Revision Date	April 20, 2020

Department of Curriculum & Instruction

First Grade Math

Unit	1-10 Measurement
Time Frame	3/29-4/16
Big Ideas	1. Objects have measurable attributes 2. An inverse relationship exists between the size of a unit of measure and the number of units needed to equal the length of an object 3. Time is a standard unit of measurement that is used in everyday life 4. On an analog clock there is a relationship between the numerals and units of measurement (clock hands).
Essential Questions	1. Why is it important to distinguish measurable attributes of objects? 2. Why is accuracy important when measuring an object's length? 3. How is time measured? 4. How does an understanding of fractions help with telling time? 5. What is the relationship between analog and digital clocks?

TEKS / Student Expectations	Skills	Concepts
(Readiness TEKs) 1.7(D) describe a length to the nearest whole unit using a number and a unit 1.7(E) tell time to the hour and half hour using analog and digital clocks	Describe Tell	Length to the nearest whole unit using a number and a unit Time to the hour and half hour using analog and digital clocks
(**Supporting TEKs**) 1.7(A) use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement 1.7(B) illustrate that the length of an object is the number of same-size units of length that, when laid end-to-end with no gaps or overlaps, reach from one end of the object to the other 1.7(C) measure the same object/distance with units of two different lengths and describe how and why the measurements differ	Use Illustrate measure	Measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement Length of an object is the number of same-size units of length that, when laid end-to-end with no gaps or overlaps, reach from one end of the object to the other Same object/distance with units of two different lengths and describe how and why the measurements differ

TEKS / Student Expectations	Skills	Concepts
(Process Skill) TEKS		
1.1(A) apply mathematics to problems arising in everyday life, society, and the workplace	Apply	Mathematics to problems arising in everyday life, society, and the workplace
1.1(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution	Use	Problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution
1.1(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems	Select	Tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems
1.1(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;	Communicate	Mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;
1.1(E) create and use representations to organize, record, and communicate mathematical ideas	Create	Representations to organize, record, and communicate mathematical ideas
1.1(F) analyze mathematical relationships to connect and communicate mathematical ideas	Analyze	Mathematical relationships to connect and communicate mathematical ideas
1.1(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.	Display Explain Justify	Mathematical ideas and arguments using precise mathematical language in written or oral communication.

Tier I Instructional Strategies – Classroom Instruction for All Students

- **Pearson Envision** Topic 14

1.7(D) describe a length to the nearest whole unit using a number and a unit

1.7(A) use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement

1.7(B) illustrate that the length of an object is the number of same-size units of length that, when laid end-to-end with no gaps or overlaps, reach from one end of the object to the other
1.7(C) measure the same object/distance with units of two different lengths and describe how and why the measurements differ

- *Misconceptions*
- Some students may think the longer the unit, the larger the count and vice versa rather than understanding the longer the unit, the fewer units needed and vice versa.
- Some students may think length, height, and distance are different types of measurement rather than realizing all three terms are referring to linear measurement.
- Some students may think they can use different sized concrete units to measure length rather than realizing all units must be of equal size.
- Some students may think they can leave gaps between units or overlap units when measuring with concrete objects rather than recognizing length as a continuous linear measurement.
- Some students may think when measuring the length of an object with one measuring tool and then measuring the same object with a different sized measuring tool, the length of the object itself changes in length rather than realizing that the length of the measuring tools results in different recorded measures but represents the same length.
- Some students may think, when measuring length to the closest whole unit, the last unit is either always counted or never counted rather than recognizing the need to determine if the last unit is greater than or less than one-half.
- ***Underdeveloped Concepts****:*

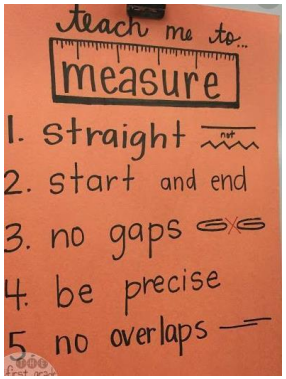
Some students may struggle with the concept of conservation of length, thinking that an object/distance changes based on the orientation or direction of the object (e.g., the height of a student standing up is the same as the height of the same student lying down).

