

MEET THE MEASUREMENTS

1st Grade Math

Written by: Candace Tickle and Dianne Ashby, Waters Elementary and Karla Lewis, Honey Elementary

Length of Unit: 6 *Introductory* Lessons and Culminating Activity

Each of these lessons are only intended to *introduce* measurement and each of the the measuring concepts—length, weight, capacity, time, and temperature. These introductory lessons are to be followed by specific lessons provided in district math curriculum at the teacher’s discretion. The culminating activity is designed to be used either after each specific concept or after all measuring concepts are taught.

I. ABSTRACT

A. Meet the Measurements! This 1st grade Math unit will *INTRODUCE* Mr. Measurement, Mrs. Measurement, and all the members of the Measurement Family. Mr. Measurement is very “non-standard” and does things his own way. Mrs. Measurement always does things in the “standard” or conventional way. These lessons will also *INTRODUCE* the rest of the Measurement family members – Tillie Time, Linear Larry, Callie Capacity, Wally Weight, and Teddy Temperature. Each sometimes takes after the Mr. and the Mrs.—non-standard and standard. Be sure to mind your mathematical manners as you meet and make friends with each magical and mad-cap family member.

II. OVERVIEW

A. Concept Objectives

1. The student demonstrates an understanding of non-standard and standard units to describe length, weight, and capacity. (adapted from TEKS Mathematics, Grade 1 b 7)
2. The student understands that time and temperature can be measured in standard and non-standard ways. (adapted from TEKS Mathematics, Grade 1 b 8)

B. Content from the *Core Knowledge Sequence*

1. Measurement (p 36)

- Identify familiar instruments of measurement, such as ruler, scale, thermometer.
- Compare objects according to:
 - Linear measure
 - Measure length using non-standard units.
 - Measure length in inches and feet, and in centimeters.
 - Measure and draw line segments in inches and centimeters.
 - Weight (mass)
 - Compare weights of objects using a balance scale.
 - Measure weight in non-standard units and in pounds.
 - Capacity (volume)
 - Estimate and measure capacity in cups.
 - Identify quart, gallon.
 - Temperature: associate temperature in degrees Fahrenheit with weather.
- Time
 - Sequence events: before and after; first, next, last
 - Compare duration of events: which takes more or less time.
 - Read a clock face and tell time to the half-hour.
 - Know the days of the week and the months of the year, both in order and out of sequence.
 - Orientation in time: today, yesterday, tomorrow; morning, afternoon,

evening, night; this morning vs. yesterday morning, etc.

C. Skill Objectives

1. The student will identify conventional and non-conventional instruments of measurement.
2. The student will estimate and measure length, capacity, and weight of objects. (adapted from TEKS, Mathematics b 7 A)
3. The student will describe the relationship between the size of the unit and the number of units needed in a measurement. (adapted from TEKS, Mathematics b 7 B)
4. The student will recognize temperature such as a hot day or a cold day. (adapted from TEKS, Mathematics b 8 A)
5. The students will describe a time on a clock using hours and half hours. (adapted from TEKS, Mathematics b 8 B)
6. The student will order three or more events by how much time they take. (adapted from TEKS, Mathematics b 8 C)

III. BACKGROUND KNOWLEDGE

A. For Teachers

1. Hirsch, Jr. E.D. *What Your First Grader Needs To Know*. New York, New York: Dell Publishing, 1997. ISBN 0-383-31987-8.
2. *Core Knowledge Sequence*. Charlottesville, VA: Core Knowledge Foundation, 1998, ISBN 1-890517-12-7.

B. For Students

1. Measurement (p 36)

- Identify familiar instrument of measurement, such as ruler, scale, thermometer.
- Compare objects according to:
 - Linear measure
 - Long and short; longer than, shorter than
 - measure length using non-standard units
 - begin to measure length in inches
 - height: taller than, shorter than
 - Weight (Mass)
 - heavy, light
 - heavier than, lighter than
 - Capacity (volume)
 - full and empty
 - less full than, as full as, fuller than
 - Temperature: hotter and colder
- Time
 - Sequence events: before and after, first, next, last.
 - Compare duration of events; which take more or less time.
 - Read a clock face and tell time to the hour.
 - Know the days of the week and the months of the year.
 - Orientation in time: today, yesterday, tomorrow; morning, afternoon; this morning vs. yesterday morning, etc.

IV. RESOURCES

- A. *Me and the Measure of Things* (Joan Sweeney)
- B. *Math Count Time* (Henry Pluckrose)
- C. *How Big Is A Foot?* (Rolf Myller)

- D. *How Big Is A Foot?* script <http://www.uen.org/Lessonplan/preview.cgi?LPid=10729>
- E. *Capacity* (Henry Pluckrose)
- F. *How Heavy Is It?* (Brian Sargent)
- G. *Weight and Balance*(Barbara Taylor)
- H. *The Snowy Day* (Ezra Jack Keats)
- I. *Four Seasons Make a Year* (Anne Rockwell)

V. LESSONS

Lesson One: Mr. and Mrs. Measurement (1 day)

(This is an *introductory* lesson to an entire unit of measurement. This lesson will include all the types of measurement and measurement instruments.)

