Lesson 72    Converting Time Measure involving Seconds, Minutes, Hours and Day

Week 1

Objective
Convert time measure from seconds to minutes, minutes to hours, and hours to a day and vice versa

Value Focus
Accuracy, Wise use of time

Prerequisite Concepts and Skills
Four fundamental operations on whole numbers

Materials
Models of a standard clock, toy clock with movable hands, flashcards with clocks and time in standard form, show-me-board

Instructional Procedures

A. Preliminary Activities

1. Drill
   Ladder game
   Divide the class into 4 rows. Each row will have 3 representatives. As the teacher flashes the cards, the representative will read the time shown in the model clock. The first to answer will take a step forward. The first to reach the front will be the winner. (Use the same procedure for the rest of the participants.)

2. Review
   Show clock models. Ask pupils to tell the time shown. e.g.

   ![Clocks]

3. Motivation
   Ask: How do you prepare yourself before going to school in the morning? Why is it important to take good care of our body?

   Look at the pictures. Pick one and tell your classmate how long it takes you to do this every morning.
Why is it important to be aware of time?
Why do we have to use time wisely?

B. Developmental Activities

1. Presenting the Lesson
Show a real and functioning clock with second hand.
Let pupils read the time.
Ask: What time does it tell us? e.g. 7 o’clock
   • How many hands does a clock have?
Let them identify the names of the different hands of a clock.
Ask: Which is the hour hand? minute hand? second hand?
   What does each hand tell us?
Let pupils observe how the second and the minute hands move. (As much as possible, each group of 4 members should have a real clock.)
Ask: Which hand moves faster, second hand or minute hand?
Guide the pupils in counting the number of ticks the second hand moves before the minute hand moves. Ask: How many seconds are there in one minute? If three minutes have passed, how many seconds is that?
Let pupils observe the minute and hour hands move. But since it will take time to show 60 minutes which is equal to 1 hour, manipulate the clock to show the pupils the number of ticks the minute hand moves which is equivalent to 1 hour. Ask: How many minutes are there in 1 hour? in 2 hours?
Just show also, using the clock, that 24 hours is equal to 1 day. Ask:
How many hours are there in one day? in two days?
Pupils should be able to say these:

When a second hand moves in 1 complete revolution, it is equal to 60 seconds.
60 seconds is equal to one minute
60 minutes is equal to one hour
24 hours is equal to one day
2. **Performing the Activity**
   Divide the class into 6 groups. Let each group answer the problems given to them and show their solutions.

   Group 1: Nena finished her homework in 360 seconds. How many minutes did it take her to do her homework?
   Group 2: Elena finished her homework in 9 minutes. How many seconds did it take her to do her homework?
   Group 3: Edgar travelled to their province in 4 hours. How many minutes did he travel?
   Group 4: Ronnie travelled to their province in 180 minutes. How many hours did he travel?
   Group 5: Juna stayed in her aunt’s house for 5 days. How many hours did she stay?
   Group 5: Benny stayed in his aunt’s house for 144 hours. How many days did he stay?
   Let each group present their solutions and answers.

3. **Processing of the Activity**
   Ask each group the following:
   How did you get your answer? What operation did you use? Why?
   What time measure did you convert? Is it from smaller to bigger time measure?
   If you are converting from smaller to bigger time measure, what operation will be used? How about from bigger to smaller time measure, which operation will be used?
   What number should we divide if we convert seconds to minutes?
   What number should we multiply if we convert minutes to seconds?
   What number should we divide if we convert minutes to hours?
   What number should we multiply if we convert hours to minutes?
   What number should we divide if we convert hours to day?
   What number should we multiply if we convert days to hours?

4. **Reinforcing the Concept**
   Call one pupil at a time and answer Activity 1. Let pupils show their solutions and answers. Let them explain how they got their answers.

   **Answer Key:**
   A. 1) 10 minutes  2) 300 seconds  3) 6 hours
       4) 20 minutes  5) 300 minutes  6) 7 200 seconds
   B. 1) 540 seconds  2) 4 minutes  3) 168 hours
       4) 4 days  5) 48 hours  6) 2 days

   Let pupils do Activity 2 in pairs. Let them discuss their solutions and answers.
Answer Key:
A. 1) 14 minutes  2) 16 hours  3) 1 140 seconds  4) 300 minutes  5) 21 hours
B. 1) 1 080 seconds  2) 12 minutes  3) 3 days  4) 120 hours  5) 288 hours
C. 1) 15 minutes  2) 180 seconds

5. **Summarizing the Lesson**

Ask:
How do you convert the following:
- seconds to minutes?
- minutes to seconds?
- minutes to hours?
- hours to minutes?
- days to hours?
- hours to days?

To convert seconds to minutes, divide the number of seconds by 60.
To convert minutes to seconds, multiply the minutes by 60.
To convert minutes to hours, divide the number of minutes by 60.
To convert hours to minutes, multiply the number of hours by 60.
To get the number of days, divide the number of hours by 24.
To get the number of hours, multiply the number of days by 24.

6. **Applying to New and Other Situations**

Let pupils do Activity 3 individually. Afterwards, discuss their solutions and answers.

Answer Key:
1) a. Jimmy works at a later time.  b. 4 ½ hours  c. 270 minutes
2) 8 hours

C. **Evaluation**

Answer Activity 4 individually.

Answer Key:
A. 1) 540 minutes  2) 72 hours  3) 13 minutes  4) 9 hours  5) 11 days
   6) 168 hours  7) 14 days  8) 16 hours  9) 18 minutes  10) 12 days
B. 1) 480 seconds  2) 2 days  3) 2 100 seconds  4) 240 minutes

D. **Home Activity**

For their assignment, refer to Activity 5.

Answer Key:
1) 7 minutes  2) 11 hours  3) 20 minutes  4) 3 600 seconds  5) 10 days
6) 660 seconds  7) 7 minutes  8) 408 hours  9) 9 days  10) 8 hours
Lesson 73  Converting Time Measure involving Days, Weeks, Months and Years

Week 1

Objective
Convert time measure from days to weeks, months and years and vice versa, weeks to months and years and vice versa, months to years and vice versa.

Value Focus
Accuracy, Wise use of time

Prerequisite Concepts and Skills
Days of the week, months of a year

Materials
Calendars, “Show Me” board, chart, flashcards

Instructional Procedures

A. Preliminary Activities

1. Drill
Let pupils complete the missing equivalent time measure.

1) 3 minutes = ____ seconds
2) 3 days = ____ hours
3) 2 hours = ____ minutes
4) 48 hours = ____ days
5) 360 seconds = ____ minutes

2. Review
Let pupils change the given time to its equivalent unit.

1) 8 days = ____ hours
2) 120 hours = ____ days
3) 1,260 minutes = ____ hours
4) 1,860 seconds = ____ minutes
5) 21 minutes = ____ seconds

3. Motivation
Have the pupils sing a song that they know about months in a year.
B. Developmental Activities

1. Presenting the Lesson

Show a calendar from January to December. Let pupils name the months of the year. Ask: How many months do we have in a year?

Let pupils investigate the number of days in each month. Let them complete the table as shown below.

<table>
<thead>
<tr>
<th>Month</th>
<th>Number of Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td></td>
</tr>
<tr>
<td>February</td>
<td></td>
</tr>
<tr>
<td>March</td>
<td></td>
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<tr>
<td>April</td>
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<td>May</td>
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<td>June</td>
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<td>July</td>
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<td>August</td>
<td></td>
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<tr>
<td>September</td>
<td></td>
</tr>
<tr>
<td>October</td>
<td></td>
</tr>
<tr>
<td>November</td>
<td></td>
</tr>
<tr>
<td>December</td>
<td></td>
</tr>
</tbody>
</table>

Ask: How many days are there in January? February? and so on. How many months have 30 days? 31 days? 28 or 29 days?

Say: 30 is the average number of days of the month.

February has only 28 days except for the leap year in which February has 29 days. January, March, May, July, August, October and December have 31 days. All the rest of the months except February have 30 days.

Ask: About how many days are there in one month? (30 days = 1 month)

What is the total number of days from January to December? How many days are there in 1 year?

Say: Every fourth year is a leap year. A leap year has 366 days.
Let them look at the days in a week.
Ask: How many days are there in a week? (7 days = 1 week) Let them name the days of a week.

Ask: If there are 7 days in one week, about how many weeks are there in one month? (4 weeks)
Let pupils show how they get their answer using the calendar.
Ask: How many weeks are there in one year? (52 weeks) Let them count the number of weeks using the calendar.

2. Performing the Activity
Group the pupils by 4s. Let them answer the following.

a. There are 14 days.
   How many weeks are there?
   How did you get 2 weeks?
   (14 ÷ 7 = 2 weeks)

b. There are 3 weeks.
   How many days are there?
   How did you get 21 days?
   (3 weeks × 7 = 21 days)

c. There are 60 days.
   How many months are there?
   How did you get 2 months?
   (60 ÷ 30 = 2 months)

d. There are 3 months.
   How many days are there?
   How did you get 90 days?
   (3 months × 30 = 90 days)

e. There are 2 years.
   How many days are there?
   How did we get 730 days?
   (2 years × 365 = 730 days)

f. There are 730 days.
   How many years are there?
   How did we get 2 years?
   (730 days ÷ 365 = 2 years)

Call some groups to share their solutions and answers.

3. Processing the Activity
Ask:
   How did you come up with your answer?
   Did you find it difficult/easy?
   How many days are there:
   - in a week?
   - in a month?
   - in a year?
How many weeks are there:
- in a month?
- in a year

How many months are there in a year?
How do you convert smaller units to larger units? larger to smaller units?

What number should you use to multiply or divide if you are changing:
- days to weeks and vice versa?
- days to months and vice versa?
- days to years and vice versa?
- weeks to months and vice versa?
- weeks to years and vice versa?
- months to years and vice versa?

4. **Reinforcing the Concept**
Let pupils do Activity 1 by groups. Discuss their solutions and answers.

Answer Key:
1) 42 days  
2) 6 weeks  
3) 20 months  
4) 180 days  
5) 1,095 days  
6) 11 years  
7) 30 days  
8) 4 weeks  
9) 104 days  
10) 1,908 days

5. **Summarizing the Lesson**
Ask the following questions.

How do we convert days to weeks and vice versa?
- To convert days to weeks, divide the number of days by 7.
- To convert weeks to days, multiply the number of weeks by 7.

How do you convert days to months and vice versa?
- To convert days to months, divide the number of days by 30.
- To convert months to days, multiply the number of months by 30.

How do you convert days to years and vice versa?
- To convert days to years, divide the number of days by 365.
- To convert years to days, multiply the number of years by 365.

6. **Applying to New and Other Situations**
Let pupils answer Activity 2 by pairs. Call pupils to show their solutions and answers.

Answer Key:
1) 6 weeks  
2) 4 months  
3) about 16,425 days  
4) 221 hours  
5) 1 week, 4 days and 4 hours

C. **Evaluation**
Do Activity 3 individually.

Answer Key:
1) 56 days  
2) 90 days  
3) 6 months  
4) 34 weeks and 6 days  
5) 200 days
D. Home Activity
Let pupils answer Activity 4.
Answer Key:
1) 4 weeks  2) 11 months  3) 56 days  4) 420 days  5) 7 weeks
6) 1460 days  7) 1 year  8) 180 days  9) 2037 days 10) 4 months

Lesson 74 Problems involving Conversion of Time Measure

Week 2

Objective
Solve problems involving conversion of time measure

Value Focus
Helpfulness, Industry

Prerequisite Concepts and Skills
1. Converting hours to minutes and vice versa
2. Converting days to week, months and years
3. Converting week to months and years
4. Converting months to years

Materials
Calendar, charts, “Show Me” board, flashcards

Instructional Procedures

A. Preliminary Activities

1. Drill
Divide the pupils into four groups then give each group a model clock/improvised clock. Flash a card with time and the pupils will use the model clock to show the time.
   a. 11:30
   b. 2:45
   c. 1:20
   d. 9:35
   e. 7:05

2. Review
Let the pupils answer the following questions mentally.
   1. How many days are there in June and July?
   2. How many days are there in August?
3. The cold months are December and January. How many days are the cold months?

4. Summer vacation is in April and May. How many days is the summer vacation?

3. Motivation
Let pupils choose the most sensible answers.

a. Amor slept for 2 (seconds, hours, days).
b. Allan takes 15 (seconds, hours, minutes) to take a bath.
c. Miles can wink her eye in a (minute, hour, second).
d. Abigail can solve a math problem in 2 (minutes, seconds, hours).

B. Developmental Activities
1. Presenting the Lesson
Present this problem.

Last Saturday, Nina helped her mother wash their clothes. They started washing at 7:30 A.M. and finished at 10:30 A.M. How many hours did they wash the clothes? How many minutes is that?

- Understand
a. What are given? 7:30 A.M. and 10:30 A.M.
b. What is being asked?
c. How will we solve the problem?

