Georgia Performance Standards Framework for Mathematics – Grade 2

Unit 3 Organizer: "LENGTH, TEMPERATURE, AND TIME" (4 weeks)

OVERVIEW:

In this unit students will:

- know the standard units for measuring length;
- compare the relationship of one unit to another;
- check by measuring to determine if estimates are accurate for length and temperature;
- determine a tool that is appropriate for measuring length;
- tell time to the nearest five minutes;
- know there are 24 hours in a day;
- know there are 60 minutes in an hour;
- understand the relationship of hours and days;
- solve problems using mental math strategies with numbers less than 1000; and
- understand the importance and usefulness of reasonable estimations.

Although the units in this instructional framework emphasize key standards and big ideas at specific times of the year, routine topics such as counting, time, money, positional words, patterns and tallying should be addressed on an ongoing basis through the use of calendars, centers, and games. The first unit should establish these routines, allowing students to gradually understand the concept of number and time.

To assure that this unit is taught with the appropriate emphasis, depth, and rigor, it is important that the tasks listed under evidence of learning be reviewed early in the planning process period. A variety of resources should be utilized to guide, but not replace the textbook. Textbooks not only provide much needed content development, but can be a rich source for learning activities. The tasks in these units illustrate the type of learning activities that should be utilized when teaching mathematics.

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ENDURING UNDERSTANDINGS:

- Objects can be measured using standard units.
- Relationships of one unit to another may be compared by measuring an object with each unit.
- A reasonable estimate is one that is close to the actual measurement.
- An inch or centimeter would be a good unit to measure small items such as the length of a pencil.
- A yard or meter would be an appropriate unit to use when measuring the length of a room.
- After making an estimate, temperature may be measured to determine whether or not the estimation is reasonable.
- Degree Fahrenheit is the customary unit to use when measuring temperature in the United States.
- A thermometer is a tool used to measure temperature.
- There are 60 minutes in an hour.
- How to tell time to the nearest five minutes.
- There is a relationship between number of minutes in an hour and hours in a day.
- There are 24 hours in a day.

ESSENTIAL QUESTIONS:

- How can I determine appropriate tools of measurement?
- Why is it important for me to know how to measure different objects using different tools of measurement?
- How do I know if an estimate is close to the actual measurement?
- How can I use a thermometer?
- Why is it important that I know how to measure temperature?
- How can counting by five help me to determine time in an hour?
- What does telling time to the nearest five minutes mean?
- How can I determine the number of hours in a day?
- When is it appropriate to estimate a measurement or value?

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STANDARDS ADDRESSED IN THIS UNIT

Mathematical standards are interwoven and should be addressed throughout the year in as many different units and activities as possible in order to emphasize the natural connections that exist among mathematical topics.

KEY STANDARDS:

M2M1. Students will know the standard units of inch, foot, yard, and metric units of centimeter and meter and measure length to the nearest inch or centimeter.

a. Compare the relationship of one unit to another by measuring objects twice using different units each time.
b. Estimate lengths, and then measure to determine if estimations were reasonable.
c. Determine an appropriate tool and unit for measuring.

M2M3. Students will estimate, then measure, temperature (Fahrenheit) and determine if estimations were reasonable.

M2M2. Students will tell time to the nearest five minutes and know relationships of time such as the number of minutes in an hour and hours in a day.

RELATED STANDARDS:

M2N5. Students will represent and interpret quantities and relationships using mathematical expressions including equality and inequality signs (=, <, >). (For this unit, use numbers less than 1,000.)

b. Represent problem solving situations where addition, subtraction or multiplication may be applied using mathematical expressions.

M2D1. Students will create simple tables and graphs and interpret their meaning.

a. Organize and display data using picture graphs, Venn diagrams, bar graphs, and simple charts/tables to record results.
b. Know how to interpret picture graphs, Venn diagrams, and bar graphs.