A. *Daily Objectives*

1. Concept Objectives
 - a. The student demonstrates an understanding of non-standard and standard units to describe length, weight, and capacity. (adapted from TEKS Mathematics, Grade 1 b 7)
 - b. The student understands that time and temperature can be measured in standard and non-standard ways. (adapted from TEKS Mathematics, Grade 1 b 8)
2. Lesson Content
 - a. Measurement (p 36)
 - Identify familiar instruments of measurement, such as ruler, scale, thermometer, clock, calendar
3. Skill Objective
 - a. The student will identify conventional and non-conventional instruments of measurement.

B. *Materials*

1. *Me and the Measure of Things* (Joan Sweeney)
2. Do You Measure Up? Worksheet (Appendix A)
3. enlarged pictures from Do You Measure Up?
4. labels for sorting – length, weight, capacity, temperature, time
5. Mr. and Mrs. Measurement (Appendix B)
6. labels for sorting – non-standard, standard
7. pencil, various colors

C. *Key Vocabulary*

1. measure – the length, dimensions, capacity, or quantity of something or to find the length, dimensions, capacity, or quantity of something
2. length - the measurement of the extent of something along its greatest dimension
3. weight – the force of gravity on an object, or a measure of the heaviness of an object
4. capacity – the volume of a solid shape expressed in units of liquid measurement
5. temperature – the amount of space
6. time - a number, as of years, days, or minutes, representing an interval separating two events

D. *Procedures/Activities*

1. The student will complete the worksheet Do You Measure Up? (Appendix A) as a pre-assessment to determine student understanding of standard and non-standard measurement terms and instruments.

2. The teacher will lead the class in reviewing Do You Measure Up? (Appendix A) by enlarging each picture and sorting into groups labeled with each of the types of measurements.
3. The teacher will illicit student responses as all complete this activity together.
4. The teacher will read the story of Mr. and Mrs. Measurement (Appendix B) to the students.
5. Using the same pictures, the teacher will lead the students in resorting the instruments into non-standard and standard labeled groups.
6. The teacher will lead the class on a Measurement Meander through the school to find types of standard and non-standard measurement tools.
7. The students will draw the items found on Do You Measure Up Again? (Appendix A-1).
8. The teacher will read *Me and the Measure of Things* (Joan Sweeney) orally to class to reinforce instruments used for measurement.

E. *Assessment/Evaluation*

1. The students will share orally the results of their Measurement Meander. The teacher can record results on a large sheet of paper drawn to look like the worksheet.

Lesson Two: Time Is On My Side with Tillie Time (1 day)

(This is an *introductory* lesson to precede specific lessons provided in your district's math curriculum about time and measuring/telling time.)

A. *Daily Objectives*

1. Concept Objective
 - a. The student understands that time can be measured in standard and non-standard ways. (adapted from TEKS Mathematics, Grade 1 b 8)
2. Lesson Content
 - a. Measurement (p 36)
 - Identify familiar instruments of measurement.
 - Time

Compare duration of events: which takes more or less time.
3. Skill Objectives
 - a. The student will identify conventional and non-conventional instrument of measurement.
 - b. The student will order three or more events by how much time they take. (adapted from TEKS, Mathematics b 8 C)
 - c. The students will describe a time on a clock using hours and half hours. (adapted from TEKS, Mathematics b 8 B)

B. *Materials*

1. *Math Counts Time* (Henry Pluckrose)
2. Activity Cards (Appendix C)
3. Tillie Time (Appendix D)
4. Time's Up (Appendix E)
5. scissors, glue, pencil
6. computer

C. *Key Vocabulary*

1. stopwatch - a watch that can be instantly started and stopped by pushing a button and used to measure an exact duration of time
2. watch – a small portable timepiece, especially one worn on the wrist or carried in the pocket

3. clock – an instrument that is not portable for measuring or indicating time, especially a mechanical or electronic device having a numbered dial and moving hands or a digital display.
4. calendar - any of various systems of measuring time in which the beginning, length, and divisions of a year are defined

D. *Procedures/Activities*

1. The teacher will read *Math Counts Time* (Henry Pluckrose).
2. The class will spend time discussing the instruments used to measure the different types of time.
3. The students will take turns choosing cards with activities (Appendix C).
4. The students will either act out the activity or just be able to answer using prior knowledge and discussion to sequence events by how much time they take.
5. These activities can be compared to each other and then sequenced as a whole. Comparing activities to one another is a non-standard unit of measure of time.
6. The teacher will read *Tillie Time* (Appendix D).
7. The class will discuss standard and non-standard ways to measure time.
8. The students can visit these websites for review and enrichment:
 click and drag time (correct and incorrect feedback)
<http://www.myparentime.com/games/games41/games41.shtml>
 match digital and analog clocks
<http://www.apples4theteacher.com/clocks.html>
 time matching (with correction)
<http://www.fi.edu/time/Journey/JustInTime/timequiz.html>
 time tic-tac-toe template
<http://www.fi.edu/time/Journey/JustInTime/timetictac.html>
 read time in words and stop the clock (score and no score)
<http://www.oswego.org/ocsd-web/games/BangOnTime/clockwordres.html>
 calendar games
<http://www.apples4theteacher.com/calendar.html>
 calendar template
<http://www.fi.edu/time/Journey/JustInTime/caltemp.html>
 interactive calendar quiz
<http://www.fi.edu/time/Journey/JustInTime/calendar/calendar1.html> .

E. *Assessment/Evaluation*

1. The student will complete *Time's Up* (Appendix E) by sorting into categories the correct instrument to measure the duration of time.

