

1.MD: MEASUREMENT & DATA

Cluster Statement: B: Tell and write time.

Additional Cluster (Students should spend the large majority of their time (65-85%) on the major work of the grade/course. Supporting work and, where appropriate, additional work should be connected to and engage students in the major work of the grade.)

<p>Standard Text</p> <p>1.MD.B.3: Tell and write time in hours and half-hours using analog and digital clocks.</p>	<p>Standard for Mathematical Practices</p> <p>SMP 7: Students can look for and make use of structure by making connections between fractions and time and using phrases such as "half past" to tell time.</p> <p>SMP 8: Students look for and express regularity in repeated reasoning by noticing that each hour is comprised of 60 minutes and that the minute hand is read the same no matter what the hour is.</p>	<p>Students who demonstrate understanding can:</p> <ul style="list-style-type: none"> • Identify the difference between an analog and digital clock. • Identify the hour and minute hand on an analog clock. • Remember how many minutes are in an hour and a half-hour. • Observe time to the hour and half-hour. • Write the time in hours and half-hours when given a time verbally. • Draw hands on a clock to show a given time in hours and half-hours. • Relate time on both digital and analog clocks. • Explain what "o'clock" and "thirty" mean.
		<p>Depth of Knowledge: 1</p>
<p>Previous Learning Connections</p> <ul style="list-style-type: none"> • Connect to the fact that while Kindergarten does not have specific standards for time, over the course of a day they are exposed to concepts of time such as the morning, or afternoon, etc. 	<p>Current Learning Connections</p> <ul style="list-style-type: none"> • Connect telling time to the nearest half-hour to partition circles into halves. (1.G.3) 	<p>Bloom's Taxonomy: Remember and Understand</p> <p>Future Learning Connections</p> <ul style="list-style-type: none"> • Connect to telling and writing time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. (2. MD.7) • Connect to telling and writing time to the nearest minute and measure time intervals in minutes. Connect to solving word problems involving addition and subtraction of time intervals in minutes, for example, by representing the problem on a number line diagram. (3. MD.1)

Clarification Statement:

Students need to experience a progression of activities for learning how to tell time from a one-handed **clock** to tell time in **hour** and **half-hour** intervals to clocks with the hour and minute **hand**. Students should also make connections between **digital** and **analog** clocks.

Common Misconceptions

- Students may have difficulty noticing the differences between the two hands on an analog clock and how they work.
- Students may have difficulty identifying the time on an analog clock when the hour hand is not directly pointing to a number.

Multi-Layered System of Supports (MLSS)/Suggested Instructional Strategies

Pre-Teach

Pre-teach (targeted): *What pre-teaching will prepare students to productively struggle with the mathematics for this cluster within your HQIM?*

- For example, some learners may benefit from targeted pre-teaching that rehearses new mathematical language when studying tell and write time because when learning how to tell time to the hour and half hour students need to know the proper language and vocabulary attached to accurately tell time.

Pre-teach (intensive): *What critical understandings will prepare students to access the mathematics for this cluster?*

- 1.MD.B.3: This standard is the foundation for work with tell and write time because telling time to the hour and half hour in first grade is an additional cluster and is introduced in first grade to continue work in 2nd grade. If students have unfinished learning within this standard, based on assessment data, consider ways to provide intensive pre-teaching support prior to the start of the unit to ensure students are ready to access grade level instruction and assignments.

Core Instruction

Access

Physical Action: *How will the learning for students provide a variety of methods for navigation to support access?*

- For example, learners engaging with tell and write time benefit when learning experiences ensure information is accessible to learners through a variety of methods for navigation, such as varying methods for response and navigation by providing alternatives to requirements for rate, timing, speed, and range of motor action with instructional materials, physical manipulatives, and technologies; physically responding or indicating selections; physically interacting with materials by hand, voice, single switch, joystick, keyboard, or adapted keyboard because when teaching time students need to physically see how the hands move and how to count the minutes on the clock. They need to be able to see the time change and to create a model of one.

