

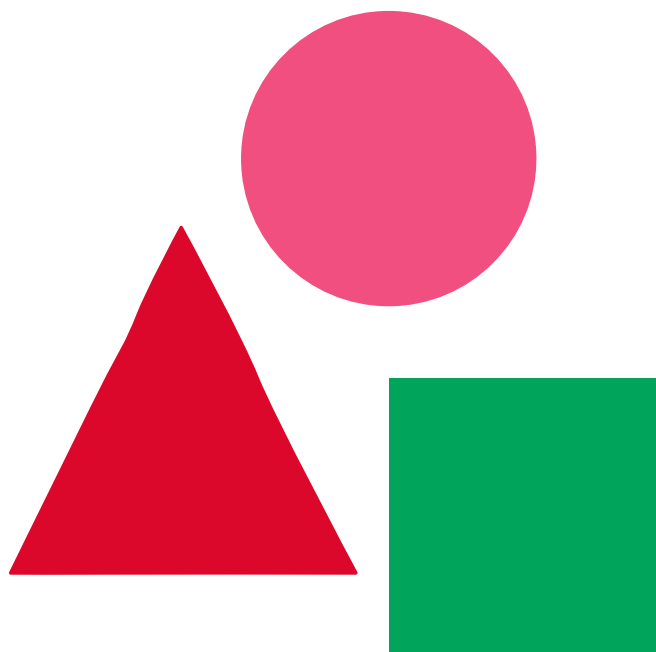


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MATHEMATICS

TERM 2

**Structured Pedagogy
Lesson Guides**



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Mathematics – Grade 2
Structured Pedagogy
Term 2
First Edition, 2026

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Mathematics

Term 2

Term 2
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Term 2
Lesson 1:

Measurement and Geometry

Measure and compare lengths of objects, in meters (m) or centimeters (cm), and distance in meters, using appropriate measuring tools.

I. Learning Objectives

At the end of the lesson, the learners must be able to:

1. measure and compare the length and distance of objects in meters or centimeters, using appropriate measuring tools.

II. Development of the Lesson

A. Motivation

Play the "I Spy the Size" game with the learners.

- Think of one object that you can see in the classroom. For example, the object is a table. Compare the object to something in the classroom.
- Say "I spy something bigger than a chair."
- Ask the learners to guess what the object is.
- After the learners have guessed the object, measure it using a ruler.
- Ask the learners to say the length of the object.
- Take note of the objects and their lengths.
- Have the learners try playing the "I Spy the Size" game one at a time.
- Before ending the game, ask the learners a few questions.

Sample questions:

What was the shortest object?
What was the longest object?
What object measured [insert measurement]?

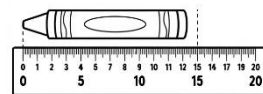
- Repeat the activity as needed.

B. Discussion

1. Explain that a **standard unit** is a fixed, agreed-upon quantity used for measuring, so that everyone gets the same result when measuring the same object (e.g., a centimeter is always the same size, no matter who is measuring).
2. Introduce the common tools used to measure length and distance: **ruler** (for short lengths), **meter stick** (for longer lengths), and **tape measure** (for lengths and distances, including curved or uneven surfaces).
3. Present the step-by-step procedure for measuring the length of an object,

using a 15 cm crayon measured with a ruler as the example:

- Step 1: Place the object flat next to the ruler.
- Step 2: Align one end of the object exactly with the **0 mark** on the ruler.



- Step 3: Look at where the other end of the object lines up with the numbers on the ruler.
 - Step 4: Read that number - this is the length of the object: 15 cm.
4. Present the step-by-step procedure for measuring a distance, using the distance from the classroom door to the teacher's table (measured with a tape measure) as the example:
 - Step 1: Place one end of the tape measure at the starting point (the door).
 - Step 2: Extend the tape measure in a straight line until it reaches the ending point (the table).
 - Step 3: Make sure the tape measure is pulled straight and flat, not sagging or bent.
 - Step 4: Read the number at the ending point — this is the distance: for example, 4 meters.
 5. Recall the relationship between the two units: **1 meter = 100 centimeters**. Explain that when a measurement is not an exact number of meters, we write it as meters plus the remaining centimeters for example, a measurement of 2 meters and 30 more centimeters is written as 2 m 30 cm.
 6. Present the step-by-step procedure for comparing two lengths or distances, using "3 m 40 cm" and "3 m 65 cm" as the example:
 - Step 1: Compare the meters first. If the meters are different, the measurement with the bigger number of meters is longer or farther.
 - Step 2: If the meters are the same (as in this example, both are 3 m), compare the centimeters.
 - Step 3: The measurement with the bigger number of centimeters is longer: 65 cm is greater than 40 cm, so 3 m 65 cm is longer than 3 m 40 cm.
 7. Model 1–2 more comparison examples, including one where the meters are

different (e.g., 5 m vs. 4 m 90 cm — even though 90 cm looks like a big number, 5 m is still longer, since whole meters are compared first).

C. Practice

Play the "Paper Airplane" game with the learners.

- Group the learners into teams.
- Give each team a piece of paper.
- Ask each team to make a paper airplane.
- Draw a starting line on one end of the classroom.
- Have each team throw the paper airplane 3 times. Ask the learners to measure the distance of the airplane from the starting line and record the farthest throw of each team.
- Before ending the game, ask the learners a few questions.

Sample questions:

Which airplane travelled the farthest?
Which airplane travelled the shortest?
What airplane travelled [insert measurement]?

- Repeat the activity as needed.

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Can you measure and compare lengths and distances?

III. Homework

Ask the learners to look around their home or in school for objects that can be measured using a ruler. Have the learners write the name of the object in their notebook and its length in meters or centimeters. Ask the learners to list the objects from smallest to largest.

Term 2

Lesson 2:

Measurement and Geometry

Identify and use the appropriate unit (m or cm) to measure the length of an object and the distance between two locations.

I. Learning Objectives

At the end of the lesson, the learners must be able to:

1. identify and use the appropriate units of measurement for length and distance.

II. Development of the Lesson

A. Motivation

Play the "Measure This" activity with the learners.

- Prepare a set of items for the learners to measure.
- Ask the learners to measure them in both meters and centimeters. Have the learners fill in the table below.

Sample table:

Object	Centimeter	Meter

- Ask the learners what they noticed when measuring the objects.

Sample questions:

Which objects were easier to measure in centimeters?
Which objects were easier to measure in meters?

- Repeat the activity as needed.

B. Discussion

1. Introduce the idea of estimating.

Tell the learners: "Estimating means making a smart guess about how long or how far something is, without using a ruler or tape measure right away."

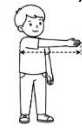
Ask: "Have you ever guessed how many steps it would take to reach the door? That's estimating!"

2. Explain that known objects can be used as reference points.

- When we don't have a measuring tool, we can compare an object to something we already know the size of.
- Example: "If you know a pencil is about 15 centimeters long, you can use it to estimate the length of your notebook by seeing how many pencils fit across it."

3. Explain that our own bodies can be used as measuring tools.

Tell the learners: "Our bodies are always with us, so they make great tools for estimating!"

Body Part	Approximate Measurement
Width of your pinky finger 	about 1 cm
Width of your palm (4 fingers together) 	about 10 cm
Arm stretched out (fingertips to opposite shoulder) 	about 1 meter
One big step (stride) 	about 1 meter

4. Demonstrate, then let learners try.
 - Show learners how to stretch one arm straight out to the side, and explain that the distance from their fingertips to their opposite shoulder is about 1 meter.
 - Have learners hold up their pinky finger and compare its width to a

centimeter ruler mark, to see that it's about 1 centimeter.

- Ask learners to estimate the length of their desk using their arm span, then check with a ruler or meter stick if available.

C. Practice

Play the "Measurement Scavenger Hunt" game with the learners.

- Ask the learners, "What is something that is best measured in meters?"
- The learners will identify objects in the classroom or school that are best measured in meters.
- After that, ask the learners, "What is something that is best measured in centimeters?"
- The learners will identify objects in the classroom or in the school that are best measured in centimeters.
- Repeat the activity as needed.

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Can you identify the appropriate unit of measurement for length and distance?

III. Homework

Ask the learners to look around their home or in school for objects that can be measured using a ruler or a meterstick. Have the learners write the name of the object in their notebooks and identify the unit of measurement most appropriate to measure it.

Term 2 Lesson 3:

Measurement and Geometry

Estimate length using meters or centimeters and distance using meters.

I. Learning Objectives

At the end of the lesson, the learners must be able to:

1. estimate the length and distance of objects.

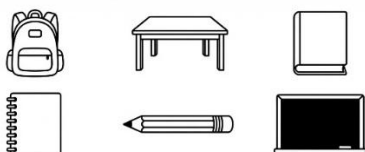
II. Development of the Lesson

A. Motivation

Play the "Guess and Check" game with the learners.

- Prepare a list of objects in the classroom that the learners can measure.

Sample objects:

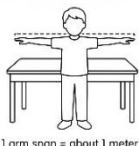


- Present 1 object to the learners at a time.
- Ask the learners to guess the length of the object.
- Afterward, ask the learners to find the actual measurement of the object.
- Have the learners compare their initial estimations and the actual measurements of the objects.
- Repeat the activity as needed.

