

Chapter 9: Measurement

Content Area: **Mathematics**
Course(s): **Math 1**
Time Period: **April**
Length: **12 Days**
Status: **Published**

Unit Summary

In unit 9, children measure lengths indirectly and by iterating length units (1.MD.A). They also tell and write time in hours and half hours (1.MD.B.3). Children learn to compare and order the lengths of objects to determine which is the longest and shortest. Children are then introduced to indirectly comparing the lengths of three objects using the Transitivity Principle. The lengths of objects are also measured using iterations of the same-sized units (1.MD.A.2). Children extend this concept by creating a measuring tool using nonstandard units and by solving word problems with measurement. The second half of the chapter focuses on telling time to the hour and half hour (1.MD.B). Children first identify time using only the hour hand. Then, children are introduced to how the movement of the minute hand is related to the movement of the hour hand. Throughout this unit, students will become familiar with and master the following academic terms: nonstandard units of measurement, longest, shortest, Transitivity Principle, analog clock, digital clock, time, hour hand, minute, hour, and half hour.

Standards

MA.K-12.2	Reason abstractly and quantitatively. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.
MA.K-12.8	Look for and express regularity in repeated reasoning. Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.
MA.1.MD.A	Measure lengths indirectly and by iterating length units.
MA.1.MD.A.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.
MA.1.MD.A.2	Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps.
MA.1.MD.B	Tell and write time.

MA.1.MD.B.3	Tell and write time in hours and half-hours using analog and digital clocks.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
TECH.8.1.2.A.CS1	Understand and use technology systems.
TECH.8.1.2.A.CS2	Select and use applications effectively and productively.

Student Learning Objectives

Students will learn to...

- Order objects by length
- Use the Transitivity Principle to measure indirectly
- Make a nonstandard measuring tool to measure length
- Solve measurement problems using the strategy act it out
- Tell times and write times to the hour and half hour

Essential Questions

- How is measurement used in the real world?
- How can comparing the lengths of objects help us to measure?
- How do we measure time?

Enduring Understandings

Students will understand that...

- Length measurement is applied to objects and distances.
- Comparative measurement can help us to establish the size of one object in relationship to another.
- We measure time in relation to hours and minutes and can record it in different ways.

Application

Students will be able to independently use their learning to...

- measure time, objects and distances.

Skills

Students will be skilled at...

- Ordering objects by length
- Using the Transitivity Principle to measure indirectly
- Measuring length using nonstandard units
- Making a nonstandard measuring tool to measure length
- Solving measurement problems using the strategy "act it out"
- Writing times to the hour shown on an analog clock
- Writing times to the half hour shown on analog clocks
- Telling times to the hour and half hour using analog and digital clocks
- Using the hour hand to draw and write times on analog and digital clocks