5

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Lesson Exemplar for Mathematics 5

Quarter 1
Lesson
7

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Lesson Exemplar for Mathematics Grade 5
Quarter 1: Lesson 7 Week 7
SY 2024-2025

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LESSON EXEMPLAR TEMPLATE

LEARNING AREA/QUARTER/ GRADE LEVEL

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	The learners should have knowledge and understanding of the area of a parallelogram, triangle, and trapezoid.
B. Performance Standards	By the end of the quarter, the learners are able to determine the area of a parallelogram, triangle, and trapezoid. (MG)
C. Learning Competencies and Objectives	***Learning Competency*** *Lesson Objective 1:* Identify the height of a parallelogram, triangle, and trapezoid, in different orientations. *Lesson Objective 2:* find the area of a parallelogram, triangle, and trapezoid, in **sq. cm or sq. m,** using formulas.
C. Content	• Base and height of a parallelogram, triangle, and trapezoid. • Formulas for the area of parallelograms, triangles, and trapezoids.
D. Integration	Critical Thinking

II. LEARNING RESOURCES
Creag H.C. (2018). Real Life Mathematics 2nd Edition. Abiva Publishing. Quezon City, Manila. Geogebra. https://www.geogebra.org/ Math Worksheets 4 Kids: https://www.mathworksheets4kids.com/

III. TEACHING AND LEARNING PROCEDURE		**NOTES TO TEACHERS**
A. Activating Prior Knowledge	**Day 1** **Review** Step 1: Learners will answer on **activity no. 1**. See activity no. 1 in the	Answer key: Base | Height | Area 6 | 3 | 18

worksheet for printable format.

Step 2: Discuss the answers to the learners. You have the freedom to choose how you will go over this step.

8	3	12
7	4	20
3		

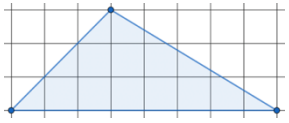
B. Establishing Lesson Purpose

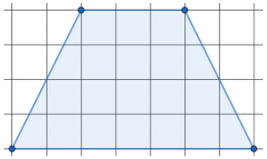
Lesson Purpose

Step 1: Tell the learners that since they already know how to find the area of parallelograms, triangles, and trapezoids (refer to activity 1 step 1), they will be challenged to find areas without grids and in different orientations. Then, show them the following new figures.

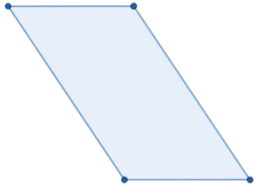
Old Figures

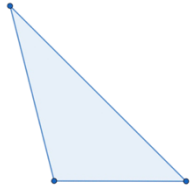


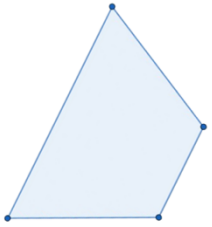




New Figures

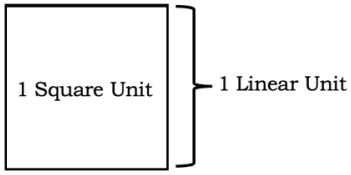


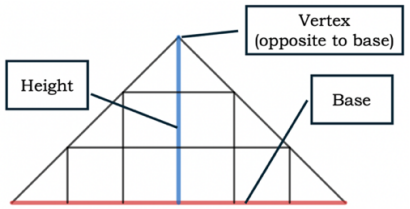
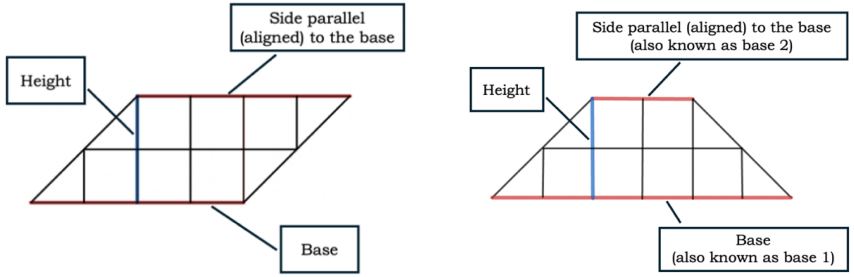
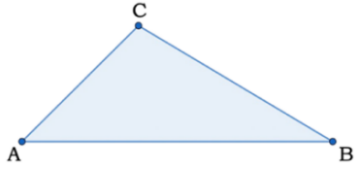