Lesson Three: Just How Big Is A Foot? with Linear Larry (1 day)

(This is an *introductory* lesson to precede specific lessons provided in your district's math curriculum about length and measuring length.)

A. *Daily Objectives*

1. Concept Objective
 - a. The student demonstrates an understanding of non-standard and standard units to describe length. (adapted from TEKS Mathematics, Grade 1 b 7)
2. Lesson Content
 - a. Measurement (p 36)
 - Identify familiar instruments of measurement, such as ruler.
 - Compare objects according to:
 Linear measure

Measure length using non-standard units.
Measure length in inches and feet, and in centimeters.
Measure and draw line segments in inches and centimeters.

3. Skill Objectives
 - a. The student will identify conventional and non-conventional instruments of measurement.
 - b. The student will describe the relationship between the size of the unit and the number of units needed in a measurement. (adapted from TEKS, Mathematics b 7 B)

B. *Materials*

1. computer
2. *How Big Is A Foot?* (Rolf Myller)
3. scripts for class <http://www.uen.org/Lessonplan/preview.cgi?LPid=10729>
4. yarn
5. scissors
6. rulers, yardsticks
7. masking tape
8. *How Big Is A Foot?* (Appendix F1 and F2)
9. *Linear Larry* (Appendix G)

C. *Key Vocabulary*

1. foot – lower extremity of the leg that is in direct contact with the ground in standing or walking
2. foot - a unit of length equal to 12 inches
3. ruler – a straight-edged strip for drawing straight lines and measuring lengths
4. inch - a unit of length equal to $\frac{1}{12}$ of a foot
5. yard – a unit of length equal to 3 feet or 36 inches
6. yardstick - a measuring stick one yard in length

D. *Procedures/Activities*

1. The teacher will read *How Big Is A Foot?* (Rolf Myller).
2. Afterwards, the class will perform the play of *How Big Is A Foot?* (Rolf Myller) found at <http://www.uen.org/Lessonplan/preview.cgi?LPid=10729>.
3. The teacher will lead the discussion of the problem encountered in the story.
4. Using yarn (a non-standard tool of measurement), the teacher will measure the tallest and shortest student in the class or all if time permits.
5. Each student in the class measures the yarn by stepping it off foot-in-front-of-foot (a non-standard tool of measurement).
6. Each student then measures the yarn with a ruler and a yardstick (standard tools of measurement).
7. The teacher will read *Linear Larry* (Appendix G) to the class and will lead a class discussion.
8. The students can visit these websites for review and enrichment:
inches and centimeters game
<http://www.funbrain.com/measure/index.html>
how to read a ruler
http://www.onlineconversion.com/faq_05.htm

E. *Assessment/Evaluation*

1. The students will complete *How Big Is A Foot?* (Appendix F1 and F2) by measuring with a non-standard and standard unit of measure.

Lesson Four: Fill ‘Er Up with Callie Capacity (1 day)

(This is an *introductory* lesson to precede specific lessons provided in your District’s math curriculum about capacity and measuring capacity.)

A. Daily Objectives

1. Concept Objective
 - a. The student demonstrates an understanding of non-standard and standard units to describe capacity. (adapted from TEKS Mathematics, Grade 1 b 7)
2. Lesson Content
 - a. Measurement (p 36)
 - Identify familiar instruments of measurement.
 - Compare objects according to:
Capacity
Estimate and measure capacity in cups.
Identify quart, gallon.
3. Skill Objective(s)
 - a. The student will identify conventional and non-conventional instruments of measurement.
 - b. The student will estimate and measure the length, capacity, and weight of objects. (adapted from TEKS, mathematics b 7 A)
 - c. The student will describe the relationship between the size of the unit and the number of units needed in a measurement. (adapted from TEKS, Mathematics b 7 B)

B. Materials

1. *Capacity* (Henry Pluckrose)
2. clear containers of various sizes and shapes
3. cup measures of various sizes—1 cup and larger
4. water
5. *Callie Capacity* (Appendix H)
6. *Fill It Up!* (Appendix I)

C. Key Vocabulary

1. cup – a unit of capacity or volume equal to 16 tablespoons or 8 fluid ounces
2. quart – a unit of volume or capacity used in liquid measure equal to $\frac{1}{4}$ gallon or 32 ounces, a unit of volume or capacity used in dry measure equal to $\frac{1}{8}$ peck or 2 pints
3. gallon – a unit of volume used in liquid and dry measure equal to 4 quarts
4. full - containing all that is normal or possible

D. Procedures/Activities

1. The teacher will read *Capacity* (Henry Pluckrose).
2. The teacher will follow the instructions in the book and experiment with capacity.
3. The teacher will set out clear containers of various sizes and shapes (use only containers without measurement markings so they can be used as non-standard tools of measurement).
4. The class will work together to order the containers from least to greatest capacity.
5. The teacher fills the first container with water.
6. The teacher empties the water from that container into the appropriate sized cup measure (a standard tool of measurement) to measure the exact amount.
7. The teacher empties that water into the next container. If it is larger, it will hold all of the water and still have room left.
8. The teacher fills the container the rest of the way with water.