- Plan
Use a model clock or number line to show the elapsed time.

- Solve
Guide the pupils to convert the numbers of hours to minutes.

- Look back
a. Is the answer correct?
b. What is the correct label? (3 hours or 72 minutes)

Ask the following questions.
- How did Nina help her mother?
- What can you say about Nina?
- Do you think her mother appreciated what Nina did?
- What do you do to help your mother in her household chores?

Let them solve other problems.

1. Nestor went to the province for 3 weeks. How many days did he stay in the province?
2. Your favorite movie is 90 minutes long. How many hours long is the movie?

2. **Performing the Activity**
   Let pupils do Activity 1 by groups. Discuss the problems one at a time. Let pupils show their solutions and answers per question.

   Answer Key: 1) 2 hours 2) 6 minutes 3) 36 months; 156 weeks; 1,095 days 4) 1 day and 16 hours

3. **Processing the Activity:**
   Ask:
   - What do you need to find in problem number 1? 2? 3? 4?
   - How can we solve problem 1? How did you convert 120 minutes to hours?
   - How can we solve problem 2? How did you convert 360 seconds to minutes?
   - How can we solve problem 3? How did you convert 3 years to months, into weeks and into days?
   - How can we solve problem 4?
   - What is the answer for problem 1? 2? 3? 4?

4. **Reinforcing the Concept**
   Let pupils do Activity 2 by pairs. Discuss their answers and solutions.

   Answer Key:
   1) 600 seconds 2) 1 month and 1 week 3) 300 minutes 4) 4 years → 48 months → 192 weeks + 3 months → 12 weeks about 204 weeks
   4 years → 4 x 365 days = 1,460 days + 3 months → 3 x 30 days = 90 days about 1,550 days

   5) About 1 hour (1 hour and 5 minutes); 65 minutes

5. **Summarizing the Lesson**
   Ask:
   - How do we solve problems involving converting time measure?

   To solve problems involving conversion of time, identify the given time measure and to which time measure it should be converted. Know the different conversion formula and how they are used.
   e.g.
   - To convert minutes to seconds, multiply the numbers of minutes by 60.
   - To convert hours to minutes, multiply the numbers of hours by 60.
To convert months to year, divide the number of months by 12.

6. **Applying to New and Other Situations**
   Answer Activity 3 in triads. Discuss their solutions and answers afterwards.
   Answer Key:
   1) $9 \times 12$ months $= 108$ months; $9 \times 52$ weeks $= 468$ weeks
   2) 2 $\frac{1}{2}$ days
   3) 1 $\frac{1}{4}$ hours (1 hour & 15 minutes); 75 minutes
   4) 5,400 seconds

C. **Evaluation**
   Let them answer Activity 4 individually to assess pupil’s understanding of the lesson.
   Answer Key:
   1) 12 weeks
   2) Vince sleeps more by 120 minutes
   3) about 11 weeks
   4) Lena spent 10 minutes more for baking than Malou; 600 seconds

D. **Home Activity**
   Refer to Activity 5 for their homework.

   Answer Key: 1) 1,200 seconds 2) 35 days 3) 84 months; 364 weeks

**Lesson 75 Converting Common Units of Linear Measure**

**Week 2**

**Objective**
Convert common units of linear measure from larger unit to smaller unit and vice versa: meter and centimeter

**Value Focus**
Accuracy in measurement

**Prerequisite Concepts and Skills**
Multiplying and dividing whole numbers by 100, fractional part of a number, measuring length of an object

**Materials**
Meter stick/tape measure/ruler with centimeter, realia/objects to be measured, activity sheets, “Show Me” board
Instructional Procedures

A. Preliminary Activities

1. Drill
   Conduct the drill below and instruct the pupils to use “show me board” in giving the answer.

   a. Find the product.
      \[
      \begin{array}{cccc}
      100 & 100 & 100 & 100 \\
      \times 5 & \times 3 & \times 6 & \times 2
      \end{array}
      \]

   b. Find the quotient.
      \[
      \begin{array}{ccc}
      4 \sqrt{400} & 7 \sqrt{700} & 100 \sqrt{1000}
      \end{array}
      \]

   c. Find the fractional part.
      \[
      \begin{array}{ccc}
      \frac{1}{2} \text{ of 10} & \frac{3}{4} \text{ of 100} & \frac{1}{3} \text{ of 90}
      \end{array}
      \]

2. Review
   Have an activity on measuring the following using ruler or tape measure or meter stick:
   (Length of the notebook, pencil, blackboard, length or width of the classroom)

   Ask: How do you know the measure of an object?
   What unit of measure is shown in the ruler? meter stick? tape measure?
   Is it necessary that one should be able to measure things accurately? Why?

3. Motivation
   If you are to measure the length of the teacher’s table, how long will that be?

   Whose measurement is correct?
   Why?
B. Developmental Activities

1. Presenting the Lesson
Present the situation to the class.

Mark and Rizza measured the length of the teacher’s table. Mark found it to be 1 meter long, while Rizza claimed that it is 100 cm long. Whose measurement is correct? Why?

Ask: Who measured the length of the teacher’s table? How long is the table according to Mark? How long is the table according to Rizza? Whose measurement do you think is correct?

Record pupils’ responses.

Verify the answer of pupils using a meter stick or a tape measure. Locate and mark the section where 1 meter is located. Help them to see that 1 meter is equal to 100 centimeters as seen in the meter stick or tape measure.

Lead the pupils to see that 1 meter when converted to centimeter is 100 centimeters.

2. Performing the Activity
Divide the class in 4 groups. Provide the materials and let them do the activity.

DIRECTIONS: In groups, measure the length of the given objects using meter stick. (Teacher should provide the following materials: e.g. 3 m of rope, 1m curtain rod/stick, 4 m plastic string)

Groups 1 and 2: Measure the length of the objects in centimeters. Fill in the table.

Groups 3 and 4: Measure the length of the objects in meters. Fill in the table.
3. **Processing the Activity**

Let the pupils record their measurements on the table as shown below. Discuss and summarize the results.

<table>
<thead>
<tr>
<th>Objects</th>
<th>Measure in Centimeters</th>
<th>Measure in Meters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rope</td>
<td>300</td>
<td>3</td>
</tr>
<tr>
<td>Curtain rod/Stick</td>
<td>100</td>
<td>1</td>
</tr>
<tr>
<td>Plastic string</td>
<td>400</td>
<td>4</td>
</tr>
</tbody>
</table>

Ask: What are the units of measure that you use in measuring the objects?

Ask the following questions for rope, curtain rod/stick and plastic string. How long is the rope in centimetres? in meters? What can you say about the measurement of the rope in centimeters and in meters? Is the length the same? Why?

Ask:
If 3 meters is already given as the length of the rope, how can we get its length in centimeters? (multiply 3 by 100; \(3 \times 100 = 300 \text{ cm}\))
How can we change 400 centimeters to meters? (divide 400 by 100; \(400 \div 100 = 4 \text{ meters}\))

4. **Reinforcing the Concept**

Provide the following exercises. Let pupils work in pairs. After each exercise discuss their solutions and answers.

1. How many centimeters are there in 2 meters? 10 meters?
   
   Answer:
   
   \[2 \text{ meter} = 2 \times 100 = 200 \text{ centimeters}\]
   \[10 \text{ meters} = 10 \times 100 = 1000 \text{ centimeters}\]

2. What is \(\frac{3}{4}\) of a meter?
   
   Answer:
   
   \[1 \text{ meter} = 100 \text{ centimeters}\]
   \[\frac{3}{4} \times 100 \text{ cm} = \frac{300 \text{ cm}}{4} = 75 \text{ cm}\]

3. Which is longer? 600 centimeters or 3 meters? Why?
   
   Answer:
   
   Convert both measurements with the same unit of measure
   Method 1
   Convert 600 centimeters to meters;
   \[600 \div 100 = 6 \text{ m}\]
   Method 2
   Convert 3 meters to centimeters;
   \[3 \times 100 = 300 \text{ centimeters}\]
   Thus 600 cm is greater than 3m.
5. **Summarizing the Lesson**
   Ask: “How is meter converted to centimeter? centimeter to meter?”
   - To convert meter to centimeter, multiply the number of meters by 100.
   - To convert centimeter to meter, divide the number of centimeters by 100.

6. **Applying to New and Other Situations**
   a. Divide the class into 5 groups. Provide about 3 meters long of yarn and meter stick or tape measure or ruler to each group. Ask 1 or 2 groups to cut and show the following measures; e.g. 1 ½ m, 110 cm. Let them convert these measures to m or cm.
   b. Let the pupils do Activities 1 and 2 in the LM.
   Answer Key:
   Activity 1: 1) 500 centimeters  2) 3 meters  3) 50 centimeters  4) 25 centimeters
   Activity 2
   A. 1) =  2) <  3) <  4) =
   B. 1) 500 centimeters  2) 300 centimeters
   3) Yes because 2 meters = 200 centimeters and 5 pieces of 25 cm wire = 125 centimeters, So there will be 75 centimeters left in the 2 m wire
   
C. **Evaluation**
   Assess learning using Activity 3.
   Answer Key: 1) Less than  2) 230 meters  3) 6 meters  4) Suzanne walks farther than Roxy by 10 meters or 1000 centimeters  5) a. school (600) is farther than the market (500 m) b. 10 000 cm

D. **Home Activity**
   For homework, let pupils do Activity 4.
   Let them measure the length of the following objects found in their home: height of the door, length of the living room, and width of the dining table. Let them record their measures in centimeters and in meters. (Answers vary)
Lesson 76  Converting Common Units of Mass Measure

Week 2

Objective
Convert common units of measure from larger unit to smaller unit and vice versa: kilogram to gram

Value Focus
Teamwork

Prerequisite Concepts and Skills
1. Multiplying and dividing whole numbers by 1 000
2. Fractional part of a number
3. Weight measure

Materials
Weighing scale, real objects, pictures, illustrations

Instructional Procedures

A. Preliminary Activities

1. Drill
Let the pupils find the product/quotient of the following using show me board:

   a. Find the product.
      \[
      \begin{array}{ccc}
      1000 & 1000 & 1000 \\
      \times 12 & \times 8 & \times 13 \\
      \end{array} \]
      \[
      \begin{array}{ccc}
      1000 & 1000 & \\
      \times 26 & \times 13 & \\
      \end{array} \]

   b. Find the quotient.
      \[
      \begin{array}{ccc}
      1000 & 18 000 & 1000 \\
      \sqrt{18 000} & \sqrt{29 000} & \sqrt{34 000} \\
      \end{array} \]

2. Review
Show the following pictures and let pupils give the reading shown on the weighing scale.
3. **Motivation**

Let the pupils sing “Bahay Kubo.”

Ask: What vegetables are mentioned in the song?
Do you eat vegetables?
Which vegetable mentioned in the song do you eat?
Why do we need to eat vegetables?

B. **Developmental Activities**

1. **Presenting the Lesson**

Show a kilo of eggplants and a kilo of guavas.

Ask: Which is heavier, a kilo of guavas or 1,000 grams of eggplant?
How do you know? What instrument will you use to determine the mass of an object?

Show a weighing scale (if available use the weighing scale used in the canteen, feeding or science laboratory).
Call the pupils’ attention to the lines shown in the weighing scale. Let them identify the smaller lines that represent grams (it can be 10 g, 100 g depending upon the weighing scale used). Let the pupils skip count the smaller lines that represent the gram until they reach 1 kilogram (e.g. 10, 20, and so on or 50, 100, 150, and so on.) Ask: How many grams are there in one kilogram?

Pupils should realize that 1000 grams is equal to 1 kilogram.

Call a pupil to weigh the eggplants and call another pupil to read its mass by grams and then by kilograms. Do the same with the guavas.

Ask: Which is heavier, a kilo of guavas or 1,000 grams of eggplant? Why?

2. **Performing the Activities**

Bring out some vegetables and fruits and let the pupils identify each. e.g. 4 kg of squash, 2 kg of eggplants, 1 kg of chico, 3 kg of bananas

Call a pupil to weigh each bag of vegetables and fruits in kilogram and in grams. Let them fill the table as shown.

<table>
<thead>
<tr>
<th>Fruits/Vegetables</th>
<th>Weight in Kilogram/s</th>
<th>Weight in Grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chico</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squash</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggplant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. Processing the Activities
Pose the following questions.

- What is the mass of chico in kg? What is its mass in grams? What did you observe?

\[
\text{Kilogram} \quad \rightarrow \quad \text{gram} \\
1 \text{ kg} = 1 \times 1000 = 1000 \text{ g}
\]

- What operation will you use to change gram to kilogram?

\[
\text{Gram} \quad \rightarrow \quad \text{kilogram} \\
1000 \text{ g} = 1000 \div 1000 = 1 \text{ kg}
\]

- Give the weight of (banana, squash and eggplant) in kilograms and in grams.
- What is the total mass of the fruits in kilograms? in grams?
- What is the total mass of the vegetables in kilograms? in grams?

