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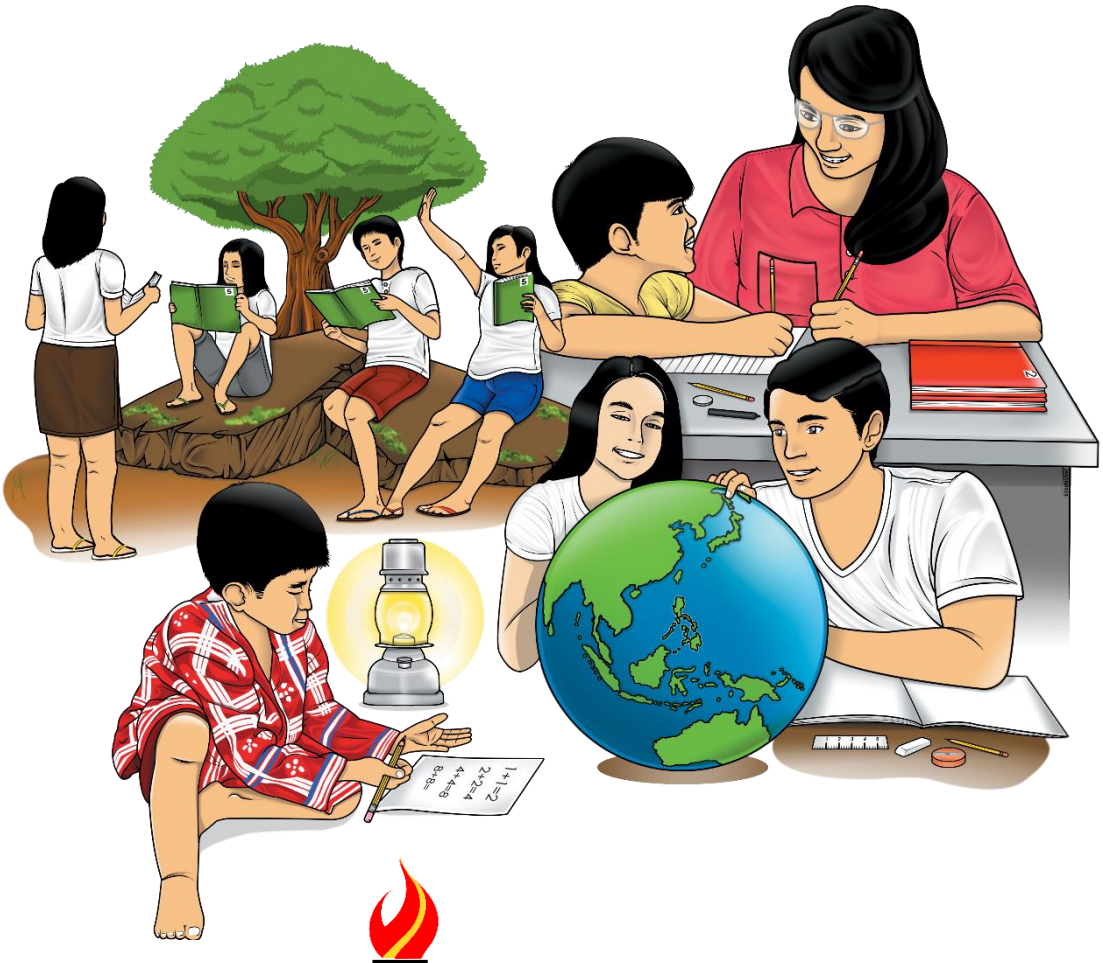
Mathematics

Quarter 3 – Module 7:
Elapsed Time



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Alternative Delivery Mode
Quarter 3 – Module 7: Elapsed Time
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Development Team of the Module

Writer:	Ireneo D. Dechavez
Editor:	Elena D. Hubilla
Reviewer:	Loyd H. Botor
Illustrator:	Ireneo D. Dechavez
Layout Artist:	Cherry Lou O. Calison
Management Team:	Gilbert T. Sadsad, Francisco B. Bulalacao Jr., Grace U. Rabelas
	Ma Leilani R. Lorico, Monserat D. Guemo, Florena M. Deuna

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Office Address : Regional Center Site, Rawis, Legazpi City, 4500
Telefax : 0917-178-1288
E-mail Address : region5@deped.gov.ph

4

Mathematics

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Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.