B. Discussion

1. Explain to the learners what it means to estimate: "To estimate means to make a good guess about how long or how far something is, without measuring it exactly. We can make a good estimate by comparing the

- object to something we already know the length of."
2. Introduce **reference objects** — objects or body parts with a length we already know, which we can use to compare and estimate other lengths:
 - Your **pinky finger** is about **1 centimeter** wide.
 - Your **arm span** (from your fingertips to your opposite shoulder, arm stretched straight out to the side) is about **1 meter**.
 - Everyday objects with a known length can also be used as references (e.g., a pad of paper is about 1 foot long, a bond paper is about 30 centimeters long).
 3. Present the step-by-step procedure for estimating a length using a reference:
 - Step 1: Choose a reference object or body part with a length you already know.
 - Step 2: Compare the object you want to estimate against your reference, either by holding them side by side or by imagining how many times the reference would fit along the object.
 - Step 3: Count how many times the reference fits, or judge if the object is about the same size, longer, or shorter than the reference.
 - Step 4: State your estimate using the appropriate unit (centimeter, meter, etc.).
 4. Model this procedure with the class using a real example:
 - Show a pencil. Ask: "About how wide is your pinky finger? Now, how many pinky-finger-widths do you think fit along this pencil?"
 - Let 2–3 learners test it by placing their pinky finger along the pencil, counting as they go.
 - Guide them to conclude: "If your pinky finger fits about 15 times, then the pencil is about 15 centimeters long."
 5. Model a second example using arm span, such as estimating the length of the classroom door or a table: "If your arm span is about 1 meter, and it fits about 2 times across the table, then the table is about 2 meters long."



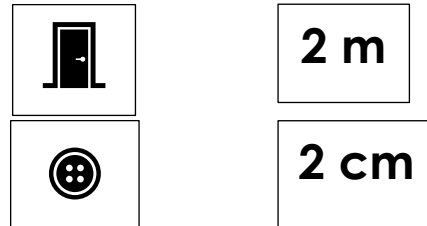
6. Emphasize that estimation gives a **close, reasonable answer**, not an exact one — and that using references makes our guesses more accurate than guessing with no comparison at all.

C. Practice

Play the "Measurement Card Scramble" game with the learners.

- Prepare flashcards with objects and their estimated measurements.

Sample flashcards:



- Shuffle the cards and lay them all on a flat surface.
- Ask the learners to find the pairs of cards.
- After a pair has been made, explain whether the pairing is correct or not.
- Repeat the activity as needed.

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Can you estimate the length and distance of objects?

III. Homework

Ask the learners to copy and answer the questions below. Have the learners encircle their answers.

Sample table:

length of a guitar 	
1 meter	1 centimeter
length of a paper clip 	
35 meters	35 centimeters
distance from the top of the door to the ground 	
2 meters	2 centimeters
length of a book 	
23 meters	23 centimeters
distance from one end of the board to the other 	
4.8 meters	4.8 centimeters

I. Learning Objectives

At the end of the lesson, the learners must be able to:

1. solve problems involving length and distance.

II. Development of the Lesson

A. Motivation

Play the "Longest Line" game with the learners.

- Divide the learners into groups.
- Mark a starting line and a finish line on the floor.
- Ask the learners to make a line out of items from their bags.
- The first team to make a line of objects from the starting line to the finish line wins the game.
- After, ask the learners a few questions.

Sample questions:

What is the distance between the start line and the end line?
Which object used has the longest length?
Which object used has the shortest length?

- Repeat the game as needed.

B. Discussion

1. Explain to the learners how to decide whether to add or subtract when solving a length or distance problem.
 - Use subtraction when something is taken away, cut off, or when one object is moving toward another (finding what remains)
 - Use addition when two lengths are combined, or when two objects are moving away from each other or measured from a shared starting point in opposite directions (finding the total).
2. Present the step-by-step procedure for solving a length/distance word problem, using Given, What is asked, Operation, Solution, and Final Answer:
 - Step 1 – Given: List the measurements stated in the problem.
 - Step 2 – What is asked: Identify exactly what the problem wants you to find.
 - Step 3 – Operation: Decide whether to add or subtract, based on the situation.
 - Step 4 – Solution: Write the number sentence and solve.

- Step 5 – Final Answer: State the answer with the correct unit (cm or m).

3. Model this procedure completely using one example: "Carl is 121 centimeters tall. After 1 year, he grew 17 centimeters more. What is Carl's height now?"

Solving a Length Problem

Given	What is asked	Operation	Solution	Final Answer
Carl's height = 121 cm. Carl grew 17 cm.	What is Carl's new height?	Addition (+) (cm)	$121 + 17 =$	Carl's new height is 138 cm.

C. Practice

Solve the following with the learners, using the 5-step process.

Sample problems:

Carl is 121 centimeters tall. After 1 year, he grew 17 centimeters more. What is Carl's height?
The grass is 40 centimeters tall. The gardener cut 32 centimeters off. How tall is the grass now?
Kim will visit her grandparents who live 178 meters away. She already walked 62 meters. How many meters does she still need to travel?
Maya lives 57 meters away from the school. Martin lives 96 meters away from the school. What is the distance between Maya and Martin's houses?

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Can you solve problems involving length and distance?
- How do we decide whether to add or subtract in a length or distance problem?

III. Homework

Ask the learners to copy and answer the word problems.

A candle 38 cm tall was lit. After a few hours, the candle was only 21 cm tall. How much of the candle has melted away?
Jessie and James are classmates in school. After school, they visited a café 46 m away. After eating, they went to Jessie's house 67 m away and played some games. Later, James went home, which was 35 m away. How far did James travel in total?

Jim made a toy car out of bottles, caps and sticks. He drew a start and finish line 100 m apart. His toy car only travelled half the distance. How many meters more does the toy car need to travel to reach the finish line?

Bamboo is the world's fastest-growing plant. It grows 91 centimeters in a day. The bamboo plant has been growing for 3 days already. How tall is the bamboo plant now?

Term 2

Lesson 5:

Numbers and Algebra

Illustrate subtraction of 2-digit by 1-digit on the number line and as an inverse of addition.

I. Learning Objectives

At the end of the lesson, the learners must be able to:

1. illustrate subtraction on the number line.

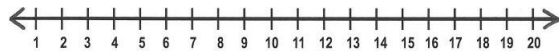
II. Development of the Lesson

A. Motivation

Play the "Number Line Race" game with the learners.

- Prepare a number line. Make sure that it is large enough for the learners to see the numbers.

Sample number line:

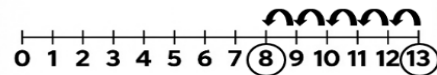


- Prepare a normal six-sided die.
- Prepare items that can be used as pieces or characters by the learners.
- To start the game, have the learners place their pieces or characters at the largest number possible.
- The learners take turns rolling the dice, and they move backward according to the number on the dice.
- The first learner to reach the opposite end of the number line or 0 wins.
- Repeat the game as needed.

B. Discussion

1. Recall the parts of a subtraction sentence, using $13 - 5 = 8$ as the example:
 - Minuend — the number we start with (13)
 - Subtrahend — the number being taken away (5)
 - Difference — the answer, what is left (8)
2. Present the step-by-step procedure for subtracting on a number line, using $13 - 5$:
 - Step 1: Find the minuend, 13, on the number line. This is your starting point.

- Step 2: Since we are subtracting, move backward (to the left) - this means we count down.
- Step 3: Make backward jumps equal to the subtrahend, 5 - jump back one number at a time: 13, 12, 11, 10, 9, 8 (5 jumps in all).



- Step 4: The number where your jumps end is the difference: 8.
- Step 5: Write the complete number sentence: $13 - 5 = 8$.

3. Explain that subtraction is the **inverse (opposite)** of addition — it "undoes" addition. Present the step-by-step procedure for showing this relationship, using the same example:

- Step 1: Start with a known addition fact: $8 + 5 = 13$.
- Step 2: Notice that the sum in addition (13) becomes the minuend in subtraction.
- Step 3: The two addends (8 and 5) become the subtrahend and the difference — whichever addend you subtract, the other addend is left as the answer: $13 - 5 = 8$, and $13 - 8 = 5$.
- Step 4: Check the subtraction number line answer from Step 2 against this fact family — since $13 - 5 = 8$ matches $8 + 5 = 13$, we know the number line answer is correct.

4. Point out that this connection gives us a way to check subtraction: if we're not sure our answer is right, we can add the difference and the subtrahend back together — if it equals the minuend, the subtraction is correct ($8 + 5 = 13$ ✓).

C. Practice

Play the "Floor Line" game with the learners.

- Prepare a big number line on the floor of the room. You may use

masking tape and sticky notes with numbers.

- Prepare equations for the learners to solve.