Build

Effort and Persistence: *How will the learning for students provide options for sustaining effort and persistence?*

- For example, learners engaging with tell and write time benefit when learning experiences attend to students attention and affect to support sustained effort and concentration such as providing feedback that encourages perseverance, focuses on development of efficacy and self-awareness, and encourages the use of specific supports and strategies in the face of challenge because as students are learning

how to tell and write time they need constant feedback to know that they are doing so correctly. In second grade students quickly move onto telling time to the nearest 5 minutes. They need to be able to tell time to the hour and half-hour.

Language and Symbols: *How will the learning for students provide alternative representations to ensure accessibility, clarity and comprehensibility for all learners? (e.g., a graph illustrating the relationship between two variables may be informative to one learner and inaccessible or puzzling to another; picture or image may carry very different meanings for learners from differing cultural or familial backgrounds)*

- For example, learners engaging with tell and write time benefit when learning experiences attend to the linguistic and nonlinguistic representations of mathematics to ensure clarity can comprehensibility for all learners such as pre-teaching vocabulary and symbols, especially in ways that promote connection to the learners' experience and prior knowledge because when telling time in first grade there are many vocabulary words that can be difficult to understand. For example: half past, half hour, etc.

Expression and Communication: *How will the learning provide multiple modalities for students to easily express knowledge, ideas, and concepts in the learning environment?*

- For example, learners engaging with tell and write time benefit when learning experiences attend to the multiple ways students can express knowledge, ideas, and concepts such as using physical manipulatives (e.g., blocks, 3D models, base-ten blocks) because students need to physically see how the hands move and how to count the minutes on the clock. They need to be able to see the time change and to create a model of one.

Internalize:

Comprehension: *How will the learning for student's support transforming accessible information into usable knowledge, knowledge that is accessible for future learning and decision-making?*

- For example, learners engaging with tell and write time benefit when learning experiences attend to students by intentionally building connections to prior understandings and experiences; relating important information to the learning goals; providing a process for meaning making of new learning; and, applying learning to new contexts such as providing interactive representations that guide exploration and new understandings because it is important for first graders to see and comprehend how a clock works in order for them to abstractly tell time.

Re-teach

Re-teach (targeted): *What formative assessment data (e.g., tasks, exit tickets, observations) will help identify content needing to be revisiting during a unit?*

- For example, students may benefit from re-engaging with content during a unit on tell and write time by clarifying mathematical ideas and/or concepts through a short mini-lesson because when telling time in first grade they frequently misinterpret how the numbers on the clock are supposed to be read. Therefore, re-teaching this skill in a small group will benefit them, providing a lot of time for practice.

Re-teach (intensive): *What assessment data will help identify content needing to be revisited for intensive interventions*

- For example, some students may benefit from intensive extra time during and after a unit tell and write time by confronting student misconceptions because students frequently misinterpret the numbers on the clock. They may say it is two, six; instead of two thirty. Giving students more time for practice will help clear up these misconceptions.

Extension

What type of extension will offer additional challenges to 'broaden' your student's knowledge of the mathematics developed within your HQIM?

- For example, some learners may benefit from an extension such as the opportunity to understand concepts more quickly and explore them in greater depth than other students, when studying telling and writing time because students who already grasp the concept of telling time to the hour and half hour may be ready explore the connections between time and astronomy.

Culturally and Linguistically Responsive Instruction:

Validate/Affirm: How can you design your mathematics classroom to intentionally and purposefully legitimize the home culture and languages of students and reverse the negative stereotypes regarding the mathematical abilities of students of marginalized cultures and languages?

Build/Bridge: How can you create connections between the cultural and linguistic behaviors of your students' home culture and language the culture and language of school mathematics to support students in creating mathematical identities as capable mathematicians that can use mathematics within school and society?