Step 2: Tell learners that in the previous lesson/week, the class find the areas of

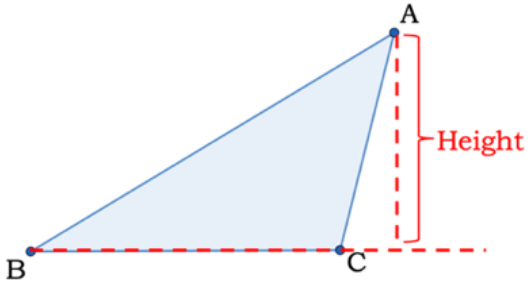
Step 2: Show the learners how is it easy to identify the bases

	parallelograms, triangles, and trapezoids in a single orientation where the base, and height are clearly seen – the base is lying flat horizontally and the height standing-up vertically. Step 3: Tell students that for this week/lesson, they will find the areas of parallelograms, triangles, and trapezoids in different orientations as shown in the new figures. Then, show the objectives of the lesson: ● Identify the height of a parallelogram, triangle, and trapezoid, in different orientations. ● Find the area of a parallelogram, triangle, and trapezoid, in sq. cm or sq. m, using formulas. **Unlocking Vocabulary** Step 1: Present again to the learners the definition of terms from lesson 4/week 6. Discuss/recall the definition of height of a triangle, parallelogram, and trapezoid. **Definition of Terms** - The figures could be covered by smaller squares. A single square is a *square unit*, while the one side length of a square unit is what we call a *linear unit*.  - The *length* is the number of linear units of the longer side, while the *width* is the number of units of the shorter side. - The *area* is the number of square units that cover the surface of the figure. - A *triangle* is a three-sided figure. - A *parallelogram* is a four-sided figure with two pairs of opposite sides parallel. - A *trapezoid* is a four-sided figure with one pair of opposite sides parallel. - The *height* is	and heights of the old figures in step 1. Step 1: Note that in lesson 4/week 6, you wrote this definition of terms in a manila paper or cartolina and posted it in one of your billboards. You will use that same material for lesson 5 (weeks 7 and 8).

	- Triangle: The length of the perpendicular line segment from the base line to the opposite vertex  - Parallelogram and Trapezoid: The length of the perpendicular line segment from the base line to the line parallel to it.  	
C. Developing and Deepening Understanding	**Day 2** **SUBTOPIC 1: HEIGHTS OF PARALLELOGRAMS, TRIANGLES, & TRAPEZOIDS** **Explicitation** Step 1: Present the triangle ABC (cut-out) below and ask the learners to draw the height of the triangle. After identifying the height, re-emphasize the definition of height of the triangle where it is the length of the perpendicular line from the base line to the opposite vertex.  	Step 1: If the learners don't know how to identify the sides of figures using letter pairs. Make sure you review first before proceeding to this step.

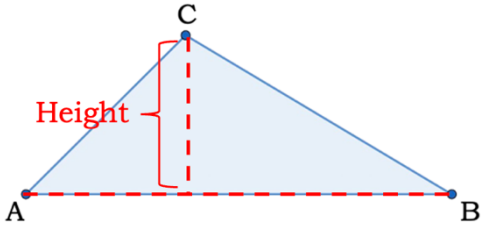
Step 2: Tell learners that the height they got is when side AB is the base.

Rotate the triangle where BC is flat horizontally, then ask the learners if the height identified earlier is still the height. Then, show this figure.

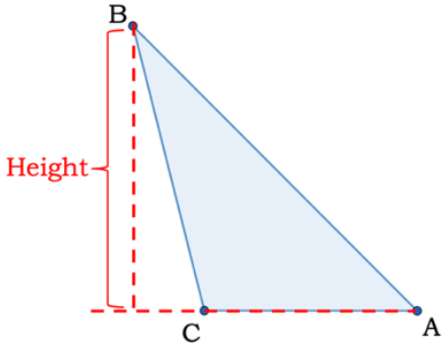


Emphasize to the learners that the height of triangle is dependent to which side is considered the base. All three sides of a triangle can be its base; hence, it has three heights. Show the three figures.