What I Need to Know

Good day to you! Do you know how to read time in minutes or seconds? Reading time is necessary for you to be able to find the length of time that an event occurred. This is called elapsed time. **Elapsed time** identifies how long you had been doing an activity like reading, cooking, browsing the internet, cleaning, etc. You will also learn to estimate elapsed time in minutes and seconds which is an essential skill in telling time. Real-life problems are also presented for you to know how important elapsed time is.

Finding elapsed time is different from just adding or subtracting numbers because in here, hours, minutes and seconds are all different units. So, GOODLUCK! Enjoy this module and remember that "Time is gold!"

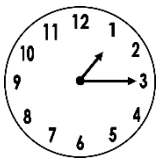
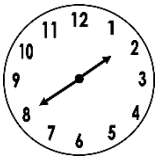
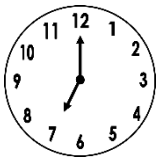
After going through this module, you are expected to:

1. find the elapsed time in minutes and seconds;
2. estimate the duration of time in minutes; and
3. solve problems involving elapsed time.

What I Know

Read the following items carefully and provide what is asked. Write your answers on your answer sheet.

A. The following items show the start and end times for particular events. Determine the elapsed time in each item. (*You can use an improvised clock or the wall clock in your home.)*

	Start Time	**End Time**	**Elapsed Time**
1.			a. 25 minutes b. 15 minutes c. 30 minutes
2.			a. 6 minutes b. 30 minutes c. 10 minutes

B. Find the elapsed time.

3. Time ended: 10 : 35
   Time started: 10 : 20
   ____

4. Time ended: 9 : 14
   Time started: 8 : 40
   ____

C. Determine the time difference. Round off to the nearest tens of minutes and then estimate the elapsed time.

5. 8 : 47 ⟶
   5 : 32 ⟶ _____
   ____

6. 10 : 54 ⟶
   9 : 43 ⟶ _____
   ____

7. 6 : 09 ⟶
   4 : 03 ⟶ _____
   ____

8. 42 : 46 ⟶
   39 : 49 ⟶ _____
   ____

D. Read and solve each problem.

9. Beatrize started answering one of her modules in Mathematics 4 at 8:30 in the morning and finished it at 9:25 a.m. How long did she spend answering her module?

10. Mother went to a grocery store to buy some necessities. She entered the store at 7:45 a.m. Because there were many customers in the store, she went out at 9:36 a.m. How long did it take her in the grocery store?

To check, please go to page 15 and check the ***Answer Key***. If you got a score of 8 – 10, VERY GOOD! The lesson will be easy for you. If you got a score of 7 or below, study carefully the discussion and examples in this module.

Lesson 1 Elapsed Time

What's In

Activity A

Use the table of equivalence below to answer the following. Write your answers on your answer sheet.

1 hour = 60 minutes
1 minute = 60 seconds

1. 3 hours = _____ minutes

2. 4 minutes = _____ seconds

3. 300 seconds = _____ minutes

Activity B

4. What is 15 minutes before 10:00 a.m.? _____

5. What is 8 minutes after 5:00 p.m.? _____

6. What is 3 minutes before noon? _____

If you are done answering the activity, please go to the answer key of this module on page 15 and check if your answers are correct.

What's New

Do you make your school projects yourself with minimal to no help from others? What do you do if your project is difficult? Do you submit them on time? At an average, how much time do you spend per project.

Read the problem below and figure out how you can estimate the answer and determine the exact answer**.**

> *Steve helps his sister in making a project out of recycled plastic bottles. They started making the project at 5:32 p.m. If they finished the project at 6:25 p.m., how long did they make the project? About how long did they make the project?*

What is It

You can solve the problem about the time spent by Steve in completing the project by estimating the elapsed time and finding the exact elapsed time.