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M2P1. Students will solve problems (using appropriate technology).
- a. Build new mathematical knowledge through problem solving.
- b. Solve problems that arise in mathematics and in other contexts.
- c. Apply and adapt a variety of appropriate strategies to solve problems.
- d. Monitor and reflect on the process of mathematical problem solving.

M2P2. Students will reason and evaluate mathematical arguments.
- a. Recognize reasoning and proof as fundamental aspects of mathematics.
- b. Make and investigate mathematical conjectures.
- c. Develop and evaluate mathematical arguments and proofs.
- d. Select and use various types of reasoning and methods of proof.

M2P3. Students will communicate mathematically.
- a. Organize and consolidate their mathematical thinking through communication.
- b. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.
- c. Analyze and evaluate the mathematical thinking and strategies of others.
- d. Use the language of mathematics to express mathematical ideas precisely.

M2P4. Students will make connections among mathematical ideas and to other disciplines.
- a. Recognize and use connections among mathematical ideas.
- b. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.
- c. Recognize and apply mathematics in contexts outside of mathematics.

M2P5. Students will represent mathematics in multiple ways.
- a. Create and use representations to organize, record, and communicate mathematical ideas.
- b. Select, apply, and translate among mathematical representations to solve problems.
- c. Use representations to model and interpret physical, social, and mathematical phenomena.

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CONCEPTS/SKILLS TO MAINTAIN:

It is expected that students will have prior knowledge/experience related to the concepts and skills identified below. It may be necessary to pre-assess in order to determine if time needs to be spent on conceptual activities that help students develop a deeper understanding of these ideas.

- Fluency with single digit addition/subtraction facts to 18
- Fair trades with coins or bills
- Duration and sequence of events
- Number patterns-skip count, odd/even
- Fact families
- Fractions: halves, fourths
- Tally marks
- Picture graphs
- Estimation: rounding to nearest ten
- Telling time
- Measurement – estimating, comparing, and ordering
- Basic geometric figures and spatial relationships

SELECTED TERMS AND SYMBOLS:

The following terms and symbols are often misunderstood. These concepts are not an inclusive list and should not be taught in isolation. However, due to evidence of frequent difficulty and misunderstanding associated with these concepts, instructors should pay particular attention to them and how their students are able to explain and apply them.

The definitions below are for teacher reference only and are not to be memorized by the students. Teachers should present these concepts to students with models and real life examples. Students should understand the concepts involved and be able to recognize and/or demonstrate them with words, models, pictures, or numbers.

Inch: A customary unit of length; 12 in. = 1 ft.
Foot: A customary unit of length equal to 12 inches
Yard: a customary unit of length equal to 3 feet
Centimeter: A metric unit of length; $\frac{1}{100}$ of a meter
Meter: The standard unit of length in the metric system
Estimate: (To make) an approximate or rough calculation, often based on rounding.
Temperature: A measurement of how hot or cold something is. Temperature is measured with a thermometer and measured in degrees. Two common temperature scales are the Celsius scale (^{o}C) and the Fahrenheit scale (^{o}F).
Fahrenheit: A temperature measurement scale.

32^{o}F = freezing point of water
212^{o}F = boiling point of water
98.6^{o}F= human body temperature

Thermometer: Instrument for measuring temperature.
Minute: Unit of time; one sixtieth of an hour or 60 seconds
Hour: Unit of time equal to 60 minutes.

EVIDENCE OF LEARNING:

By the conclusion of this unit, students should be able to demonstrate the following competencies:

- Some standard units for measuring length are inch, foot, yard, centimeter, and meter.
- Measuring items with two different units makes it possible to determine the relationship of the two different units.
- Estimated lengths should be reasonably close to the actual measurement.
- Appropriate tools should be used to measure length and temperature.

- Tell time to nearest 5 minutes.
- Know the relationship between number of minutes in an hour and in a day.
- Solve problems about time that involve the relationship of minutes, hours, and days.
- Solve problems that involve 24 hours in a day.

The following tasks represent the level of depth, rigor, and complexity expected of all second grade students. These tasks or a task of similar depth and rigor should be used to demonstrate evidence of learning.

