.5? Why? What property of addition did you use?

d) How about for question number 2? Is (20.1 + 13.7) + 8 equal to 20.1 + (13.7 + 8)? Why? What property of addition was used?

Give other examples.

Add the following mentally. Then, explain/discuss what property of addition you used.

1) 3.1 + 1.4 + 2.3
2) 0.40 + 0.25
3) 18 + 1.67
4) 4.85 + 0 + 7.1

b. Activity 2 – Math Challenge

Group pupils into 3s. Each group answers the questions mentally. There will be 3 kinds of questions: 5 easy, 5 average and 5 difficult questions. Two points will be given for every correct answer in the easy round, 3 points for the average round, and 5 points for the difficult round. The team who gets the highest total score wins.

Easy

1) 2.4 + 3.5
2) 0.18 + 0.24
3) 56 + 1.3 + 2.5
4) 0 + 0.768
5) 3.2 + 0.5 + 1.1

Average

1) 1.33 + 2.57
2) 0.49 + 0.20 + 0.18
3) 33.1 + 48.5 + 0
4) 0.54 + 0.09 + 0.1
5) 7.65 + 1.63

Difficult

1) 0.823 + 0.109
2) 60.8 + 7.2 + 20
3) 0 + 19.1 + 3.3475
4) Joshua weighs 18.2 kg and Joy weighs 14.6 kg. What is their total weight?
5) In a 4 x 100 m relay, Vic ran for 12 seconds, John ran for 13.1 seconds, Ray ran for 10.5 seconds, and Bobby ran for 11.9 seconds. How long did the team take to finish the race?

Discussion:

a) In 56 + 1.3 + 2.5, what are the different ways of adding the expression? What property of addition did you use?
b) What about in adding 0.823 + 0.109, how did you solve it mentally?
c) How did you add 0 + 19.1 + 3.3475? What properties of addition is/are involved?
d) What about for question 5 in the difficult round, how did you come up with your correct answer?

2. **Fixing Skills**

Find the sum mentally. Use any of the properties of addition to make it easier for you to find the answer.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>3.7 + 4.9</td>
<td>4)</td>
</tr>
<tr>
<td>2)</td>
<td>0.82 + 0.76</td>
<td>5)</td>
</tr>
<tr>
<td>3)</td>
<td>2.37 + 4.10 + 1.03</td>
<td>+ 18.7</td>
</tr>
</tbody>
</table>

3. **Generalization**

How do you add decimals mentally using the properties of addition?

C. **Application**

Solve the given numbers mentally.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>1.1 + 2.1</td>
<td>6)</td>
</tr>
<tr>
<td>2)</td>
<td>0.19 + 0.26</td>
<td>7)</td>
</tr>
<tr>
<td>3)</td>
<td>23 + 25.2</td>
<td>8)</td>
</tr>
<tr>
<td>4)</td>
<td>0.25 + 0.46 + 0.23</td>
<td>9)</td>
</tr>
<tr>
<td>5)</td>
<td>29.2 + 35.8</td>
<td>10)</td>
</tr>
</tbody>
</table>

IV. **Evaluation**

Add the following mentally.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>3.7 + 5.6</td>
<td>6)</td>
</tr>
<tr>
<td>2)</td>
<td>1.6 + 2.4 + 1.2</td>
<td>7)</td>
</tr>
<tr>
<td>3)</td>
<td>0.77 + 0.15</td>
<td>8)</td>
</tr>
<tr>
<td>4)</td>
<td>0 + 18.2 + 7.4</td>
<td>9)</td>
</tr>
<tr>
<td>5)</td>
<td>0.648 + 0</td>
<td>10)</td>
</tr>
</tbody>
</table>

V. **Assignment**

How many can you do mentally? Record your score.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>0.31 + 0.53</td>
<td>6)</td>
</tr>
<tr>
<td>2)</td>
<td>0.49 + 0.10</td>
<td>7)</td>
</tr>
<tr>
<td>3)</td>
<td>0.12 + 0.42</td>
<td>8)</td>
</tr>
<tr>
<td>4)</td>
<td>0.13 + 0.25 + 0.11</td>
<td>9)</td>
</tr>
<tr>
<td>5)</td>
<td>1.21 + 2.02 + 3.14</td>
<td>10)</td>
</tr>
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<td></td>
<td></td>
<td>11)</td>
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<td>14)</td>
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<td></td>
<td>15)</td>
</tr>
</tbody>
</table>
Two to Three-Step Word Problems

I. Learning Objectives

Cognitive: Solve 2- to 3-step word problems involving addition and subtraction of decimals
Psychomotor: Write the correct number sentence and solution for a 2- to 3-step word problems, involving addition and subtraction of decimals
Affective: Help a friend in need

II. Learning Content

Skill: Solving 2- to 3-step word problems involving addition and subtraction of decimals
References: BEC PELC II.C.6.2, Math in Everyday Life, pp. 150-152
Materials: flash cards, charts, manila paper
Value: Helping others in need

III. Learning Experiences

A. Preparatory Activities

1. Mental Computation/Drill: Adding and Subtracting Decimals

   a) Divide the class into 6 groups (per column).
   b) Call on one student from each group to stay in between the aisle at the back of the classroom.
   c) Teacher flashes an addition or subtraction equation on decimals.
   d) The students at the back solve mentally for the sum or difference. The first to say the correct answer makes one step forward.
   e) Repeat c and d.
   f) The first to reach the platform in front gets 5 points for his group.
   g) Repeat for another round of student contestants.

