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Georgia Performance Standards Framework for Mathematics – Grade 1

Unit 4 Organizer: “HOW CAN I MEASURE AND COMPARE?” **(5 weeks)**

OVERVIEW:

In this unit students will:

- directly compare the length, weight, or capacity of two or more objects;
- order the length, weight, or capacity of two or more objects;
- use a non-standard unit to estimate and measure an object that is larger than that unit;
- create and use a “ruled” stick, tape or container;
- tell time to the nearest hour and half hour;
- understand that the movement of the minute hand is related to the movement of the hour hand;
- understand calendar time through relationships of days, weeks, and months;
- compare the duration of events as longer or shorter than other events; and
- compare the sequence of events using before or after.

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.

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. A variety of resources should be utilized to supplement, but not completely replace, the textbook. Textbooks not only provide much needed content information, but excellent learning activities as well. The tasks in these units illustrate the types of learning activities that should be utilized from a variety of sources.

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ENDURING UNDERSTANDINGS:

- Objects may be compared according to length, weight, and capacity.
- Non-standard units of measure may be used to determine length, weight, and capacity.
- Tools may be created to measure length, weight, and capacity.
- There are twelve months in every year.
- Each month consists of about 4 weeks.
- Each week consists of seven days.
- Each day consists of 24 hours.
- Each hour consists of 60 minutes.
- The minute hand on a clock makes one complete circle every hour.
- Some events take more time than others.
- It is important to know the sequence of the daily events in our lives.

ESSENTIAL QUESTIONS:

- How can I measure the length of an object?
- How can I tell which of two objects is longer than the other?
- How can I order a group of objects by their length?
- How can I tell which of two objects is heavier?
- How can I order a group of objects by their weight?
- How can I decide which of two containers will hold the most?
- How can I order a group of containers by the amount they will hold?
- When is an estimate good enough? When should I measure instead of using an estimate?
- What does the hour hand on a clock tell me?
- What does the minute hand on a clock tell me?
- How do calendars help me measure time?

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- How can I use pictures, words, and symbols to describe the months in a year?
- How does time affect our daily lives at home? At school?

STANDARDS ADDRESSED IN THIS UNIT

KEY STANDARDS:

M1M1. Students will compare and/or order the length, weight, or capacity of two or more objects by using direct comparison or a nonstandard unit.

- a. Directly compare length, weight, and capacity of concrete objects.
- b. Estimate and measure using a non-standard unit that is smaller than the object to be measured.
- c. Measure with a tool by creating a “ruled” stick, tape, or container by marking off ten segments of the repeated single unit.

M1M2. Students will develop an understanding of the measurement of time.

- a. Tell time to the nearest hour and half hour and understand the movement of the minute hand and how it relates to the hour hand.
- b. Begin to understand the relationship of calendar time by knowing the number of days in a week and months in a year.
- c. Compare and/or order the sequence or duration of events (e.g., shorter/longer and before/after).

RELATED STANDARDS:

M1N1. Students will estimate, model, compare, order, and represent whole numbers up to 100.

- b. Correctly count and represent the number of objects in a set using numerals.
- c. Compare small sets using the terms greater than, less than, and equal to ($>$, $<$, $=$).

M1N3. Students will add and subtract numbers less than 100 as well as understand and use the inverse relationship between addition and subtraction.

- a. Identify one more than, one less than, 10 more than, and 10 less than a given number.

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- d. Understand a variety of situations to which subtraction may apply: taking away from a set, comparing two sets, and determining how many more or how many less.

M1D1. Students will create simple tables and graphs and interpret them.

- a. Interpret tally marks, picture graphs and bar graphs.
- b. Organize and record data using objects, pictures, tally marks, and picture graphs.

M1P1. 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.

M1P2. 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.

M1P3. 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.

M1P4. 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.

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M1P5. 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.

CONCEPTS/SKILLS TO MAINTAIN:

- Counting to 30
- Patterning
- Sorting
- Number words through 10
- Writing numbers through 20
- Ordinal numbers (1st – 10th)
- Comparing sets of 1-10 objects (equal to, more than, or less than)
- One to one correspondence
- Equivalence
- Basic geometric shapes
- Spatial relationships – positional words
- Estimation using five or ten as a benchmark
- Modeling addition and subtraction
- Estimating using 10 as a benchmark
- Name and value of coins
- Calendar time and daily schedule
- Measurement – comparing and ordering

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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 students. Teachers should present these concepts to students using 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.