Let us see if we have the same answer. Read and follow the presentation then let us check if you got the elapsed time and the estimated elapsed time correctly.

There are two questions that we are going to answer:

Question a): How long did they make the project?

Question b): About how long did they make the project?

In Question 1, we need to find the **exact elapsed time**, while in Question 2 we will find the **estimated elapsed time**.

Let us solve the problem by answering the following questions:

1. What are asked in the problem?
2. What are given?
3. What operation will you use?
4. What is the number sentence?
5. How are the solutions done?
6. What are the answers to the problem?

***NOTE**: The six questions follow the 4-Step Plan in Problem Solving introduced in the previous modules (Understand, Plan, Solve, Check and Look Back).*

1. *What are asked in the problem?*
   ANSWERS:
   a. The time Steve and his sister spent in making the project.
   b. The estimated time Steve and his sister spent in making the project.

2. *What are given in the problem?*
   ANSWERS: 5:32 p.m. – time started
   6:25 p.m. – time ended

3. *What operation will you use?*
   ANSWER: SUBTRACTION

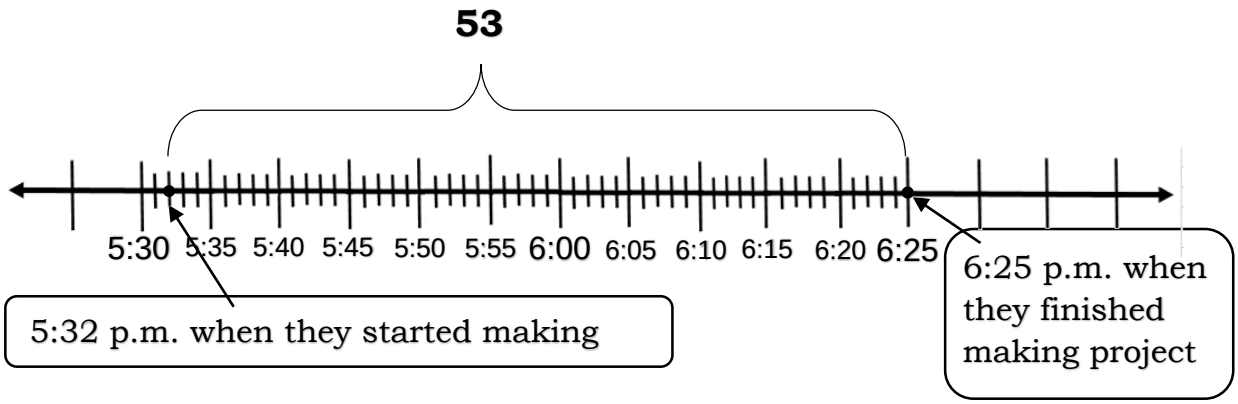
4. *What is the number sentence?*
   ANSWER: 6:25 – 5:32 = N

5. *How are the solutions done?*

SOLUTION FOR QUESTION 1: How long did they make the project?

Let me present to you two methods on how to find the elapsed time.

Method 1: Using Number Line



You noticed that from 5:32 pm to 6:25 pm, the time elapsed is 53 minutes.

Method 2: Subtraction

$$\begin{array}{rl} & 6:25 \longrightarrow 5:\mathbf{60}+25 \\ & 6:25 \longrightarrow 5:85 \\ - & 5:32 \longrightarrow 5:32 \\ \hline & 0:53 \end{array}$$

Subtract the time in minutes. (25 – 32). We cannot subtract the time in minutes because 25 is smaller than 32, so we will regroup by borrowing 1 hour from 6. (6 – 1=5)
Rename 1 hour as 60 minutes.
Add 60 and 25 minutes. (60+25=85)
Subtract again the time in minutes, and then the hours.

So, they made the project for 53 minutes.