4. Reinforcing the Concept
A. Let the pupils answer the problems by pairs. Discuss their solutions and answers afterwards

1. A pupil weighs 40 kilograms. How much is it in grams?

   Use multiplication in converting kg to g
   \[40 \times 1000 = 40000 \text{ g}\]

2. Teresa bought 5 dozen sachets of 50 grams of powder juice. What is the total weight in grams? In kilograms?

   \[5 \times 12 = 60 \text{ pieces}; \quad 60 \times 50 \text{ g} = 3000 \text{ g}\]
   Use division in converting g to kg
   \[3000 \div 1000 = 3 \text{ kg}\]

B. For additional activity, let the pupils do Activities 1 - 3 in the LM. Discuss their solutions and answers afterwards

Answer Key:
Activity 1: 1) 375 2) 460 3) 320 4) 500 5) 482
Activity 2: 1) 5 kg = 5000 g 2) 3 kg = 3000 g 3) 4 kg = 4000 g

Activity 3
A. 1) 44000 g 2) 23000 g 3) 85000 g
B. 1) 24 kilograms 2) 54 kilograms 3) 8 kilograms
3. **Summarizing the Lesson**
   
   Ask: How do you convert kilogram to gram? gram to kilogram?

   To convert kilogram to gram multiply the number of kilogram by 1,000.
   To convert gram to kilogram divide the number of gram by 1,000.

4. **Applying to New and Other Situations**
   
   Let the pupils do Activity 4 in the LM.
   
   Answer Key:
   A. 1) 19 kilograms 2) 32 kilograms 3) 28,000 grams
   B. 1) 2 kg 2) about 3 kg 3) 21/2 kg 4) 7,500 g or 7 ½ kg

C. **Evaluation**
   
   Let the pupils answer Activity 5.
   
   Answer Key:
   1) 3 kg 2) 11,000 grams 3) 100,000 grams 4) 2,000 grams
   5) 2,500 grams or 2 ½ kilograms

D. **Home Activity**
   
   Let the pupils answer Activity 6.
   
   Answer Key:
   1) 750 grams 2) 8 packages; PhP176.00 3) 1,500 g or 1 ½ kg

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Lesson 77  **Converting Common Units of Capacity Measure**

**Week 2**

**Objective**
Convert common units of measure from larger unit to smaller unit and vice versa: liter (L) to milliliter (mL)

**Value Focus**
Cleanliness, Decisiveness, Thriftiness

**Prerequisite Concepts and Skills**
1. Multiplication and division of whole numbers by 1,000
2. Fractional part of a number

**Materials**
Activity cards, empty plastic bottles of different capacities
Instructional Procedures

A. Preliminary Activities

1. Drill
   A. Use flash cards. Instruct the pupils to use mental math in finding the product/quotient.
      a. 10 x 1000
      b. 3000 x 50
      c. 12 x 2000
      d. 3000 ÷ 2
      e. 1000 ÷ 50

   B. Find the fractional part.
      a. \( \frac{2}{3} \) of 600
      b. \( \frac{3}{4} \) of 1200
      c. \( \frac{1}{8} \) of 1000

2. Motivation
   Show a picture of a flooded place with plastic bottles, cups, cans, etc... floating.
   Say: Look at the picture and describe what you see.
   Ask: Why do we need to keep our surroundings clean?
   How can you maintain cleanliness in your house? in your classroom?
   In what ways can we reduce the waste or trash in our surrounding?
   What objects in the picture can we reuse or recycle?

B. Developmental Activities

1. Presenting the Lesson
   Ask: When you buy bottled mineral water or juice, aside from the brand, what other things do you want to see in its label? (expiry date, ingredients, nutrition facts, serving size, etc.)

   Is it necessary to know those facts? Why?

   Say: “Today we will reuse empty bottles with different sizes in our lesson.”
2. **Performing the Activities**

Group the pupils and give each group the materials and activity card.

Groups 1 and 2:

**Materials:** 2 empty bottles that can hold 500 mL of water and 1 liter of water

**Directions:** Pour the 1 liter of water in the 2 empty bottles

**Questions**

a. How many liters of water is transferred in the 2 empty bottles?

b. How many milliliters are there in 1 liter?

1 liter = 2 x 500 mL = 1 000 mL

Groups 3 and 4:

**Materials:** 4 - 250 mL bottle of water and an empty bottle that can hold 1 liter of water

**Directions:** Pour the water from the four 250 mL bottles to a 1-liter bottle container.

**Answer the following questions:**

a. How many milliliters of water did you pour in the 1 liter bottle container?

b. How many liters are there in 1000 milliliters?

Therefore, 1 000 mL = 1 000 ÷ 1 000 = 1 liter

3. **Reinforcing the Concept**

Discuss:

a. Mother bought four 500 mL tetra packs of milk. How many liters is it?

4 x 500 = 2 000 mL

Since 1,000 mL = 1 liter
2 000 ÷ 1 000 liters
Therefore, 4- 500 mL of milk is equal to 2 liters
b. Lira has to transfer 5 liters of cooking oil in bottles of 250 ml. How many bottles will she need?

Since 1 liter = 1 000 mL
5 x 1 000 = 5 000 mL: 5 000 ÷ 250 = 20
Therefore, 20 – 250 mL bottles are needed

Let the pupils do Activity 1 in the LM for reinforcement.
Answer Key:
A. 1) 3 000 mL  2)12 000 mL  3) 2 500 mL  4) 5 000 mL  5) 8 000 mL
B. 1) 3 L  2) 11 L  3) 1 L  4) 10 L  5) 13 L

4. Summarizing the Lesson
Ask:  How do you convert liter to milliliter? milliliter to liter?
To convert liter to milliliter multiply the number of liter by 1000.

To convert milliliter to liter divide the number of milliliters by 1000.

5. Applying to New and Other Situations
Let the pupils do Activity 2 in the LM by pairs. Discuss their solutions and answers.
Answer Key: 1) 4 000 mL  2) Container B holds more by 200 mL  3) 105 L, 105 000 mL, PhP525.00  4) 2 L

C. Evaluation
Let the pupils answer Activity 3 in the LM.
Answer Key: 1) 1 liter for PhP150 because for every 500 mL, it costs PhP75 while the three 500-mL, one 500-mL costs PhP80.
2) Buy 6 bottles of 500-mL because it is equivalent to 3 liters
3) PhP480; PhP20 change

D. Home Activity
Let the pupils do Activity 4 in the LM.
Answer Key: 1) 40  2) Better to buy four 3-L which cost PhP264.00 rather than four 750-mL (equal to 3 L) which cost PhP280.00 or twelve 250-mL (equal to 3 L) which cost PhP300.00
Lesson 78  Routine and Non-Routine Problems involving
Conversions of Common Units of Measure

Week 3

Objective
Solve routine and non-routine problems involving conversions of common
units of measure

Value Focus
Respect

Prerequisite Concepts and Skills
Converting meter to kilometer and vice versa, converting gram to kilogram
and vice versa, converting milliliter to liter and vice versa

Materials
Measuring tape, weighing scale

Instructional Procedures

A. Preliminary Activities

1. Drill
Solve and supply the missing number.

1) 5 m = _______ cm  6) 1½ kg = _______ g
2) 300 cm = _______ m  7) 18 000 mL = _______ L
3) 8½ m = _______ cm  8) 24 500 mL = _______ L
4) 12 kg = _______ g  9) 6 ½ L = _______ mL
5) 7 500 g = _______ kg 10) 75 L = _______ mL

2. Review
Choose the best estimate. Encircle the correct answer.

1. the length of a hairpin
   a. 3 cm  b. 3 mm  c. 3 m
2. a bottle of ketchup
   a. 500 L  b. 500 mL  c. 50 L
3. the regular bar of soap
   a. 90 mg  b. 90 g  c. 90 kg
4. a full tank of diesel
   a. 40 L  b. 40 mL  c. 40 kg
5. The length of a chalk
   a. 10 mm  b. 10 cm  c. 1 m
3. **Motivation**
Call on two pairs of children with opposite physical qualities. Let the class compare these pairs of pupils in terms of height in meters or centimeters and weight in grams and kilograms. Stress the value of respecting other people.

B. **Developmental Activities**

1. **Presenting the Lesson**
Present this problem
A laboratory room is 18 ½ meters long. How many centimeters is that?

**Understand**

What is given? 18 ½ meters long
What is being asked? The number of centimeters
What operation will solve the problem? Multiplication

**Plan**
What mathematical sentence will solve the problem?
18 ½ x 100 = N

**Solve**
Tell the students to be careful in multiplying ½ by 100.
18 ½ x 100 = 1800 + 50 = 1850

**Look back**
Is the answer correct?
What is the correct label/ unit?
State the complete answer. There are 1850 meters.

2. **Performing the Activities**
Let pupils answer the problems with their learning partners. Let them use the following steps to solve the problems.

**Understand**

What is given? ________________________________
What is being asked? __________________________

**Plan**
How will you solve the problem? __________________________

**Solve**
____________________________________________

**Look back**
Is the answer correct?
What is the correct label/ unit?
State the complete answer. __________________________
a. A can contains 1.5 liters of water. The teacher asks you to put the water in 250 mL bottles. How many bottles does the teacher need?
Use the 4-step in solving word problem.

b. The class donates a box of noodles to typhoon victims. The content of a box of noodles weighs 6 kilos. If each packet of noodles weighs 60 g, how many packets are in the box?
Use the 4-step in solving word problem.

3. Processing the Activities
Ask: Did you follow the 4-step plan in problem solving?
Do you have other ways to solve the problems?

Discuss each problem using the steps.

4. Reinforcing the Concept
Let pupils answer Activities 1 and 2 by groups. Present their outputs afterwards and discuss their solutions and answers.
Answer Key:
Activity 1: 1) 6 800 cm 2) 1 ½ m or 1.5 m 3) 1 000 grams 4) 7 250 grams 5) 3 250 mL
Activity 2: 1) 175 cm 2) 15 m 3) 6 m 4) 1 200 cm 5) 57 000 g 6) ½ kg 7) 5 000 g 8) 30 kg 9) 4 000 g 10) 2 500 mL 11) 75 L

5. Summarizing the Lesson
Ask: How did we solve the problems involving conversion of common unit of measure?
To solve a one step word problem involving conversion of common unit of measure, follow the 4-step plan in problem solving.
Ask: What are units of measure for length? Meter and centimeter
What are units of measure for mass/weight? grams and kilograms
What are units of measure for capacity? liter and milliliter

6. Applying to New and Other Situations
Let pupils do Activity 3 by pairs. Afterwards, discuss their solutions and answers.
Answer Key:
1) 800 m 2) PhP560 3) 4 kg, PhP520 4) 8 km 5) 15 L a day, PhP840.00

C. Evaluation
Let pupils do Activity 4 individually.
Answer Key: 1) 750 g 2) 2 kg or 2 000 g 3) 3 ¼ L 4) 525 mL 5) 4 ½ km
D. Home Activity
Let pupils do Activity 5.
Answer Key:
1) 2 725 g   2) 1 825 g   3) 160 000 mL   4) 735 mL   5) 7 500 cm

Lesson 79  Measuring Area using Appropriate Units

Week 3

Objective
Measure area using appropriate units

Value Focus
Accuracy, Diligence

Prerequisite Concepts and Skills
Names and attributes of common shapes, measuring lengths, standard measures of length (cm and m)

Materials
Cutouts of shapes, centimeter ruler, meter stick/tape measure, 1 cm by 1 cm grid paper

Instructional Procedures

A. Preliminary Activities

1. Drill
Show the following shapes. Let the pupils name the shapes and tell the number of its sides.
2. **Review**
   Show the following figures and let the pupils count and tell the number of squares in the figure.

3. **Motivation**
   If you are to buy a plastic cover for your notebooks, what is the appropriate unit of area measure to be used? Why?

**B. Developmental Activities**

1. **Presenting the Lesson**
   Post the problem on the board.

   Diana and Jean bought notebooks at the mall. They also bought plastic cover for their notebooks. What is the area of the top of the notebook to be covered? What is the appropriate unit of area measure to be used? Why?

   Ask: What do we need to find in the problem? (area of the notebook and appropriate unit in measuring area)

   Let the pupils bring out one notebook. Let them show the area of the top of the notebook to be covered.
   Ask: What measuring tool can we use to get the length of this notebook? (ruler, tape measure)
   What standard unit of measure can we use to get the length of this notebook? (centimeter or cm)
2. Performing the Activity
   
a. Using square centimeter (sq. cm)

Divide the class into groups of 4s. Provide each group with a 1 cm by 1 cm grid paper approximately the size of their notebook. e.g.