9. The teacher empties the water from that container into the appropriate sized cup measure to measure the exact amount.
10. This process continues until all containers have been shown to be in the correct order.
11. If there are mistakes in container placement, they are corrected.
12. The teacher will read Callie Capacity (Appendix H) and will lead a class discussion.
13. The students can visit these websites for review and enrichment:
 visual representation for different capacities in a test tube
<http://www.teachingmeasures.co.uk/menu.html>
 pouring and compaing
<http://www.abc.net.au/countusin/games/game15.htm>

E. *Assessment/Evaluation*

1. The students will complete Fill It Up! (Appendix I) by comparing non-standard and standard units of measurement for capacity.

Lesson Five: I Did It My Weigh with Wally Weight (1 day)

(This is an *introductory* lesson to precede specific lessons provided in your District’s math curriculum about weight and measuring weight.)

A. *Daily Objectives*

1. Concept Objective
 - a. The student demonstrates an understanding of non-standard and standard units to describe weight. (adapted from TEKS Mathematics, Grade 1 b 7)
2. Lesson Content
 - a. Measurement (p 36)
 - Identify familiar instruments of measurement.
 - Compare objects according to:
 Weight (mass)
 Compare weights of objects using a balance scale.
 Measure weight in non-standard units and in pounds.
3. Skill Objectives
 - a. The student will identify conventional and non-conventional instruments of measurement.
 - b. The student will describe the relationship between the size of the unit and the number of units needed in a measurement. (adapted from TEKS, Mathematics b 7 B)

B. *Materials*

1. *How Heavy Is It?* (Brian Sargent)
2. *Weight and Balance* (Barbara Taylor)
3. hook
4. hanger
5. string
6. 2 paper plates
7. several smaller classroom objects to weigh
8. several larger classroom objects to weigh
9. Wally Weight (Appendix J)
10. It’s a Balancing Act! (Appendix K)

C. *Key Vocabulary*

1. balance – a weighing device consisting of a rigid beam horizontally suspended by a low-friction support at its center with identical weighing pans hung at either end
2. scale – an instrument or device with marks used as a reference in measurement

3. heavy – having great weight
 4. lighter – having lesser weight
- D. *Procedures/Activities*
1. The teacher will read *How Heavy Is It?* (Brian Sargent)
 2. The teacher will share pages 8-11 from *Weight and Balance* (Barbara Taylor).
 3. The teacher will lead the class in making the balance on page 11 (a non-standard tool of measurement).
 4. The class will experiment with different smaller objects (paperclips, cubes) to see if they can balance.
 5. The students will experiment with different larger objects (books, supply box) and use their own arms as the balance moving their arms to show heavier and lighter. Each student will need to have a turn.
 6. The teacher will have available a scale (such as a bathroom scale—a standard tool of measurement) so the students can verify the weights of the larger objects.
 7. The teacher will read *Wally Weight* (Appendix J) and will lead a class discussion.
 8. The students can visit these websites for review and enrichment:
 animal weigh in on a balance
<http://www.bbc.co.uk/education/mathsfile/shockwave/games/animal.html>
 visual representation for different weights on a scale
<http://www.teachingmeasures.co.uk/menu.html>
- E. *Assessment/Evaluation*
1. The students will complete *It's A Balancing Act!* (Appendix K) by comparing non-standard and standard units of measurement for weight.

Lesson Six: You're As Cold As Ice with Teddy Temperature (1 day)

(This is an *introductory* lesson to precede specific lessons provided in your District's math curriculum about temperature and measuring temperature.)

- A. *Daily Objectives*
1. Concept Objective
 - a. The student understands that time and temperature can be measured in standard and non-standard ways. (adapted from TEKS Mathematics, Grade 1 b 8)
 2. Lesson Content
 - a. Measurement (p 36)
 - Identify familiar instruments of measurement.
 - Compare objects according to:
 Temperature: associate temperature in degrees Fahrenheit with weather.
 3. Skill Objectives
 - a. The student will identify conventional and non-conventional instruments of measurement.
 - b. The student will recognize temperature such as a hot day or a cold day. (adapted from TEKS, Mathematics b 8 A)
- B. *Materials*
1. *The Snowy Day* (Ezra Jack Keats)
 2. *Four Seasons Make a Year* (Anne Rockwell)
 3. thermometer (Appendix L)
 4. white ribbon, red ribbon
 5. scissors

6. Heat Causes Changes (Appendix N1) and Cold Causes Changes (Appendix N2)
 7. overhead transparency of Appendix N1 and N2
 8. Teddy Temperature (Appendix M)
- C. *Key Vocabulary*
1. thermometer – an instrument for measuring temperature
 2. hot – being at a high temperature
 3. cold – being at a low temperature
- D. *Procedures/Activities*
1. The teacher will read *The Snowy Day* (Ezra Jack Keats).
 2. The teacher will lead a discussion about what happened to the snowball.
 3. The students will make a thermometer (Appendix L).
 4. The teacher will read *Four Seasons Make a Year* (Anne Rockwell).
 5. The students will act out cold (shivering) and hot (fanning) actions (non-standard tools of measurement) to match the weather/season in the book.
 6. The students will manipulate their thermometers (standard tool of measurement) to match the weather/season in the book.
 7. The teacher will read Teddy Temperature (Appendix M) and will lead a class discussion.
 8. The students can visit these websites for review and enrichment:
associate degrees in Fahrenheit with seasons and weather
http://www.scholastic.com/kids/weather/temperature_story
<http://www.beaconlearningcenter.com/WebLessons/HotStuff/default.htm>
- E. *Assessment/Evaluation*
1. The students will complete Heat Causes Changes (Appendix N1) and Cold Causes Changes (Appendix N2).
 2. The students will draw pictures of possible answers to Heat Causes Changes and Cold Causes Changes onto an overhead transparency to share with the class.