SOLUTION FOR QUESTION 2: About how long did they make the project?

Let us find the estimated elapsed time.

Round the times in tens of minutes.

Study this

Actual Times		Estimated Times
6 : 25	⟶	6 : 30
− 5 : 32	⟶	5 : 30
		1 : 00

Subtract the estimated times starting the rounded time in tens of minutes and then hours.

Therefore, they made the project for about one hour.

Compare the actual elapsed time (Question 1) and the estimated elapsed time (Question 2).

Actual Elapsed Time: ***53 minutes***
Estimated Elapsed Time: ***1 hour***

Are the answers close enough? Is the estimated elapsed time reasonable?

Study the following examples in finding elapsed time and estimated time.

ELAPSED TIME

A. (With Regrouping)

1: 60 + 13

2 : 13 → 1 : 73
− 1 : 55 → 1 : 55
0 :18

B. (Without Regrouping)

4 : 48
− 4 : 15
0 : 33

C.(With seconds)

Hour: Minute: Second

0 : 35 : 49
− 0 : 21 : 37
0 : 14 : 12

ESTIMATED ELAPSED TIME

A. (With Renaming)

Estimated Times 9: 60 + 20

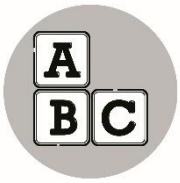
10 : 24 → 10 : 20 → 9 : 80
− 9 : 37 → 9 : 40 → 9 : 40
0 : 40

B. (Without Renaming)

Estimated Times

2 : 38 → 2 : 40
− 2 : 15 → 2 : 20
0 : 20

Now, you already learned our lesson on elapsed time. This time you are now ready for more activities. LET'S GO!!!

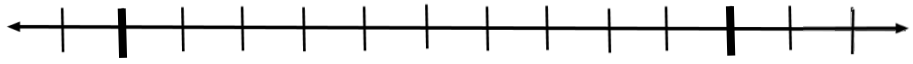


What's More

Activity A

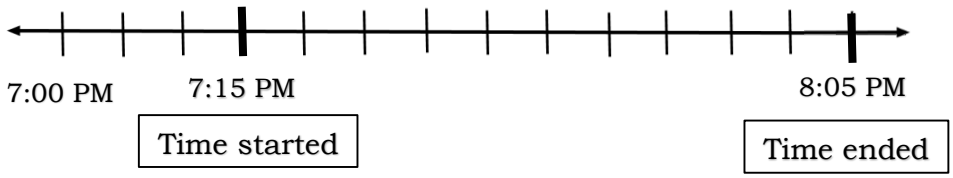
Find the elapsed time shown in each number line.

1.



0 sec 5 sec — 30 sec — 55 sec

Time started — Time ended

2. 

Activity B

Complete the following table by providing the elapsed time.

Start Time	End Time	Elapsed Time
0:03:05	0:03:49	1.
8:05 p.m.	8:54 p.m.	2.
7:36 a.m.	8:12 a.m.	3.

Activity C

Round the given time in tens of minutes and estimate the elapsed time.

1.	Actual Times	Rounded times
Time Ended	11:47	
Time Started	11:34	
Estimated Elapsed Time		

2.	Actual Times	Rounded times
Time Ended	5:42	
Time Started	5:08	
Estimated Elapsed Time		

Activity D

Read the following problem and answer the following questions.

During weekends, Greta helps her mother in washing their clothes. They started washing at 8:10 a.m. and finished at 8:55 a.m. How long did they wash their clothes?

1. What is asked? _____
2. What are the given facts? _____
3. What is the operation to be used? _____
4. What is the number sentence? _____
5. How is the solution done? _____
6. What is the answer? _____

Please check your answers for each activity using the ANSWER KEY on page 15. If you answered more than 80% of them, Great Job! Keep Up the Good Work! If you have some mistakes, go back and review the lesson again and decide which of the solutions presented is easy for you.