![1 cm x 1 cm grid paper]

Ask: What is the area of this paper? (300 square units) Let pupils count the small squares. Then let the pupils measure the length of one small square. (1 cm)

Ask: What is the length of the side of one small square? (1 cm)
What is the area of one small square? (1 square centimeter or 1 cm²)

If one small square is 1 sq. cm, what is the area of the paper? (300 sq. cm)

Let pupils compare: 300 square units and 300 square centimeters

Ask: What is the difference between the two answers? (The first answer used square units while the second used square centimeters)
Are the two answers correct? Why? (Yes, because we both find the area of the paper. In the first answer we put square units after we counted the number of small squares while in the second one we put square centimeter because we used a standard unit of measure which is centimeter.)

What standard unit of area measure did we use to find the area of this paper? (square centimeter or sq. cm)

Let them put the grid paper on top of their notebooks.

Ask: What is the estimated area of your notebook? (about 300 square centimeter or 300 sq. cm)

What standard unit of area measure can we use to get the area of this notebook? (square centimeter or sq. cm)

Can we also use square centimeter or sq. cm to find the area of your pad paper? Why? How about your book?

When can we use square centimeter or sq. cm in measuring an area of an object, space or figure? (square centimeter or sq. cm is used if the area to be measured is small)
Let pupils give more examples of area of a space or figure that can be measured by square centimeter or sq. cm.

b. Using square meter (sq. m)

Ask: Can we use square centimeter or sq. cm to measure the area of our room? Why? (Expected answers: No, because the room is big. Yes, but it will take a long time to get the area.)

Ask: What appropriate unit of measure can we use in finding the area of this room?
What unit of measure can we use to find the length of this room?
What measuring tool/instrument can we use?

Let one pupil draw a square measuring 1 meter by 1 meter from one corner of the room.
Ask: What is the area of this square? (1 square meter or 1 sq. m)
About how many square meters is this room? Let pupils estimate the area of the room using the area of 1 square meter (sq. m).
Can we also use square meter or sq. m to get the area of the playground? covered court?
When is it appropriate to use square meter or sq. m in getting the area of a figure or a space? (square meter or sq. m is used if the area to be measured is big)
Let pupils give more examples in which square meter or sq. m is the appropriate unit of area measure.

3. Processing the Activity
How did you find the activity? Is it easy or difficult? If a different person will measure the area of a book and floor of the room, do you think he/she will get the same answer as yours?

What instrument or measuring tool did we use in the activities? (ruler, meter stick, carpenter’s tape measure)
What did we measure? (area of the notebook, room)
What will help you decide the appropriate unit to use in measuring area? (When the area to be measured is small, for example, book, pad paper, etc., the appropriate unit is square centimeter. If the area to be measured is bigger, like the garden, the floor of a room, etc., then the appropriate unit is the square meter.)

4. Reinforcing the Concept
Let pupils do Activity 1 individually. Afterwards, call pupils to share their answers and reasons.
5. Summarizing the Lesson
   When do we use square centimeter (sq. cm)? square meter (sq. m)

   When measuring smaller area, like a book, greeting card, etc., we use the square centimeter (sq. cm).
   When measuring bigger area, like the garden, floor of a room, etc., use the square meter (sq. m).

6. Applying to New and Other Situations
   Let pupils do Activity 2 by pairs. Discuss between them why they choose square meter or square centimeter. After 2-3 minutes, call some pairs to share their answers.
   Answer Key: 1) square centimeter 2) square meter 3) square meter 4) square centimeter

C. Evaluation
   Let pupils do Activity 3 individually.

D. Home Activity
   Look around your house. Give 5 things or figures which can be measured using square centimeters and another 5 things or places which can be measured using square meters.

Lesson 80  Area of a Rectangle and a Square

Week 4

Objectives
1. Derive the formula for the area of a rectangle and a square
2. Find the area of a rectangle and square in square centimeter and square meter

Value Focus
Decisiveness

Prerequisite Concepts and Skills
1. Multiplying whole numbers
2. Measuring length using centimeter and meter
3. Finding the area of a region by counting square units
4. Unit of measure for area

Materials
Square grid, tape measure, crayons, and activity sheets
Instructional Procedures

A. Preliminary Activities

1. Drill
   Flash cards and let pupils answer mentally. e.g.
   
   a. $15 \times 50$  
   b. $120 \times 20$  
   c. $200 \times 10$  
   d. $180 \times 100$  
   e. $500 \times 20$  
   f. $500 \div 100$  
   g. $3000 \div 100$  
   h. $1500 \div 100$  
   i. $8300 \div 100$  
   j. $16000 \div 100$

   Answer Key: a. 750  b. 2400  c. 2000  d. 18000  e. 10000  
   f. 5  g. 30  h. 15  i. 83  j. 160

2. Review

   Call pupils to convert the following measurements to the indicated unit of measure:
   
   a. $300 \text{ cm} = \underline{\text{ } \text{ m}} (\underline{3})$  
   b. $10 \text{ m} = \underline{\text{ } \text{ cm}} (\underline{1000})$  
   c. $\frac{1}{2} \text{ m} = \underline{\text{ } \text{ cm}} (\underline{550})$  
   d. $6000 \text{ cm} = \underline{\text{ } \text{ m}} (\underline{60})$  
   e. $\frac{3}{4} \text{ of } 800 \text{ cm} = \underline{\text{ } \text{ m}} (\underline{6})$

3. Motivation

   What can you say about the illustration?  
   What does it show?

B. Developmental Activities

1. Presenting the Lesson
   Let pupils identify the shapes given in Motivation and let them explain why they say it is a square or a rectangle.
Say:
One small square inside the square/rectangle is equal to 1 square unit. The number of square units that covers the region/surface of the rectangle/square is called its **AREA**.

Ask: What is the area of each figure?  
How did you get the area of each figure? *(Expected answer: Count the number of small squares)*  
Let them identify the length and width of each figure. Say and show:  
The column is referred to as length and the row is referred to as width.  
Ask pupils to write the measures of the length and width of each figure.  
Ask:  
What is the relationship of the length and width to the area? *(the product of the length and width is equal to the area)*  
How can we get the area of a rectangle?  
Area of a rectangle = length x width  
= \( l \times w \)  
Say: Look at the measures of the length and width of the square figures, what can you say about them? *(they are equal)*  
Say: For squares, length (column) and width (row) are referred to as sides  
Ask: How can we get the area of a square?  
Area of a square = side x side  
= \( s \times s \)  
Say: If the length of one small square is equal to 1 cm, what is the area of each figure?  
Using the figures in Motivation, guide the pupils to complete the table below.

<table>
<thead>
<tr>
<th>Figure</th>
<th>Length (in cm)</th>
<th>Width (in cm)</th>
<th>Area Formula</th>
<th>Area (in sq. cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2 cm</td>
<td>7 cm</td>
<td>Area of rectangle = ( l \times w )</td>
<td>Area = 2 cm x 7 cm = 14 sq. cm</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Answer Key:

<table>
<thead>
<tr>
<th></th>
<th>Length (in cm)</th>
<th>Width (in cm)</th>
<th>Area Formula</th>
<th>Area (in sq. cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>4 cm</td>
<td>4 cm</td>
<td>Area of square = ( s \times s )</td>
<td>Area = 4 cm x 4 cm = 16 sq. cm</td>
</tr>
<tr>
<td>C</td>
<td>3 cm</td>
<td>3 cm</td>
<td>Area of square = ( s \times s )</td>
<td>Area = 3 cm x 3 cm = 9 sq.cm</td>
</tr>
<tr>
<td>D</td>
<td>4 cm</td>
<td>3 cm</td>
<td>Area of rectangle = ( l \times w )</td>
<td>Area = 4 cm x 3 cm = 12 sq.cm</td>
</tr>
</tbody>
</table>
2. Performing the Activities

Ask: What are the standard units of area measure that we have already learned?

Let the pupils do the following activities in groups. Provide them with the activity sheet, tape measure or ruler or meter stick and the materials needed. Let them find the area of the given objects by completing the table and answering the questions provided.

Note: You may use other materials available. Draw the square (2 m by 2 m) inside the room using masking tape before the start of the lesson or the day before.

Groups 1 and 2

Materials: Activity sheet, tape measure, piece of cloth or Manila paper (1 m by 2 m), notebook (15 cm by 20 cm), ID card (8 cm by 12 cm)

Measure the length and the width of each object then fill in the table.

<table>
<thead>
<tr>
<th>Object</th>
<th>Shape of object</th>
<th>Length</th>
<th>Width</th>
<th>Formula</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>cloth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>notebook</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID card</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Questions:

a. What is the length of the cloth in meter?
b. What is the width of the cloth in meter?
c. Compute for the area in square meter.
d. What is the length of the notebook in centimeter?
e. What is the width of the notebook in centimeter?
f. Compute for the area in square centimeter.
g. What is the length of the handkerchief in centimeter?
h. What is the width of the handkerchief in centimeter?
i. Compute for the area in square centimeter.
Groups 3 and 4

Materials: Activity sheet, tape measure, plastic cover (75 cm by 75 cm), part of the room (2 m by 2 m), handkerchief (42 cm by 42 cm)

<table>
<thead>
<tr>
<th>Object</th>
<th>Shape of Object</th>
<th>Length</th>
<th>Width</th>
<th>Formula</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>plastic cover</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>handkerchief</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>part of the room</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Questions:
- a. What is the length of the plastic cover in centimeter?
- b. What is the width of the plastic cover in centimeter?
- c. Compute for the area in square centimeter.
- d. What is the length of the handkerchief in centimeter?
- e. What is the width of the handkerchief in centimeter?
- f. Compute for the area in square centimeter.
- g. What is the length of the part of the room in meter?
- h. What is the width of the part of the room in meter?
- i. Compute for the area in square meter.

3. Processing the Activities
Let each group present their outputs. Let them discuss how they get the area of each object given.

Ask: How do we get the area of a rectangular figure? How about the area of a square figure?

4. Reinforcing the Concept
Let pupils answer the following problems. Pupils can work with their partners. After the pairs solve one problem, discuss their solution and answers. Do this to the next problem.

1. Find the area of a square with side 15 cm. Write the solution or formula and then solve for the area.

   Solution. \[ A = s \times s \]
   \[ A = 15 \text{ cm} \times 15 \text{ cm} = 225 \text{ sq. cm} \]

2. A rectangular garden has an area of 24 sq. m. If its length is 6 m, what is its width?
   Ask pupils to give the given facts. Then let them write the solution or formula. Let them solve for the missing width.
   Given: \[ A = 24 \text{ sq. m} \] \[ \text{length} = 6\text{m} \] \[ \text{width} = ? \]
By substitution,
\[ A = l \times w \]
\[ 24 \text{ sq. m} = 6 \text{ meters} \times \text{width} \]
\[ \text{Width} = \frac{24 \text{ sq. m}}{6 \text{ meters}} \]
\[ \text{Width} = 4 \text{ meters} \]

For more activities let pupils do Activity 1 in LM. Afterwards, discuss and share their answers and solutions.

**Answer Key:**
A. 1) 14 sq. m 2) 36 sq. m 3) 1600 sq. cm 4) 2500 sq. cm 5) 24 sq. m
B. 1) 3 m 2) 10 cm by 3 cm or 6 cm by 5 cm or 15 cm by 2 cm 3) 256 sq. cm 4) 7 m

5. **Summarizing the Lesson**
How do we find the area of a rectangle?
In finding the area of a rectangle, use
\[ \text{Area} = \text{length} \times \text{width} \text{ or } \text{Area} = l \times w \]

How do we find the area of a square?
In finding the area of a square, use
\[ \text{Area} = \text{side} \times \text{side} \text{ or } \text{Area} = s \times s \]

6. **Applying to New and Other Situations**
For more exercises let the pupils do Activity 2 and 3 in the LM. Afterwards, discuss and share their answers and solutions.

**Answer Key:** Activity 2: 1) 48 sq. cm 2) 12 cm 3) They are equal, their areas are both 144 sq. m 4) 12 sq. m

C. **Evaluation**
Let pupils do Activity 4 in the LM individually.

**Answer Key:**
1) 84 sq. cm 2) 9 m 3) 16 sq. cm 4) 12 sq. m

D. **Home Activity**
Let pupils answer Activity 5 in the LM.

**Answer Key:**
1) 9 sq. m 2) 6 sq. m 3) 16 sq. m 4) 24 sq. m 5) 4 sq. m 6) 25 sq. m
Lesson 81   Routine and Non-Routine Problems involving Areas of Squares and Rectangles

Week 5

Objectives
1. Solve routine and non-routine problems involving areas of squares and rectangles
2. Create word problems involving area with reasonable answer

Value Focus
Being helpful, Cooperative

Prerequisite Concepts and Skills
Area of squares and rectangles

Materials
Graphing papers, geoboard and rubber bands, “Show Me” board

Instructional Procedures
A. Preliminary Activities

1. Drill
   Give the most appropriate unit of measure for the following (cm or m).
   a. paper clip (cm)  f. manila paper (m)
   b. table (m)  g. cartolina (m)
   c. book (cm)  h. telephone wire (m)
   d. flag pole (m)  i. garden plot (m)
   e. shoe box (cm)  j. floor tile (cm)

2. Review
   Find the area of the given figure. (Ask the pupils to write the formula for the area of a rectangle and square as shown in the geoboard or graphing papers.)

   a. \[ A = l \times w \]  e. \[ A = l \times w \]
   b. \[ A = s \times s \]  d. \[ A = s \times s \]
   c. \[ A = l \times w \]
3. **Motivation**
   Ask 2 – 3 pupils to measure the length and width of your classroom.  
   Ask: What is the area of our room?