- Time Memory
- Choose it! Estimate it! Measure it!
- Temperature Book
- Kangaroo Jump
- Giant Measurements
- Snails and Lizards
- My Time Schedule
- Who RULES at Estimation?
- My Perfect Day Outside

Culminating Activities: "Who RULES at Estimation?" and "My Perfect Day Outside"

"Who RULES at Estimation?"
Students will estimate and measure objects using measurement tools using customary and metric units of measure. This is a cooperative group game.

"My Perfect Day Outside"
Students will use time to describe events which occur during their perfect day. Students will show their times on both an analog clock and digital clock for each event. They will record temperature on a paper thermometer that shows what the different temperatures were for the different activities.

STRATEGIES FOR TEACHING AND LEARNING:

- Students should be actively engaged by developing their own understanding.
- Mathematics should be represented in as many ways as possible by using graphs, tables, pictures, symbols and words.
- Appropriate manipulatives and technology should be used to enhance student learning.
- Students should be given opportunities to revise their work based on teacher feedback, peer feedback, and metacognition which includes self-assessment and reflection.

Classroom Routines

The importance of continuing the established classroom routines cannot be overstated. Daily routines must include such obvious activities such as taking attendance, doing a lunch count, determining how many items are needed for snack, lining up in a variety of ways (by height, age, type of shoe, hair color, eye color, etc.), daily questions, hundreds chart, and calendar activities. They should also include less obvious routines, such as how to select materials, how to use materials in a productive manner, how to put materials away, how to open and close a door, how to do just about everything! An additional routine is to allow plenty of time for children to explore new materials before attempting any directed activity with these new materials. The regular use of the routines are important to the development of students' number sense, flexibility, and fluency, which will support students' performances on the tasks in this unit. See unit 1 for suggestions concerning specific ideas for classroom routines.

TASKS:

The collection of the following tasks represents the level of depth, rigor and complexity expected of all second grade students to demonstrate evidence of learning.

- **Time Memory**

Time Memory

1. You and a partner will use the worksheet of clocks to create a time memory game.
2. Think of a time. Draw the hands on one of the analog clocks and the digits on one of the digital clocks to represent that time.
3. Do this for each pair of clock cards remembering to choose a different time for each set.
4. Your times should demonstrate that you are able to read a clock to the nearest 5 minutes and should be challenging for you and your partner.
5. Cut the cards out and mix them up.
6. Lay all the cards face down on the floor in an array.
7. Player number 1 turns over two cards and will say the time shown on each card as it is turned over. An appropriate statement might be, "The analog clock shows 5:20. The digital clock shows 8:10."
8. If both cards revealed by the first player match then the cards are picked up by the player and two more cards may be turned over.
9. If the cards turned over do not match then the cards are turned face down and it becomes the second player's turn.
10. Continue the game until all cards have been picked up.
11. The person with the most sets of cards at the end of the game wins.

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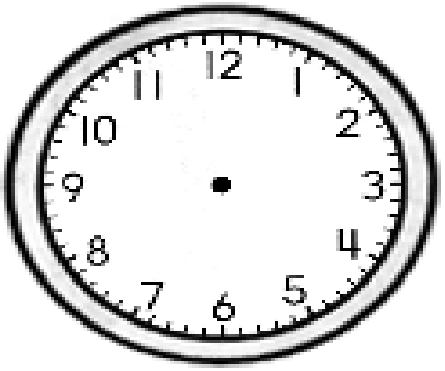
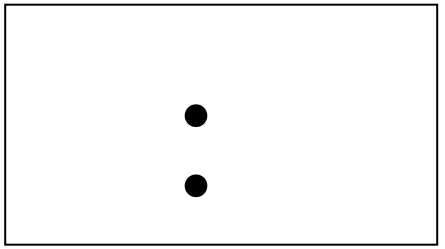
Discussion, Suggestions, Possible Solutions

Prepare clock cards for the children to program with different times. Each pair of students should have the same number of digital clock cards as analog clock cards. Stress the importance of programming each pair of cards with the same time (preferably with times other than on the hour or half hour).

