MA.3.M.2.2

Overarching Standard: MA.3.M.2 Tell and write time and solve problems involving time.

Benchmark of Focus

MA.3.M.2.2: Solve one- and two-step real-world problems involving elapsed time.

Example: A bus picks up Kimberly at 6:45 a.m. and arrives at school at 8:15 a.m. How long was her bus ride?

Benchmark Clarifications:

Clarification 1: Within this benchmark, the expectation is not to include crossing between a.m. and p.m.

Related Benchmark/Horizontal Alignment

- MA.3.NSO.2.2
- MA.3.AR.1.2

Vertical Alignment

Previous Benchmarks	Next Benchmarks
MA.2.M.2.1	MA.4.M.2.1

Purpose and Instructional Strategies

The purpose of this benchmark is for students to apply their understanding of telling and writing time to solve one- and two-step real-world problems involving elapsed time. Elapsed time can be represented within a single hour (e.g., determining when a half-hour gym class would end if it began at 8:10 a.m.) or crossing into the next hour (e.g., determining when a half-hour gym class will end if it began at 8:45 a.m.). Elapsed time should not include crossing between a.m. and p.m. This is the first grade where students will be expected to determine elapsed time.

- When solving problems with elapsed time, students may see different problem types. Students may see result unknown problems (e.g., determining when an activity ends, given the starting time and length of activity), change unknown problems (e.g., determining the length of an activity, given the starting and end times), or start unknown problems (e.g., determining the starting time, given the length of the activity, and ending time) (MTR.2.1, MTR.7.1).

- A great way for students to work with elapsed time problems is to use number lines. It is important to note that when using number lines during instruction, students should be given the opportunities to determine the intervals and size of jumps on their number line. Students could use pre-marked number lines (intervals every 5 or 15 minutes) or open number lines (intervals determined by students). Open number lines encourage students to jump from one point on the line to another any way they choose, allowing them to calculate flexibly. Students should compare their open number line strategies with one another, and then make connections between them during classroom discussions.

- In real-world elapsed time problems, students use open number lines to represent solutions in many ways. Two open number lines that represent the benchmark's example are below.
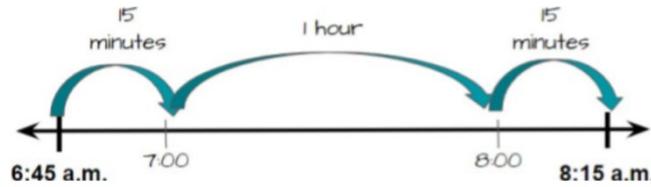
  - o In this example, the student counted up to benchmark hours, then an additional 15 minutes to jump to 8:15 a.m. The student would reason that the elapsed time is the sum of the jumps, or 1 hour and 30 minutes.
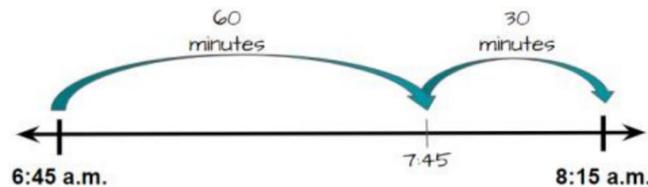
  - o In this example, the student jumped 60 minutes to 7:45 a.m., and then another 30 minutes to 8:15 a.m. In this example, the student would represent the answer as 60 minutes + 30 minutes, or 90 minutes.

  - o Notice that both the answers of 1 hour and 30 minutes and 90 minutes are acceptable. Students' solutions may be expressed as hours and minutes or minutes only. Conversion from minutes to hours or hours to minutes is not expected in Grade 3, so students should see both as correct (MTR.2.1, MTR.5.1).

- In addition to number lines, Judy clocks provide a great visual to help students identify elapsed time and can be used to help students solve real-world problems (K12.MTR.2.1).

- Elapsed time problems can involve multiplication and division. For example, if Petra starts running laps at 9:55 a.m. and runs 6 laps at 2 minutes per lap, what time does she finish?

Common Misconceptions or Errors

- Students can confuse when time crosses the hour because it does not follow the familiar base ten pattern. For example, students can misinterpret that the elapsed time between 9:55 a.m. and 10:05 a.m. and state that the elapsed time is 50 minutes because they have found the difference from 55 to 105. The use of number lines and clocks side-by-side help students build understanding about how elapsed time is calculated.

Strategies to Support Tiered Instruction

- Instruction includes the use of number lines and clocks side-by-side to help students build understanding about how elapsed time is calculated.
- Instruction includes using a number line and counting by ones to demonstrate what happens when time crosses the hour because it does not follow the familiar base ten pattern.
  - o For example, use a number line to find the elapsed time between 9:55 a.m. and 10:05 a.m. and explain what happens when time crosses the hour at 10:00 a.m.

9:55 + 5 minutes = 10:00   10:00 + 5 minutes = 10:05

+1 min. +1 min. +1 min. +1 min. +1 min. +1 min. +1 min. +1 min. +1 min. +1 min.