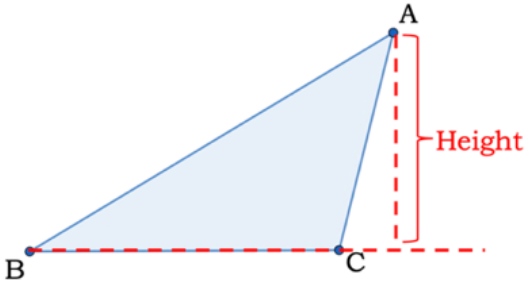
Base AB



Base CA



Base BC



Step 2: Note that in lesson 4/ week 6, you wrote the definition of terms in a manila paper or cartolina and posted it in one of your billboards. Refer to this material in recalling the definition of height of a triangle.

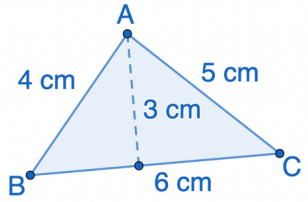
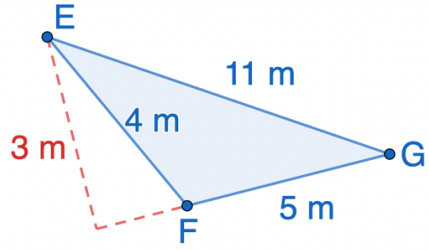
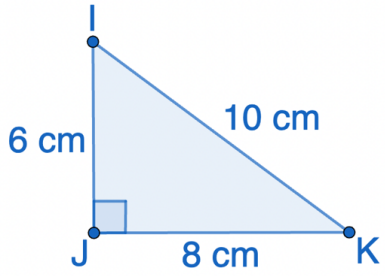
Make cut outs of the bases, the heights, and an "L" shape.

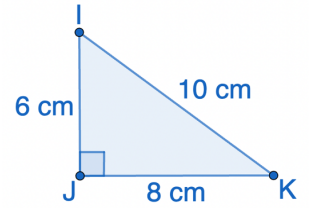
Rotate triangle ABC. Put the cut-outs of the base and height in the triangle every time you rotate. Put the "L" cut-out between the base and the height to emphasize that they are perpendicular to each other.

Discuss that heights for base AB, base BC, and base CA are different from each other.

Worked Example

Present the table below and ask the learners to identify the lengths of the base and height of the given polygons in the first column.

Figure	Base	Height	
Base BC 	**6 cm**	**3 cm**	Ask the learners the length of the base and the height.
Base FG 	**5 m**	**3 m**	Ask the learners the length of the base and the height. Then, ask them what kind of triangle EFG is. Discuss that in obtuse triangles, a height could be seen outside the triangle. Recall that the height is the length of the perpendicular line segment from the base line to the opposite vertex. Given that the 3 m line segment is still perpendicular to the extended base, then the height of the triangle is 3 m.
Base JK 	**8 cm**	**6 cm**	Ask the learners the length of the base and the height. Then, ask them what kind of triangle IJK is. Discuss that since the legs of a right triangle are perpendicular to each other, it is possible that the height could be the length of one of the legs.

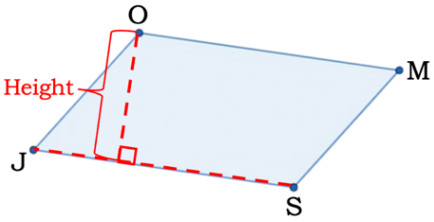
Base IJ 	**6 cm**	**6 cm**

Tell learners that triangles, parallelograms and trapezoids also have bases. Hence, heights are also dependent on which side is considered the base.

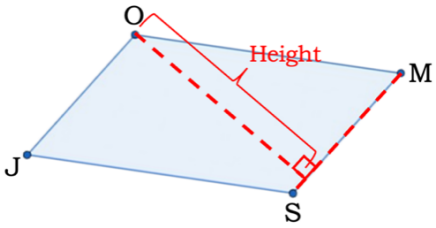
Recall the definition of height of parallelograms and trapezoids as the length of the perpendicular line from the base line to the line parallel to it.

Explain the heights of a parallelogram using figure JOMS. Show the figures.