Time cards: reproduce as many as needed for the game



Analog Clock



Digital Clock

- **Choose it! Estimate it! Measure it!**

- **Choose it! Estimate it! Measure it!**

- With your partner take turns reaching into a bag and choosing a string.
- Lay each string in a straight line.
- Create a recording chart for your estimations and measurements of the strings.
- Estimate the lengths of each string in inches and centimeters.
- Write the estimates of your string length on your chart.
- Measure the length of the string with an inch and centimeter ruler.
- Write the length in inches and centimeters on your chart.
- Write a summary about your estimations and measurements.
- Create a poster / chart to show your data. Be creative!
- Groups will then share their posters / charts with the class.

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Discussion, Suggestions, Possible Solutions

Read a book like Inch by Inch *by Leo Lionni. Explain to the class that today they are going to practice measuring using both metric and customary units.*

Prepare bags containing strings of different lengths. Be sure that each string can be measured exactly to the inch and centimeter. It would be easier for the children if the strings were also different colors to make recording easier.

Allow the children to estimate, measure, and record data for each string with their partner. As the groups are working, look to see that the children are correctly measuring and recording. After they have completed their chart students will need to reflect on how they measured and estimated. Children should use math vocabulary in their writing about this activity. Partners will then share findings with the class by creating a poster with their strings, measurements, and recording chart and present it to the class.

***Suggested chart** – or you may allow your children to come up with a chart on their own to show all of the information described above.*

Strings	Estimation: **inches**	Estimation: **centimeters**	Measurement: **inches**	Measurement: **centimeters**
String 1- (blue)				
String 2- (red)				
String 3 – (yellow)				
String 4- (green)				

- **Temperature Book**

Temperature Book

1. You and your partner will have 6 pictures of thermometers marked with different temperatures.
2. Color each thermometer to show the temperature that is written below it.
3. Order the thermometers from coldest to hottest.
4. Create a book with your partner using the thermometers in the order that you placed them.
5. Write a sentence about each thermometer and include the temperature it shows.
6. Draw a picture to go along with your story that represents the type of clothing you would wear if the weather was this temperature and what the season might be.
7. Create a cover for your book and give your story a title.
8. Share your story with the class.

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Discussion, Suggestions, Possible Solutions

Place a thermometer in a sunny window and another in a dark cabinet or fridge. After about 20-30 minutes show them to students and discuss "who's hot and who's cold". Look in the newspaper and find different temperatures on the weather page to discuss the differences in temperatures across the state or the United States.

1. *Using a thermometer template make several copies and label them with different temperatures. These will be the pictures that the students will color to read, compare, and order from coldest to hottest.*
2. *The students will create books with the thermometers and will write sentences about the different temperatures they show. They will also illustrate the pages with pictures demonstrating the clothes worn for each particular temperature and the possible season.*
3. *Check to be sure that the children are coloring their thermometers with the correct temperature and that they are able to place them in the correct order before they begin to create a book.*

- **Kangaroo Jump**

Kangaroo Jump

- You will record your jumps and compare the jumps using terms such as greater than, less than, equal to.
- Record and compare using inches or feet. Decide as a group which is more practical for recording your jumps.
- Measure and record the jump for each member of your group. This information should be recorded in your math journal.
- Create a graph to represent the data from your group's recorded jumps. Remember to label all parts of your graph and give your graph a title.
- Come up with at least 3 questions you could ask the class about your graph and write those in your math journal.
- Share your graph with the class.