Length: The distance along a line or figure from one point to another.

Weight: A measure of how heavy an object is.

Estimate: A number close to an exact amount; an *estimate* tells about how much.

Minute: A unit of time that is equal to 60 seconds. 60 minutes is equal to one hour.

Hour: Unit of time that is equal to 60 minutes. Twenty-four hours is equal to 1 day.

EVIDENCE OF LEARNING:

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

- compare objects by measuring length, weight, and capacity;
- estimate the length, weight, and capacity of objects;
- use non-standard units of measure;
- use measurement tools to measure objects;
- tell time to the nearest hour and half hour;
- know how the movement of the minute hand affects the movement of the hour hand on a clock;
- understand the measurement of time as it relates to a calendar;
- relate time to a daily schedule;

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- order daily events; and
- organize events by developing tables and charts.

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

- It's Time
- Hold and Compare?
- How Many Hands?
- How Big is a Foot?
- How Many Scoops?
- Measurement Masters
- The Grouchy Lady Bug
- Days of Week/Month
- Which is Bigger? Which is Smaller?
- Ground Hog's Garden
- In a Minute

Culminating Activity: “Who is Bigger? Who is Smaller?”

This task requires that students directly compare length as well as estimating lengths. Students will use non-standard and standard units of measure. The students are required to explain their findings and draw conclusions about measurement comparisons.

Culminating Activity: “Ground Hog's Garden”

This task requires students to measure and compare length using non-standard units. Students are asked to justify their thinking about length by writing and by drawing illustrations of their garden.

Culminating Activity: “In a Minute”

This task requires students to sort the time cards based on how long it would take to do the activity. The time cards should be sorted into two groups: longer than 1 minute and shorter than 1 minute.

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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 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.

TASKS:

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

• **It's Time**

It's Time

Move the hour hand that is on your paper clock to tell where it should be at the times that your teacher tells you.

Using clock faces, draw (or move) the hands of the clock to show the given times.

Discussion, Suggestions, Possible Solutions

Students need a great deal of work on time. Although the topic of time is a part of everyday routines, additional tasks should be used to reinforce the meaning and understanding of the relationship between minutes and hours.

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Begin by giving each student a paper clock with only an hour hand attached with a brad. Be sure to remind the children that the hour hand is the short hand on the clock and that the minute hand is the longer hand. It would help if these two hands were made out of different color paper for the demonstration clocks.

Allow students to move the hour hand appropriately when the hand would be at various times such as:

- *four o'clock*
- *nine o'clock*
- *half way between 1 and 2 o'clock (or 1:30)*
- *a little before 7 o'clock*
- *a little after 11 o'clock*
- *12 noon*

Give students a recording sheet with clock faces. Allow them to draw the hour hand. Again stress that the hour hand is the shorter hand and does not normally touch the numbers on the face of the clock that mark the hours.

To help with understanding the relationship between the minute and hour hands:

- *Have the students skip count by fives at least up to sixty.*
- *Attach a minute hand to the clock faces.*
- *Let students move the minute hand as they skip count by fives. Allow them time to practice moving both the hour and minute hands as they skip count. (Students should understand that the reason they are doing this is because there are five minutes between consecutive integers on the clock face.) After students understand that there are sixty minutes in an hour, it is a good time for them to recognize the relationship between the hour hand's movement and the movement of the minute hand. This is a good time to reinforce on a demonstration clock that one full circle of the minute hand will cause the hour hand to move from one hour to the next.*

Show students time on a digital clock (showing hours and half-hours). Allow them to move hands or draw them on the paper clock faces provided by the teacher.

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Extension:

Have the children make time cards using index cards. Program one card with an analog clock and a corresponding card with a digital clock. Make several examples like this and allow the children to play “Time Memory.” All of the cards with the times on them, both analog and digital clock cards, will be mixed up and turned face down. They take turns turning 2 cards over at a time and try to find a match. For example, the analog clock will read 2:00 and the digital clock will say 2:00. If they get a match they get to keep the cards and go again. If they do not find a match they turn the cards back over and the next player goes.