B. **Developmental Activities**

1. **Presenting the Lesson**
   Post the problem on the board.
   
   A room measures 8 meters long and 7 meters wide. What is the area of the room?

   Who among you are like Nica and Carla? Why do we need to be helpful and cooperative?

   Guide the pupils to solve the problem.
   Ask: What is the shape of the room? (Rectangle) 
   Call a pupil to draw the figure and put the correct dimensions. 
   Ask: How do we find the area? \( \text{Area} = \text{length} \times \text{width} \)
   Let them write the mathematical sentence and solve. \( A = l \times w \)
   \[ A = 12 \times 9 \]
   Ask: What is the unit of measure? Square meters (sq. m.)
   State the complete answer. The area is 108 square meters 
   Is this the correct answer? Why?

   Provide another problem.
   Lito’s vegetable garden measures 5 meters on each side. What is the area of the garden?
   Ask: What is the shape of the vegetable garden? Square 
   Call a pupil to draw the figure and put the correct dimensions. 
   Ask: How do we find the area? \( \text{Area} = \text{side} \times \text{side} \)
   Let them write the mathematical sentence and solve. \( A = s \times s \)
   \[ A = 5 \times 5 \]
   Ask: What is the unit of measure? Square meters (sq. m.)
   State the complete answer. The area is 25 square meters 
   Is this the correct answer? Why?

2. **Performing the Activities**
   Let the pupils solve the following problems by pairs.

   a. Mr. Reyes bought a square lot with measures 12 meters on one side. What is its area? 
   Draw the figure to find the answer. 
   Solve the answer using the formula. 
   State the complete answer.
b. The area of a rectangular hall is 180 sq. m. If the length is 15 meters long, what is its width?
   Draw the figure to find the answer.
   Solve the answer using the formula.
   State the complete answer.

3. **Processing the Activities**
   Call some pupils to show their solutions and answers on the board.
   
   Ask:
   What is asked in problem a? (area of the square lot)
   How can we solve the problem? (Multiply the length of side to itself)

   What is asked in problem b? (width of the rectangular hall)
   How can we solve the problem? (divide the area with the length of the width)

4. **Reinforcing the Concept**
   - Form learning partners. They will play “Math Survival.”
     1. Call two pairs of contestants.
     2. They will be asked to listen to the problem.
     3. Without using a ballpen and paper they have to give the answer.
     4. The first to give the correct answer remains.
     5. The pair who remains will choose their next opponent.
     6. Repeat the process until one pair is left.

   Sample questions:
   1. A handkerchief measures 30 cm on all sides. What is its area? (900 sq. cm)
   2. The movie theatre is 20 meters long and 15 meters wide. What is its area? (300 sq. m)
   3. The swimming pool is 12 meters long and 8 meters wide. Find its area. (96 sq. m)
   4. A square garden has 10 meters on each side. What is the area? (100 sq. m)
   5. A park is 35 meters long and 10 meters wide. Find its area. (350 sq. m)
   6. The parking lot is 20 meters on each side. What is its area? (400 sq. m)
   7. Rico made a chopping board which is 20 cm long and 30 cm wide. What is its area? (600 sq cm)
   8. The municipal plaza is 40 meters long and 25 meters wide. Find its area. (1000 sq. m)
9. A teacher’s table is 50 cm on all sides. What is its area?
   (2500 sq. cm)
10. A square mirror is 30 cm on all sides. Find its area.
   (900 sq. cm)

b. Group Activity
   Let pupils do Activity 1. Call groups to present their work.
   Answer Key: 1) 2500 sq. cm 2) 2304 sq. cm
   3) a. (16 x 22) – (11 x 8) = 264 sq. m; b. (26 x 76)÷ 2 = 2888 sq. cm
   4) 12 m 5) 20 m

5. Summarizing the Lesson
   Ask:
   What is area?
   The number of square units needed to cover the region inside a figure is called area.
   How do we find the area of a square and a rectangle?
   To find the area of a rectangle, use the formula \( \text{Area} = \text{length} \times \text{width} \). This formula is often written as \( A = l \times w \).
   To find the area of a square, use the formula \( \text{area} = \text{side} \times \text{side} \). This formula is often written as \( A = s \times s \).
   How did we solve the problems involving the area of a rectangle and a square?
   To solve a one step word problem involving the concept of area, follow the 4-step plan in problem solving, draw the figure and use the formula in finding the area of a rectangle and a square.

6. Applying to New and Other Situations
   a. Working in pairs
   Let pupils illustrate and solve the following problems:
   1. A table top that is two meters long and one meter wide.
   2. A small door that is 30 cm long and 20 cm wide.
   3. A window that is 50 cm long and 30 cm wide.
   4. What is the area of a handkerchief which has 25 cm. on all sides?
   5. A square-shaped lawn is 5 meters on its side. What is the area?

b. For additional activities, let pupils do Activities 2 and 3. After each activity, discuss the problems and the solutions and answers of the pupils.
   Some questions to be asked to guide pupils in analyzing and solving the problems:
- How will you solve the problem? What operation will you use to solve for the length/width?
- How can you find the length/width of a rectangle if the given fact is length/width?
- How can you find the side of a square if the given is the area of a square?

Answer Key:
Activity 2: 1) 32 m  2) 6 m  3) 32 m  4) 50 sq. cm  5) 3 m
Activity 3: 1) 64 sq. cm  2) 32 sq. cm  3) 32 sq. cm  4) 16 sq. cm
       5) Figures 1 and 2  or Figures 1 and 3  6) 144 sq. cm
    7) No, because the total area of figures 2, 3, and 4 is 80 sq. cm while the area of figure 1 is 64 sq. m.

C. Evaluation
Let pupils do Activity 4 individually.
Answer Key: Possible answers:
    1) A square garden is 4 meters each on all sides. What is the area of the garden?
    2) A rectangular plot measures 8 meters long and 4 meters wide. What is the area of the plot?
    3) What is the area of a floor which is 6 m long and 4 m wide?
    4) A square lawn has a side of 6 meters. What is the area of the lawn?
    5) A rectangular lot is 12 m by 4 m. What is its area?

D. Home Activity
Let pupils do Activities 5 and 6 in the LM.
Answer Key:
Activity 5:  1) 575 sq. m  2) 64 sq. m  3) 2 550 sq. m  4) 15 cm
Activity 6: 1) 720 sq. m  2) 800 sq. cm  3) 360 sq. m  4) 2 304 sq. cm; if the side is doubled, the area is 9 216 sq. cm which is 4 times the original area  5) 96 sq. m

Lesson 82  Capacity of a Container using Milliliter/Liter

Week 5

Objectives
1. Find the capacity of a container using milliliter/liter
2. Convert liter to milliliter and vice versa

Value Focus
Water conservation
Prerequisite Concepts and Skills
Non-standard unit of capacity

Materials
Measuring cup or jug, medicine bottles and medicine dropper, shampoo bottles, glass and cups, different liquid containers, water

Instructional Procedures

A. Preliminary Activities

1. Drill
   Have a drill among pupils in listing the liquids they use at home. Ask: How are these liquids packaged?

2. Review
   Give the most appropriate unit of measure for the following (cm or m).
   a. paper    b. table    c. book    d. rope    d. match box

3. Motivation
   Put two glasses on your table, one glass with water, the other one empty. Pour a small amount of water from one glass to the other. Ask: What is the exact amount of water poured in the empty glass? What units of measure should be used to determine the amount of liquid in the glass?

   Say: Nowadays we experience water shortage. What can you do to conserve water? Is there a need for us to campaign? How would you do it?

B. Developmental Activities

1. Presenting the Lesson
   Present real measuring devices that show L and mL: e.g. measuring cup, jug, medicine dropper or beaker
Let pupils name the measuring devices. Let them identify what they see on the measuring devices.
Ask: What does L stand for? How about mL? What do they measure?

Introduce the term capacity. Say: Capacity means how much liquid a container can hold. Tell them that some of the units of measure for capacity is liter (L) or milliliter (mL).

Ask a pupil to measure 1 mL of water.
Ask:
Which of these devices will you use? Why? Pour the amount in a small glass.
About how many milliliters of water does this glass contain/hold? Let pupils give their estimates.

How about this pail, how many milliliters of water does it contain/hold? Let pupils give their estimates.

Ask another pupil to measure 1 L of water.
Ask:
Which of these devices will you use? Why?
Can you put 1 L of water in the small glass? Why?
How about in the pail? Why? About how many liters of water can it contain/hold?

2. Performing the Activities
Divide the class into 6 groups. Let them do the activities given.

Activity—Groups 1 and 2
Materials: measuring cup/jug that shows mL, water, glass, small medicine bottle
Procedure:
1. Take turns to use the containers.
2. Fill the container up to its brim with water.
3. Pour the water from the container to the measuring cup/jug.
4. Read the scale carefully.
5. Record the amount of liquid the container holds in the table as shown.

<table>
<thead>
<tr>
<th>Container</th>
<th>Amount of water/liquid it holds in milliliter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass</td>
<td></td>
</tr>
<tr>
<td>Small medicine bottle</td>
<td></td>
</tr>
</tbody>
</table>
Activity – Groups 3 and 4
Materials: measuring cup/jug that shows L, water, jug, pail
Procedure:
1. Take turns to use the containers.
2. Fill the measuring cup/jug up to 1 liter.
3. Pour the 1L water into the container.
4. Fill the container with as many as 1-L water until it is full.
5. Record the amount of liquid the container holds in the table as shown.

<table>
<thead>
<tr>
<th>Container</th>
<th>Amount of water/liquid it holds in liter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water jug</td>
<td></td>
</tr>
<tr>
<td>Pail</td>
<td></td>
</tr>
</tbody>
</table>

Activity – Groups 5 and 6
Materials: plastic cups with labels 250 mL and 100 mL, respectively, 1 L juice drink bottle  
[see illustration]

Procedures:
1. Fill a 250-mL plastic cup with water.
2. Fill the soft drink bottle with 250 ml water until it reaches 1 liter.
3. Record the number of times the 1 L bottle is filled with 250 mL water.
   How many 250 mL cups of water does the 1 L bottle contain?
   How many milliliters of water did you put in the 1 liter bottle?
4. Pour water in a plastic cup up to 100 mL.
5. Fill the bottle with 100 mL water until it reaches 1 liter.
6. Record the number of times the 1 L bottle is filled with 100 mL water.
   How many 100 mL cups of water does the 1 L bottle contain?
   How many milliliters of water did you put in the 1 liter bottle?
Let the groups present their answers.

3. Processing the Activities
Ask:
How much liquid/water does each of the containers that were given to you hold?
Do groups 1 and 2 have the same answer? Why?
How about groups 3 and 4, do they have the same answer? Why?
What unit of measure did you use to find the capacity of the given container?
Which containers can hold milliliters of liquid? liters of liquid? Why?
Do groups 5 and 6 have the same answer? Why?
How many milliliters are there in 1 liter?
How many liter is 1000 ml?
If you have 2 liters, how many ml is that? How did you get your answer?

4. Reinforcing the Concept
   a. Show some empty liquid containers. (Make sure the labels are still intact.) e.g.

   1. medicine bottle (50 mL)
   2. shampoo bottle
   3. medicine bottle (10 mL)
   4. soft drink bottle (1.5 L)
   5. canned juice
   6. perfume bottle

   Ask pupils what is the appropriate unit of capacity measure to be used, mL or L for each container. Write their answers on the “Show Me” board.
   Call some pupils to show and read the amount of liquid the container holds based on its label.

   b. Group Activity

   How do you measure capacity with metric units?

   Make a table like the one shown below. Select five empty containers with various capacities. Estimate the capacity of each. Then use the metric measuring cup and water to measure the amount of liquid/water it holds to the nearest milliliter. If the capacity is more than a liter, give the measure in liters and in milliliters.
<table>
<thead>
<tr>
<th>Object</th>
<th>Estimated Capacity</th>
<th>Capacity to the nearest Milliliter/Liter</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g. vinegar bottle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5 L soft drink bottle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cup or mug</td>
<td></td>
<td></td>
</tr>
<tr>
<td>large pitcher</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ask: Which of the containers you measured had the least capacity? largest capacity? Why?

c. Let pupils work in pairs. Let them answer Activity 1 and 2. Share their ideas why they choose such estimate.