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Discussion, Suggestions, Possible Solutions

1. *Explain to the students that they are going to measure their jumps from a standing position.*
2. *Students must agree on the unit of measurement (inches or feet)*
3. *Students will come up with the rules for the jumping. ((i.e. Do they start with toes on the starting line? Are they going to measure to the heel or the toes of the foot once they have landed? Will there be a practice jump or if the first jump counts.)*
4. *The distance jumped can be marked with a piece of chalk or a small object such as a paper clip.*
5. *Place the students in groups of four. Ask children to record their information in their math journals in the form of a chart.*
6. *After groups have created their bar graphs demonstrating their data for their jumps allow them to present the information to the class. They should then ask their questions to the class that they created to go along with their graph.*

7. *The teacher could ask questions like:*
- *Whose jump was greater than Mike's?*
- *Whose jump was equal to Courtney's?*
- *Whose jump was less than Sandra's?*

• Giant Measurements

Giant Measurements

1. Listen to the story. Imagine the giant in the story and think about his size.
2. Estimate in inches and in centimeters the giant's:

    - height
    - size of his waist
    - length of his foot

3. Create a chart with your group to show these estimations. Leave space for more measurements like the example on the board.
4. Create a giant on a piece of butcher paper with your partners. Be creative!
5. When your giant is finished measure his height, the size of his waist, and the length of his foot using both inches and centimeters and labeling these parts on your creation. Use these measurements to complete the chart you started with the giant's estimated measurements.
6. Discuss how close the class' estimations were. Were they different? Why or why not?
7. Present your giant and your measurement chart to the class and talk about the measurements.
8. Discuss with the class the similarities and differences between all the giants created by the class.

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Discussion, Suggestions, Possible Solutions

This lesson will take several days to complete

Read a book like Jim and the Beanstalk by Raymond Briggs to the class.

Discuss with the class giants, the concept of size for humans and for giants, and how they might be different.

As a class, make a chart of estimations on what the giant's height might be, how big his waist might be, and how long the length of his foot might be. Estimations of the giant's measurements could be done in both inches and centimeters so children could see that the number of centimeters would be much larger than the number of inches.

Next, separate the students into groups. Have the groups copy the estimation chart on chart paper for their group. Then they will begin creating a life-size giant on a large piece of butcher paper. The giant will look different for each group. After the giants are created, have students measure their creations using both centimeters and inches. They should label each part of the giant that they measure with the centimeter and inch measurements. After they have finished measuring the height, waist, and foot length of the giant have the groups complete their estimation chart by writing the actual measurements next to the estimations.

Monitor the peer work as they measure, checking the students understanding of the various linear measurements. Make sure if they are measuring inaccurately, they check the reasonableness of their answers ("Does that number of inches/centimeters makes sense for the size of the giant's foot?").

Allow the groups to present their giants to the class along with their chart of the estimations and measures for the giant's height, waist, and foot length (students may also want to measure the length of the arm, head, leg, etc.). Discuss the differences in the estimations and measurements. Were they correct? Was the giant they created

similar to the one they pictured from the story?

Example of the estimation / measurement chart:

Giant's Measurements	Estimation: **inches**	Estimation: **centimeters**	Measurement: **inches**	Measurement: **centimeters**
Height of Giant				
Giant's waist from one side to the other				
Length of the Giant's foot				
Other measurements (ex. Arm, finger, leg, head)				

Extension:

- *Students could make a giant's foot from construction paper and discover how many foot lengths it takes to go to various locations in the school and graph the results. They could then compare the giant's foot to their foot in a Venn diagram.*
- *Writing a story about a giant and incorporate the measurements that they took from their picture. The student should use creativity to infuse measurement into their story.*

- **Snails and Lizards**

Snails and Lizards

1. After we read the story, measure the same items from the book using a nonstandard type of measurement unit such as your feet.
2. Each person in your group should measure the length of the classroom using their own foot.
3. Did all of you get the same measurement? Why or why not?
4. As a group, locate an item that is one inch long, an item that is one foot long and an item that is one yard long.
5. As a group, find items that are shorter and/or longer than one inch, one foot, and one yard.
6. Now that you understand an inch, foot, and yard, the group must make their own reptiles.

   Make the following reptiles:
   a snake that is exactly thirty six inches long,
   an iguana that is a foot long and
   a snail that is exactly one inch long.

