Georgia Department of Education
Deconstructing Georgia Standards of Excellence
Mathematics Standard/Element Using The 5-Step Protocol

Code:	MGSE3.MD.1
Standard and/or Element:	**Tell and write time to the nearest minute and measure elapsed time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram, drawing a pictorial representation on a clock face, etc.**

1. Determine and define vocabulary. *Identify and underline key terms within the standard(s) and/or element(s). Define each term as it relates to the standard.*

Time is the duration of an event from beginning to end. Time can be measured in standard units such as seconds, minutes, hours, and days. Time is also categorized by A.M. or P.M. Both an analog and digital clocks are instruments to tell time. Time can be told to the nearest hour, half hour, quarter hour, or to the minute. Elapsed time can be found by finding the total amount of time that passes between a starting time and an ending time. In some problems, you may know the elapsed time and have to calculate the beginning or ending time. Essential vocabulary for this standard includes: **second, minute, hour, day, elapsed time, analog clock, digital clock, A.M.,** and **P.M.**

2. Study the standard(s) and/or element(s). *Identify concepts and skills students will need to know, understand, and be able to do to reach proficiency. Generate key implementation questions related to the standard and/or element(s). Answer each question.*

One expectation in the third grade is for students to solve elapsed time, including word problems. Students could use clock models, t-charts, or number lines to solve. On the number line, students should be given the opportunities to determine the intervals and size of jumps on their number line. Students could use pre-determined number lines (intervals every 5 or 15 minutes) or open number lines (intervals determined by students).

Teachers may want to begin with a discussion of daily activities in students' lives and the amount of time those activities typically take. For example, getting ready for school may begin at 7:06 AM and end at 7:36 AM, a 30 minute duration. Then engage students in a discussion of activities that typically happen during the school day and their estimates of the duration of these activities. One book that explores elapsed time, The Long Wait by Annie Cobb, discusses wait-time at an amusement park. As the calculations are made, you should encourage students to explore a linear model of time as well as a traditional analog clock. The linear model can be created using an open number line. Jumps are made from the beginning time to the ending time much like movement on a number line and increments of time may be recorded above the jumps.

Throughout this unit, it is important to provide situations with a variety of problem types. These types include: End Time Unknown, Start Time Unknown, and Change of Time Unknown. Students will also need to use addition and subtraction situations when calculated elapsed time with multiple events.

Make It Rigorous
- Oliver says that it is about 1:45. What could the exact time be?
- How could you show how long it took Sally to get from home to school if she left at 8:30 and got there at 9:05?
- What information would you need to know in order to determine what time you need to leave the house in order to make it to your 10:15 a.m. doctor's appointment ?
- Jeff has a 4 hour and 30 minute flight to Utah. He leaves Baltimore at 7:30am. What time does he arrive in Utah? Show two different ways to solve this problem.
- How can you use a number line to show elapsed time?

> **3. Scaffold understanding and communicate the language of the standard and/or element(s).**
> *Paraphrase the standard) and/or element(s). Create a "script" that details how teachers will describe the standard and/or element(s) to students.*

As referenced in the video, there are several books that help students relate elapsed time to daily activities, Making connection to daily events allows students to conceptualize elapsed time situations.

In this unit, we are going to explore time. When we think about the activities we do each day, we know that they have a start time and an end time. The change in time is called "elapsed time". How long did the activity last?

We can use tools such as open number lines and t-charts to help us calculate elapsed time. We can also use these tools to find the start time and end time when we are given the elapsed time.

4. Develop "I can" statements. *Describe the standard(s) and/or element(s) as statements of intended learning (e.g., "I can use information from what I read to draw conclusions (make inferences)"; "I can use mathematical vocabulary to describe how I solved a problem," etc.).*

I can measure elapsed time to the nearest minute.

I can solve word problems involving addition of time.

I can solve word problems involving subtraction of time.

I can tell time to the nearest minute.

I can write time to the nearest minute.

5. Establish success criteria by identifying strong and weak work. *Identify the characteristics of strong and weak work related to the standard and/or element(s). Identify common misconceptions.*
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Strong Work	Weak Work
- Students are able to tell time to the minute on both analog and digital clocks. - Students can differentiate between activities that occur in the AM and PM. - Students can use number lines and t-charts to calculate the elapsed time, start time, and end time.	"Student overgeneralizes base-10 and applies it to measurements inappropriately. For example, when asked to change 1 hour 15 minutes to minutes, the student responds with 115 minutes or with 25 minutes. When asked to change 1 hour 15 minutes to hours, the student responds with 1.15 hours." (from America's Choice, Misconceptions and Errors) Students may not understand how noon and midnight are shown on a clock and how this impacts computing elapsed time. Therefore, students may have difficulty counting these intervals of time. (Van de Walle, Grades 3-5, pg.339)