• Hold and Compare

Hold and Compare

Today, we are going to think about how heavy objects are. We will decide whether one object is heavier than another by holding each one and comparing their weight. Listen to the story and then we are going to go to our stations and determine whether one object is heavier, lighter, or weighs about the same as another.

Discussion, Suggestions, Possible Solutions

Students will explore and compare weight by describing whether items are heavier or lighter than other items.

- *Students will determine which of two objects is heavier by holding the two objects. They will conduct the activity at five stations with different objects and record their findings.*
- *Read a book similar to Who Sank the Boat? by Pamela Allen. Point out and record the following vocabulary: heavier, lighter, and balanced.*

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- *Introduce the concept of weighing and balancing. Encourage students to share what they know about the topic. Discuss items that may be lighter or heavier than them. Elicit conversation about what to use to find out the weight of an object. Tell students that as a class you are going to compare weights to find the heavier of two objects.*
 1. *Display the “Hold and Compare” recording sheet on the overhead.*
 2. *Choose 2 objects from a prepared collection and write the names of the objects on the overhead in space 1.*
 3. *Ask students to predict which is the heavier of the two objects.*
 4. *Have someone come up and hold each item in their hands and compare the weights. (The student may want to close their eyes to concentrate on how heavy the objects feel.)*
 5. *Have the volunteer describe the way the objects feel out loud.*
 6. *Pass the same two objects around the room so other students can get a feel for the weights.*
 7. *Circle the object on the overhead that most students think is the heaviest.*
 8. *Repeat this process with other pairs of objects. Continue until students have an understanding.*
- *Set up 5 stations containing 2 objects each to be weighed by hand. Students must put one object in each hand, decipher which is heavier, and record it on their sheet. Allow students to rotate through all 5 stations while completing a “Hold and Compare” recording sheet, shown below,*

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HOLD and COMPARE

Circle the **HEAVIER** item for each pair in **BLUE**

Circle the **LIGHTER** item for each pair in **RED**

| Object 1 | | Object 2 |
|-----------------|-----------|-----------------|
| | or | |
| | or | |
| | or | |
| | or | |
| | or | |

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• How Many Hands?

How Many Hands?

1. Trace your hand on a piece of paper and cut it out.
2. After we practice estimating and measuring objects with MY hand, you are going to measure using yours.
3. As a class, we will make a list of 10 things in the classroom to measure.
4. You will work with a partner. Each of you should choose the same 5 items from our list and estimate the length of the items using your own hand as a reference. Write your estimates on your record sheet.
5. Using your hand cut-out, measure each object. Write the measurements on your record sheet.
6. WITHOUT comparing your hands, see if you can tell by the measurements who has the larger hand, you or your partner. How do you know? Explain your thinking.
7. Compare the measurement of three classroom objects with someone else in your class. Who has the largest hand, you, your partner, or the new person? Explain how you know.

Discussion, Suggestions, Possible Solutions

This is a fun activity giving students an opportunity to measure using non-standard units.

- *Students will estimate the length or height of several classroom objects. Students will measure the length and/or width of these same objects using their hand as a non-standard unit of measure.*
- *Begin the lesson by reading a book similar to How Tall, How Short, How Faraway (1999) by David Adler. Discuss with students the ways in which measuring objects has occurred over time.*

1. *Using the copy of your own hand, ask students to estimate, using a crayon, the length and height of an item in the classroom. Record on a sample recording sheet their estimations. Emphasize reasonable estimations and model how you estimate.*

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2. *Then, using a cut out of your hand, measure the item and record the actual measurement on the recording sheet.*
3. *List at least 10 items on the board for students to estimate and measure using their own hands.*
4. *Pair up students. Pairs of students should estimate (writing this in crayon) the same 5 items from the list using their own hand as a reference and record their estimations on their own recording sheet.*
5. *Students should then use their own hands to measure the items they've selected in the class and each fill out their own recording sheet.*
6. *Students will then need to compare their actual measurements with their partner's measurements and answer the comparing question from their recording sheet.*

- *Student recording sheet, "How Many Hands?" is shown below.*

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How Many Hands?

Name: _____

| Classroom item | My Estimate | Actual Number |
|----------------|-------------|---------------|
| 1) | | |
| 2) | | |
| 3) | | |
| 4) | | |
| 5) | | |

Were your measurements the same as your partners? Why or why not?

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- **How Big is a Foot?**

How Big is a Foot?