7. After you create one of each for your group, explain the relationship of the three. Each person in your group will need to write about this in your math journal or on a separate sheet of paper.
8. Each person in the group must choose one item (that is longer than their snake or 1 yard) and measure the object with the snake, the iguana, and the snail. Record the measurements by describing how many snakes, iguanas, and snails into your journal or onto a separate sheet of paper.

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Discussion, Suggestions, Possible Solutions

1. *Read a story like* Twelve Snails to One Lizard *by Susan Hightower to the class.*
2. *Have the children measure items such as the ones in the story using a nonstandard type of measurement unit like the student's feet. For example, have everyone measure the length of the classroom using their feet. Discuss how this effects the measurement of the classroom and stress a need for standard units of measure.*
3. *Discuss the story and identify the problem and solution, each student should be given a twelve inch ruler and divided into groups of three.*
4. *For the first activity, children should locate an item that is one inch long, an item that is one foot long and an item that is one yard long. (All three students must work together to measure a yard by putting their three twelve inch rulers together - good cooperative activity).*
5. *For the second activity, have students find items that are shorter and/or longer than one inch, one foot, and one yard.*
6. *For the third activity, make snakes that are exactly thirty six inches long, iguanas that are a foot long and snails that are exactly one inch long. The group will create one of each for their group and explain the relationship of the three. This may be done through a journaling activity.*
7. *For the final activity, students should choose one item (that is longer than their snake or 1 yard) and measure the object with the snake, the iguana, and the snail. Record the measurements by describing how many snakes, iguanas, and snails. They may even measure using more than one type of creature!*

- **My Time Schedule**

My Time Schedule

Let's explore your daily schedule! You will need a Clock Recording sheet to complete this task.
For each question, you will need to write down the time and record it on your blank clock.

1. What time is it now?
2. What time do you go to bed at night?
3. What time do you wake up on school days?
4. What time do you wake up on week-ends? How does this compare to school days?
5. What time does school start?
6. Do you take lessons or practice a sport? What time is your lesson or practice? What day(s) of the week do you have lessons or practice?
7. What is the latest you have ever stayed up at night?
8. What is your favorite time of day? Tell why you like this time the best.
9. What time is it now? How much time has passed since you started this activity? (Hint: Compare the clocks in # 1 and 9, and then count by 5's to find out.)

Once you finish, write about what time your favorite time of the day is and what occurs at that time. Also, why is this time your favorite time of the day?

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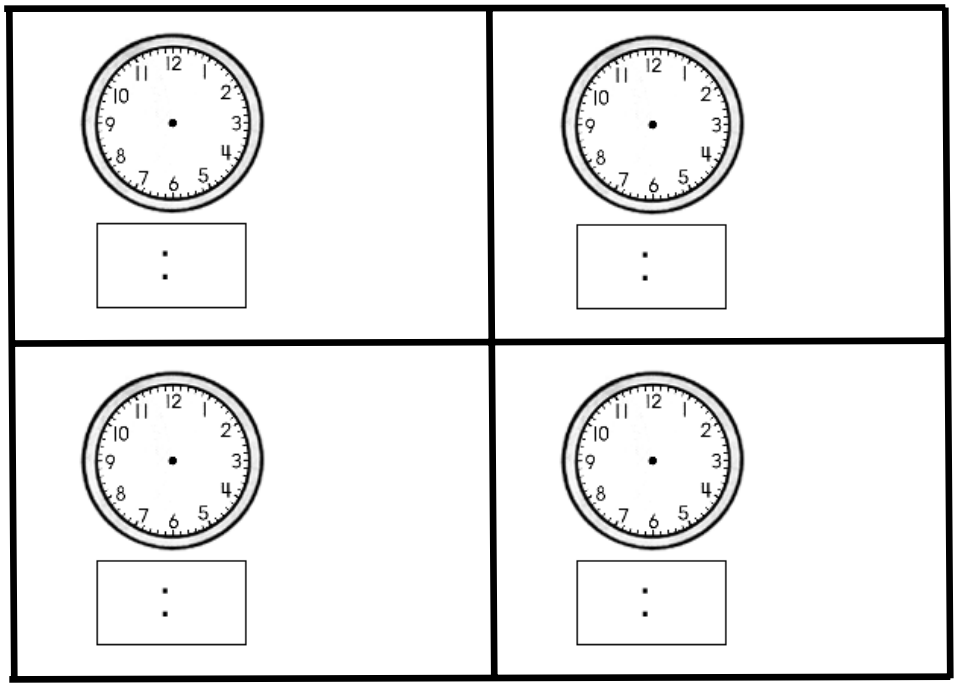
Discussion, Suggestions, Possible Solutions