Answer Key
Activity 1: 1) 50 mL  2) 200 mL  3) 200 mL  4) 5 L  5) 1 L  
6) 5 mL  7) 500 mL  8) 50 mL  9) 4 L  10) 50 mL
Activity 2: 1) bowl  2) bottle  3) drum  4) bowl  5) bottle

5. **Summarizing the Lesson**
How do we find the capacity using standard unit of measure? When do we use milliliter? Liter?
**Milliliter (mL)** is a metric unit used to measure the capacity of small containers.
**Liter (L)** is used to measure the capacities of the large containers.
How do we convert milliliter to liter?
To change to liter, divide the amount in milliliter by 1,000.
How do we convert liter to milliliter?
To change to milliliter, multiply the amount in liter by 1,000.

6. **Applying to New and Other Situations**
Present the problem.
A recipe calls for \( \frac{1}{2} \) L of vinegar, \( \frac{1}{4} \) L of soy sauce and \( \frac{3}{4} \) L of water.
How many milliliters will each liquid contain? How many liters of liquid are there in the recipe? milliliters of liquid?

Discussion on the problem
Let the pupils list down the given.
\( \frac{1}{2} \) L of vinegar, \( \frac{1}{4} \) L of soy sauce and \( \frac{3}{4} \) L of water
What are we asked to find in the problem?
Guide the pupils to draw a number line to show \( \frac{1}{4}, \frac{1}{2}, \frac{3}{4} \) and 1 whole.

Ask: Where are we going to put \( \frac{1}{2} \) L, \( \frac{1}{4} \) L, \( \frac{3}{4} \) L and 1 L? Why?
Let pupils put ½ L, ¼ L, ¾ L and 1 L in the number line.

Ask: How many milliliters are there in 1 liter?
Where are we going to put 1 000 ml in the number line?
So, how many milliliters are there in ½ L, ¼ L and ¾ L?

½ L = _____ mL
¼ L = _____ mL
¾ L = _____ mL

How many liters of liquid are there in the recipe? milliliters of liquid?

For additional activities, let pupils do Activities 3 and 4. Discuss the activities afterwards.

Answer Key:

Activity 3: 1) 525 mL 2) 1 050 mL 3) 1 350 mL 4) 850 mL 5) 750 mL
6) 1 250 mL 7) 1 050 mL 8) 1 650 mL 9) 1 000 L 10) 1 200 mL

Activity 4: 1) mL 2) mL 3) mL 4) L 5) L
6) L 7) mL 8) mL 9) mL 10) mL

C. Evaluation

Let pupils do Activity 5 individually.

Answer Key:
A. 1) mL 2) L 3) mL 4) mL 5) mL 6) L 7) mL 8) mL 9) L 10) mL
B. 1) 2 2) 5 000 3) 43 4) 3500 5) 8 ¾ L

3. Home Activity

Let pupils do Activity 6.

Answer Key:
A. 1) 4 L 2) 250 mL 3) 10 L 4) 200 mL 5) 200 mL
B. (possible answers)
1) Name containers that holds about 1 liter.
   1 liter bottle of softdrinks; 1 liter can of juice; 1 liter buko juice
2) Name containers that hold more than 1 L.
   can of oil; pitcher of water; large container of milk
3) Name containers that hold more than 1 mL.
   teaspoon of syrup; drop of medicine; paste in a bottle
Lesson 83  Routine and Non-routine Problems involving Capacity Measure

Week 6

Objective
Solve routine and non-routine problems involving capacity measure

Value Focus
Practice drinking right amount of water

Prerequisite Concepts and Skills
Concept of capacity measure, converting liter to milliliters and vice versa

Materials
Cutouts, pictures, drawing, charts

Instructional Procedures

A. Preliminary Activities

1. Drill
Choose the appropriate measurement. Write your answer on the board.

1. A drinking glass holds about _______________ of milk.
   a. 250 milliliters  b. 250 liters
2. A teaspoon holds about _______________ of liquid.
   a. 5 mL    b. 5 L
3. A sprinkler can hold about _______________ water.
   a. 5 mL    b. 5 L
4. A small mineral water bottle can hold _________ liquid.
   a. 250 mL    b. 250 L
5. A drum can hold about _______________ of crude oil.
   a. 400 mL    b. 40 L

2. Review
Use <, > or = to compare the two liquid containers. Write your answer inside the box.

1. 8000 mL gasoline 10 L diesel
2. 3000 mL mango juice 2 L buko juice
3. 4000 mL fish sauce 4 L soy sauce
4. 1000 mL iced tea 1.5 L softdrinks
5. 750 mL oil 1 L water
3. **Motivation**

Let's read the short story.

Jake together with Chris love to jog around the lake every morning. One morning, Jake and Chris woke up early, they went to the lake and jogged. They made six rounds of jogging then went home. When they arrived Jake and Chris drank 10 glasses of water for they were really thirsty, then took a bath, ate their breakfast and went to their school.

Ask:
1. Who jogged one morning?
2. What did they do when they arrived home, after jogging?
3. How many glasses of water did they drink?
4. Why do we need to drink such amount of water?
5. What will happen to us if we don’t drink the right amount of water?

**B. Developmental Activities**

1. **Presenting the Lesson**

Present the story problems.

1. Jake drinks 3 liters of water a day. How many milliliters does he drink in a day?
   Let's illustrate.

   We will need 6 empty bottles (500 mL each).

   ![Diagram of bottles](image)

   = 3 000 mL

   1 liter 1 liter 1 liter = 3 liters

   What is the answer? (3 000 mL)

2. Chris bought 2 liters of mineral water. The mineral water comes in 250-ml bottle. How many bottles did Chris get for the 2 liters?
   
   What is asked?
Let’s act out the problem. We need 2 actors, one a storekeeper and the other a buyer. The storekeeper gave the bottle in fours.

2. Performing the Activities
Let pupils work in triads. Provide one problem for each group. (Note: 2 or more groups may work on 1 problem.)

Read the problem carefully and draw pictures to solve them.

1. A water container can hold 4000 ml of liquid. How many liters can the water contain?
2. Carlo fetched 4 liters of water, Aldrin 5000 ml and Lester 6 L. Who fetched the greatest amount of water? the least?
3. Ms. Megan needs 250 milliliters of liquid wax to shine the floor each week. How many liters of liquid wax does she need in 2 months?
4. Melay, a fish vendor, uses 2000 ml water in cleaning 1 1/2 kilos of fish. How many liters of water does Melay use?
5. Kristine put 20 liters of water in a pail. How many milliliters of water did she put in the pail?

3. Processing the Activities
Call some groups to share their answers on each problem. Ask:
How did your group solve the problem given you, e.g. problem number 1? Did the other groups who solved the same problem have the same answer? Why or why not? Which is the best solution? Why?

4. Reinforcing the Concept
a. Divide the class into four groups. Let them read and solve the problems in Activity 1. Have them write their answers on a Manila paper provided for them.
Answer Key:
1) 4 L  2) 2 000 mL  3) 10 000 mL  4) 6 L  5) 6 000 mL
b. Let pupils do Activity 2 by learning partners. Let them study the table given and answer the questions that follow.

Answer Key
1) a. 5 L  b. 2 000 mL  c. 7 000 mL
2) 1 L  3) 5 750 mL  4) 14 L  5) 3 L  6) bucket, large plastic bottle and glass (8 L) > water jug and pitcher (7 L)

5. Summarizing the Lesson
How do we solve problems involving capacity measure?
Use the 4-step procedure.
We sometimes draw and make a pattern.
We add, subtract, multiply or divide depending on the problems.

6. Applying to New and Other Situations
Let pupils do Activities 3 and 4. Discuss their answers afterwards.

Answer Key:
Activity 3
1) 14 600 mL  2) 14 500 mL  3) 12 700 mL  4) 10 500 mL  5) 27 700 mL; 52 300 mL
Activity 4: Possible answers
1. Mother used 1 liter of water, 500 mL of iced tea and 250 mL honey syrup in preparing juice for the family.
2. Lorna has a laundry shop. She used 750 mL of soap detergent, 1 L of bleach and 500 mL fabric conditioner.

C. Evaluation
To assess pupils’ understanding of the lesson, let them answer Activity 5 individually.

Answer Key:
1) 27 L  2) 6 L  3) 5 000 mL  4) 7 L  5) 3 L

D. Home Activity
For assignment, let them do Activity 6.

Answer Key:
1) 20 000 mL  2) 3 L  3) 875 mL  4) 650 000 mL  5) 8.5 L
Lesson 84  Collecting Data on One Variable

Week 7

Objectives
1. Collect data on one variable using existing records
2. Collect and organize data in a table

Value Focus
Fairness, Honesty, Sportsmanship

Prerequisite Concept and Skills
Factors of a given number

Materials
Card, chart

Instructional Procedures

A. Preliminary Activities

1. Drill
   “Around the World Game” using division and multiplication facts
   
   Create a set of question and answer cards that include a variety of multiplication and division tasks. See sample cards below.
   
   Distribute cards to the pupils. The pupil with the start ‘card’ begins and he/she reads aloud, “I have the start card”, and the first question. Each pupil then looks at his/her card to see if he/she has the matching answer. Then, the pupil with the “matching answer” reads the answer and then poses his/her question.
   
   All learners then look for the match and the game continues until they get to the learners with the end card.

   Note:
   You may call 16 or 10 pupils only to shorten the drill.
   1. You will need all cards to play the game.
   2. Pupils can work together if you do not have enough cards for every student. If there are too many cards, then some students can have 2 cards each.
2. **Review**
   Give the factors of the following:
   a. 12
   b. 18
   c. 24
   d. 36
   e. 42

3. **Motivation**
   Let pupils do a “Pinoy Henyo” game.
   1. Ask pairs of volunteers from the class to guess the magic words, one word at a time.
   2. The words/pictures to be guessed are common sports known by elementary pupils.
      e.g. basketball, baseball, volleyball, swimming, soccer, badminton, tennis
   3. Prepare the 3 pictures/words to be guessed in a minute.
   4. The pair with the fastest time to give the correct answer wins the game.

Which among the sports given would you like to play? Why?
Why is it important to engage in sports?
What does it give to our body?
What do you feel when you lose a game?
As a player, how can you show fairness and being a good sport in playing any sport?

B. Developmental Activities

1. Presenting the Lesson
   Present a word problem.
   Mrs. Soriano administered a summative test in mathematics in her Grade 3 class. The scores are shown below

   Scores in Achievement Test in Mathematics
<table>
<thead>
<tr>
<th>Score</th>
<th>Tally</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   Look at the scores in the box
   Can you easily tell how many pupils got a score of 15? 16? Why?
   What do numbers inside the box represent? (score/number/information)
   Do you have an idea how to organize the given information?
   Guide the pupils in organizing the given information in a table.
   Ask: What is the information about? (Scores in the Achievement test in Mathematics)
   What is the highest score? the next score? the lowest score? Let pupils write and arrange the scores from highest to lowest as shown in the table below.

   Let them look at the scores, tally the number of pupils who get the following scores e.g. 20, 19, etc. in the table by marking (I) in the tally column. Do this till the last score has been tallied.
   Count the number of pupils who got 20;19;18; and so on and write the total in the total column.
Now, looking at the table can you easily see the number of pupils who got 20?

We can get the data from the tally chart and present it in a table.

<table>
<thead>
<tr>
<th>Score</th>
<th>Number of pupils who got the score</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>18</td>
<td>5</td>
</tr>
<tr>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
</tr>
</tbody>
</table>

Ask: Which score has the most number of pupils who got it? How many pupils took the test?

Provide another example:
Complete the table then use the information to answer the questions:

<table>
<thead>
<tr>
<th>Favorite Sports of Grade III Pupils</th>
<th>Sports</th>
<th>Tally</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basketball</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseball</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soccer</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Badminton</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table Tennis</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swimming</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. How many pupils like to play basketball? ________
2. How many more pupils like to play badminton than soccer?
3. Which sports is liked most by the pupil?
4. How many pupils like swimming?
5. Which sport is the least liked by the pupil?

2. Performing the Activity
A. Divide the class into 4 groups.
   Provide activity sheet and Manila paper for each group.
   Task: Present in the table the favourite places in the Philippines or province of all the members of the group.
   Procedures:
   1. The leader asks the members of the group about their favorite places in the Philippines/province.
   2. The secretary will record their answers.
3. Organize the information in a table.
4. Present and explain the output of the group.

3. **Processing the Activity**
   - How did you find the activity?
   - What type of data/records did you have in the activity?
   - What kind of information did you organize?
   - How did you organize the information?
   - Why do we need to organize the information in a table?

4. **Reinforcing the Concept**
   Divide the class into 6 groups. Provide an activity for each group. Groups 1, 2 and 3 will do the same activity as well as Groups 4, 5 and 6. They will conduct a survey and make a tally table.