- Listen to the story your teacher reads to you.
- Working with your partner, trace around your shoe several times on the paper that your teacher gives you. Cut out your “feet”.
- See how many of your personal feet it takes to measure the distances that your teacher has asked you to measure.
- Record your results on your record sheet.
- Compare your results with your partner’s. Did you both use the same number of feet? Why or why not?
- Can you tell by looking at your results who has the larger foot, you or your partner. Explain your thinking.

Discussion, Suggestions, Possible Solutions

This is a good introduction to non-standard units.

Read the book How Big Is a Foot by Rolf Myller. Have students trace around their shoe several times and use their cut-outs to measure how many of their personal "feet" it takes to get from one place to another. Making several copies allows students to see why it is important to use the measurement tool back to back and not leave big gaps when measuring. You can also have students practice walking the rug, or the length of tables by walking heel to toe to heel to toe to help them see this.

After students have measured several distances with their “feet”, then, as a class, use a cut-out of your foot (that has already been cut out and reproduced) to measure the same distances. Students may also graph their results on chart paper. Talk about why there is a difference between the number of feet used to measure distances using different students’ feet and using your foot.

Extension:

Feet can be cut out of construction paper and used later on a bulletin board with a title of a math book the class has read written on each foot. The bulletin board could read “Look at how many “FEET” of math books we’ve read!”

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- **How Many Scoops?**

How Many Scoops?

You are going to estimate and then measure how many scoops it takes to fill the containers your teacher has placed in your centers.

- For each container, estimate how many scoops the container will hold. Record your estimate.
- For each container, measure the number of scoops the container will hold.
- Which container holds the most? How do you know?
- Which holds the least? How do you know?
- Do any of the containers hold the same amount?
- How many more cups does the largest container hold than the smallest container?

Discussion, Suggestions, Possible Solutions

Set up measurement centers that have several different containers at least two of which hold the same amount. The centers should also contain a scoop, and a dry material such as rice, sand or beans.

Provide students with record sheets on which they can record the number of scoops it takes to fill each container.

Discuss with the class how they might use the scoop to measure. Include a discussion of level versus heaping scoops. As a class, decide the most effective way to measure using the scoop.

After students have finished measuring the capacity of each container, have them answer the questions provided.

Allow students to discuss their results and explain their thinking. Students should be able to order the containers based on capacity from largest to smallest.

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• Measurement Masters

Measurement Masters

1. You will be a member of a group of 3 or 4 children.
2. Today, you are going to be given an object to use as a measurement tool.
3. Before you measure, estimate how long each classroom item would be in terms of your measuring tool. Record this on the recording sheet in crayon.
4. Measure each item using your measuring tool. Record the measurement on the record sheet.
5. Your group will now rotate from station to station until you have visited all stations.
6. Talk in your group about your findings.

Discussion, Suggestions, Possible Solutions

The point of this lesson is to make sure students know that measurements can be made at any time, even if you do not have a ruler present. This is helpful in many ways. There are times, when you will need a ruler or tape measure or yard stick because you need to have a more precise measure. Ask the kids, “When do you think you need to have a really accurate measurement? When is it OK to estimate?”

This is an activity where students will estimate how many of each manipulative (paper clip, connecting cube, color tile, pencil-top eraser) it will take to equal a certain length of a classroom object (math book, crayon, marker, whiteboard eraser). They will count how many of their manipulative it takes to measure the length the classroom object to be measured. Then they will record this number on the activity sheet. Students will also compare and order classroom items by length.

1. *Divide students up into groups of 3 or 4.*
2. *Give group a non-standard measuring tool (paper clip, connecting cube, color tile, pencil-top eraser) and a recording sheet for each student.*

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3. *Set up 4 or 5 measuring stations for each group to rotate to for measuring. For example, Station 1-math book, Station 2-whiteboard eraser, Station 3-crayon, Station 4-marker, etc.*
4. *Each group will start at a station and must first estimate using crayon, then measure with the manipulative.*
 - *Instruct each group to look at their measuring tool.*
 - *Each student will estimate the length of each classroom object and record this length on the recording sheet using a crayon. The estimation should be based on the manipulative they were given to use as their measuring tool.*
 - *Students will then measure each classroom object with the measuring tool and record their measurements.*
5. *Groups continue to rotate from station to station until all stations have been visited by each group.*
6. *Groups then discuss their findings and put in order the classroom objects they measured. They may arrange them in order from shortest to longest or vice versa.*
7. *Each student needs to write an explanation of how they ordered the classroom objects and what they learned from their measurements.*