Facilitating Meaningful Mathematical Discourse: Mathematics discourse requires intentional planning to ensure all students feel comfortable to share, consider, build upon and critique the mathematical ideas under consideration. When student ideas serve as the basis for discussion we position them as knowers and doers of mathematics by using equitable talk moves students and attending to the ways students talk about who is and isn't capable of mathematics we can disrupt the negative images and stereotypes around mathematics of marginalized cultures and languages. "A discourse-based mathematics classroom provides stronger access for every student — those who have an immediate answer or approach to share, those who have begun to formulate a mathematical approach to a task but have not fully developed their thoughts, and those who may not have an approach but can provide feedback to others." For example, when studying tell and write time facilitating meaningful mathematical discourse is critical because telling time is an abstract skill requiring students to be able to count, determine the meaning between hours and minutes and knowing all the required vocabulary to make sense of the clock, allowing discussion around this will allow for misunderstandings to be cleared and peer to peer.

Standards Aligned Instructionally Embedded Formative Assessment Resources:

Source: <http://tasks.org/cillustrativemathematicscontent-standards/1/MD/B/tasks/992>

Making a Clock

Materials

- 12 sheets of laminated paper or tag board with the numbers 1-12
- 12 sheets of laminated paper or tag board with the numbers 0, 5, 10, ... 55
- 1 long arrow (minute hand)
- 1 short arrow (hour hand)
- White board, dry erase marker
- 1 large clock face with hands that can be moved to different positions
- Small clock faces with hands that can be moved to different positions (1 for each pair of students)
- A cut-out circle with the sun on one side and moon on the other.

Actions

The students sit in a large arc/rainbow. The teacher explains that they are going to make a giant clock to practice telling time.

The teacher shows students a clock and asks what numbers they see on it. After students respond, the teacher has students help position the tag board sheets with the numbers 1-12 in a circle on the floor to represent a clock. Students count from 1 o'clock through 12 o'clock as the numbers are laid out.

Then the teacher says,

There are 60 minutes in an hour. When the minute hand goes from one number to the next, that means five minutes have passed. It starts on the 12; that means 0 minutes have passed. Then the teacher has a student put the paper with the 0 below the paper with the 12 on it. Next, the teacher models counting by 5's, having a student place the corresponding number of minutes below each of the numbers 1-11.

Then the teacher says,

When the minute hand reaches 12 again, that is 60 minutes, and one hour has passed. Now the count starts over for the next hour.

The students and teacher can count by 5s together pointing to each of the numbers 1-11.

The teacher then discusses the hour and minute hands and shows how they move in a clockwise direction. The teacher models moving the hands to show time to the hour and half hour.

In pairs, the students create the same time on their mini clocks. The teacher guides the students in telling the times to their partner and shows them how to write the times on the whiteboard in both word format (i.e. eight o'clock) and digital format (8:00).

Once students have demonstrated proficiency in identifying what time it is, the teacher uses the moon/sun icon to show that the same time can occur at night or during the day. For example, she can model 12:00 lunchtime and hold up the sun icon, and model 12:00 while the students are in bed and hold up the moon icon. This can be extended with other events that are relevant to the students' lives.

This type of assessment question introduces students to the concept of reading an analog clock. Students would then tell time to the hour and half-hour. This task can be extended by having students take turns moving the hour and minute hands on the class clock or mini clocks, as well as figuring out the times. The teacher should use times that are on the hour and half hour (example: 12:00, 1:30, 4:00, 6:30, etc). Students can also write the times on paper or mini whiteboards. To teach the vocabulary of "clockwise," students can practice a clock dance with their partner. The partners face each other, and one gently moves the other's arm in a clockwise motion through each imaginary number on a clock, chanting one o'clock, two o'clock, etc. Or, the teacher can lead the entire class through a clock dance, with the students moving their own arms.

Relevance to families and communities:

During a unit focused on tell and write time, consider options for learning from your families and communities the cultural and linguistic ways this mathematics exists outside of school to create stronger home to school connections for students, Identify the time frame of favorite TV shows, Identify the length of time for sporting event (break up halves or quarters into time lengths, Discuss with parents the times they do important things during the day (wake-up, go to school, get out of school, eat dinner, go to bed). They can then make a schedule of their day writing the times in analog or digital format.

Cross-Curricular Connections:

Social Studies: Different map skills are often explored in first grade, including classroom and neighborhood maps. Consider providing a connection for students to read or write times related to visiting different locations on the map.

Language Arts: Literature can offer connections about measurement such as: *The Grouchy Ladybug* by Eric Carle.