9:55   9:56   9:57   9:58   9:59   **10:00**   10:01   10:02   10:03   10:04   10:05
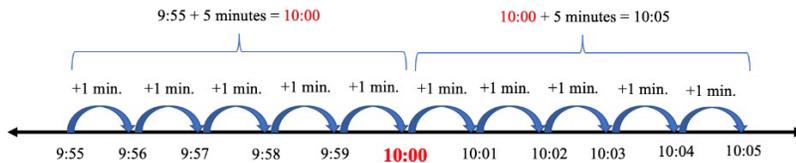
- Instruction includes using a geared manipulative clock.
    - For example, the teacher uses a geared manipulative clock model how to find the elapsed time between 9:55 a.m. and 10:05 a.m. Students should move the minute of the hand one minute at a time from 9:55 to 10:00. After each minute, the teacher asks students to record what time it is. The teacher should have students pay special attention to what happens when the minute hand moves from 9:59 to the next minute.

9:55 + 5 minutes = 10:00

10:00 + 5 minutes = 10:05
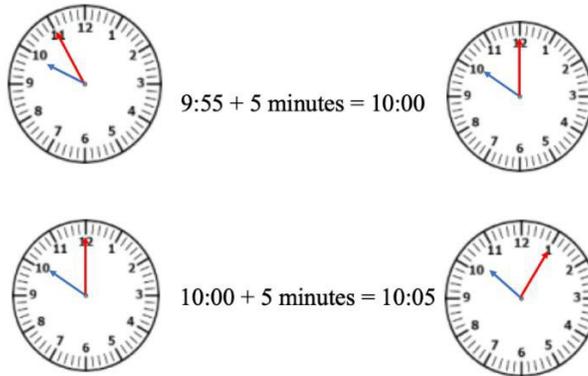
Questions to ask students:

Tell student that a movie starts at 8:30 a.m. and ask what time will it be after the movie if the movie is 1 hour and 46 minutes?

- *Sample answer that indicates understanding:* It will be 10:16 a.m. Student uses a number line or other strategy to prove their answer.
- *Sample answer that indicates incomplete understanding or a misconception:* 9:76 (student counted the hours correctly but thought the minutes went up to 100 before moving to the next hour)

Ask students to draw a number line to show how much time will pass. It is 11:15 AM. Lunch is at 11:50 AM. How many minutes until lunch?

- *Sample answer that indicates understanding:*

15 minutes +   20 minutes   = 35 minutes

11:15

11:30   11:50
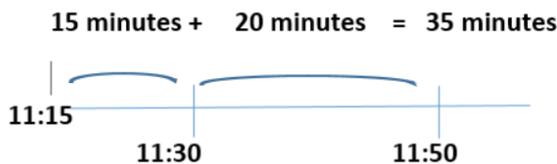
Instructional Tasks

Instructional Task 1

Recess began at the time shown on Clock A. Recess ended at the time shown on Clock B.

Clock A	Clock B

How many minutes were spent at recess?

Instructional Task 2

Anthony began reading at the time shown on Clock A. He stopped at the time shown on Clock B.

Clock A	Clock B

How many minutes did Anthony spend reading?

Instructional Items

Instructional Item 1

Each week, Victor attends violin lessons that last 55 minutes. If the lesson begins at 4:30 p.m., what time will it end?

Achievement Level Descriptors

Benchmark	Context	Assessment Limits
MA.3.M.2.2 Solve one- and two-step real-world problems involving elapsed time. Example: A bus picks up Kimberly at 6:45 a.m. and arrives at school at 8:15 a.m. How long was her bus ride? Clarification 1: Within this benchmark, the expectation is not to include crossing between a.m. and p.m.	Real-world	Items will not include a visual model. Reponses greater than or equal to 60 minutes will be expressed in hours and minutes.

ALD 2	ALD 3	ALD 4	ALD 5
solves one-step word problems involving addition or subtraction of time intervals in minutes when the interval does not include a new hour (e.g., 8:15 to 8:25).	solves one-step word problems involving elapsed time.	solves one- and two-step real-world problems involving elapsed time.	identifies an error and solves one- and two-step real-world problems involving elapsed time.

Additional Resources:

[CPALMS Resources](#)

Resources/Tasks to Support Your Child at Home:

When you are driving, ask your child questions about how long it takes to get to certain places. Vary your questions by asking about the start time, the ending time, or the elapsed time. For example, if you are driving to school, you can ask the following different questions:

- If we want to get to school at 7:40 and it takes us 15 minutes to get there, what time should we leave?
- If we leave at 7:15 and it takes us 15 minutes to get to school, what time will we arrive?
- If we leave for school at 7:20 and we get there at 7:35, how long did it take us to drive?

Khan Academy: [Telling Time with a Number Line](#)

Khan Academy: [Time Differences Example](#)

Khan Academy: [Time Word Problem: Travel Time](#)

Khan Academy: [Time Word Problem: Puzzle](#)

LearnZillion Video: [Solving Elapsed Time Word Problems to the Nearest Minute](#)

LearnZillion Video: [Solving Elapsed Time Word Problems Using a T-Chart](#)

LearnZillion Video: [Identifying the Start Time, Change of Time, and End Time in Real-World Elapsed Time Problems](#)