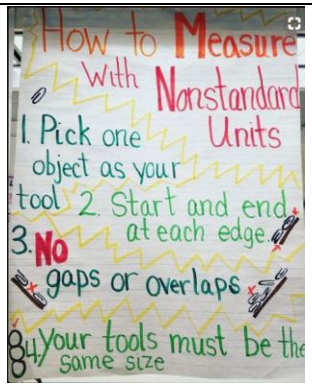
● Instructional Strategies - TEKs 1.7A B,C,D

- Students are especially engaged during this unit because they are able to move around and explore. Capture this enthusiasm by not limiting measuring opportunities to only within your classroom. Take the measuring outside, the cafeteria, the hallway, etc
- (B),(C),(D) are often best taught through repeated exposure and practice. Provide multiple opportunities for students to learn how to accurately measure, and to describe the inverse relationship between the size of the units and the number needed to measure the same object.

○ Orally explain or document through words and pictures why the two measurements differ even though the length of the object has not changed. Move the units around, and repeat the next day. This creates new opportunities with minimal effort.

(A) use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement
○ Draw several curvy paths on chart paper or outside with sidewalk chalk. Ask students to use string to find the length of each path. Then, straighten the string and measure/describe its length using a variety of units.





Other resources

- Measurement Blog with printables
- Sid the Science Kid Whale Video
- Math Monsters Standard and Non Standard Units

1.7(E) tell time to the hour and half hour using analog and digital clocks

- *Misconceptions*
  - Thinking half an hour is 6 minutes (because the minute hand in on the 6)
  - Confusing the hour hand and the minute hand, or reading them in reverse order
- Recording “o’clock” numerically as :12 on a digital display (e.g., one o’clock may be recorded as 1:12)
- Jumping to the next hour when the minute hand is halfway between two hours
- Assuming the numeral 1 should be at the top of an analog clock rather than the numeral 1

Instructional Strategies

○ Introduce vocabulary associate with Analog and Digital Clock with Anchor Chart with large scale examples to engage students

- Blog with Ideas and Resources
- "What Does the Clock Say?" Video
- Time to the hour

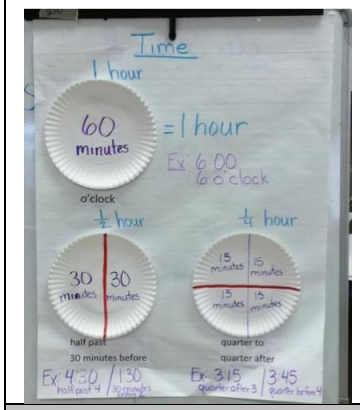
○ Teach Students about a the “Hour Space” on a digital Clock

- The hour numbers only have “front yards” not “backyards”. So if the hour hand is behind the number, it belongs to the previous number because that is its “front yard”

- Video for teaching Hour and Second Hand

■ Time to the Half Hour

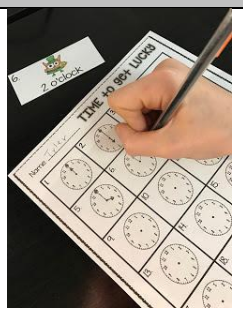
- Emphasize that there are 60 mins in the hour by individually counting the minute dashes on teaching clock
- Spiral Review Fractions
  - If half an hour equals 30 minutes then with the minute hand is on the numeral 6- 30 minutes have elapsed since the hour because the minute hand has moved halfway around the clock
  - Make sure that students understand that half an hour is 30 mins from multiple starting points
    - Example 6:00-6:30, 6:00-7:00, and 6:15-6:45
    - It is not necessary for First Graders to read a clock at quarter hours, but they must understand the concept of half an hour equals 30 mins and quarter hour is 45 mins
- Review "Hour Space" because on an analog clock the minute will be halfway between numerals at half-past an hour.



Stations/Centers

Stations provide students the opportunity to practice skills that have introduced or taught in whole group or Guided Math lessons. students in stations allows them the opportunity to talk about their mathematical thinking, apply academic vocabulary, and hear how their about math. When students visit math centers, the teacher has the opportunity to meet with Guided Math groups for small group

Once stations are created and introduced, they can be spiraled back and utilized in any unit.



