

MA.4.M.2.1

Overarching Standard: *MA.4.M.2 Solve problems involving time and money.*

Benchmark of Focus

MA.4.M.2.1.: Solve two-step real-world problems involving distances and intervals of time using any combination of the four operations.

Benchmark Clarifications

Clarification 1: Problems involving fractions will include addition and subtraction with like denominators and multiplication of a fraction by a whole number or a whole number by a fraction.

Clarification 2: Problems involving fractions are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.

Clarification 3: Within the benchmark, the expectation is not to use decimals.

Related Benchmark/Horizontal Alignment

- MA.4.M.1.2

Vertical Alignment

Previous Benchmarks

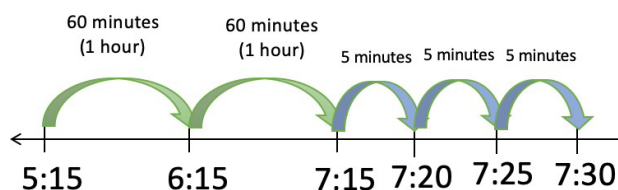
MA.3.M.2.2

Next Benchmarks

Purpose and Instructional Strategies

The purpose of this benchmark is to connect concepts of unit conversions to time and distance and solve problems with these conversions. In Grade 3, students solved one- and two-step elapsed time problems without converting units of time or crossing from a.m. to p.m. or p.m. to a.m. (MA.3.M.2.2).

- For distance problems, students may need to understand multiplicative comparison (e.g., 20 is twice as many as 10).
- For instruction, an open number line is strategy students can use to solve elapsed time problems.



- Students need to spend time solving problems crossing between a.m. and p.m., and vice-versa.
- Students should also have a firm understanding of the terms quarter hour (15 minutes) and half hour (30 minutes).

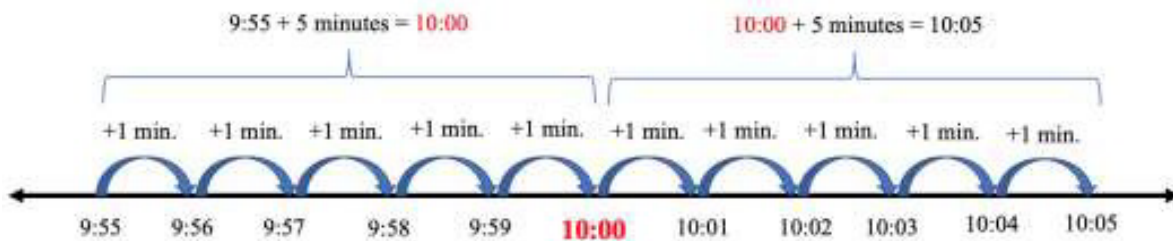
Common Misconceptions or Errors

- Students can confuse when time crosses the hour because it does not follow the base-ten pattern where they are familiar. 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.
 - 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.



- Instruction includes demonstrating what happens when time crosses the hour because it does not follow the familiar base ten pattern.
 - For example, instruction may include using a geared manipulative (Judy) clock to find the elapsed time between 9:55 a.m. and 10:05 a.m. Students move the minute of the hand one minute at a time from 9:55 to 10:00. After each minute, the teacher asks the students to record what time it is. The teacher has students pay special attention to what happens when the minute hand moves from 9:59 to the next minute.

Questions to ask students:

- **Ask students to explain the steps they took to solve the problem.**
- **While solving a word problem, ask what relationship they need to know to solve this problem.**
- Sample answer that indicates understanding: I know that the measure is 3 feet, but I have to figure out how many inches that is. I know that 12 inches is equal to one foot, so I need to had $12 + 12 + 12$, like if I had 3 rulers, or 3 groups of 12 inches.
- **See if students can appropriately label expressions and equations to model what was happening in the word problem.**
- **How can you relate a quarter of an hour and a half hour to fractions?**
- Sample answer that indicates understanding: I know that a quarter of an hour is 15 minutes, and a quarter is the same as $\frac{1}{4}$. A fourth of an hour is 15 minutes. Half is 30 minutes because $\frac{1}{2}$ of 60 minutes is 30 minutes.
- **What information do you need to determine elapsed time? What information do you need to determine start time? What information do you need to determine end time?**
- Sample answer that indicates understanding: For elapsed time, I need start time and end time. For start time, I need to know the elapsed time and the end time. To determine end time, I need to know the start time and the elapsed time.

Instructional Tasks*Instructional Task 1:*

Steve drove 2,465 miles away to college. On Parents' Weekend, his parents drove the distance round trip from home, with an additional 385 miles traveled to visit his sister on their return trip. How many total miles did his parents drive on Parents' Weekend?

Instructional Items*Instructional Item 1*

After lunch, Billy walked the dog for 17 minutes and then immediately after, did his chores for 58 minutes. If he finished his chores at 12:15 p.m., what time did he start walking the dog?

- a. 1:30 p.m.
- b. 1:13 p.m.
- c. 11:17 a.m.
- d. 11:00 a.m.

Achievement Level Descriptors

Benchmark		Context	Assessment Limits
MA.4.M.2.1 Solve two-step real-world problems involving distances and intervals of time using any combination of the four operations. Clarification 1: Problems involving fractions will include addition and subtraction with like denominators and multiplication of a fraction by a whole number or a whole number by a fraction. Clarification 2: Problems involving fractions are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100. Clarification 3: Within the benchmark, the expectation is not to use decimals.		Real-World	Items not including a fraction and including intervals of time will only cross from a.m. to p.m. and p.m. to a.m. Responses greater than 60 minutes can be expressed as total minutes or in hours and minutes.
ALD 2	ALD 3	ALD 4	ALD 5
solves one-step real-world problems involving whole numbers representing distances and intervals of time using any of the four operations.	solves two-step real-world problems involving distances and intervals of time less than 60 minutes, using any combination of the four operations limited to whole numbers. • solves one-step ad	solves two-step real-world problems involving distances and intervals of time using any combination of the four operations.	identifies an error and solves two-step real-world problems involving distances and intervals of time using any combination of the four operations.

Additional Resources:

[CPALMS Resources](#)

Khan Academy: [Time Differences Example](#)

Khan Academy: [Measurement word problems: running laps](#)

Resources/Tasks to Support Your Child at Home:

Khan Academy: [Time Word Problem: travel time](#)

Khan Academy: [Time word problem: puzzle](#)

When completing any task, point out start times, end times, and elapsed times to your child. For example, if I started cooking at 6:00 pm, and finished in an hour and a half, how long did it take me to cook? Or, if we need to be at soccer practice at 7:30, and it takes 20 minutes to get there, what time should we leave?