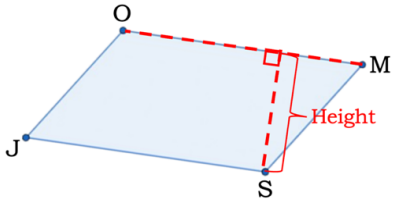
Base JS



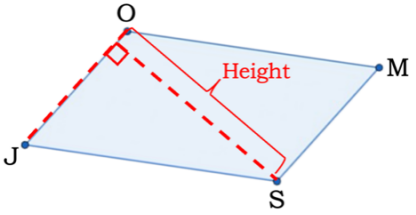
Base SM



Base OM



Base JO



Ask the learners the length of the base and the height. Then, ask them what they observe on the base and height of IJK. Emphasize that despite using the same triangle IJK, the height could change depends on the considered base.

Note that in lesson 6, you wrote the definition of terms in a manila paper or cartolina and posted it in one of your billboards. Refer to this material in recalling the definition of height of parallelograms.

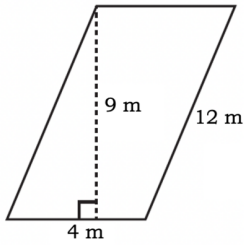
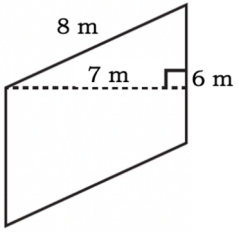
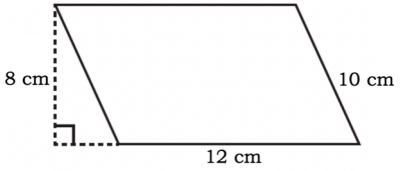
Discuss that the height for base JS is different from the height for base SM.

Make cut-outs of the base and the heights, move the height along the base to show that it remains the same across the base.

Discuss that height for base OM and is the same for base JS. Also, height for base JO and is the same for base SM.

Move the base cut-outs from JS to OM, and from SM to JO. Then, show that the height is the same. Argue that since opposite sides of a parallelogram are parallel, then

Present the table below and ask the learners to identify the lengths of the base and height. Answers are written in red.

Figure	Base	Height
	**4 m**	**9 m**
	**6 m**	**7 m**
	**12 cm**	**8 cm**

Step 4: Explain to learners that trapezoid, different from triangles with three heights and parallelograms with two, trapezoids only have one since they only have one pair of parallel sides. Use trapezoid RITQ to discuss the following:

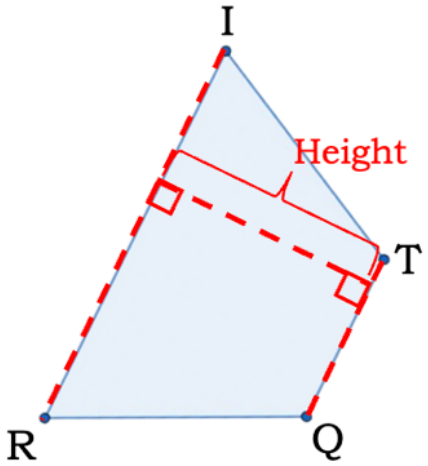
the corresponding bases will result in the same heights.

Ask the learners the length of the base and the height. Emphasize that 12 m is not the height because it is the length of the line that is NOT perpendicular to the base.

Ask the learners the length of the base and the height. Emphasize that height can be measured from a horizontal line as long as it is perpendicular to defined base, which is the 6 m line.

Ask the learners the length of the base and the height. Discuss that the height could be found outside the parallelogram as long as it is perpendicular to the base line.

Step 4:Make cut-outs of the bases and the height.



The height of trapezoid RITQ is the length of the line that is perpendicular to both sides RA and TQ.

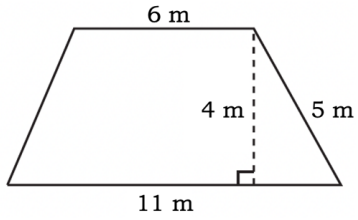
Trapezoid only has two bases, side RI and TQ. Sides RQ and IT can't be bases since the two sides are not parallel to each other.

Trapezoid RITQ only has one height. The height remains the same regardless of the base being side RI or TQ.

