

Just In Time Quick Check
Standard of Learning (SOL) 4.9

Strand: Measurement and Geometry

Standard of Learning (SOL) 4.9

The student will solve practical problems related to elapsed time in hours and minutes within a 12-hour period.

Grade Level Skills:

- Solve practical problems related to elapsed time in hours and minutes, within a 12-hour period (within a.m., within p.m., and across a.m. and p.m.):
 - when given the beginning time and the ending time, determine the time that has elapsed;
 - when given the beginning time and amount of elapsed time in hours and minutes, determine the ending time; or
 - when given the ending time and the elapsed time in hours and minutes, determine the beginning time.

Just in Time Quick Check

Just in Time Quick Check Teacher Notes

Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
 - [4.9 - How Much Longer? \(Elapsed Time\)](#) (Word) / [PDF Version](#)
- VDOE Word Wall Cards: Grade 4 ([Word](#)) | ([PDF](#))
 - Elapsed Time

Supporting and Prerequisite SOL: [3.9a](#), [3.9b](#), [3.9c](#), [2.9](#)

SOL 4.9 - Just in Time Quick Check

1. Heidi woke up at 8:12 a.m. She ate breakfast and then watched television for a total of 2 hours. What time was it when Heidi finished watching television? Use a diagram, model, words, and/or numbers to show how you know.

2. Jaheim arrived at the park at 4:35 p.m. and left the park at 6:15 p.m. How long was Jaheim at the park? Create a number line or another model to find the answer and show your thinking.



3. Determine the elapsed time between the times shown on the two clocks.



Starting time

___ : ___ a.m.



Ending time

___ : ___ p.m.

Elapsed time _____

4. Janelle went to bed at 9:12 p.m. She had been up for 11 hours and 32 minutes. What was the time when Janelle got up that morning?

5. Santiago leaves for work in the morning at the time shown below. He gets home 11 hours and 6 minutes later. What time does Santiago get home? Use the number line or another model to show your thinking.



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Common Errors/Misconceptions and their Possible Indications

1. Heidi woke up at 8:12 a.m. She ate breakfast and then watched television for a total of 2 hours. What time was it when Heidi finished watching television? Use a diagram, model, words, and/or numbers to show how you know.

Some students may respond with 9:12 a.m., which may indicate students counting on two hours and including the 8:12 a.m. as the first hour in their count. These students may benefit from using geared analog clocks to model the context and determine the ending time. Teachers may also wish to encourage students to use a blank number line to count the hops between hours, as this model may help students visualize the passage of time.

2. Jaheim arrived at the park at 4:35 p.m. and left the park at 6:15 p.m. How long was Jaheim at the park? Create a number line or another model to find the answer and show your thinking.



Some students may respond with 2 hours 20 minutes, which may indicate they are subtracting hours (6 – 4) and then subtracting minutes (35 – 15). These students may not understand that breaking apart the hours and minutes and rearranging the order of the minutes to subtract 15 from 35 is not a valid action. Students may benefit from more experiences using manipulative clocks with gears to model the passing of time and determine the amount of time that has passed. Modeling the passage of time on a number line may also be helpful.

Some students may not understand or be able to apply the relationship between minutes and hours. Teachers may wish to provide scaffolded practice where students first practice elapsed time with hours and then minutes before transitioning to both hours and minutes. Using real life examples, such as determining elapsed time between activities throughout the school day, may make this skill more relevant to students.

3. Determine the elapsed time between the times shown on the two clocks.



Starting time

___ : ___ a.m.



Ending time

___ : ___ p.m.

Elapsed time _____

Some students may have difficulty with this problem due to a lack in understanding of the 12-hour cycle as it crosses from a.m. to p.m. Demonstrating how hours 13-24 relate to hours 1-12 in a 24-hour period may assist students in the conceptualization of the 12-hour cycles within the 24-hour period. Some students may add or subtract the beginning and ending times to determine elapsed time. Experiences that include using an interactive

analog clock with gears, open number line, or t-chart in determining elapsed time and exposure to peers' problem-solving strategies may be beneficial to students.

If students struggle with determining the elapsed time, first check to see if they determined the starting and ending times accurately. Some students may have difficulty with telling time on analog clocks or may confuse the minute and hour hands. Some students may have difficulty counting the clock numbers by fives to determine the associated minute time (i.e. when the minute hand is at 4, this represents 20 minutes after the hour). Teachers may wish to provide a labeled analog clock as students develop this skill, labeling the short hand as "hours" and the long hand as "minutes," as well as labeling the hour numbers on the clock with the multiples of five that coincide with the minute time.

4. Janelle went to bed at 9:12 p.m. She had been up for 11 hours and 32 minutes. What was the time when Janelle got up that morning?

Some students may have difficulty with this problem because they must work backward from the ending time to determine the unknown beginning time. Students may benefit from more experiences with practical problems when the beginning time is unknown. Teachers may want to encourage students to create a chart where they fill in the two parts of the problem that are known (in this problem, the ending time and elapsed time are known) and place a question mark in the unknown part (in this problem the starting time is unknown). Using organizers or models (e.g., open number line, t-chart, interactive analog clock) may be helpful when solving practical problems involving elapsed time.

5. Santiago leaves for work in the morning at the time shown below. He gets home 11 hours and 6 minutes later. What time does Santiago get home? Use the number line or another model to show your thinking.



Students may have difficulty with this problem because they must read the analog clock and then determine the missing end time. Some students may not realize that the answer should be reported as p.m. These students will benefit from more opportunities to solve practical problems involving elapsed time that include crossing from a.m. to p.m. and vice versa. Classroom discussions during which peers share strategies and models may be helpful. Teachers may wish to encourage students to create a chart where they fill in the two parts of the problem that are known and place a question mark in the unknown part. Additionally, using interactive analog clocks with gears, as well as number lines, will assist students in modeling the passage of time.