What I Have Learned

Always remember the following:

TO FIND THE ESTIMATED ELAPSED TIME:

1. Round the times in minutes.
2. Subtract the rounded times in tens of minutes.
3. Subtract the hours.

Note: Regroup if necessary by borrowing one hour. Rename one hour to 60 minutes and add to the given time in minutes. Then subtract again the time in minutes and hours.

TO FIND THE ELAPSED TIME:

Method 1: Use a number line by counting 5 minutes per unit.

Method 2: Subtract the minutes and then hours.

Note: Regroup if necessary by borrowing one hour. Rename one hour to 60 minutes and add to the given time in minutes. Then subtract again the minutes and hours.

TO SOLVE PROBLEMS INVOLVING ELAPSED TIME:

Use the 4-Step Plan: Understand, Plan, Solve, Check and Look Back

What I Can Do

Teacher Ruby grouped the class into five for a group activity during a Math lesson. She recorded the starting and end times that the groups had for the activity in the table below. Complete the table below by filling in the actual and estimated elapsed time. Answer the questions that follow. (*Remember: The lower the time, the faster the task was finished.)*

Group	Time Started	Time Ended	Actual Elapsed Time	Estimated Elapsed Time
Group 1	8:25 a.m.	8:52 a.m.		
Group 2	8:25 a.m.	8:43 a.m.		
Group 3	8:25 a.m.	8:49 a.m.		
Group 4	8:25 a.m.	8:54 a.m.		
Group 5	8:25 a.m.	8:37 a.m.		

1. Which group finished first? The last?
2. What operation did you use to solve each answer?
3. Which group finished faster, Group 3 or Group 4?
4. Which groups have the same longest estimated elapsed time?
5. If teacher Ruby will give additional points based on their time, which should be her basis, Actual elapsed time or Estimated elapsed time?

Please check your answers for each activity with the ANSWER KEY on page 15.

Assessment

Read the following items carefully and provide what is asked. Write your answers on your answer sheet.

A. Find the elapsed time.

1. Time ended: 8:57
   Time started: 8:35
   Elapsed Time: _____

2. Time ended: 0:25:45
   Time started: 0:25:24
   Elapsed Time: _____

3. Time ended: 12:14
   Time started: 11:36
   Elapsed Time: _____

B. Find the estimated elapsed time.

4. Time ended: 2:46 ⟶
   Time started: 2:12 ⟶
   Estimated Elapsed Time: ____

5. Time ended: 5:39 ⟶
   Time started: 5:28 ⟶
   Estimated Elapsed Time: _____

6. Time ended: 4:19 ⟶
   Time started: 3:42 ⟶
   Estimated Elapsed Time: ____

C. Solve the following problems.

7. The grade 4 pupils of Ms. Analyn took their lunch right after their class at 11:45 a.m. If they finished eating at 12:10 p.m., how long did they take their lunch?

8. Nico wakes up at 5:40 a.m. so that he will have time to prepare himself for school. At 6:10 a.m. he is ready to go to school. How long did it take Nico to prepare for school?

9. Alet started reviewing her lessons at 6:45 p.m. for a quiz the next day. She finished reviewing at 7:17 p.m. How long did she spend reviewing her lessons?

10. An airplane departs from Manila at 8:10 a.m. and arrives in Legazpi at 8:56 a.m. How long is the flight?

Please check your answers with the ANSWER KEY on page 15.

Additional Activities

Reminder: Before answering the following activity, please make a record of the time you started answering.

Solve each problem. Write the number sentence and state the complete answer.

1. The EPP class of Mrs. Fara-on started gardening at 3:45 p.m. and finished at 4:20 p.m. How long did they spend for gardening?

2. Teacher Elsie started telling a story to her kinder pupils at 10:15 a.m. and finished it at 10:35 a.m. How long is the story time?

3. At 6:42 p.m., Jhonabel starts answering her assignments. She finished it at 7:10 p.m. How long did she answer her assignments?

4. Aivan and Arjay went to an internet shop to research for their project in Science. They started researching at 5:25 p.m. and ended at 5:55 p.m. How long is their researching time?