VI. CULMINATING ACTIVITY

A. Measurement Mania

The students will participate in the Measurement Mania activities listed below. They can be used at the end of each unit as a culminating activity or as individual activity stations all on one day as a Measurement Mania Day as a culmination of the entire measurement unit.

Measurement Mania Activities/Stations

Temperature: Students measure the temperature of items that have definite different temperatures (cup of ice, heating pad, room-temperature water, etc.) with kid-friendly thermometers (standard tools of measurement). Students record temperatures on When You're Hot When You're Not (Appendix O1). Students complete Sort the Seasons (Appendix O2) by cutting and gluing the picture beside the correct thermometer.

Weight: Students weigh actual items (try to provide as many items as possible that are close to 1 lb.) on a scale (standard tool of measurement) and record the weight on Weight for Me (Appendix P). A balance (non-standard tool of measurement) can also be placed in this center to compare the items. Students can record these findings on It's A Balancing Act! (Appendix K).

Capacity: Students will measure rice or sand from cup measures (standard tools of measurement) into containers of specific sizes—pint, quart, gallon. Students will record

how many cups it takes to make a pint, quart, and gallon, etc. on Cup for Cup (Appendix Q).

Linear: Students will use rulers (a standard tool of measurement) with centimeters and inches to measure items (all less than 12 inches in length) already placed at the station. Students will record the measurements in two ways on Inch By Inch (Appendix R1) and Measuring's A Cinch (Appendix R2).

Time: Students will choose a card with a Digital Time Card (Appendix S1) to the hour and half-hour written on it and record times on a conventional clock face (a standard tool of measurement) on Just Face It (Appendix S2). Students can also use the Clock Face Cards (Appendix S3) made and the digital times (Appendix S1) to play a concentration game.

VII. HANDOUTS/WORKSHEETS

- A. Appendix A – Do You Measure Up?
- B. Appendix A-1—Do You Measure Up Again?
- C. Appendix B – Mr. and Mrs. Measurement
- D. Appendix C – activity cards
- E. Appendix D – Tillie Time
- F. Appendix E – Time's Up
- G. Appendix F1– How Big Is A Foot?
- H. Appendix F2 – How Big is A Foot II?
- I. Appendix G – Linear Larry
- J. Appendix H – Callie Capacity
- K. Appendix I – Fill It Up!
- L. Appendix J – Wally Weight
- M. Appendix K – It's A Balancing Act!
- N. Appendix L – thermometer
- O. Appendix M – Teddy Temperature
- P. Appendix N1 – Heat Causes Changes
- Q. Appendix N2 – Cold Causes Changes
- R. Appendix O1 – When You're Hot When You're Not
- S. Appendix O2 – Sort the Seasons
- T. Appendix P – Weight for Me
- U. Appendix Q – Cup for Cup
- V. Appendix R1 – Inch by Inch
- W. Appendix R2 – Measuring's A Cinch
- X. Appendix S1 – digital times
- Y. Appendix S2 – Just Face It
- Z. Appendix S3 – analog times

VIII. BIBLIOGRAPHY

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- B. BBC Education – Animal Weigh In
<http://www.bbc.co.uk/education/mathsfile/shockwave/games/animal.html> .
- C. Beacon Learning Center – Hot Stuff
<http://www.beaconlearningcenter.com/WebLessons/HotStuff/default.htm> .
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- H. *How Big Is A Foot?* script <http://www.uen.org/Lessonplan/preview.cgi?LPid=10729> .
- I. Interactive Calendar <http://www.apples4theteacher.com/calendar.html> .
- J. Interactive Math Game- Learning Time <http://www.apples4theteacher.com/clocks.html> .
- K. Just In Time – Calendar Activity
<http://www.fi.edu/time/Journey/JustInTime/calendar/calendar1.html> .
- L. Just In Time – Calendar Template <http://www.fi.edu/time/Journey/JustInTime/caltemp.html> .
- M. Just In Time – Telling Time <http://www.fi.edu/time/Journey/JustInTime/timequiz.html> .
- N. Just In Time - Time Tic Tac Toe <http://www.fi.edu/time/Journey/JustInTime/timetictac.html> .
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- Q. Online Conversion http://www.onlineconversion.com/faq_05.htm .
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- V. Scholastic – Interactive Weather Maker <http://www.scholastic.com/kids/weather/> .
- W. Sweeney, Joan. *Me and the Measure of Things*. New York: Crown Publishers, 2001. ISBN 0-375-91101-4.
- X. Taylor, Barbara. *Weight and Balance*. New York: Franklin Watts, 1990. ISBN 0-531-14082-2.
- Y. Teaching Measures – Capacity <http://www.teachingmeasures.co.uk/menu.html> .
- Z. Teaching Measures – Mass <http://www.teachingmeasures.co.uk/menu.html> .
- AA. Time Clock Practice <http://www.myparentime.com/games/games41/games41.shtml> .

Appendix A

Do You Measure Up?

Name	 If you use it to measure length, color it yellow.	 If you use it to measure capacity, color it blue.
 If you use it to measure time, color it green.	 If you use it to measure weight, color it red.	 If you use it to measure temperature, color it orange.



Do You Measure Up Again?