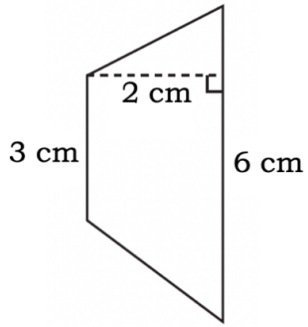
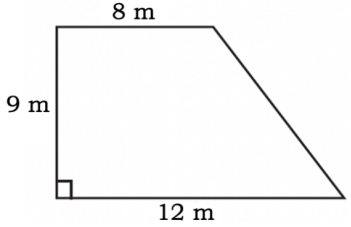
Make a cut-out of the line that connects side RI and QT. Move it alongside RQ to show that the height is not appropriate across side RQ; hence it can't be considered a base.

Move the height along the base to show that it remains the same across the base.

Step 5: Present the table below and ask the learners to identify the lengths of the base and height. Answers are written in red

Figure	Base 1	Base 2	Height
	**11**	**6**	**4**

Ask the learners the length of the bases and the height. Emphasize that 5 m is not the height because the line segment is NOT perpendicular to the bases.

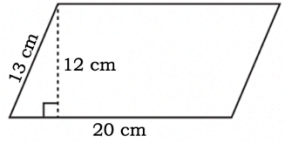
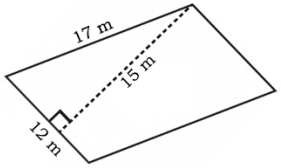
	**3**	**6**	**2**
	**12**	**8**	**9**

Ask the learners the length of the bases and the height. Discuss that 6 cm, despite being a vertical line, is not the height because it is not perpendicular to the base sides, which are the 3 cm and 6cm sides. Note that bases should be parallel to each other.

Ask the learners the length of the bases and the height. Emphasize that a side of a trapezoid could be its height if it is perpendicular to both bases just like the 9 m side.

Lesson Activity

Step 1: Learners will work on **activity no. 2**. See activity no. 2 in the worksheet for printable format.

Figure	Base	Height	Figure	Base	Height
					

Step 2: Discuss the answers to the learners.

Answer key:

b	*h*	*b*	*h*
20	12	12	15
16	17	12	12
18	8	15	12
12		10	

Step 2: You have the freedom on how to do this step.

Day 3

SUBTOPIC 2: AREAS OF PARALLELOGRAMS, TRIANGLES, & TRAPEZOIDS

Explicitation

Step 1: This activity is a review on the formulas for the areas of parallelograms, triangles, and trapezoids which are discussed in the previous lesson exemplar

Step 1: Learners will work on **activity no. 3**. See activity no. 3 in the worksheet for printable format.

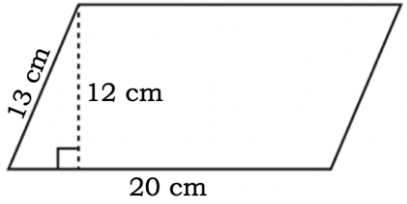
Step 2: After the learners are done with activity no. 3, ask them to **Turn and Talk**. **Turn and Talk** is a keyword which means you will ask learners to turn to their seatmates to compare their answers and solutions.

Step 3: Discuss the answers to the learners.

Task 8: Worked Example

Step 1: Discuss the three examples of finding the area of parallelograms, triangles, and trapezoids. Note that plugging in values in their respective formulas are already discussed in task 7, steps 1-3.

Example 1



Given: b = 20 cm; h = 12 cm

Formula: A = b x h

A = 20 x 12

A = 240 square centimeters

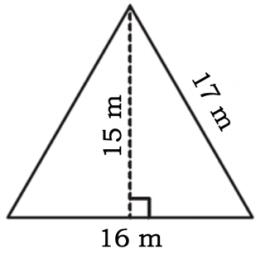
Example 2

(Lesson 6). Best if you emphasize that fact to your learners.

Step 3: You have the freedom on how to do this step.

Step 1: The examples in task 8 are the items of activity no. 3 in task 7. Discuss the worked example as an extension of your discussion of activity no. 3 (see task 7, step 3).

In the 1st example (area of a parallelogram), discuss that the unit of the area is *square centimeters* because it shows the number of unit squares that makes-up the figure. Hence, of the base and height are in meters, then the unit of the area should be *square meters*.