Sample equations:

$8 - 5 = \underline{\quad}$	$7 - 6 = \underline{\quad}$	$11 - 7 = \underline{\quad}$
$12 - 8 = \underline{\quad}$	$49 - 7 = \underline{\quad}$	$33 - 6 = \underline{\quad}$
$11 - 4 = \underline{\quad}$	$37 - 2 = \underline{\quad}$	$58 - 9 = \underline{\quad}$
$61 - 3 = \underline{\quad}$	$15 - 5 = \underline{\quad}$	$73 - 1 = \underline{\quad}$

- Assign an equation for the learner to solve and write it on the board. Have a learner start at the minuend position on the number line.
- Ask the learner to solve the equation by hopping to solve the sum of the equation.
- Repeat the activity until all the learners have solved at least 1 equation.

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Can you illustrate subtraction on the number line?

III. Homework

Ask the learners to answer the following equations in their notebooks. Have the learners draw a number line and count down to solve for the difference. You may include more equations that the learners may solve.

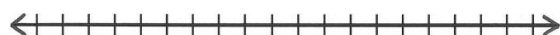
$$16 - 3 = \underline{\quad}$$



$$45 - 8 = \underline{\quad}$$



$$88 - 6 = \underline{\quad}$$



Term 2 Lesson 6:

Numbers and Algebra

Subtract numbers where both numbers are less than 100 with regrouping: (a) 2-digit minus 1-digit numbers, and (b) 2-digit minus 2-digit numbers.

I. Learning Objectives

At the end of the lesson, the learners must be able to:

1. subtract 2-digit minus 1-digit numbers with regrouping; and
2. subtract 2-digit minus 2-digit numbers with regrouping.

II. Development of the Lesson

A. Motivation

Play the "Math Hot Potato" game with the learners.

- Prepare equations for the learners to solve. Write each equation down on a piece of paper.

Sample equations:

$18 - 9 =$	$32 - 4 =$	$91 - 8 =$
$65 - 6 =$	$87 - 29 =$	$50 - 45 =$
$20 - 17 =$	$44 - 17 =$	$72 - 36 =$

- Fold the equations and put them in a box or in a container.
- Prepare a ball or an object that the learners can hold and pass to each other.
- Ask the learners to form a circle.
- Give one of the learners the ball.
- Play music and have the learners pass the ball until the music stops.

- The learner who has the ball when the music stops will get a paper from the container.
- The learner reads the equation on the paper and tries to solve it.
- If the learner answers it correctly, they get to stay in the circle. If not, they get removed from the circle.
- Then repeat the previous steps.
- The winner of the game is the last learner in the circle.
- Repeat the entire game as needed.

B. Discussion

1. Recall what regrouping means: "Regrouping means trading. When there are not enough ones to subtract, we trade 1 ten for 10 ones." Show it with a tens rod (or a bundle of 10 sticks) and 10 ones cubes, and let learners see that 1 ten and 10 ones are worth the same.
2. Show learners how to tell if regrouping is needed. Write two problems side by side and compare the ones digits:
 $62 - 21$: In the ones place, $2 - 1$ can be done. No regrouping is needed.
 $62 - 27$: In the ones place, $2 - 7$ cannot be done, because 2 is smaller than 7. We need to regroup.

3. Present the step-by-step procedure for subtracting with regrouping. Start with part (a), 2-digit minus 1-digit, using 43 - 8:
 - Step 1: Write the numbers in columns. Line up the ones under the ones. The 8 goes under the 3.
 - Step 2: Look at the ones. Can 3 - 8 be done? No, 3 is smaller than 8, so we must regroup.
 - Step 3: Take 1 ten from the tens place. The 4 tens become 3 tens. Add the 10 ones you traded to the 3 ones. Now there are 13 ones.
 - Step 4: Subtract the ones: $13 - 8 = 5$.
 - Step 5: Subtract the tens: 3 tens - 0 tens = 3 tens.
 - Step 6: Read the answer: 35.
 - Step 7: Check by adding: $35 + 8 = 43$
4. Model part (b), **2-digit minus 2-digit**, using 62 - 27 with the same steps:
 - Step 1: Write the numbers in columns: 62 on top, 27 below, tens under tens and ones under ones.
 - Step 2: Look at the ones. Can 2 - 7 be done? No, so we must regroup.
 - Step 3: Take 1 ten from the 6 tens. Now there are 5 tens. Add 10 ones to the 2 ones. Now there are 12 ones.
 - Step 4: Subtract the ones: $12 - 7 = 5$.
 - Step 5: Subtract the tens: $5 - 2 = 3$.
 - Step 6: Read the answer: **35**.
 - Step 7: Check by adding: $35 + 27 = 62$
5. Explain the special case when the ones digit of the minuend is 0, using 40 - 17. There are no ones to subtract from, so we must always regroup:
 - Step 1: Write the numbers in columns: 40 on top, 17 below.
 - Step 2: Look at the ones. Can 0 - 7 be done? No, so we must regroup.
 - Step 3: Take 1 ten from the 4 tens. Now there are 3 tens. The 0 ones become 10 ones.
 - Step 4: Subtract the ones: $10 - 7 = 3$.
 - Step 5: Subtract the tens: $3 - 1 = 2$.
 - Step 6: Read the answer: 23.
 - Step 7: Check by adding: $23 + 17 = 40$

Model one more with a 1-digit subtrahend: 30 - 6. Regroup to get 2 tens and 10 ones. Then $10 - 6 = 4$ and 2 tens are left, so the answer is 24.

6. Show the two parts side by side to point out the only difference: in part (a), there is nothing to subtract in the tens place (the tens digit stays as it is after regrouping). In part (b), subtract the tens digits too. The regrouping steps are exactly the same.
7. Remind learners of the common mistake: turning the problem around. In $62 - 27$, some learners think " $7 - 2 = 5$ " because it feels easier. Always subtract the bottom digit from the top digit. If the top digit is smaller, regroup instead of switching the numbers.

C. Practice

Play the game "Jeopardy" with the learners.

- Prepare the game board. You may use a manila paper as the game board. Stick the manila paper on the board.
- Prepare questions for each category and amount. Do not show the questions until the category and amount are chosen.

Sample Jeopardy game board: (Hide the Questions)

Easy	Medium	Hard
200pts. $\begin{array}{r} 7 \\ - 3 \\ \hline \end{array}$ Answer: 4	200pts. $\begin{array}{r} 49 \\ - 37 \\ \hline \end{array}$ Answer: 12	200pts. This is the process or skill of taking one number or amount away from another. Answer: Subtraction
400pts. $\begin{array}{r} 9 \\ - 2 \\ \hline \end{array}$ Answer: 7	400pts. $\begin{array}{r} 86 \\ - 23 \\ \hline \end{array}$ Answer: 63	400pts. This is the result after subtracting the subtrahend from the minuend. Answer: Difference
600pts. $\begin{array}{r} 18 \\ - 5 \\ \hline \end{array}$ Answer: 13	600pts. $\begin{array}{r} 96 \\ - 67 \\ \hline \end{array}$ Answer: 29	600pts. This is the number being taken away or subtracted from another number.

		Answer: Subtrahend
800pts. 34 - 3 Answer: 31	800pts. 70 - 49 Answer: 21	800pts. This is the number being diminished or reduced in subtraction. Answer: Minuend
1000pts. 59 - 40 Answer: 19	1000pts. 93 - 36 Answer: 57	1000pts. This is also known as borrowing in subtraction. Answer: Regrouping

- Divide the learners into teams.
- One learner from each team will be the representative for each round. The representative changes each round.
- The first team chooses a category and amount to answer.
- Read the question to the representatives of both teams.
- The representative of each team answers the question by raising their hand (whoever raises their hand first). Once acknowledged, they say their answer.

- If the answering team did not answer the question correctly, the other team can attempt to answer the question.
- The team that answered correctly gets the associated number of points and can choose the next category and amount to answer.
- After a category and amount have been chosen, mark the game board that it has already been used.
- Repeat the process until all the categories and amounts have been used.
- The team with the highest number of points wins.
- Repeat the game as needed.

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Can you subtract 2-digit minus 2-digit numbers with regrouping?

III. Homework

Ask the learners to copy and solve the following problems in their notebooks.

49 – 13 =
74 – 58 =
100 – 78 =
60 – 20 =
88 – 39 =

Term 1

Lesson 7:

Number and Algebra

Count by 2s, 5s, 10s, 20s, 50s, and 100s (not beyond 1 000).

I. Learning Objectives

At the end of the lesson, the learners must be able to:

1. solve subtraction problems with and without regrouping.

II. Development of the Lesson

A. Motivation

Solve picture subtraction problems with the learners.

- Prepare cutouts of an object. Prepare around 100 cutouts of this object. You may also opt to use the same object for all the problems.
- Prepare problems for the learners to solve.

Sample problems:

Abigail has a basket full of lemons. She used 23 lemons to make lemonade. If she had a total

of 61 lemons at the start, how many lemons does she have left?

Jackie has a lemon farm. She harvested 89 lemons. She gave 1 lemon to each of her 37 friends and family members. How many lemons does she have left?

Daniel will bake a lemon tart. He needs 36 lemons for the recipe. He only has 12 lemons. How many more lemons does he need?

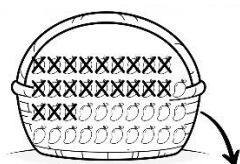
- Use the object cutouts to illustrate the subtraction.
- Ask the learners to solve the problems using the cutouts.