**Groups 1, 2 and 3**
Task: Conduct a survey among group members on what they would like to buy for snacks from the list given. Record their answers in the table. Then answer the questions that follow.

<table>
<thead>
<tr>
<th>Menu</th>
<th>Tally</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banana cue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>French fries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sandwich</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotcake</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   1. How many pupils bought banana cue? turon?
   2. Which snack has the most orders?
   3. Which snacks has the least orders?

**Groups 4, 5 and 6**
Task: Conduct a survey among group members about their favourite books to read from the list given. Record their answers in the table. Then answer the questions that follow.

<table>
<thead>
<tr>
<th>Kinds of Books</th>
<th>Tally</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science Books</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fantasy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Answer the following questions:
1. How many pupils enjoy reading history and geography?
2. Do the pupils prefer sports or fantasy book?
3. Which type of book is the most popular?
Post the outputs of each group and discuss their tables and answers. Then groups 1, 2, and 3 and groups 4, 5 and 6 will form 2 big groups. The two groups will organize a table containing all their surveys as their final output.

5. **Summarizing the Concept**
   
   **Ask:**
   
   How do we organize the information given?
   
   We organize the information or data using table.
   
   Why is there a need to organize the information in a table?
   
   So that it will be easier to see, analyze and interpret.

6. **Applying to New and Other Situations**

   Group the class into 4. Let them do Activity 1 and 2. Let them create 3 – 5 questions based on the table. Afterwards, call each group to share 1 or 2 questions they created. Let other groups answer their questions.

   **Answer Key: Activity 2**

<table>
<thead>
<tr>
<th>Animals</th>
<th>Tally</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow</td>
<td>I</td>
<td>1</td>
</tr>
<tr>
<td>Carabao</td>
<td>II</td>
<td>2</td>
</tr>
<tr>
<td>Pig</td>
<td>III</td>
<td>3</td>
</tr>
<tr>
<td>Goat</td>
<td>IIII</td>
<td>4</td>
</tr>
<tr>
<td>Horse</td>
<td>II</td>
<td>2</td>
</tr>
<tr>
<td>Chicken</td>
<td>III - II</td>
<td>7</td>
</tr>
<tr>
<td>Duck</td>
<td>III</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>22</strong></td>
</tr>
</tbody>
</table>

C. **Evaluation**

   Let the pupils do Activity 3 in the LM.

   **Answer Key:**

<table>
<thead>
<tr>
<th>Color</th>
<th>Tally</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>IIII - IIII</td>
<td>9</td>
</tr>
<tr>
<td>Red</td>
<td>IIII - III</td>
<td>8</td>
</tr>
<tr>
<td>Pink</td>
<td>IIII - I</td>
<td>6</td>
</tr>
<tr>
<td>Yellow</td>
<td>III</td>
<td>4</td>
</tr>
<tr>
<td>White</td>
<td>III</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

   **B. Questions (Possible answers)**
   
   1. What is the favorite color of Grade 3 - Ilang-Ilang?
   2. What is the least liked color?
D. Home Activity
Let pupils conduct an interview among their family members about their favorite food. Ask them to organize their data using a table. Create two problems based on their table.

Lesson 85 Organizing and Presenting Data in Tables and Bar Graphs

Week 7

Objectives
1. Organize data in tabular form and present this into a vertical and horizontal and vertical graph.
2. Construct a bar graph

Value Focus
Fairness and sportsmanship

Prerequisite Skills
Organizing data using tabular form, addition, subtraction and skip counting

Materials
Chart, flash cards

Instructional Procedures
A. Preliminary Activities

1. Drill
Flash cards, one at a time. Let the pupils give the answer orally.

1. What is 134 increased by 35?
2. What is 98 more than 122?
3. Deduct 93 from 380.
4. One number is 10 more than the other. The sum is 45. What are the numbers?
5. What is 435 decreased by 85?

2. Review
Look at the given table and answer the questions.

A monkey in the forest loves to eat bananas.
How many bananas did the monkey eat each week?
How many bananas were eaten by the monkey in 5 weeks?
Which week did the monkey eat the least numbers of bananas?
Which week did the monkey eat the most numbers of bananas?

<table>
<thead>
<tr>
<th>Week</th>
<th>Bananas eaten by the monkey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

3. Motivation
Ask the pupil to get a piece of paper from the box. The pupil will act out a specific movement of the sports written in that piece of paper.

Then another pupil will be called to identify the sports being demonstrated.
(Soccer, basketball, volleyball, gymnastics, table tennis)

Ask: If you will be asked to participate in the school sports festival, which among the list of sports would you like to play? Why?

As a member of any team, what should you do to win?
Can you give the characteristics of a good player?

B. Developmental Activities
1. Presenting the Lesson

Story Telling

Mrs. Gonzales conducted an interview among her grade 3 pupils about their favorite sports. She asked her pupils to write their favorite sports.

Ask: Do you have any idea about the sports listed by her pupils? Let us find out.
Present the table of data.

<table>
<thead>
<tr>
<th>Sports</th>
<th>Number of Pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basketball</td>
<td>15</td>
</tr>
<tr>
<td>Badminton</td>
<td>10</td>
</tr>
<tr>
<td>Volleyball</td>
<td>6</td>
</tr>
<tr>
<td>Baseball</td>
<td>5</td>
</tr>
<tr>
<td>Table tennis</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
</tr>
</tbody>
</table>

Ask:
Which sport is most preferred by the pupils to play?
Which sport is least preferred by the pupils?
How many pupils were interviewed?
How is the data presented?
(The data was organized in a table making it easier to read and interpret.)

Say: There is another way of presenting the data given. We can present the data using a bar graph.
Ask: Do you know how to make a bar graph? Elicit pupils’ answer.
Guide the pupils to present the data /information in a bar graph by following the steps.
1. Make the horizontal and vertical lines/axis. Show how to draw each line.
2. Write the appropriate labels in the horizontal and vertical axis. Show where to write the labels and how to write them.
3. Make the appropriate scale in the vertical axis. Write the different categories in the horizontal axis. Show how to make the intervals, when to use by 1s, by 2s, by 5s and by 10s.
4. Draw the bar for each category based on the given data. Show where to start and where it should end.
5. Write a good title for the bar graph. Ask: What is a good title for the bar graph? Let them write the title in its proper place.

The pupils should be able to construct a bar graph similar to the one below.
Let them study the bar graph they have constructed.

Ask:
- What is the graph about? (favorite sports of Grade 3 pupils)
- How many categories are in this graph?
- What are the categories? How are they labelled?
- What are written on the left side of the graph? (numerical values or descriptions of things being compared)
- What is the range of values on the vertical scale? (0-20)
- What intervals are used?
- What can you say about the number scale used? Is it exact or just an estimate?
  Explain your answer
- What do you call this kind of bar graph? (vertical bar graph)
- In vertical graph, what facts are listed in vertical axis? horizontal axis?
  - What kind of information does the bar graph provide us? (The bar graph provides a visual display for comparing quantities)
  - What does this graph show? (The bar graph shows that 15 pupils like basketball, 10 badminton, 6 volley ball, 5 baseball and 4 table tennis)
Say: There is another way in presenting the data. It can also be presented using horizontal bar graph. Look at the graph.

![Favorite Sports of Grade 3 Pupils](image)

Ask:
- Along what side or axis is the number scale? (below / horizontal)
- What is labeled at left side? (name of sports)
- Each space represents what? (Each space / interval represents 5 pupils)
- How many pupils choose basketball?
- How many pupils choose in each listed sport?

Can you see now the differences between horizontal and vertical bar graph? What are their differences?

Did you observe changes in the given information?

Show another example:

The school principal conducted a survey of pupils’ activity after school hours. The table below shows the result.

<table>
<thead>
<tr>
<th>Activities</th>
<th>Number of Pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Play sports</td>
<td>25</td>
</tr>
<tr>
<td>Play computer/ cell phone games</td>
<td>33</td>
</tr>
<tr>
<td>Do house chores</td>
<td>39</td>
</tr>
<tr>
<td>Watch TV</td>
<td>42</td>
</tr>
<tr>
<td>Read books</td>
<td>23</td>
</tr>
</tbody>
</table>

Can you present the information using a bar graph?
Guide the pupils in using the steps below.
Steps in making a bar graph:
1. Draw horizontal and vertical axis
2. Identify the greatest number.
   What is the greatest number from the given data?
   Then ask the pupil to draw a scale from 0 to 45?
   Ask them to think of the space/interval in between. Relate interval using skip counting.
   Guide them that the space/interval should be 10 so that it would be easy for them to plot the graph
3. Estimate the length of the bar to be drawn for the number of pupils.
4. Label the axis and write a title of the graph.

What kind of bar graph do we have now?
What are the things to remember in constructing a bar graph?

2. Performing the Activity
Discuss and brainstorm the favorite fruits of pupils.

a. List the fruits on the board as pupils suggest them. For example:
   • banana
   • santol
   • guava
   • mango
   • guyabano

b. After listing many favorite fruits, choose five of the most popular.
c. Tell students to vote on these to determine the class favorites. If there are 30 or more pupils in the class, they should vote only
once otherwise they could vote twice. Make a tally for each fruit and total them.

<table>
<thead>
<tr>
<th>Fruits</th>
<th>Tally</th>
<th>Total Number of Pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td>banana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>santol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>guava</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mango</td>
<td></td>
<td></td>
</tr>
<tr>
<td>guyabano</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

d. Group the class into 5. Let 2 groups construct a vertical bar graph and 3 groups to make a horizontal bar graph. Let them be guided by the following questions:

- What information should be included on the graph?
- What is a possible title for the graph?
- Where should the types of fruits be placed on the graph?
- Where should the number of pupils be placed?
- What intervals could be used for the graph? Why?

Let pupils answer some questions based on the constructed graph.
Possible Questions:
How many categories are in the graph?
Which fruit had the most votes?
Which fruit had the least votes?
How many pupils voted for bananas?
How many pupils voted for grapes?
Which two fruits had the same number of votes?
Let them also create 1 – 2 questions.

Call the groups to present their output.

3. Processing the Activity
What are the things that should be included in constructing a bar graph?
What kinds of bar graph did we construct?
What is the difference between the two graphs?
Why is it important to label the graph properly?
What information does a bar graph provide us?
4. **Reinforcing the Concept**

A. **Pair Activity**

Ask the pupils to work with partners. Let them do Activity 1 in the LM. Let them construct a horizontal and vertical bar graph and create three questions using the given data.

*Questions:*
1. What is the least number of books borrowed?
2. How many cartoon books were read that day?
3. What is the total number of books borrowed on Tuesday?

Have the partners compare their graph to that of another pair. Let them exchange their questions and let them answer the questions created by the other pair.

Circulate to observe and help pupils form questions as necessary. Afterwards, call a pair to share their output and ask the class a question about their work. The pair/pupil who answered correctly, reads one of his/her group’s questions and calls on another pair. Continue this questioning and answering procedure for 4-5 times.

B. **Group Activity**

Group the class into 4 groups. Distribute Activity Card for each group.

Groups 1 and 2
Conduct a survey among your group members about their favorite colors.

Groups 3 and 4
Conduct a survey among your group members about their favorite subject.

Each group should organize the data into table and bar graph. Create also 3 questions about the graph.

Groups 1 and 3 will make a vertical bar graph and groups 2 and 4 will make a horizontal bar graph.

The group leader /representative will present their work. Answer also some of the questions they made.

5. **Summarizing the Concept**

Ask:
How can we organize the available data/information?
- We can organize data using tables and bar graphs.
What are the different bar graphs that we organized?
- Horizontal and vertical bar graphs

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What is the difference between the two graphs?

What are the things that should be observed in making a bar graph?
  Draw the horizontal and vertical axis.
  Write the appropriate labels in the horizontal and vertical axis.
  Make the appropriate scale/interval in the vertical axis.
  Write the different categories.
  Draw the bar for each category based on the given data.
  Write a good title for the bar graph.

6. **Applying to New and Other Situations**

Do Activity 2 in the LM. Let them construct a horizontal or vertical bar graph using the data. Remind them of the steps in constructing a bar graph.
(Answers vary)

C. **Evaluation**

Do Activity 3 in the LM individually.

Answer Key:

<table>
<thead>
<tr>
<th>Group</th>
<th>Total Number of Bottles Collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>47</td>
</tr>
<tr>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>3</td>
<td>42</td>
</tr>
</tbody>
</table>

![Bar Graph]

<table>
<thead>
<tr>
<th>Number of Bottles Collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
</tr>
<tr>
<td>45</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>35</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>25</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of bottles collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

400
D. **Home Activity**

Do Activity 4 in the LM.