Given: b = 16 cm; h = 15 cm

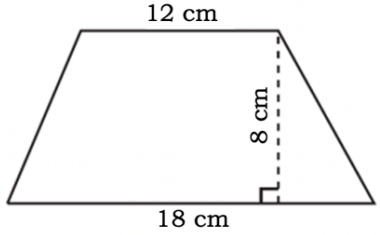
Formula: $A = \frac{b\,x\,h}{2}$

$A = \frac{16\,x\,15}{2} = \frac{240}{2} = 120$

A = 120 square meters

In the 3rd example (area of a trapezoid), review the concept of GMDAS where you start with the grouped operations (b1 + b2). Then, multiply the sum with 4 since they are grouped in the numerator. Lastly, divide the product with 2.

Example 3



Given: b1 = 18 ft; b2 = 12 ft, h = 8 ft

Formula: $A = \frac{(b1+b2)\,x\,h}{2}$

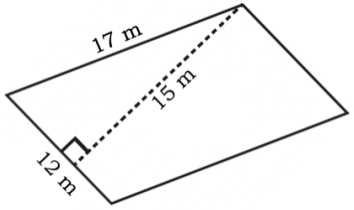
$A = \frac{(18+12)\,x\,8}{2} = \frac{20\,x\,8}{2} = \frac{160}{2} = 80$

A = 30 square feet

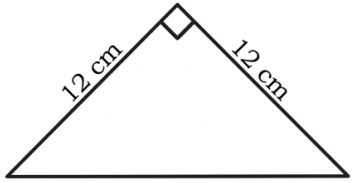
Lesson Activity

Step 1: Ask students to find the area of the following figures.

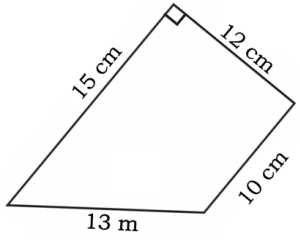
1.



2.



3.



After the learners are done, ask them to **Turn and Talk**.

Answer key:
1. 180 sq. m.
2. 72 sq. m.
3. 150 sq. cm.

Give the learners 5 to 10 minutes to turn and talk. Then, ask for answers and list them down regardless if it is correct or not. After all the answers are listed, discuss the items one by one similar on how examples in the worked example (task 8) are discussed.

D. Making Generalizations	**Day 4** **Task 10: Learner's Take Away**	

	Step 1: Ask the learners to complete the table below as a summary what they have learned in this lesson. See **activity no. 4** in the worksheet for printable format.	

<table>
<tr><th colspan="4">IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION</th><th>NOTES TO TEACHERS</th></tr>
<tr><td>A. Evaluating Learning</td><td colspan="3">Day 4
Learners will answer the formative assessment. See activity no. 5 in the worksheet for printable format.</td><td>Answer key:
1. 104 sq. cm
2. 63 sq. m
3. 9 sq. cm
4. 18 sq. cm
5. 21 sq. m
6. 30 sq. cm</td></tr>
<tr><td rowspan="5">B. Teacher's Remarks</td><td>Note observations on any of the following areas:</td><td>Effective Practices</td><td>Problems Encountered</td><td rowspan="5">Teachers are encouraged to record relevant observations or any critical teaching events that influence the attainment of the lesson objectives.
Use or modify the provided template in recording the notable instructional areas or concerns.

In addition, notes here can also be on tasks that will be continued the next day or additional activities needed.</td></tr>
<tr><td>strategies explored</td><td></td><td></td></tr>
<tr><td>materials used</td><td></td><td></td></tr>
<tr><td>learner engagement/ interaction</td><td></td><td></td></tr>
<tr><td>Others</td><td></td><td></td></tr>
<tr><td>C. Teacher's Reflection</td><td colspan="3">Reflection guide or prompt can be on:
▪ <u>principles behind the teaching</u>
What principles and beliefs informed my lesson?

Why did I teach the lesson the way I did?

▪ <u>students</u>
What roles did my students play in my lesson?

What did my students learn? How did they learn?</td><td>Entries on this section are teacher's reflections about the implementation of the whole lesson, which will serve as input for the LAC sessions. Use or modify the provided guide questions in eliciting teacher's insights.</td></tr>
</table>

	▪ *<u>ways forward</u>* *What could I have done differently?* *What can I explore in the next lesson?*	