B. Discussion

1. Recall the 5-step process for solving a word problem:

- Given - the numbers or information in the problem (the minuend and the subtrahend)

- What is asked - what the problem wants you to find
 - Operation to be done - subtraction, since something is being taken away or compared
 - Solution - the number sentence and computation
 - Final Answer - the complete answer, with the correct label
2. Explain that a subtraction problem may not always be given in writing — it can also be given orally (spoken aloud by the teacher) or through pictures (shown as a drawing or photo). Present the step-by-step procedure for each case:
 - For an oral problem: listen carefully to the whole problem first, then repeat it in your own words or write down the numbers you hear before solving.
 - For a picture problem: study the picture to figure out the starting amount (minuend) and how many are taken away, crossed out, or missing (subtrahend), then write it as a subtraction number sentence before solving.
 3. Model solving a written problem, using: "There were 52 mangoes in a basket. Nanay sold 27 of them. How many mangoes are left?"
 - Step 1 – Given: minuend = 52 (starting amount); subtrahend = 27 (amount sold)
 - Step 2 – What is asked: the number of mangoes left
 - Step 3 – Operation: subtraction
 - Step 4 – Solution: $52 - 27 = 25$ (regroup: since 2 ones cannot subtract 7 ones, regroup 1 ten to make 12 ones; $12 - 7 = 5$ ones, then 4 tens - 2 tens = 2 tens)



$$52 - 27 = 25$$

- Step 5 – Final Answer: 25 mangoes are left.
4. Model a second example presented as a **picture problem** (no written sentence given) — show a drawing of 18 balloons, with 9 of them crossed out or popped, and guide the class

through identifying the minuend (18) and subtrahend (9) from the picture alone before solving: $18 - 9 = 9$.

5. Model a third example presented **orally** — read aloud without writing anything on the board first: "Jun had 45 marbles. He gave 16 to his friend. How many marbles does he have now?" Have learners listen, then write down what they heard (45 and 16) before solving: $45 - 16 = 29$ (with regrouping).
6. Remind learners that no matter how the problem is given — written, oral, or picture — the same 5-step process applies once the minuend and subtrahend are identified.

C. Practice

Solve subtraction problems with the learners.

Sample problems:

There are 64 birds in the forest. If 32 birds flew away, how many birds are left in the forest?
There are a total of 67 fish in the lake. A fisherman caught 18 fish. How many fish are left in the lake?
Paul has 54 mango trees. He collected 24 mangoes. He gave 10 mangoes to his daughter. How many mangoes does Paul have left?
In a graduating class with 100 students, all the students passed. How many students remain?

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Can you solve subtraction problems with and without regrouping?

III. Homework

Ask the learners to copy and answer the word problems in their notebooks.

The bakeshop has a total of 100 cookies. At the end of the day, they sold 59 cookies. How many cookies are left?
In a class of 35 students, there are 17 boys, and the rest are girls. How many girls are in the class?
Teacher Gelo has 75 worksheets. If he gives his 40 students a worksheet each, how many worksheets would be left?
There is a total of 78 residents in the barangay. After a few people left, there were 58 residents in the barangay. How many people left the barangay?

Term 2
Lesson 8:

Numbers and Algebra

Subtract numbers, where both numbers are less than 1000, with and without regrouping.

I. Learning Objectives

At the end of the lesson, the learners must be able to:

1. subtract numbers less than 1000, with and without regrouping.

II. Development of the Lesson

A. Motivation

Play the "Math Board Game" with the learners.

- Prepare the game board. Indicate the start and finish line on the board. Put some distance between the start and finish lines and divide it into cells. Make sure that the cells can fit the cutouts.

Dice Race game board:

FINISH
$514 - 451 =$
$847 - 309 =$
$900 - 694 =$
$603 - 248 =$
$421 - 369 =$
$127 - 89 =$
$826 - 27 =$
$580 - 329 =$
$279 - 106 =$
$871 - 637 =$
$490 - 269 =$
START

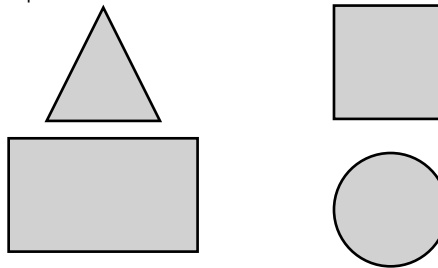
- Prepare the game dice. Use a normal 6-sided die.

Sample game dice:



- Prepare the characters or pieces. These are cutouts of simple shapes like squares, triangles, rectangles, circles, half-circles, and quarter-circles.

Sample cutouts:



- To start the game, divide the learners into teams. Assign each team a cutout.
- Place the cutouts at the start of the board. Two teams compete against each other on the board at a time.
- Each team will have one representative at a time. The representatives decide which team goes first.
- The representative of the first team rolls the die.
- After the die has been rolled, the representative moves their cutout up the game board according to the number rolled on the die. The cutout cannot go past the finish line.
- The representative answers the problem on the cell that their piece landed on. If the representative answers the problem correctly, they get to stay on that spot. If not, they go back to their previous spot.
- After the turn of the first team, the representative of the second team follows the previous steps.
- After both teams have taken their turns, the representative of each team changes.
- Repeat the steps until a team has reached the finish line. Congratulate the teams and have another pair of teams play the game.
- Repeat until all learners and teams have played.

B. Discussion

1. Explain to the learners how to subtract **without regrouping**. Present the step-by-step procedure using $578 - 245$ as the example:
 - Step 1: Write the numbers in vertical (column) form, lining up the digits by place value —

- ones under ones, tens under tens, hundreds under hundreds.
- Step 2: Subtract the ones place first: $8 - 5 = 3$.
 - Step 3: Subtract the tens place: $7 - 4 = 3$.
 - Step 4: Subtract the hundreds place: $5 - 2 = 3$.
 - Step 5: Read the final answer from left to right: 333.
2. Explain to the learners how to subtract **with regrouping**. Present the step-by-step procedure using $512 - 367$ as the example:
- Step 1: Write the numbers in column form, aligned by place value.
 - Step 2: Look at the ones place: $2 - 7$. Since 2 is smaller than 7, there are not enough ones to subtract, so we must regroup.
 - Step 3: Regroup 1 ten from the tens place into 10 ones. The 2 ones become 12 ones, and the tens digit decreases by 1.
 - Step 4: Subtract the ones place: $12 - 7 = 5$.
 - Step 5: Move to the tens place. Since we borrowed earlier, the tens digit is now 0 (originally 1, minus 1 borrowed). Subtracting $0 - 6$ is also not possible, so we must regroup again.
 - Step 6: Regroup 1 hundred from the hundreds place into 10 tens. The tens digit becomes 10, and the hundreds digit decreases by 1.
 - Step 7: Subtract the tens place: $10 - 6 = 4$.
 - Step 8: Subtract the hundreds place: $4 - 3 = 1$.
 - Step 9: Read the final answer: **145**.
3. Explain the special case where a digit in the minuend is **0**, using $604 - 258$ as the example:
- Step 1: Look at the ones place: $4 - 8$. Since 4 is smaller than 8, we need to regroup.
 - Step 2: Check the tens place to regroup from — but the tens digit is **0**, so there is nothing to borrow yet.
 - Step 3: Regroup 1 hundred from the hundreds place into 10 tens first. The hundreds digit decreases by 1 (from 6 to 5), and the tens digit becomes 10.
 - Step 4: Now regroup 1 ten from the tens place into 10 ones. The tens digit decreases by 1 (from

10 to 9), and the ones digit becomes 14.

- Step 5: Subtract the ones place: $14 - 8 = 6$.
 - Step 6: Subtract the tens place: $9 - 5 = 4$.
 - Step 7: Subtract the hundreds place: $5 - 2 = 3$.
 - Step 8: Read the final answer: **346**.
4. Point out that when the tens digit is 0, learners must regroup **twice in a row** — first from the hundreds place into the tens place, then from the tens place into the ones place — before they can subtract the ones.

C. Practice

1. Play the "Math Baseball" game with the learners.
- Group the learners into 2 teams.
 - Ask each team to think of 11 equations for the opposite team to solve. Do not let the learners on the opposite team see the equations of the other team.
 - Check the equations that each team created. Make sure that the equations subtract numbers up to 1000, and the minuend is bigger than the subtrahend.

Sample equations:

$789 - 126 =$	$407 - 159 =$	$620 - 227 =$
$500 - 216 =$	$857 - 208 =$	$416 - 187 =$
$615 - 322 =$	$735 - 543$	$537 - 224 =$

- Each team takes turns "pitching" their equations for the other team to answer. You may add a time limit for answering.
- If the opposite team was able to answer the equation, they get a point.
- If the opposite team failed to answer the equation correctly, the team that made the equation gets a point.
- After, the opposite team takes their turn and repeats the steps above.
- The first team to get to 10 points wins the game.
- Repeat the game as needed.

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Can you subtract numbers less than 1000?

III. Homework

Ask the learners to copy and answer the problems in their notebooks.

$417 - 89 =$	$513 - 308 =$
$540 - 137 =$	$720 - 428 =$
$901 - 567 =$	$800 - 679 =$
$434 - 289 =$	$216 - 107 =$
$614 - 355 =$	$1000 - 797 =$

Term 2

Numbers and Algebra

Lesson 9:

Solve 1- and 2-step problems involving subtraction where both numbers are less than 1000 (including problems involving money), with and without regrouping.