- *Student recording sheet, “Measurement Master” shown below.*

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Measurement Master

Name: _____

Measurement tool used : _____

| Item Measured | Measurement Estimate | Actual Measurement |
|---------------|----------------------|--------------------|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

Which item was the longest? _____

Which item was the shortest? _____

What did you learn from this activity:

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- **The Grouchy Lady Bug**

The Grouchy Lady Bug

1. While you listen to the story, think about a clock and time and what happens at different times of the day.
2. Write a time story with a different time on each page. Draw or stamp a clock on each page with hands that show the correct time of the time story. Your story page will have a story about time and a clock to show the time that the event is happening.
3. Create a flip book of your story. You should have 4 different times in your book.
4. Share your book with classmates.

Discussion, Suggestions, Possible Solutions

Students will make a flip book. In the flip book they will write a time story and draw the correct hands on a clock matched to written words.

Read a book similar to Grouchy Lady Bug by Eric Carle.

Throughout the story each student or pairs of students will display the time on their own analog clock. The teacher observes what the children show on their clocks, then models the time in the story using a large classroom clock. Example: At two o'clock the grouchy ladybug runs into a firefly. The teacher shows two o'clock on the clock.

The teacher will demonstrate how to draw the hands of a clock. Then show students an example of a flip book and help them create their own time story. On the front will be the title, student's name and an illustration (a ladybug). Inside students will draw / stamp a clock and draw the hands of the clock. The student will write a sequenced story.

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In pairs, have students share, retell their stories, and display books.

It is important for students to talk about time and to relate time to things that happen in their lives. If they are stumped about the things that happen at a given time, give them some examples like:

Waking up on a school day: 6:30 am

Waking up on a Saturday: 8:00 am

Eating Lunch: 12:00 pm

Riding home from school: 3:00 pm

Dinner: 7:00 pm

Baseball or Gymnastics or Soccer or Dance practice: 5:30 pm

Sponge Bob Squarepants program: 8:00 pm

Bedtime: 8:30 pm

Daily work should be done on time. Calendar time should begin everyday, highlighting the date, season, weather, patterns, numbers, counting, etc. It is important to develop connections between the calendar, numbers, and meanings. Once you establish a daily calendar routine, allow students to facilitate it.

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• Days of the Week/Month

Days of the Week/Month

(Teachers should choose version A or B depending on the focus of the book or lesson.)

1. As you listen to a story, make a list of the events that happened on each day or in each month of the book.
2. **A:** Using 7 sentence strips, write each day of the week. Put the days in order on poster board. Choose a day and write about an event that takes place on that day and draw a picture to complete your story.
3. **B:** Using 12 sentence strips, write each month of the year. Put the months in order on poster board. Choose a month and write about an event that takes place during that month and draw a picture to complete your story.

Discussion, Suggestions, Possible Solutions

Some suggest books are: The Very Hungry Caterpillar by Eric Carle, Seven Blind Mice by Ed Young, and (months in the year) Chicken Soup With Rice by Maurice Sendak

1. *Read one of the listed books about days of the week or months of the year. Discuss the book by focusing on something that happened each day or month.*
2. *Discuss with the students events which may occur during each day or month of the year and make a chart with your ideas. Ask students to about other events that they may know about a day of the week or month of the year. Record these events on chart paper too.*
3. *Have children write the days of the week or months of the year (Version A or B) on sentence strips and put them in the correct order.*
4. *Let students choose a day of the week or month of the year (Version A or B) to draw a picture about, tell or write a story about. Remind students of the events that were discussed in class about events that occur during a specific day or during a specific month.*

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- **Culminating Tasks:**

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

Unit Four Culminating Task: “WHICH IS BIGGER? WHICH IS SMALLER?”

- 1) Directly compare the width of your hand with your partner’s hand. Whose hand is wider? Directly compare the length of your foot (big toe to heel) with your partner’s foot. Whose foot is longer?
- 2) Estimate how many cubes it would take to measure the length of each part of the body pictured on the activity sheet. Write your estimate on the sheet. Write your measurements on the activity sheet. (Allow adequate time for the students to record their measurements)
- 3) Measure, using the Unifix cubes, the part of the body pictured on the activity sheet. Write your measurements on the activity sheet.
- 4) Return to your desk.
- 5) Write or tell about what you found out.