**Answer Key:**

<table>
<thead>
<tr>
<th>Name of Toys</th>
<th>Tally</th>
<th>Total Number of Toys Sold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>⌂ ⌂ ⌂ - ⌂ ⌂ ⌂ - ⌂</td>
<td>12</td>
</tr>
<tr>
<td>Ball</td>
<td>⌂ ⌂ ⌂ - ⌂ ⌂ ⌂ - ⌂ -</td>
<td>13</td>
</tr>
<tr>
<td>Car</td>
<td>⌂ ⌂ ⌂ - ⌂ ⌂ ⌂</td>
<td>9</td>
</tr>
<tr>
<td>Yoyo</td>
<td>⌂ ⌂ ⌂ - ⌂ ⌂ ⌂</td>
<td>5</td>
</tr>
<tr>
<td>Marble</td>
<td>⌂ ⌂ ⌂ - ⌂ ⌂ ⌂</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>48</strong></td>
</tr>
</tbody>
</table>

---

**Lesson 86  Interpreting Data in a Bar Graph**

**Weeks 8 & 9**

**Objectives**

1. Interpret data presented in different kinds of bar graph
2. Solve routine and non-routine problems using data presented in a single bar graph
3. Draw inferences based on data presented in a single bar graph
Prerequisite Skills
Organizing data in tabular form, addition and subtraction, skip counting, interval and number line

Materials
Charts, flash cards

Instructional Procedures

A. Preliminary Activities

1. Drill
The teacher will flash cards, one at a time. Pupils give the answer mentally.
   1. Find twice the sum of 10 and 5?
   2. What is 240 more than 22?
   3. Deduct 150 from 380.
   4. What is the product of 12 and 50?
   5. What is 335 decreased by 135?

2. Review
Present a number line on the board.
Call a pupil one at a time to answer the activity below

Give the values of each point.
Do the following:

Locate point 3 and mark it M.
Locate point 11 and mark it H

Point A = ____ Point T = ____

How did you get the answer?
What is the interval between numbers?

3. Motivation
Ask: How do you go to school? How long does it take you to reach the school if you walk? If you take a tricycle, bus or jeepney?
Write the pupils’ responses on the board.
Write down the common means of transportation on the board.
B. Developmental Activities

1. Presenting the Lesson
   A. Present a bar graph. Let pupils study the bar graph.

   ![Bar Graph]

   Ask some questions about the graph:
   1) What does this bar graph show? ______________________
   2) What information is in the horizontal axis? vertical axis?
   3) Which way /means of coming to school is used the most? ______
   4) Which way/means of coming to school is the least used?
   5) How many pupils ride a bus to school? ___________________
   6) How many pupils walk to school? ___________________
   7) How many bus riders and jeep riders are there? ____________?
   8) How many more pupils come to school by walking than by tricycle? ____
   9) How many fewer pupils come to school by bus than by jeep? _____
   10) How many pupils are in this class? ___________________
   11) Why do most of you come to school by walking instead of by tricycle?
       (Possible answer: to save money)
   12) What did you do with the money that you save?
   13) How would changes in the weather possibly change the data in the graph?
   14) What other factors might change your means of coming to school? Would it affect the data on the graph?
B. Present another bar graph. Say: Let’s have another example. Look at the bar graph.

![Bar Graph of August Weather](image)

Ask some questions about the graph:
1) What does this bar graph show? ______________________
2) Which type of weather occurred most often? ________________
3) Which type of weather occurred the least? ________________
4) How many partly cloudy days were there in August? ________________
5) How many sunny days were there? ________________
6) How many days were there with no rains? ________________
7) How many more rainy days than sunny days were there? ________________
8) How many days were partly cloudy than the cloudy days? ________________
9) How many days are in August? ___
10) Does this graph show the same number of days? ___
11) How do you know? ______________________
12) Why do you think the month of August has more rainy days than sunny days? ________________
13) Would the information be useful to the farmers? Why? ________________

Ask: What do you do to interpret the data and information in the graph?
Does the graph provide us meaningful information?
2. Performing the Activity

A. Show the graph below to the pupils. Ask questions to help pupils analyze and interpret the graph.

![Graph showing the number of kaing harvested from 2009 to 2013.]

1) How many kaing of lanzones were harvested in 2011?
2) How many more kaing of lanzones were harvested in 2010 than 2011?
3) In which year was the greatest harvest?
4) What was the difference between the harvest in 2009-2013?
5) In 2016, do you think the harvest of Mang Jose will be increasing or decreasing? Why?
6) If it is increasing, by how many will be the increase? If decreasing, it will decrease by how many?
7) What do you think are the factors that might affect the increase or decrease of the harvest? Explain your answer.

B. Group Activity

Group the class into 4 groups. Provide each group with activity sheet.
Direction: Study the graph. Create 5 questions from the given graph.
3. **Processing the Activity**
   How did you find the activity?
   What did you do to interpret the data in the graph?
   How did you construct your questions?
   What strategies did you do to construct questions? Is it easy to construct questions about the graph? Why?

4. **Reinforcing the Concept**
   Do Activities 1 - 3 in the LM.
   Answer Key:
   Activity 1: 1) Rabbits  2) Dogs  3) 15  4) 9  5) 5  6) dog  7) 45  8) the interval is 2  9) A dog is a good guard and is considered man’s best friend  10) Depends on the answers of the pupils
Activity 2: 1) Favorite subject of Grade 3 Pupils  2) Araling Panlipunan
3) 10  4) MAPEH  5) 7  6) 2
7) equally popular; the same number of pupils : 10
8) 5  9) 54  10) Depends on the answers
Activity 3: 1) 55  2) corn  3) chocolate  4) 40  5) nuts
6) 15  7) Yes  8) 20  9) 95  10) nuts and ube

15) Summarizing the Concept
How do we read and interpret a bar graph?

Identify the title of the bar graph. Read and analyze the information given in the horizontal and vertical axis.

16) Applying to New and Other Situations
Let the pupils answer Activity 4 and 5 in LM. Discuss pupils’ answers afterwards.
Answer Key:
Activity 4 (possible answers)
1) Ana spends 1 hour watching TV.
2) Ana spends 6 hours in school.
3) Ana spends 1 hour playing.
4) Ana spends 1 hour and 30 minutes in doing her homework.
5) Ana has more time doing her homework than watching TV.
Activity 5: 1) No  2) Yes  3) No  4) Yes  5) No  6) No  7) No  8) No  9) No  10) No  11) Yes  12) Yes  13) Yes  14) Yes  15) No  16) Depends on the pupils’ answers

C. Evaluation
Do Activity 6 in LM. Let them write their answers on the paper.
Answer Key: 1) 55  2) Kristala  3) 35  4) 20  5) Juan dela Cruz  6) Juan dela Cruz  7) 15  8) Pedro Penduko and Panday  9) Juan dela Cruz  10) 2

D. Home Activity
Create and display a birthday month graph to show all friends’ month birthdays. Construct 5 questions about the graph.
Lesson 87  Likelihood of an Event

Week 9 and 10

Objectives
1. Tell whether an event is sure, likely, equally likely, unlikely, and impossible to happen.
2. Describe events in real-life situations using the phrases “sure to happen,” “likely to happen,” “equally likely to happen,” “unlikely to happen,” and “impossible to happen.”

Value Focus
Industry in doing work

Prerequisite Concepts and Skills
Telling whether an event is likely, equally likely or unlikely to happen.

Materials
Worksheet, red and blue marbles, coins, pictures, red and black counters

Instructional Procedures
A. Preliminary Activities

1. Drill
   Let the pupils play “Who am I?” game.
   Example:
   What is the smallest odd number nearest to but less than 20?
   What is a two-digit even number for which the sum of the 2 digits is 5 and the difference is 3?

2. Review:
   Make a bar graph using the data.

<table>
<thead>
<tr>
<th>Santan</th>
<th>Rose</th>
<th>Daisy</th>
<th>Sampaguita</th>
<th>Orchid</th>
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</thead>
<tbody>
<tr>
<td>10</td>
<td>25</td>
<td>20</td>
<td>5</td>
<td>15</td>
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3. Motivation
   Say: Let’s toss a coin. Raise your right hand if you are for the tail and left if you are for head.
   Ask: If you choose a tail or a head, will you be sure that your choices will come true? Why?
B. Developmental Activities

1. Presenting the Lesson

Show a box with 6 blue marbles inside it. Let them count the number of marbles.

Ask: What object will I pick from the box? Will I be sure that every time I pick an object it will be a marble? Why? (Marble will be picked. This is certain or sure because all the objects inside the box are marbles.)

Put one pingpong ball on the box. Let them count the number of marbles and pingpong balls.

Ask: Do you think I will always pick a marble now? Will I be sure that every time I pick it will be a marble? Why? What do you think will be my chance of getting a marble, will it be most likely or sure to happen? Why? (Most likely to be picked because there are 6 marbles and only one pingpong ball.)

Ask: What do you think is my chance of getting a jackstone ball? Why? (Impossible to happen because there is no jackstone in the box)

What about my chance of getting a pingpong ball, will it be impossible, unlikely, most likely or sure to happen? Why? (Unlikely to be picked because there is only one pingpong ball and 6 marbles).

Put 5 more pingpong balls in the box. Ask the pupils to count the pingpong balls and the marbles inside the box.

Ask: What is the likelihood that I will get a pingpong ball? Marble? Why? (Equally likely to be picked because there are the same number of pingpong balls and marbles inside the box).

Say: Let us make a number line to show the different chances of an event to happen.

Ask: What do you think does zero represents? How about 1? How about ½? How about greater than zero but less than ½?
How about greater than ½ but less than 1?

2. Performing the Activities
   a. Show some pictures. Ask: What event/s is/are certain to happen to you today? Why?

   Some additional questions to be asked for each illustration:
   What do you usually do during recess time?
   Do you always do your homework? Why?
   What time do you usually sleep at night? Why do you need to have enough sleep and rest?

   b. Group Activity
   Divide the class into groups of fives. Provide each group with the following events/situations written in strips of cartolina or card board. Say: What do you think is the chances of the following event or situation to happen the next day, will it be impossible, unlikely, equally likely, most likely or sure to happen? Why? Let them write their answers on their answer sheet or paper.

   1. Tomorrow will be a sunny day.
   2. You will all eat sandwich during lunchtime.
   3. You will have a periodic test.
   4. It will rain.
   5. Everyone of you will play badminton.
   6. All of you will go to the market.

3. Processing the Activities
   Ask:
   What events or situations in our activities are:
   - sure to happen? Why?
   - impossible to happen? Why?
   - unlikely to happen? Why?
   - equally likely to happen? Why?
   - most likely to happen? Why?
   When do we say that an event is:
   - sure to happen?
4. **Reinforcing the Concept**

a. **Group Activity: Milling Around.** Say: Answer Activity 1 in your LM by going around the room for 5 minutes and let your classmates answer the given event.

   **Answer Key:**
   - Possible answers: Impossible – Climbing Mt. Pinatubo; Flying to the moon
   - Other chances depends on the pupils answer.

b. **Working in Triads**

   Ask pupils to complete the table.

   List down events that are sure, most likely, equally likely, unlikely and impossible to happen to them.

<table>
<thead>
<tr>
<th>Impossible to happen (Not a chance this will happen)</th>
<th>Unlikely (Could happen, Probably won’t)</th>
<th>Equally likely (Even Chance)</th>
<th>Most Likely (Could happen)</th>
<th>Sure (Certain/Absolutely will happen)</th>
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   c. For additional activity, let pupils answer Activity 2 individually.
   - Discuss their answers afterwards.
   - **Answer Key:** 1) most likely 2) equally likely 3) equally likely 4) most likely 5) impossible 6) most likely 7) unlikely 8) unlikely 9) impossible 10) most likely

5. **Summarizing the Lesson**

   Say: The chance that something will happen - how likely it is that some event will happen is called probability.

   Ask: What are the different chances that an event will happen? When can you tell whether an event will happen? You can tell whether the event is most likely to happen, equally to happen or unlikely to happen based on given facts.
6. Applying to New and Other Situations
Let pupils work in pairs. Let them answer Activities 3 – 5. Discuss one activity at a time.

Answer Key:

Activity 3
1) most likely  
2) equally likely  
3) unlikely  
4) impossible  
5) sure
6) equally likely  
7) impossible  
8) most likely  
9) unlikely  
10) most likely

Activity 4
A. 1) equally likely  
2) equally likely  
3) equally likely  
4) impossible  
5) impossible
B. 1) B, all counters are red  
2) D, almost all counters are red  
3) A, there are as many red as black counters  
4) C or E, because the black counters outnumber the red counters  
5) F, all the counters are black

Activity 5
1) equally likely  
2) equally likely  
3) equally likely  
4) equally likely  
5) impossible
6) unlikely  
7) equally likely  
8) impossible  
9) unlikely  
10) equally likely

3. Evaluation
Let pupils answer Activity 6 individually.

Activity 6-A Depends on the pupils answer

4. Home Activity
Let pupils answer Activity 7 in their notebook.