I. Learning Objectives

At the end of the lesson, the learners must be able to:

1. solve 1- and 2-step problems involving subtraction with numbers less than 1 000, with and without regrouping.

II. Development of the Lesson

A. Motivation

Play the "Math Hot Potato" game with the learners.

- Prepare equations for the learners to solve. Write each equation down on a piece of paper.

Sample equations:

$128 + 659 =$	$911 - 789 =$	$542 + 347 =$
$241 - 163 =$	$674 + 326 =$	$856 - 377 =$
$341 + 570 =$	$850 - 609 =$	$1000 - 748 =$

- Fold the equations and put them in a box or in a container.
- Prepare a ball or an object that the learners can hold and pass to each other.
- Ask the learners to form a circle.
- Give one of the learners the ball.
- Play music and have the learners pass the ball until the music stops.
- The learner who has the ball when the music stops will get a paper from the container.
- The learner reads the equation on the paper and tries to solve it.
- If the learner answers it correctly, they get to stay in the circle. If not, they get removed from the circle.
- Then repeat the previous steps.
- The winner of the game is the last learner in the circle.
- Repeat the entire game as needed.

B. Discussion

1. Recall the 5-step process for solving a word problem:
 - Given - the numbers or information stated in the problem
 - What is asked - what the problem wants you to find
 - Operation to be done - the operation needed (subtraction,

or subtraction combined with another operation)

- Solution - the number sentence and computation
 - Final Answer - the complete answer, with the correct label or unit
2. Explain to the learners how to solve 1- and 2-step problems involving subtraction.
 - Start by reading and understanding the problem.
 - Identify the numbers and information given.
 - Then think about how to solve the problem and write the final answer.
 3. Explain that a two-step problem needs two operations, one after the other, to reach the final answer. Present the step-by-step procedure using a money example: "Mira had ₱850. She bought a toy for ₱275 and a book for ₱180. How much money does she have left?"
 - Step 1 – Given: starting money = ₱850; cost of toy = ₱275; cost of book = ₱180
 - Step 2 – What is asked: the money Mira has left after both purchases
 - Step 3 – Operation: subtraction, done twice - once for each item bought (or the two costs can be added first, then subtracted once)
 - Step 4 – Solution:
 - Method A (subtract one at a time): $₱850 - ₱275 = ₱575$, then $₱575 - ₱180 = ₱395$
 - Method B (add costs first, then subtract): $₱275 + ₱180 = ₱455$, then $₱850 - ₱455 = ₱395$
 - Step 5 – Final Answer: Mira has ₱395 left.
 4. Remind the learners to check whether regrouping is needed at each step by comparing the digits being subtracted — if the top digit is

smaller than the bottom digit in any place value, they must regroup before subtracting.

C. Practice

Play the "Math Relay" game with the learners.

- Prepare problems for the learners to solve. Arrange the problems so that the sum or difference from the previous problem can be used as the first or second number in the next equation. Create 2 sets, 1 set of problems for each team. Do not include the number in the blanks.

Sample problems:

Set A	Set B
$751 + 164 = 915$	$945 - 687 = 258$
$915 - 449 = 466$	$258 + 501 = 759$
$281 + 466 = 747$	$759 - 660 = 99$
$747 - 369 = 378$	$218 + 99 = 317$
$378 - 289 = 89$	$589 + 317 = 906$
$607 + 89 = 696$	$906 - 457 = 449$
$151 + 696 = 847$	$967 - 449 = 518$
$1000 - 847 = 153$	$518 + 429 = 947$

- Place the problems on a desk in one corner of the room. Mark a starting area for the teams to form a line from.
- To start the game, divide the learners into 2 teams and have them form a line.
- When you say go, the first learner in each team goes to the desk. They answer the 1st problem on their team's paper. Once they have answered the problem, they go to the back of the line.
- Once the 1st learner has returned, the 2nd learner can go to the desk and answer the next question.

They will use the previous answer as an addend, minuend, or subtrahend in the next equation.

- This repeats until all the learners have taken their turn.
- The first team to solve the problems correctly wins the game.
- Repeat the game as needed.

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Can you solve 1- and 2-step problems involving subtraction with numbers less than 1000, with and without regrouping?

III. Homework

Ask the learners to copy and answer the problems in their notebooks.

The bakery has 740 pieces of bread. One customer bought 456 pieces of bread. The next day, another customer bought 197 pieces of bread. How many pieces of bread are left in the bakery?

The fisherman caught 224 fish. After a few more days of fishing, he caught 401 more fish. He sold 497 fish in the market. How many fish does the fisherman have left?

Julia has ₱ 750. She bought food ingredients worth ₱ 679. After cooking the food, she sold it for ₱ 800. How much money does she have now?

Marco is 165 cm tall, while Andrea is 139 cm tall. How much taller is Marco compared to Andrea? If Andrea grew 20 cm taller, what would be the difference in their heights?

Gelo has 427 oranges. He harvested 499 more oranges. He gave 648 oranges to his family and friends. How many oranges does he have left?

Term 2

Lesson 10:

Numbers and Algebra

Determine the next term/s in increasing or decreasing patterns, e.g., numbers, letters and rhythmic properties, visual elements in arts, and repetitions.

I. Learning Objectives

At the end of the lesson, the learners must be able to:

1. determine the next term/s in increasing or decreasing patterns.

II. Development of the Lesson

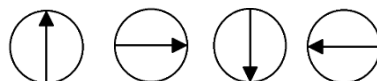
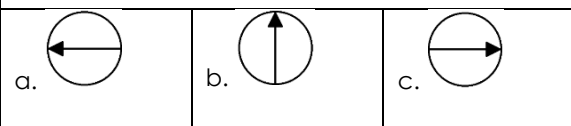
A. Motivation

Do the activity "What is Next?" with the learners.

- Prepare patterns for the learners to solve.

Sample patterns:

The circle rotates clockwise.



The letters increase by 2, and the numbers increase by 3.

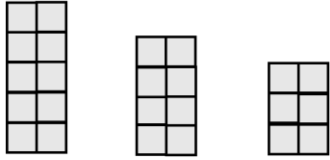
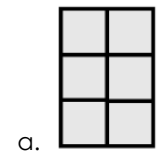
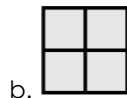
A3, C6, E9, G12

a. H15

b. I13

c. I15

The blocks decrease by 2 from the top.



The numbers decrease by 5, and the dots decrease by 1.

50....., 45.....,
40....., 35.....

a. 35..

b. 34..

c. 30..

- Ask the learners to identify the next figure in the sequence.
- Ask the learners what they noticed about the figures.
- After, reveal to the learners what the pattern is and what the correct answer is.
- Repeat the activity as needed.

B. Discussion

1. Explain to the learners what a pattern is: "A pattern is a sequence of things that follow a rule. Once we know the rule, we can guess what comes next."
2. Introduce the two types of patterns named in the lesson:
 - An **increasing pattern** is a sequence that grows or gets bigger, following a certain rule.
 - A **decreasing pattern** is a sequence that shrinks or gets smaller, following a certain rule.
3. Present the step-by-step procedure for finding the next term in a pattern, using an increasing number pattern as the example: 2, 4, 6, 8, ____

- Step 1: Look at how the sequence changes from one term to the next.
- Step 2: Find the rule: each number is 2 more than the one before it (+2).

Numbers **2** **4** **6** **8** **?**

- Step 3: Apply the rule to the last term to find the next one: $8 + 2 = 10$.
 - Step 4: State the next term: 10.
4. Model the same 4-step procedure for a decreasing number pattern: 20, 17, 14, 11, ____
- The rule is -3 each time, so the next term is $11 - 3 = 8$.
5. Explain that the same rule-finding process works for patterns that are not numbers. Model these examples:

- Letter pattern (increasing through the alphabet): A, C, E, G, ____ → the rule is "skip one letter," so the next term is I.

Letters **A** **C** **E** **G** **?**

- Repetition pattern: circle, square, circle, square, circle, ____ → the rule is "alternate between two shapes," so the next term is square.

Shapes     

- Rhythmic pattern (sound or movement): clap, clap, stomp, clap, clap, ____ → the rule is "repeat a group of three," so the next term is stomp.

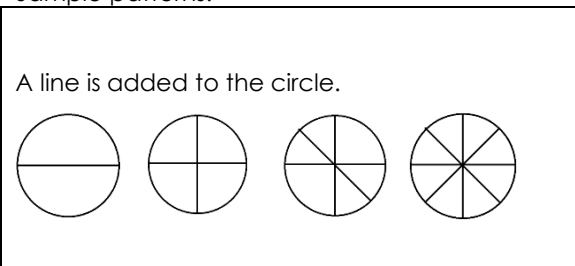
Rhythm       

- Visual arts pattern (colors or shapes in art): red, yellow, red, yellow, red, ____ → the rule is "alternate between two colors," so the next term is yellow.