<p>Name</p> <p>Students, on your Measurement Meander find and draw standard and non-standard tools of measurement.</p>	<p>If you use it to measure length, draw it here.</p> 	<p>If you use it to measure capacity, draw it here.</p> 
<p>If you use it to measure time, draw it here.</p> 	<p>If you use it to measure weight, draw it here.</p> 	<p>If you use it to measure temperature, draw it here.</p> 

Mr. and Mrs. Measurement

In a metropolis not so far away, live Mr. and Mrs. Measurement. They are a most happy couple who dearly love each other even though they have many differences. They have a magical and madcap family (you will meet later).

Mr. and Mrs. Measurement are different, but work to accomplish one mission. With the help of each special family member, there is nothing that they cannot measure! It is how they complete their tasks that gains them merit.

Mr. Measurement is non-standard. This means that he “marches to his own music”. He will measure and do it magnificently. However, the materials he uses may not be what you would imagine. He can measure with the sun and moon, he can measure with his arm to the middle of his face, he can measure with a metal can, he can measure with his hands like a make-believe balance, and he can measure with the marrow of his bone. Miraculously, his methods work.

Mrs. Measurement is standard. This means that she has methods and machines that she uses. She is a model in measurement. Her motto is to maintain precise marks and to never miscalculate. She measures with timers and monthly calendars, she measures with yardsticks and meter sticks, she measures with measuring cups and spoons, she measures with scales in a market, and she measures with a thermometer in your mouth. She is masterful!

It is a marvelous thing to use this Mr. and Mrs. to manage all of your measuring requirements. Meld your mind to their measurement message. Merry Measuring!

Appendix C
Activity Cards

 <p>lunch</p>	 <p>Art class</p>	<p>Billy Billy Billy Billy</p> <p>write name 10 times</p>
 <p>watch a movie</p>	 <p>tie your shoes</p>	 <p>brush your teeth</p>
 <p>baseball game</p>	 <p>jump 10 times</p>	 <p>mow the lawn</p>
 <p>bake cookies</p>	 <p>play cards</p>	 <p>watch cartoon</p>

Appendix D

Tillie Time

In a metropolis not so far away, live Mr. and Mrs. Measurement. They are a most happy couple who dearly love each other even though they have many differences. They have a magical and madcap family. Tillie Time is one member of their family.

Tillie has the task of telling time. Tillie is a tidbit like Mr. Measurement and a tad bit like Mrs. Measurement. She is very talented!

When Tillie is most like Mr. Measurement, she is non-standard. She has many tactics to use. She can measure with the sun and moon, she can measure with counting to ten, she can measure with tying her tennis shoe, she can measure with eating a taco, and she can measure with tuning in to a TV show. Thankfully, her tips are terrific.

When Tillie is most like Mrs. Measurement, she is standard. She has many tools to use. She measures with timers that tick, she measures with tall grandfather clocks, she measures with table-top calendars, she measures with telephone answering machines, and she measures with seasons and tides. She is top-notch!

It is a titillating thing to use this Tillie Time as the ticket to all of your time telling. Have a treat and get on the right track. Tame that time telling!

Appendix E

Name _____

Cut the pictures out and glue under the correct measurement tool.

Time's Up!

clock	calendar	stopwatch





Appendix F1
How Big Is A Foot?



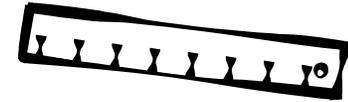
Name _____

Pick 5 things in the room and measure with your own foot and a ruler.

Item	My Foot Estimate	My Foot Measurement	Ruler Estimate	Ruler Measurement



Appendix F2



How Big Is A Foot II ?

Name _____ Find the 5 tapes in the room and measure each with your foot and with a ruler.

Item	My Foot Estimate	My Foot Measurement	Ruler Estimate	Ruler Measurement
Tape A				
Tape B				
Tape C				
Tape D				
Tape E				
Tape F				

Linear Larry

In a metropolis not so far away, live Mr. and Mrs. Measurement. They are a most happy couple who dearly love each other even though they have many differences. They have a magical and madcap family. Linear Larry is one member of their family.

Larry has the task of measuring lines. Larry is a little bit like Mr. Measurement and a little bit like Mrs. Measurement. He is very likeable!

When Larry is most like Mr. Measurement, he is non-standard. He has much leeway. He can measure with his arm to the middle of his face, he can measure with a length of yarn, he can measure with a branch or log, he can measure by lying down, and he can measure with little lentil beans. Luckily, he does not lie.

When Larry is most like Mrs. Measurement, he is standard. She has many links to use. He measures with yardsticks and meter sticks, he measures with light and sound, he measures with lightweight tape measures, he measures with centimeters and millimeters, and he measures with latitude and longitude. He is letter-perfect!

It is not too late. Do not labor or lament. Latch on to Linear Larry's lessons!

Callie Capacity

In a metropolis not so far away, live Mr. and Mrs. Measurement. They are a most happy couple who dearly love each other even though they have many differences. They have a magical and madcap family. Callie Capacity is one member of their family.

Callie has the chore of measuring capacity. Callie is a casting of Mr. Measurement and clearly like Mrs. Measurement. She is a capacity catalyst!

When Callie is most like Mr. Measurement, she is non-standard. She has a cache to use. She can measure with a metal can, she can measure cocoa by the capful, she can measure a canister of candy, she can measure a scoop of coffee, and she can measure canal of cool water. Use her to avoid a catastrophe!