Sample Equations:

\[
\begin{array}{c}
4.8 + 2.75 = \square \\
10 - 2.8 = \square \\
1 - 0.455 = \square \\
5.64 + 3.8 = \square
\end{array}
\]

2. Review: Identify the Operation Involved in a Problem

   a) Rogel bought a pair of pajamas, a pair of socks, and a t-shirt. How much did he spend?
   b) Lani bought a dress and a skirt. How much change did she receive from a five hundred peso bill?
   c) Melvin wants to buy a dress for his mother. If he has P150, how much more does he need?

Recall the steps in solving word problems.
Provide one-step problems involving addition and subtraction of decimals.
Write the number sentence and solve.

1) The diameter of the earth is 12 763.29 kilometers. If Mercury’s diameter is about 7 913.04 kilometers shorter than that of the earth, what is the diameter of Mercury?
2) Luz wants to buy a bag that costs P375.95. If she has saved P148.50 for it, how much more does she need?

3) Martha bought 2.5 m of yellow ribbon, 3.4 m of red, 8.75 m of white, and 3.70 m of blue. How many metres of ribbon did she buy altogether?

3. Motivation

   Lani and Sol went to a book fair. Lani found 2 good books which cost P45.00 and P67.50. She only had P58.00 in her purse but wanted very much to buy the books. Sol offered to give her money. How much will Sol give for Lani to be able to buy the books?

B. Developmental Activities

1. Presentation
   a. Ask the following questions:
      1) What is being asked?
      2) What are given?
      3) What operations are needed to solve the problem?
      4) What is the hidden question?
      5) What is the number sentence needed to solve the problem?
   b. Call on a volunteer to solve the number sentence on the board.
   c. Teacher discusses the step-by-step solution on the board.
   d. Discuss the importance of helping others in need. Have you had the chance to help a friend in need? How? How did you feel after being able to help?

2. Give another set of examples:
   a) Annie bought 13.6 gal and 51.51 litres of gas in each of 2 consecutive weeks. Her total consumption of gas in 3 weeks is 145.27 litres. How much gas did she consume on the 3rd week?
   b) How much more is 8.24 increased by 0.8 than 2.7?
   c) How much less is the sum of 24.5 and 18.762 than 50?

3. Generalization

   What are the important steps in problem solving?
   How do we solve 2- to 3- step word problems on addition/subtraction of decimals?

C. Application

1) Divide the class into groups of 4.
2) Let each group create their own 1- to 2- step word problems involving addition/subtraction of decimals.
   Let them make at least 5 problems and write it on a piece of Manila paper, to be presented later on in class.
3) Presentation of problems per group follows.
   The class gives the number sentence for each problem and solves it.

IV. Evaluation

A. Read the problem and answer the questions about it. Write the letter only.
   Binoy wanted to buy a notebook for P18.75 and a ballpen for P28.75. He had only P19.85. How much more does he need to buy the 2 items?
   1) The operations involved in the problem are:
      a. +, -                      c. + and ÷
      b. x and +                    d. – and ÷
   2) The hidden question is:
      a. How much money does Binoy have?
      b. How much more does Binoy need to buy the 2 items?
      c. How much does the notebook and ballpen cost altogether?
3) The correct number sentence for the problem is:
   a. \(19.85 + (18.75 - 28.75) = N\)
   b. \((19.85 + 18.75) - 28.75 = N\)
   c. \((18.75 + 28.75) - 19.85 = N\)
   d. \((28.75 + 19.75) - 18.75 = N\)

B. Barangay Maligaya is 28.5 km from the town proper. In going there, Ricardo traveled 12.75 kilometres by jeep, 8.5 km by tricycle, and the rest by hiking. How many kilometres did Ricardo hike?

V. Assignment

Write the number sentence and solve.
1. Delia filled the container with 3.5 litres of water. Her mother used 0.75 litres of water for cooking and 1.25 litres for palamig. How much water was left in the container?
2. Mang Caloy cut four pieces of bamboo. The first piece was 0.75 metre; the second was 2.278 metres, the third was 6.11 metres, and the fourth was 6.72 metres. How much longer were the third and fourth pieces put together than the first and second pieces put together?