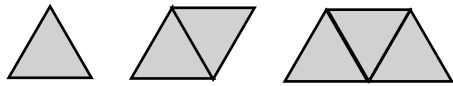
C. Practice

1. Do the activity "What is the Pattern?" with the learners.
 - Prepare patterns for the learners to solve.

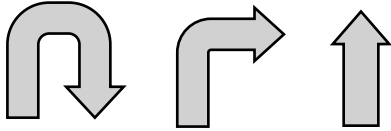
Sample patterns:



An inverted triangle is added on the right.



The number of turns of the arrow decreases by 1.



The letters increase by 1, and the numbers decrease by 10

A260, B250, C240,
D230, E220

- Ask the learners what they noticed about the figures.
- Ask the learners to identify the pattern of the figures.
- Afterward, reveal to the learners what the pattern is.
- Ask the learners to draw or write the next figure in the sequence.
- Repeat the activity as needed.

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Can you determine the next term/s in increasing or decreasing patterns?

III. Homework

Ask the learners to copy the problems below into their notebooks. Ask the learners to draw or write the next figure in the sequence.

3	6	9

Term 2 Lesson 11:

Numbers and Algebra Create increasing or decreasing patterns.

I. Learning Objectives

At the end of the lesson, the learners must be able to:

1. create increasing or decreasing patterns.

II. Development of the Lesson

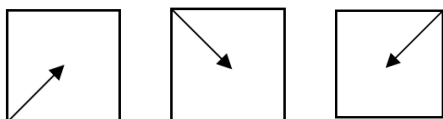
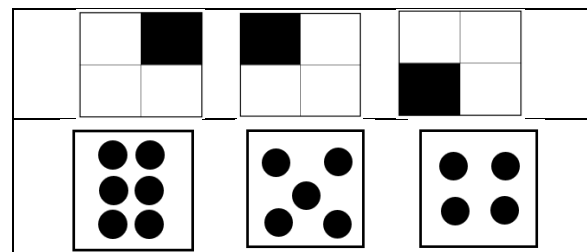
A. Motivation

Do the activity "Draw the Next Pattern" with the learners.

- Prepare patterns for the learners to solve.

Sample patterns:

1000A, 900B, 800C,
700D



- Ask the learners to draw or write the next figure in the sequence.
- Repeat the activity as needed.

B. Discussion

1. Recall that a pattern follows a rule, and that an increasing pattern gets bigger while a decreasing pattern gets smaller. Explain that today, learners will be the pattern makers: instead of finding the next term, they will create the whole pattern.
2. Present the step-by-step procedure for creating an increasing pattern, using the rule "start at 5, add 10 each time":

- Step 1: Choose a starting number: 5.
 - Step 2: Choose a rule that makes the numbers bigger: +10.
 - Step 3: Apply the rule to the starting number to get the next term: $5 + 10 = 15$.
 - Step 4: Keep applying the same rule to each new term: $15 + 10 = 25$, $25 + 10 = 35$, $35 + 10 = 45$.
 - Step 5: Write the pattern: 5, 15, 25, 35, 45.
 - Step 6: Check that the rule is consistent. Every term should be exactly 10 more than the one before it.
3. Present the step-by-step procedure for creating a decreasing pattern, using the rule "start at 100, subtract 20 each time":
- Step 1: Choose a starting number: 100.
 - Step 2: Choose a rule that makes the numbers smaller: -20.
 - Step 3: Apply the rule to the starting number: $100 - 20 = 80$.
 - Step 4: Keep applying the same rule: $80 - 20 = 60$, $60 - 20 = 40$, $40 - 20 = 20$.
 - Step 5: Write the pattern: 100, 80, 60, 40, 20.
 - Step 6: Check that every term is exactly 20 less than the one before it.
4. Show learners a non-example so they see why a consistent rule matters. Write 5, 15, 25, 40, 45 on the board and ask: "Is this an increasing pattern with a rule?" Guide them to notice that the jumps are +10, +10, +15, +5, so there is no single rule. Then correct it together to 5, 15, 25, 35, 45.
5. Explain that patterns can also be created with objects or drawings, not just numbers. Model one increasing example: draw 1 star, then 2 stars, then 3 stars, then 4 stars. The rule is "add 1 more star each time." Model one decreasing example: draw 5 circles, then 4 circles, then 3, then 2. The rule is "take away 1 circle each time."

Increasing



Decreasing



- 6. Invite the class to create one pattern together. Let learners suggest the starting number and the rule (for example, skip counting by 2s, 5s, 10s, 20s, 50s, or 100s, which they already know), then build the pattern term by term on the board. Have the class check each term against the rule.
- 7. Remind learners of the 3 things every pattern needs: a **starting point**, a **rule**, and **consistent** use of that rule for every term.

C. Practice

Do the activity "Follow the Rules" with the learners.

- Prepare a list of rules for the learners to follow.

Sample rules:

The number of sides of the shape increases by 1.
The numbers decrease by 7.
The letters in the alphabet increase by 3.
The cubes decrease by 1.
The figure rotates counterclockwise.
The figure flips up and down.

- Present 1 rule to the learners at a time.
- Ask the learners to create a sequence with 5 figures that follows the rule.
- For added challenge, you can use 2 rules at a time.
- Repeat the activity as needed.

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Can you create increasing or decreasing patterns?

III. Homework

Ask the learners to create their own sequence with 5 figures. Ask the learners to draw or write the five-term sequence in their notebooks. Have the learners explain the pattern below.

I. Learning Objectives

At the end of the lesson, the learners must be able to:

1. present data in a pictograph with a scale and vice versa.

II. Development of the Lesson

A. Motivation

Do the "Human Pictograph" activity with the learners.

- Prepare simple questions that the learners can vote on.

Sample questions:

What is your favorite food?
What is your favorite animal?
What is your favorite color?
What is your favorite animal?
What is your favorite sport?

- Ask one of the questions to the learners. Take note of the votes and answers of the learners. Write the results on the board.
- Establish a scale for the learners to follow (e.g., 1 learner represents 2 votes). Write the scale on the board.
- Ask the learners to form a line for each answer to the question. The learners must work together to figure out how many people need to stand in each line to represent the total votes. If a line needs an odd number (like 5 votes on a scale of 2), the learner may stand on one foot or use another creative way to represent the vote.

B. Discussion

1. Explain what a pictograph is: "A

Pet	Number of Learners
Dog	8
Cat	6
Fish	4
Bird	2
Total	20

pictograph uses pictures or symbols to show information. Each symbol stands for a number, and we can count the symbols to find out how many." Show this sample and point to each part as you name it:

Our Favorite Pets	
Dog	☺ ☺ ☺ ☺
Cat	☺ ☺ ☺
Fish	☺ ☺
Bird	☺

Key: ☺ = 2 learners

- **Title:** tells what the pictograph is about ("Our Favorite Pets")
 - **Labels:** name the groups or categories (Dog, Cat, Fish, Bird)
 - **Symbols:** the pictures that stand for the data (☺)
 - **Scale (key):** tells how much each symbol is worth (1 ☺ = 2 learners)
2. Point out the most important idea: **one symbol does not always mean 1**. In this pictograph, each ☺ stands for 2 learners, so we cannot just count the symbols. We must use the scale.
 3. Present the step-by-step procedure for **reading a pictograph**, using the Dog row:
 - Step 1: Read the title to know what the pictograph is about.
 - Step 2: Look at the scale. Here, 1 symbol = 2 learners.
 - Step 3: Count the symbols in the row: 4 symbols.
 - Step 4: Skip count by the scale, once for each symbol: 2, 4, 6, 8. (You can also multiply: $4 \times 2 = 8$.)
 - Step 5: State the answer: **8 learners** chose dog.

Guide the class to read the other rows the same way: Cat = 3 symbols (2, 4, 6) = 6 learners, Fish = 2 symbols = 4 learners, Bird = 1 symbol = 2 learners.
 4. Present the step-by-step procedure for changing a pictograph into **data in a table** (the "vice versa" part), using the same pictograph:
 - Step 1: Write the categories in the first column of a table.
 - Step 2: Read each row using the scale (Steps 3 to 5 above).
 - Step 3: Write each total in the second column.
 - Step 4: Add all the totals to find how many learners were counted altogether.
 5. Present the step-by-step procedure for making a pictograph from **raw data**. Show this list of answers from 20 learners: dog, cat, dog, fish, cat, dog, bird, dog, cat, fish, dog, cat, dog, fish, cat, dog, bird, cat, dog, fish

- Step 1: **Tally and count** each answer. Dog = 8, Cat = 6, Fish = 4, Bird = 2.
 - Step 2: **Organize** the counts in a table (the same table as above).
 - Step 3: **Choose a scale.** Here, every count is an even number, so we can use 1 symbol = 2 learners.
 - Step 4: **Find how many symbols each category needs.** Skip count by the scale until you reach the count. For Dog (8): 2, 4, 6, 8. That took 4 counts, so draw 4 symbols. Cat (6) needs 3, Fish (4) needs 2, Bird (2) needs 1.
 - Step 5: **Draw the pictograph.** Write the title, list the labels, draw the symbols in each row, and write the key.
 - Step 6: **Check.** Skip count each row again using the scale and compare it with the table.
6. Explain how to choose a scale, and model one more example with a different scale. "Look at the numbers. Choose a scale that lets you show every number with whole symbols."
- If the numbers are all even (like 8, 6, 4, 2), use 1 symbol = 2.
 - If the numbers end in 0 or 5 (like 20, 15, 10, 5), use 1 symbol = 5.
 - If the numbers are all tens (like 40, 30, 20), use 1 symbol = 10.

