InsightMath California

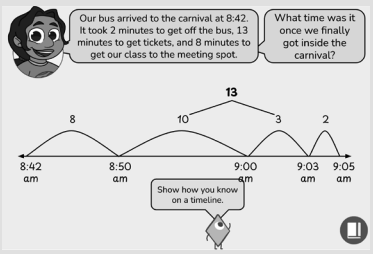
Making Connections with Time and Data

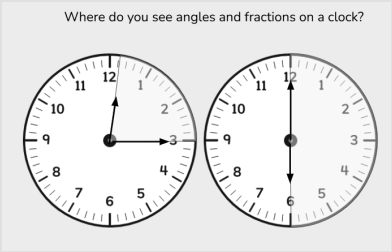
Family Guide | Grade 4 | Unit 10

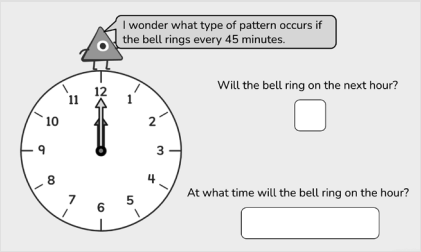
Your student is exploring how time can be represented with a variety of models that can help to solve problems and interpret data.

Key Math Ideas

In this unit, your student will consider how time is measurable and explore how it can be represented in different ways. Students first explore elapsed time through timelines, exploring relationships between start times, end times, and durations of time. They make connections between fractions and angles to better understand time measurement. Your student will also connect time measurement to real-life situations, recognizing patterns and solving real world problems. This skill helps them lay the groundwork for future lessons about variables.





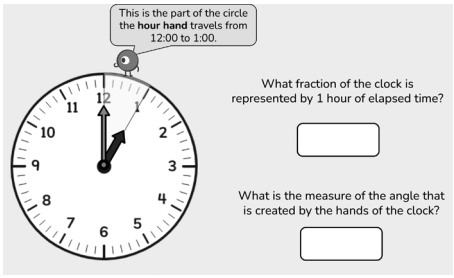


→ In the beginning of the unit, your student will learn to

- represent elapsed time in different ways, such as describing 2.5 hours as 2 hours and 30 minutes or 150 minutes;
- use timelines to represent times and elapsed times, including identifying start or end times;
- create line plots involving elapsed time and use the data to answer questions;
- solve word problems involving elapsed time.

→ In the middle of the unit, your student will learn to

- describe, identify, and convert between elapsed time of hours or minutes, angle measures, and fractions of a circle (for example, 1 hour of elapsed time is equivalent to a 30° rotation of the hour hand, which is $\frac{1}{12}$ of the circle as shown in the example to the right);
- tell and represent time on an analog clock with no markings, using the angles created by the hands.



→ At the end of the unit, your student will learn to

- convert larger units to smaller units of time, such as weeks to days or minutes to seconds;
- select their own strategies and models to solve word problems involving data and time;
- use their understanding of angles or fractions to make sense of and describe time data;
- consider contexts and ask clarifying questions to solve time problems.

Helpful Hint

Students often struggle to calculate elapsed time that bridges across the hour. For example, they may say that the time elapsed between 8:42 am and 9:05am is 1 hour and 37 minutes since 9 hr - 8 hr = 1 hr and 42 min - 5 min = 37 min. Encourage them to use a timeline to visualize how much time actually passed or to identify those times on an analog clock and determine how much time has passed.

Tips for Supporting Your Student at Home

Questions to Ask Your Student

→ In the beginning of the unit:

- How can you represent time on a number line?
- How can you write elapsed time in hours and minutes? Only minutes? As a fraction?
- How can you figure out how long an activity takes?

→ In the middle of the unit:

- What is the relationship between clocks and fractions and angles?
- How do fractions and angles help you tell time?
- How can you tell time if a clock does not have any markings?

→At the end of the unit:

- How can you use patterns to help make schedules?
- How do you use time to understand data and solve problems?
- How can you solve problems when you do not have all the information?

If...	Try...
your student interprets 3.25 as 3 hours and 25 minutes because they think that the decimal point separating the time is used to represent different-sized units of time . . .	using a clock face to show the decimal part of an hour. Remind students that 0.25 is a quarter ($\frac{1}{4}$) rotation or 15 minutes.

Student Strengths Spotlight

I take time to understand the problem and look for entry points.	Students spend time to breakdown the problem and try to look for the known quantities in the problem.
I do not give up, even when a problem is challenging.	Using a positive mindset, students show the willingness to learn and grow with every difficult problem.
I use math to represent a real-life situation.	Using examples from their daily life situations help students relate math to their daily life.

Try This Together!

- Our Daily Schedule. Talk with your student about time throughout their day and make connections between what they know about elapsed time and their after school or weekend activities. For example, if their gymnastics class starts at 4:15 p.m. and ends at 5:30 p.m., have them tell you how long the class is. Ask them to tell you in different ways, such as 1 hour and 15 minutes or 75 minutes. Also try giving students a start time and the duration of time and asking them to tell you the end time. For example, if their trombone lesson starts at 5:30 p.m. and is 45 minutes long, have them tell you what time it will end. You can also reverse it and give the duration of time and end time, and ask them what time the lesson would begin.
- Create your own silly time pattern! Choose a silly gesture or noise and create a time pattern. For example, if you say “meow” every 4 seconds and your student says “meow” every 5 seconds, have your student determine how often will you say “meow” at the same time. Since 4 and 5 have common multiples of 20, 40, 60, etc., you student will recognize that you will “meow” at the same time every 20 seconds. Test it out!