When Callie is most like Mrs. Measurement, she is standard. She is very calculating. She measures with measuring cups and measuring spoons, she measures candidly with pints, quarts, and gallons, she measures cans of carrot juice, she measures the contents of a carton, and she measures the ingredients of a casserole. She is high caliber!

Calm your capacity cares. Callie is beyond comparison. Call on Callie for all of your capacity campaigns!

Appendix I

Fill It Up!

Name _____

Circle the picture of the item that holds less.

	or	
	or	
	or	

Circle the picture of the item that holds more.

	or	
	or	
	or	

Wally Weight

In a metropolis not so far away, live Mr. and Mrs. Measurement. They are a most happy couple who dearly love each other even though they have many differences. They have a magical and madcap family. Wally Weight is one member of their family.

Wally has the worries of measuring weight. Wally is way like Mr. Measurement and a wee bit like Mrs. Measurement. He is very wonderful!

When Wally is most like Mr. Measurement, he is non-standard. He has many ways to weigh. He can measure with his hands like a make-believe balance, he can measure a wagon's load, he can compare a walrus to a whale, he can measure our garbage and waste, and he can measure things that are waxing and waning. Wow, he is not a wacky or weird!

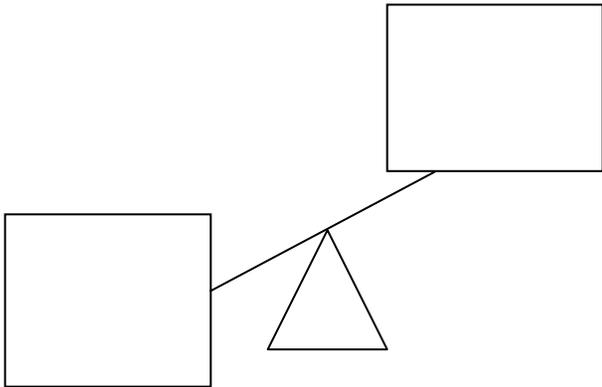
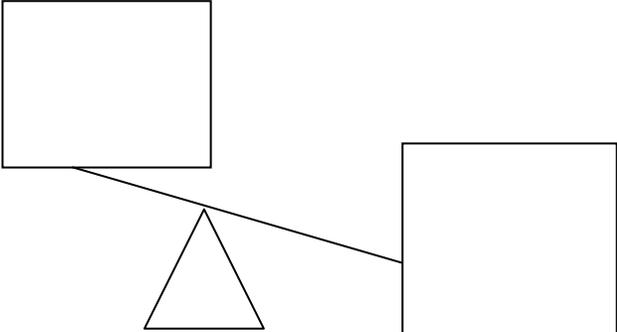
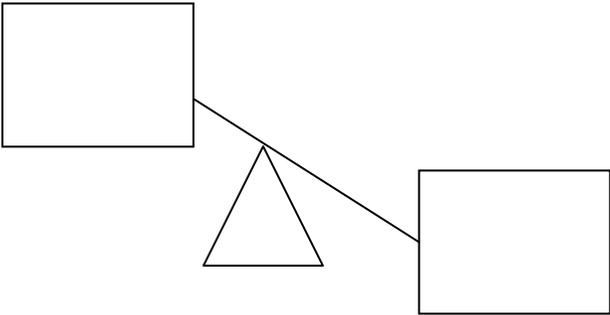
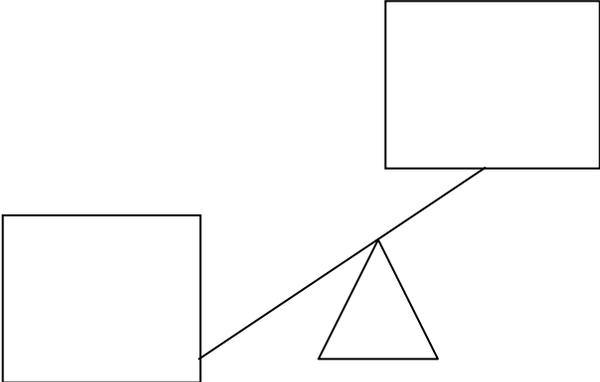
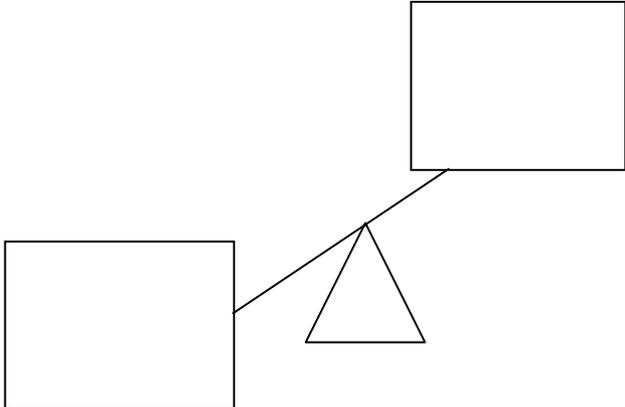
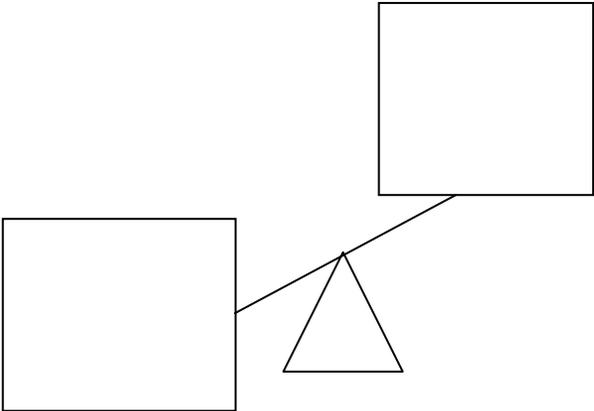
When Wally is most like Mrs. Measurement, he is standard. He is not wearisome. He measures with scales in a market, he measures the weight of an expanding waist, he measures a wedge of cheese, he measures a wealth of wood, and he measures the weight of the words in a Webster. He is worthy!