Example with scale 5, using this table:

Fruit	Number Sold
Mango	20
Banana	15
Apple	10
Atis	5

Skip count by 5 for each row:

Mango = 5, 10, 15, 20 (4 symbols)

Banana = 3 symbols

Apple = 2 symbols

Atis = 1 symbol

Key: ☆ = 5 learners

7. Remind the learners of the common mistake: **forgetting the scale.** Ask: "If a row has 4 symbols and the scale is 5, is the answer 4?" Guide them to see that it is $4 \times 5 = 20$, not 4.
8. Remind learners to check every pictograph for its 4 parts: a **title**, **labels**, **symbols**, and a **scale (key)**.

C. Practice

Do the "Snack Graphs" activity with the learners.

- Prepare small snacks for the learners. These can be

candies, cereal, etc. Pack the snacks into bags. Have variety in the number of snacks in each bag.

- Ask the learners to form groups. Give each group a bag of snacks.
- Write a scale that the learners will use on the board.
- Ask the groups of learners to count the snacks in their bags.
- Ask each group to draw a pictograph on the board to represent the number of snacks in their bags.

Sample pictograph:

Number of Snacks	
Scale:	
Group 1	
Group 2	
Group 3	
Group 4	
Group 5	

- Repeat the activity. Repack the snack bags to change the number of snacks in each bag.
- To end the activity, the learners can eat or take home the snacks.

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Can you present data in a pictograph with a scale and vice versa?

III. Homework

Ask the learners to copy the table below. Then

Fruits Sold in the Canteen	
Mango	☆☆☆☆
Banana	☆☆☆
Apple	☆☆
Atis	☆

have the learners create a pictograph to present the data.

My Favorite Color	
Color	Votes
Red	18
Blue	19
Yellow	14
Green	11
Orange	14

I. Learning Objectives

At the end of the lesson, the learners must be able to:

- interpret data in tabular form and in a pictograph with or without a scale.

II. Development of the Lesson

A. Motivation

Play "Pick your Favorite" by asking the learners to make a funny pose to show their choice.

- Paste or draw images of food on the board and create a table.

Choice	Votes
 pizza	
 burger	
 ice cream	

- Call out each choice and have learners stand up and do the corresponding pose.
 -  pizza → hands on head
 -  burger → hands on tummy
 -  ice cream → do a funny face
- Count the number of votes and write them in the table.
- Ask the following questions:
 - How many learners chose pizza?
 - How many chose burger?
 - How many chose ice cream?
 - Which has the most votes?
 - Which has the fewest votes?
- Process and discuss the learners' answers.

B. Discussion

- Explain what a pictograph is. A **pictograph** uses **pictures** or **symbols** to show **information**. Each symbol stands for a number, and we can count the symbols to find out how many. Some pictographs have no scale, so each symbol is 1. Others have a scale, so each symbol is worth more than 1.
- Interpret a table.
Show the table. Ask learners to read the title, the labels, and the numbers.

Our Favorite Pets	
Pet	Number of Learners
Dog	8
Cat	6
Fish	4
Bird	2

Ask the learners the following questions:

- Which pet did the most learners choose? (Dog, 8)
- Which pet did the fewest learners choose? (Bird, 2)
- How many more learners chose dog than fish? ($8 - 4 = 4$)
- How many learners were counted in all? ($8 + 6 + 4 + 2 = 20$)

3. Interpret a pictograph without a scale.

Our Favorite Snacks	
Snack	Number of Learners
pandesal	    
banana Cue	  
turon	 

Key:  = 1 learner

Pandesal = 5

Banana cue = 3

Turon = 2

Ask the learners the following questions:

- Which snack is the favorite?
- How many more learners chose pandesal than turon? ($5 - 2 = 3$)

4. Interpret a pictograph with a scale. Show the pictograph and point to each part as you name it.

Our Favorite Pets	
Dog	   
Cat	  
Fish	 
Bird	

Key:  = 2 learners

- Title** tells what the pictograph is about. (Our Favorite Pets)
- Labels** name the groups or categories. (Dog, Cat, Fish, Bird)
- Symbols** are the pictures that stand for the data. (☺)
- Scale (key)** tells how much each symbol is worth. ($1 \text{ ☺} = 2 \text{ learners}$)

The most important idea: one symbol does not always mean 1.

Each ☺ stands for 2 learners, so we must use the scale.

- Present the steps for reading a pictograph with a scale.

Using the Dog row as the example:

- Read the title** to know what the pictograph is about.
- Look at the scale.** Here, 1 symbol = 2 learners.
- Count the symbols** in the row: 4 symbols.
- Skip count by the scale**, once for each symbol: 2, 4, 6, 8. (Multiplying also works: $4 \times 2 = 8$.)
- State the answer.** 8 learners chose dog.

The other rows are read the same way:

- Cat: 3 symbols $\rightarrow$ 2, 4, 6 $\rightarrow$ **6 learners**
- Fish: 2 symbols $\rightarrow$ 2, 4 $\rightarrow$ **4 learners**
- Bird: 1 symbol $\rightarrow$ 2 $\rightarrow$ **2 learners**

- Connect the table and the pictograph. The table in Number 2 and the pictograph in Number 4 show the same data. Each number in the table matches a row in the pictograph (Dog = 8 = 4 symbols $\times$ 2). The same questions about most, fewest, how many more, and how many in all can be answered using either one.

C. Practice

Play "I Choose!" where the learners will choose between multiple options and interpret collected data.

- Paste or draw images of fruits on the board and create a table. An example is given below:

Choices	Number of Learners
 apple	
 banana	
 orange	
 grapes	
 mango	

- Ask the learners which fruit among the choices they like the most.
- Ask the learners to line up and tally their choice on the board.
- After the tally is complete, ask the learners to raise their hands when their choice is called. Count the votes together.

- Check if the tally and number of hands raised match.
- Ask the learners the following questions:
 - Which fruit has the most votes?
 - Which fruit has the fewest votes?
 - How many learners chose bananas?
 - How many learners like mangoes more than apples?
- Process and discuss the learners' answers.
- Turn the table into a pictograph by drawing one fruit symbol for each vote. An example is given below:

Choices	Votes	Pictograph
apple	2	 
banana	4	   
orange	1	
grapes	3	  
mango	5	    

- Ask the learners to interpret the pictograph.
- Repeat the process with different options.

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Can you interpret data in tabular form and in a pictograph with and without a scale?
- How did the pictograph make the data easier to understand? Why?
- Which is easier for you to read: the table or the pictograph? Why?

III. Homework

Ask the learners to complete the table using the pictograph below.

My Favorite Animal	
Scale: 1 is to 3	
Cat	
Dog	
Fish	
Bird	
Hamster	

My Favorite Animal	
Animal	Votes

I. Learning Objectives

At the end of the lesson, the learners must be able to:

1. count the number of concrete objects in a group by repeated addition and create equal groups, using language such as "5 groups of 3" and "5 threes".

II. Development of the Lesson

A. Motivation

Play "Group Masters" where the learners have to make equal groups of the same objects.

- Demonstrate the activity by placing 12 crayons on the table.
- Ask the learners how many crayons should be in each group if we need to make "4 equal groups"
- Ask for volunteers to arrange the crayons.

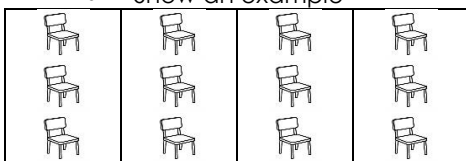


- Ask the learners the following questions:
 - i. How many groups did we make? (Answer: 4 groups)
 - ii. How many objects are in each group? (Answer: 3)
 - iii. How many objects are there altogether? (Answer: 12 objects)
- Explain that they made "4 groups of three" or "4 threes".
- Have the learners answer the following:
 - i. $3+3+3+3 = \underline{\hspace{2cm}}$
 - ii. $4 \times 3 = \underline{\hspace{2cm}}$
- Process and discuss the learners' answers.

B. Discussion

1. Explain "equal groups" as groups that have the same number of objects.

- Show an example



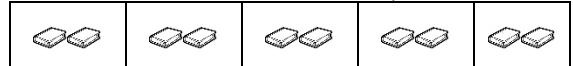
- Ask: "Are the groups equal? How many objects are in

each group?" (Answer: Yes, each group has 3 objects).

- State that there are four groups of three. This is equivalent to $3+3+3+3$ or 4×3 , and both equal 12.

2. Discuss the meaning of "groups of" in relation to repeated addition.

- Provide an example



- Ask the learners the following questions:
 - i. How many groups are there? (Answer: 5 groups)
 - ii. How many objects are in each group? (Answer: 2 objects)
 - iii. How many objects are there in total? (Answer: 10 objects)
- Write "5 groups of 2" on the board.
- Explain that "5 groups of 2" or "5 twos" means that there are 5 equal groups, with 2 objects in each group.
- Write the repeated addition ($2+2+2+2+2=10$) and the multiplication sentence ($5 \times 2=10$ or $2 \times 5=10$) on the board.
- Allow the learners to visualize "groups" by drawing the corresponding number of boxes. Example: "5 groups" is 5 boxes.