Discuss with students how time relates to events in our daily lives. You may give examples of when time is important and what you notice about your daily schedule (for example, the time you wake up each day).

Use the following list of questions with blank clocks for students to record time. For each question, students will need to draw clock hands to show the time and write the time. Students may need to find out the answers to some of the questions for homework prior to this activity.

Discuss student schedules and find likenesses and differences in their daily activities. Discuss with students why some of the recorded times are the same. You may want to display a larger version of daily schedules and fill in some of the answers to the questions from student work. Highlight the times in the schedule that are the same for everyone!

Reproduce the given clock template as needed:



- **Culminating Tasks**

These culminating tasks represent the level of depth, rigor, and complexity expected of all second grade students to demonstrate evidence of learning.

Unit Three Task: "WHO RULES AT ESTIMATION?"

1. With your group members, find an object in the classroom that is about the same measurement your teacher gave you. Remember that the object must be within your reach.
2. Everyone in your group needs to agree that the object is about the measurement that your teacher gave you and record the name of the object on their chart.
3. Repeat the above two steps for each of the measurements that your teacher gave you.
4. After all estimates are recorded, your group will actually measure the objects they recorded on their charts. Each person in your group is responsible for measuring at least one object.
5. The name of the object, the object's actual measurement, the measurement given by your teacher, and the difference of the actual measurement and the measurement given by your teacher must be included on your data chart.
6. You will put a (+) or (-) amount in the difference column to show if the object is more (+) or less (-) than the estimate. If your estimation and actual measurement are the same, put a zero in the difference column.
7. Use the data of each group within your class to figure out which group made the most accurate object-estimates.
8. Write a paragraph describing what you have learned about measurement in this unit.
9. Share your results and your paragraph with the class.

Suggestions for Classroom Use

While this task may serve as a summative assessment, it also may be used for teaching and learning. It is important that all elements of the task be addressed throughout the learning process so that students understand what is expected of them.

- Peer Review
- Display for parent night
- Place in portfolio
- Photographs

Discussion, Suggestions and Possible Solutions

A good introduction to measurement that will encourage class discussion are the books:

Measuring Penny *by Loreen Leedy*
How Tall? How Short? How Faraway? *David Adler*

Provide measurement tools such as rulers, tape measures, and yardsticks. Previous measurement activities should have included experiences with measurement tools. The process of using such tools should be modeled frequently.

This task provides an excellent opportunity for students to use measurement and estimation skills while having fun at the same time. In small groups, students are given a measurement and asked to estimate what object in the classroom has that specific measurement. The teacher will come up with five measurements to estimate and measure for both customary and metric units of measurements. Then the teacher will ask a question like, "What in this room is 10 inches long? In cooperative groups students need to agree on the object they feel is 10 inches long. Groups will list the estimated object on their chart then students will take turns measuring the actual objects. They need to arrange their data in a table which includes the estimation-object, measurement, and the difference of the actual measurement compared to their estimate.

An example of data representation:

Can you find something that is 10-inches?
Can you find something that is 1 centimeter long?