5. After dinner, instead of watching TV, Akira always volunteers to wash the dishes and clean the dining table. She does this from 6:15 p.m. to 6:36 p.m. How many minutes did she spend washing the dishes and cleaning the dining table?

Now, record the time you finish answering the activity, then find the elapsed time. How long did you answer the activity? That is your own actual elapsed time for completing the activity.

To check, please go to page 15 for the ***Answer Key***. Congratulations for reaching this part of the module. You can always review the previous pages of this module if you need to.

Answer Key

What I Know

1. A
2. B
3. 0:15 or 15 minutes
4. 0:34 or 34 minutes
5. 8:47 → 8:50 ; 5:32 → 5:30 ; 3:20
6. 10:54 → 10:50 ; 9:43 → 9:40 ; 1:10
7. 6:09 → 6:10 ; 4:03 → 4:00 ; 2:10
8. 42:46 → 42:50 ; 39:49 → 39:50 ; 3:00
9. She answered her module for 55 minutes.
10. It took her 1:51 or 1 hour and 51 minutes in the grocery store.

What's In

1. 180 minutes
2. 240 seconds
3. 5 minutes
4. 9:45 AM
5. 5:08 PM
6. 11:57 AM

Assessment

1. 0:22
2. 0:00:21
3. 0:38
4. 0:40
5. 0:10
6. 0:40
7. 25 minutes
8. 30 minutes
9. 32 minutes
10. 46 minutes

What I Can Do

Group	Time Started	Time Ended	Actual Elapsed Time	Estimated Elapsed Time
Group 1	8:25 a.m.	8:52 a.m.	0:27	0:20
Group 2	8:25 a.m.	8:43 a.m.	0:18	0:10
Group 3	8:25 a.m.	8:49 a.m.	0:25	0:20
Group 4	8:25 a.m.	8:54 a.m.	0:29	0:20
Group 5	8:25 a.m.	8:37 a.m.	0:12	0:10

1. Group 5, Group 4
2. Subtraction
3. Group 3
4. Group 1, 3, and 4
5. Actual Elapsed Time

Additional Activities

1. 4:20 – 3:45 = N
   They spent 35 minutes for gardening.
2. 10:35 – 10:15 = N
   The story time is 20 minutes.
3. 7:10 – 6:42 = N
   She answered her assignment for 28 minutes.
4. 5:55 – 5:25 = N
   Their researching time is 30 minutes.
5. 6:36 – 6:15 = N
   She spent 21 minutes washing the dishes and cleaning the dining table.

What's More

Activity A

1. 50 seconds
2. 50 minutes

Activity B

1. 0:00:44 or 44 seconds
2. 0:49 or 49 minutes
3. 0:36 or 36 minutes

Activity C

1.	Actual Times	Rounded Times
Time Ended	11:47	11:50
Time Started	11:34	11:30
Estimated Elapsed Time		0:20

2.	Actual Times	Rounded Times
Time Ended	5:42	5:40
Time Started	5:08	5:10
Estimated Elapsed Time		0:30

Activity D

1. The time spent washing the clothes.
2. Time ended: 8:55 a.m.
   Time started: 8:10 a.m.
3. Subtraction
4. 8:55 – 8:10 = N
5. 8:55
   - 8:10
   0:45
6. The time they spent washing their clothes is 45 minutes.

References

Tabilang, Alma R. et al. *Mathematics 4 Learner's Material.* Department of Education. 2015.

Tabilang, Alma R. et al. *Mathematics 4 Teacher's Guide.* Department of Education. 2015.

For inquiries or feedback, please write or call:

Department of Education - Bureau of Learning Resources (DepEd-BLR)

Ground Floor, Bonifacio Bldg., DepEd Complex
Meralco Avenue, Pasig City, Philippines 1600

Telefax: (632) 8634-1072; 8634-1054; 8631-4985

Email Address: blr.lrqad@deped.gov.ph * blr.lrpd@deped.gov.ph