Suggestions for Classroom Use

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

Discussion, Suggestions and Possible Solutions

- 1) *The teacher will read the directions to the students: “You are going to measure the parts of the body listed on the activity sheet with a partner. You will use Unifix cubes to measure. When I call time you must return to your desk with your activity sheet.”*

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- 2) *Step 1: Directly compare the width of your hand with your partner's hand. Whose hand is wider? Directly compare the length of your foot (big toe to heel) with your partner's foot. Whose foot is longer?*
- 3) *Step 2: Estimate how many cubes it would take to measure the length of each part of the body part pictured on the activity sheet. Write your estimate on the sheet. Write your measurements on the activity sheet. (Allow adequate time for the students to record their measurements)*
- 4) *Step 3: Measure, using the Unifix cubes, the parts of the body pictured on the activity sheet. Write your measurements on the activity sheet.*
- 5) *Step 4: Return to your desk.*
- 6) *Write or tell about what you found out.*

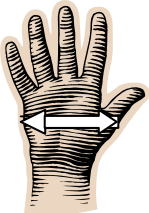
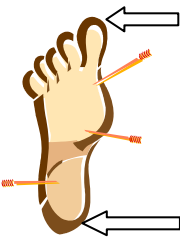
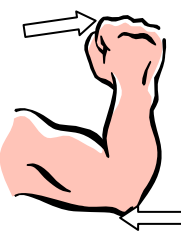
A good introduction to measurement that will encourage class discussion is the book Measuring Penny by Loreen Leedy. The students will measure, to a reasonable degree of accuracy, linear dimensions and record their results. Provide Unifix cubes to measure. The steps in the process should be modeled frequently.

The task assumes that students have an understanding of nonstandard units of measurement and that the students have experience measuring objects using direct comparison and non standard measurement tools. Students are familiar with the terms length and width.

- *Some things that teachers should look for include:*
 - *Mathematical Accuracy: Accurate estimation and nonstandard measurement tool. Tools and skills used correctly.*
 - *Approach: Record keeping show planning and is easy to follow.*
 - *Explanation: Application and understanding of nonstandard measurement is evident.*

Georgia Performance Standards Framework for Mathematics – Grade 1

Student's Task Sheet

| | | | |
|--|---|---|---|
| <p>About how wide is your hand?</p> <p>Estimate: <input type="text"/></p>  <p>hand</p> <p>Measurement in Cubes: _____</p> | <p>About how long is your foot from your big toe to your heel?</p> <p>Estimate: <input type="text"/></p>  <p>foot</p> <p>Measurement in Cubes: _____</p> | <p>About how long is your arm from your elbow to your fist?</p> <p>Estimate: <input type="text"/></p>  <p>Arm</p> <p>Measurement in Cubes: _____</p> | <p>Back at your desk write and draw about your estimates and cube measurements.</p> <hr/> <hr/> <hr/> <hr/> <hr/> |
|--|---|---|---|

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Unit Four Culminating Task: “GROUNDHOG’S GARDEN”

You are going to choose a bag of plants and measuring tools (worms or ladybugs). You will choose a flower from the pile and measure the length of the flower using the measuring tools (worms or bugs) and record your findings.

1. Choose a bag of plants and a measuring tool- either worms or ladybugs.
2. Choose 5 flowers out of your bag of flowers to measure.
3. Measure the flower length from the top of the flower card to the bottom.
4. Record your measurements on your Recording Sheet.
5. Then paste your flowers in an order that makes sense to you onto the Groundhog’s Garden Mat.
6. Explain what you found out about measuring flowers and why you decided to glue your flowers onto the mat like you did.