Addition and subtraction BINGO

Recursive/Practice/Application-

- Time
  - Envision Independent Practice Lesson Topic 14-3 p.735

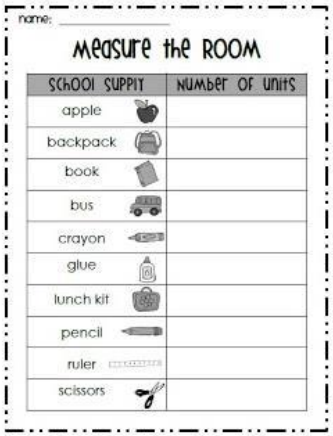
- I Have Who Has Cards
- Time to the Hour Cut and Paste
- Mixed Hour and Half Hour Cut and Paste
- Go Fish Game
- BINGO
- Board Game
- To the Hour Digital/Analog Matching Game
- Hour and Half Hour Matching Game
- Hour and Half Hour SCOOT with Recording Sheet

Blog with SCOOT Instructional Strategies

Length

- Envision Independent Practice Lesson Topic 14-4 p.741

- Envision Independent Practice Lesson Topic 14-6 p.743
- Measure the Room with Recording Sheet



Hands On

- Time
  - Judy Clocks.

    - Students can draw digital hour and half hour cards. Students will match their Judy clock to the digital time on the card.
    - Use the spinner template provided to create 2 spinners. One with numbers 1-12 (hour hand) and the other spinner with (:00) and (:30) – *See Image*

- Spinner Template
  - Create large scale clocks with hula-hoops or floor tape. (See Instructional Strategies section)

- Length
  - Create Measurement Stations with numbered tub containing string and floor tape of various length and.

Each tub will also contain a Non-Standard measuring tool (cubes, paperclips, etc). Students will work in partners and rotate through the stations to practice measuring with a variety of units. Post activity discuss student observations.

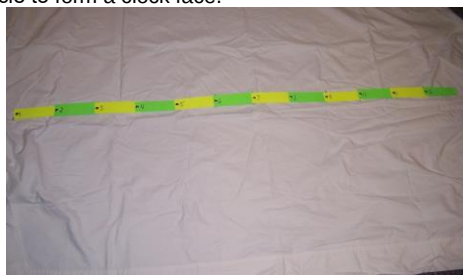
- Food Lab. Students will enjoy using food such as Goldfish or lollipops to measure. Teacher can create Measuring Stations by drawing various lengths of straight and zigzag lines on laminated paper.

Strategies for Struggling Students (S^3)

For struggling students, use smaller groups to focus on comprehension, analysis, and /or application of content.

1.7(E)

When telling time to the half hour on an analog clock, the hour hand is in between two numerals. Help students understand "the hour space" using a one-to-twelve number line made of colored cards connected by brads. After exploring the number line itself, the student can curve it around so that the '12' card attaches to the '1' card at the top of the circle to form a clock face.



Another strategy to demonstrate "hour space" is to form a circle with 12 students. Place a sticky note on each child's shirt with a number in order from 1-12 representing the 12 hours on an analog clock. Have students place their right arm down at their side and their left arm outstretched placing their hand on their neighbor's shoulder.

Vocabulary

Length
Linear measurement – the measurement of length along a continuous line or curve
Unit of length
Continuous Distance
Efficiency
time
hour
half hour
hour hand
Height
Increment
Measurement
attribute
minute hand
number
unit
digit
Precision
Width
analog clock
digital clock
colon
skip counting
attribute

Sample STAAR or STAAR-Like Assessment Items

**The following sample questions are one of many ways to assess the TEKS student expectation.*

Unit Assessment (click link to download)

Resources

**The suggested resources are one of many ways to address the TEKS student expectation.*

TEA Stations and Small Group Activities

1. Grade 1
2. Kindergarten

TEA vertical alignment chart
Literature

Is A Paw A Foot? Learn Measurement (The Dog), Inc Scholastic
Measuring at the Dog Show (Math in Our World). Amy Rauen
Inch By Inch. Leo Lionni
Measuring Penny (Rise and Shine). Loreen Leedy
How Big Is a Foot? (Rise and Shine). Rolf Myller
Measuring: On a Treasure Hunt (Math in Our World). Jennifer Marrewa and Kay McKinley
The Biggest Fish. Shelia Keenan
Super Sandcastle Saturday (Math Start). Stuart Murphy
The Clock Struck One: A Time-Telling Tale. Trudy Harris
All in One Hour. Susan Stevens Crummel
Clockwise: A Time-Telling Tale. Sara Pinto
I.Q., It's Time. Mary Ann Fraser
Just a Second: A Different Way to Look at Time. Steve Jenkins
Mr. Ouchy's First Day. B.G. Henness
A Second is a Hiccup : A Child's Book of Time. Hazel Hutchins
Telling Time with Big Mama Cat. Dan Harper.
The Grouchy Ladybug. Eric Carle
Me Counting Time, by Annette Cable