

Core Content

Cluster Title: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

Standard 1: Tell and write time to the nearest minute and measure 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.

MASTERY Patterns of Reasoning:

Conceptual:

Students will understand how many minutes are in an hour.

Students will understand that the clock can be divided into fifteen-minute intervals.

Students will understand that hour and minute hands move at different rates.

Students will understand the concept of elapsed time, including between a.m. and p.m.

Students will understand concepts of whole, half and quarter, as they relates to a number line.

Students will understand how to apply estimation of time for different tasks (e.g., about how long is your favorite T.V. show?).

Procedural:

Students can write time on a digital clock and draw hands on analog clock to a precise minute.

Students can accurately compute elapsed time to the nearest minute.

Students can solve elapsed time word problems using addition and subtraction.

Students can figure elapsed time on a number line.

Representational:

Students can demonstrate a given time on an analog and digital clock to the nearest minute.

Students can demonstrate elapsed time on a number line.

Students can describe strategies used to solve elapsed time in story problems.

Supports for Teachers

Critical Background Knowledge	
<p>Conceptual:</p> <ul style="list-style-type: none"> Students will understand the parts of a clock, and how they work. Students will know that there are 60 seconds in a minute, 60 minutes in an hour, 24 hours in a day, and the meaning of a.m. and p.m. Students will understand that the clock is divided into intervals (5 minutes, 10 minutes, 15 minutes, 30 minutes, etc.). Students will understand the concept of a number line. Students will understand the terms before, after, ago, from now, start, end, begin, half past, o'clock. Students will understand how to write time, using the colon correctly. <p>Procedural:</p> <ul style="list-style-type: none"> Students can tell time from an analog and digital clock to within five minutes. Students can represent time in written form (e.g., 3:25). <p>Representational:</p> <ul style="list-style-type: none"> Students can manipulate a number line as a tool to solve simple addition and subtraction time problems. Students can manipulate a model clock to show time. 	
Academic Vocabulary and Notation	
<p>elapsed, quarter to/till, quarter of, quarter past, quarter after, midnight, noon</p>	
Instructional Strategies Used	Resources Used

<p>Organize a year-long sunrise/sunset project with weekly data collection of the time of sunrise and sunset, figuring the length of day, and plotting it on a graph.</p> <p>Stop work intermittently during the day to record time on a representation of an analog clock, writing what time it is, and figuring the elapsed time from the previous recording.</p> <p>Teach students how to figure elapsed time on a number line.</p> <p>Have students estimate the time until the next subject, lunch, recess, etc., then figure out the actual elapsed time.</p>	<p>Harper, Don. <i>Telling Time with Big Mama Cat</i>. HMH Books, 1998.</p> <p>Murphy, Stuart. <i>Game Time (MathStart 3)</i>. HarperCollins, 2000.</p> <p>Carle, Eric. <i>The Grouchy Ladybug</i>. HarperCollins, 1996.</p> <p>Axelrod, Amy. <i>Pigs on a Blanket</i>. Aladdin, 1998.</p> <p>Hutchins, Pat. <i>Clocks and More Clocks</i>. Aladdin, 1994.</p> <p>Wiesner, David. <i>Tuesday</i>. HMH Books, 2011.</p> <p>Cave, Kathryn. <i>Just in Time</i>. Clarkson Potter, 1984.</p> <p>http://www.ixl.com/math/grade-3</p> <p>http://www.ixl.com/math/grade-2</p> <p>http://www.softschools.com/time/tellingtime.jsp</p> <p>http://math.pppst.com/tellingtime.html</p> <p>http://wartgames.com/themes/math/tellingtime.html</p>
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Assessment Tasks Used	
<p>Skill-Based Task: Tell and write time to the nearest minute, figuring elapsed time to the nearest minute both forward and backward, including between a.m. and p.m.</p> <p>Hannah is making brownies. They need to bake for 30 minutes. She put them in the oven at 4:30 p.m. At what time should she take them out?</p> <p>How long did Abby sleep if she went to bed at 8:45 p.m. and got up at 7:30 a.m.?</p> <p>Jason completed his bike tour 5 hours and 15 minutes after he started. If he finished at 2:30 p.m., what time did he start?</p>	<p>Problem Task: Create a schedule with set time parameters, including a given number of tasks.</p> <p>Figure the time necessary to complete a number of certain activities varying in length.</p> <p>Given a number line showing quarters and halves, figure elapsed time between two given times to the minute.</p> <p>John wants to play with his best friend. His mother said he can go play with his friend on Friday from 4:30 p.m. until 6:15 p.m., or he can play with his friend on Saturday from 11:30 a.m. until 1:45 p.m. Which day should he play with his friend? Justify your choice by using pictures, numbers and words.</p>