Object estimated	Actual measurement	Measurement asked for	Difference of two measurements
1 floor tile	12 inches	10 inches	+ 2 inches
End of a small paperclip	1 centimeter	1 centimeter	0

1. **Write what you have learned about estimating with inches, yards, centimeters and meters.**

2. **Write what you know about measuring with inches, yards, centimeters and meters.**

3. **Choose an item you estimated. Measure it in both inches and centimeters. Compare your inch and centimeter measurements for that item. Write about how they compare. (You may choose more than one to compare.)**

It is important to remember all the components included in this activity: Measurement, estimation, subtraction, addition, data collection, and cooperative learning.

What Should Teachers Look for?

- *Mathematical Accuracy: Accurate estimation and measurement. Tools and skills used correctly.*
- *Approach: Record keeping show planning and is easy to follow.*
- *Explanation: Application and understanding of standard measurements is evident. There are at least two sentences used to compare standard units of measurement.*

Students need many experiences estimating measurement, making reasonable estimates, and understanding the usefulness of estimation.
To accomplish this, they need many practical experiences measuring with measurement tools.

The teacher may need to model measurement along with his/her thinking and procedure for measuring.

Counting on is an essential skill for measuring with a tool that is too short or not large enough for the item being measured.
When using a ruler, students must remember to line up the item being measured with the ruler and understand the importance of accuracy in measurement.

Solutions will vary. Look for reasonableness of estimates.

Unit Three Task: "MY PERFECT DAY OUTSIDE"

- Choose 5 different activities that you would want to do if you were able to plan your "perfect" day outside.
- Think about what season you might want this day to take place and what temperature it might be when you do each of your activities.
- Draw a picture of each of these 5 activities.
- Think of which activity you would do 1st, 2nd, 3rd, etc.
- Place your pictures in the order that you would like to do them.
- Each activity should take place during a different hour and beginning on different 5 minute marks.
- Draw an analog clock in the bottom right hand corner and a digital clock in the bottom left hand corner of each page.
- Draw the hands on your analog clock to show what time you will begin the first activity. Next, write the same time on the digital clock on the same page.
- Assign a starting time for the rest of your activities and show the time for each on a digital and analog clock.
- After considering the different times of the day, the season that you might do them, and the clothes that you are wearing in your pictures color a thermometer for each picture showing the temperature for each of the different times of the day.
- Write a sentence or two to describe each time and the event.
- Make your pages into a book and create a cover for your book.

Suggestions for Classroom Use

While this task may serve as a summative assessment, it also may be used for teaching and learning. It is important that all elements of the task be addressed throughout the learning process so that students understand what is expected of them.

- Peer Review
- Display for parent night
- Place in portfolio
- Photographs

Discussion, Suggestions and Possible Solutions

The teacher may demonstrate possible example times for sample activities and discuss how the temperature changes during the day depending on the season and time of day. Students should be encouraged to used activities other than the ones shown to the class.

<u>For example:</u> (early fall day)

- *I went to the park at 9:20am to play on the jungle gym with my friend Bill. It was chilly outside to I wore a light jacket. (60^o F)*
- *More of my friends came to the park at 10:05am to play a game of kickball. My team won! Yeah! It was starting to warm up outside so I pushed the sleeves up on my jacket. (67^o F)*
- *My friends and I had a picnic at 11:50am. The peanut butter sandwich in my bag was smashed but it still tasted good. The sun was directly overhead and we sat on our picnic blanket while our lunches digested. (72^o F)*
- *We played a soccer game at 12:25pm and I had to play goalie. Joe fell but continued to play because he is a good sport. It was really beginning to warm up, so I took my jacket off and tied it around my waist. (75^o F)*
- *Karen said we needed a break at 1:10pm so we had orange slices and brownies. I love both of these, but they didn't taste good together. I took my jacket off and put it on the jungle gym. (75^o F)*
- *This was my perfect day at the park with my friends! I can't wait to do it again!*

Allow students to share their stories with the class after they are finished. The class can participate along with each story by moving the hands on their personal analog clocks (if available).

The drawings and time for each event should be reasonable. Check for accuracy of times and that the analog and digital clock times match. Check to make sure that clothing matches for the temperature at the different times of the day.