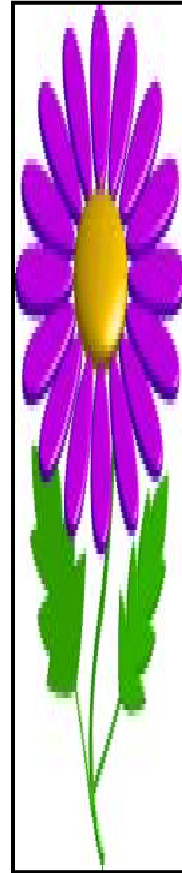
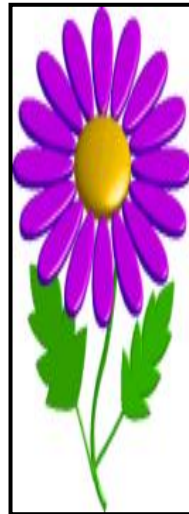
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Below is the mat for Groundhog's Garden.



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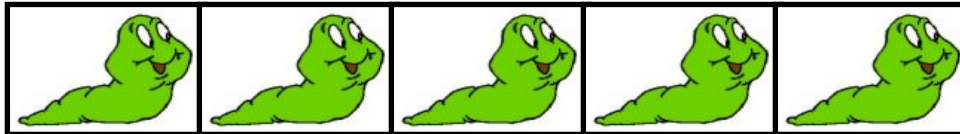
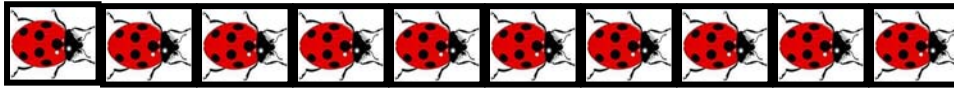
Below are the flowers for Groundhog's Garden



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Below are the worms and lady bugs rulers for Ground Hog's garden.

Cut out each measuring tool. Measure your flowers and record your results on the recording sheet.



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Below is the record sheet for Groundhog's Garden.

Flower Measurement Recording Sheet

Record the lengths of each flower below.
Circle measuring tool used: **ladybugs** or **worms**

| FLOWER | Length of Flower |
|--------|------------------|
| 1. | |
| 2. | |
| 3. | |
| 4. | |
| 5. | |

After recording the measurements for each flower, glue the flowers onto the Groundhog's Garden sheet in an order that make sense to you. Explain how the flowers are ordered.

Georgia Performance Standards Framework for Mathematics – Grade 1

Suggestions for Classroom Use

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

Discussion, Suggestions and Possible Solutions

The task assumes that students have an understanding of nonstandard units of measurement and that the students have experience measuring objects using direct comparison and non-standard measurement tools. Students are familiar with the terms length and width.

Some things that teachers should look for include:

- *Mathematical Accuracy: Accurate estimation and nonstandard measurement tool. Tools and skills used correctly.*
- *Approach: Record keeping show planning and is easy to follow.*
- *Explanation: Application and understanding of nonstandard measurement is evident.*

Good introductions to measurement that will encourage class discussion are the books: How Big Is A Foot? By Rolf Myller and Measuring Penny by Loreen Leady. The students will measure, to a reasonable degree of accuracy, linear dimensions and record their results. The steps in the process should be modeled frequently.

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Unit Four Culminating Task: “IN A MINUTE”

1. Sort the time cards based on how long it would take you to do the activity. The time cards should be sorted into two groups: longer than 1 minute and shorter than 1 minute.
2. Once the time cards are sorted into two groups, glue the cards onto paper. The time cards in each group need to be glued together as a group on separate sheets of paper. Be sure to label each group.
3. Answer the following questions:
 - a) Choose a time card from the “shorter than 1 minute” group. Tell me how you know the activity is shorter than 1 minute.
 - b) Pick your own activity or activities. Draw and label these activities on the blank time cards. Decide which group it would belong to: longer than a minute or shorter than a minute. Then glue the new cards onto your pieces of paper with the correct group.

Suggestions for Classroom Use

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

Discussion, Suggestions and Possible Solutions

The task assumes that students are familiar with the terms minute, longer, and shorter. The students should have experience timing the duration of activities to one minute through other activities.

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1. *Read directions, questions, and time cards to students as needed.*
2. *Observe students and note:*
 - *correct sort of all activity cards*
 - *use of accurate vocabulary to explain sort*
 - *level of difficulty in determining activities that take longer or shorter than 1 minute.*

Ideas for time cards for sorting may include:

- *Write your name*
- *Read a favorite book aloud*
- *Hang up your coat*
- *Wave good-bye*
- *Eat your lunch*
- *Do 10 jumping jacks*
- *Sing the ABC song*
- *Count to 100*
- *Sleep at night*