- Expound by explaining that 5 groups "of 2" means that there are 2 objects in each box. Thus, draw 2 objects in each box.



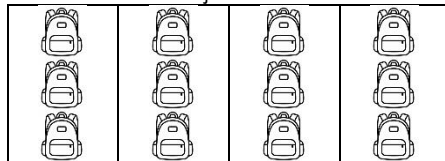
- Provide more examples by discussing the tables below. Create a pictograph for each example.

Equal Groups	Repeated Addition	Multiplication Sentence	Total
3 groups of 2	$2 + 2 + 2$	3×2 or 2×3	6
5 groups of 3	$3 + 3 + 3 + 3 + 3$	5×3 or 3×5	15
6 groups of 2	$2 + 2 + 2 + 2 + 2 + 2$	6×2 or 2×6	12
4 groups of 5	$5 + 5 + 5 + 5$	4×5 or 5×4	20

C. Practice

Play "Group it, Count It!" where each group will race to make equal groups using objects in the classroom.

- Divide the class into 4 groups and assign an object to each group (crayons, pencils, books, notebooks, papers, etc.).
- Ask the learners to make equal groups. Example: "4 equal groups of 3".
- Allow learners to arrange their objects.



- Tell the learners that the group should stand up once it is done.
- The first group to stand up must state the total number of objects in the format "4 groups of 3 is equal to 12".
- If they are correct, they can proceed by writing the repeated addition and multiplication sentence on the board. If not, the first group to stand up again will get the next chance to answer.
- However, if they write the correct repeated addition

and multiplication sentence, they will receive 2 points. If not, they will only receive 1 point.

- Ask the learners the following questions:
 - How many groups did you make?
 - How many objects are in each group?
 - Are the groups equal?
 - How many objects are there altogether?
- Process and discuss the learners' answers.
- Provide more items for the learners to practice with and repeat the process as necessary.
- The group with the most points wins.

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- Why is repeated addition helpful when counting objects in equal groups?
- If one group has fewer objects than the others, can we still call them equal groups? Why or why not?
- Which is easier for you: counting objects one by one or counting equal groups by repeated addition? Why?

III. Homework

Ask the learners to copy the items below and answer the following questions.

☆☆☆	☆☆☆	☆☆☆
☆☆☆	☆☆☆	

- How many groups are there? _____
- How many stars are in each group? _____
- Complete the phrase: _____ groups of _____
- Complete the repeated addition:
 $___ + ___ + ___ + ___ + ___ = ______$

Term 2

Lesson 15:

Number and Algebra

Illustrate and write multiplication as repeated addition, using a variety of concrete and pictorial models and numerals, using: (a) groups of equal quantities, (b) arrays, (c) counting by multiples, and (d) equal jumps on a number line.

I. Learning Objectives

At the end of the lesson, the learners must be able to:

- illustrate and write multiplication as repeated addition, using a variety of

concrete and pictorial models and numerals.

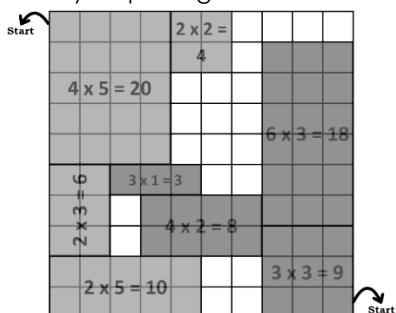
II. Development of the Lesson

A. Motivation

Do the “Array Capture” activity with the learners.

- Prepare a large grid and a set of dice.
- Draw the grid on the board. Label the opposite corners of the grid with starting positions.
- Have 2 learners do the activity at a time.
- The first learner rolls the dice 2 times. That represents the size of their array. For example, if the learner rolled a 4 and a 5, they will draw a 4 by 5 array.
- The learner will then draw their array on the grid. The array must touch the starting area of the learner. They will then write the multiplication sentence inside their array ($4 \times 5 = 20$).
- After that, the second learner takes their turn and follows the same steps.
- The learners take turns drawing their arrays. The arrays should be touching an existing array on one side.
- If the learner cannot create an array because there is no space left, they lose a turn.

Sample Array Capture game:



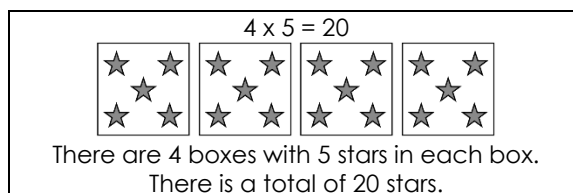
- The learner who captures the most squares wins.
- Repeat the activity with a different pair of learners.

B. Discussion

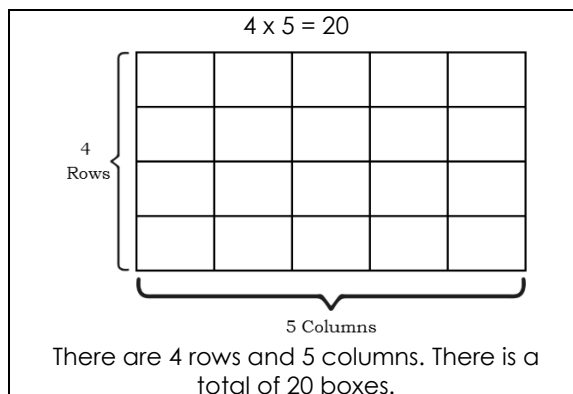
Explain to the learners the different methods to illustrate and write multiplication. These methods illustrate multiplication as repeated addition.

- Groups of equal quantities
 - i. Start by drawing shapes like a box or a circle equal to one of the factors in the equation.
 - ii. Then, place items in each shape equal to the other factor.
 - iii. Lastly, count all the items inside the shapes. The total

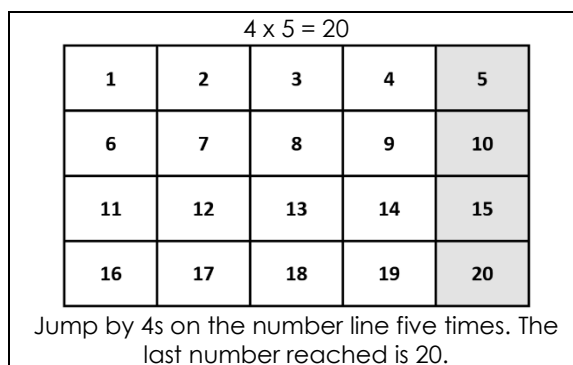
number is the final answer or the product.



- Arrays
 - i. Start by drawing a grid.
 - ii. The columns in the grid should be equal to the first factor, and the rows should be equal to the second factor. The factors for the columns and rows are interchangeable.
 - iii. Finally, you can count how many boxes are created by the grid. The total number of boxes is the product.

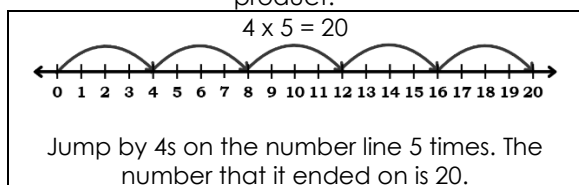


- Counting by multiples
 - i. Start by choosing one of the factors in the equation.
 - ii. Then, skip-count by the factor you chose until you reach the number indicated by the other factor.
 - iii. Lastly, the number that you end on is the product.



- Equal jumps on a number line
 - i. Start by drawing a number line.

- ii. Then, choose 1 factor. This would indicate how far the jumps are. The other factor indicates how many jumps you should do. The factors are interchangeable.
- iii. Finally, the number that the last jump ends on is the product.



C. Practice

Do the "Multiplication Boom" activity with the learners.

- Prepare popsicle sticks to be used in the activity.
- On each popsicle stick, write one multiplication sentence. Write "BOOM!" on a few popsicle sticks. Place the popsicle sticks in a cup or a container. Make sure that the learners are not able to see what is written on each popsicle stick.
- Ask the learners to form a circle.
- Ask the first learner to pull out a popsicle stick.
- If the popsicle stick has a multiplication sentence, the learner reads and solves it.
- If the learner's answer is correct, they get to keep the popsicle stick. If they

answered incorrectly, the stick must go back in the cup or container.

- Have the next learners in the circle repeat the steps.
- If the learner pulled the "BOOM!" popsicle stick, they have to place all the popsicle sticks they have collected back into the cup or container.
- You may set conditions for winning the game. For example, the first learner to collect 10 sticks, the learner with the most sticks after 5 rotations around the circle, etc.
- Repeat the activity as needed.

D. Reflection

Ask the learners the following questions:

- What did we learn today?
- What is your favorite method to write and illustrate multiplication?

III. Homework

Ask the learners to solve the problems below. The learners may use any method to solve the equations. Ask the learners to also illustrate the method that they used.

1. $3 \times 4 =$ _____	4. $7 \times 5 =$ _____
2. $4 \times 8 =$ _____	5. $7 \times 6 =$ _____
3. $6 \times 6 =$ _____	6. $8 \times 9 =$ _____