Wally will help you waltz your way across weighing. You should never wonder. Wallop your weighing wants!

It's a Balancing Act!

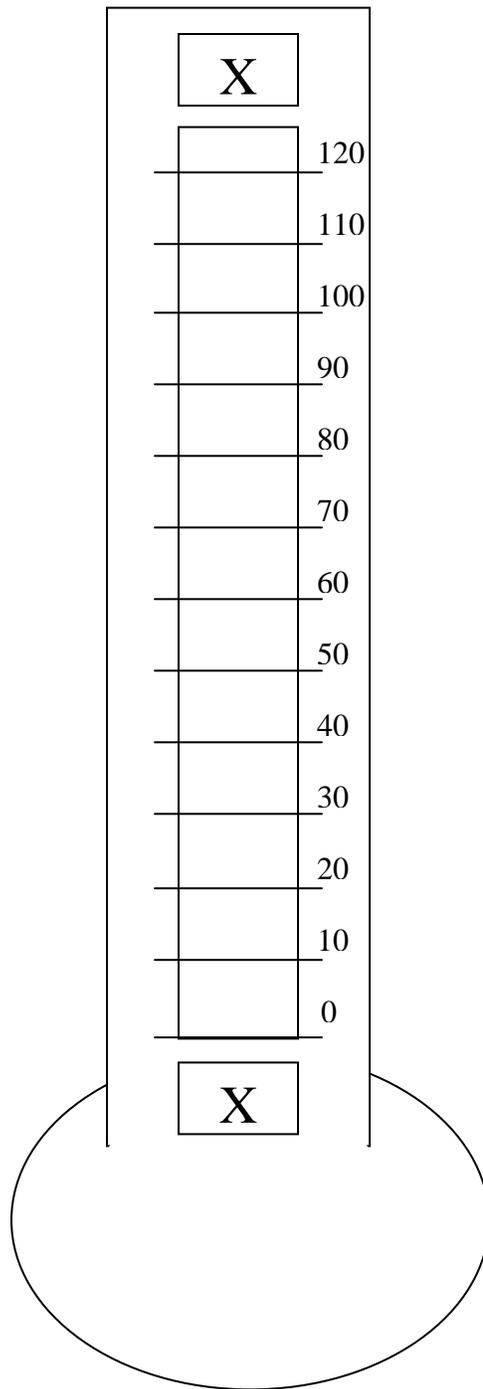
Name _____

Select two items. Compare their weights by drawing which item is heavier and lighter on the balance.

Appendix L

What's Hot What's Not



Copy on cardstock. Cut out the thermometer and the squares with X's.
Put a joined red/white ribbon through the X holes to make the "mercury".

Teddy Temperature

In a metropolis not so far away, live Mr. and Mrs. Measurement. They are a most happy couple who dearly love each other even though they have many differences. They have a magical and madcap family. Teddy Temperature is one member of their family.

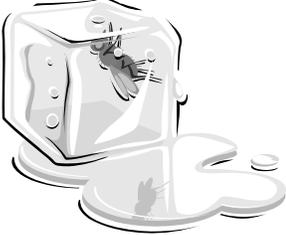
Teddy has the task of measuring temperature. Teddy is tolerant like Mr. Measurement and a taskmaster like Mrs. Measurement. He is a bit temperamental!

When Teddy is most like Mr. Measurement, he is non-standard. He can tempt you. He can measure with the marrow of his bone, he can tally the timidity of a team, he can measure a spicy tamale on your taste buds, he can measure a cup of tea, and he has tendencies to be temporary. Thankfully, he is tactful.

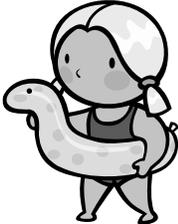
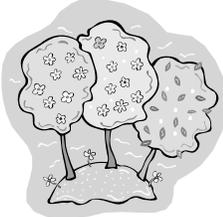
When Teddy is most like Mrs. Measurement, he is standard. He would never be testy. He measures with a thermometer in your mouth, he measures with table food with a specialized thermometer, he measures the Temperate Zone, he measures and gives you tidings on your TV, and he will tether you to the truth. He can tabulate temperatures!

Do not tarry! Teddy is a great teacher. Tackle telling temperature!

Name _____

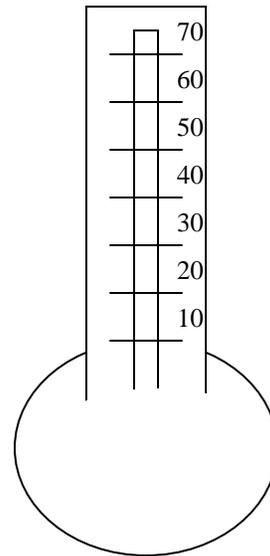
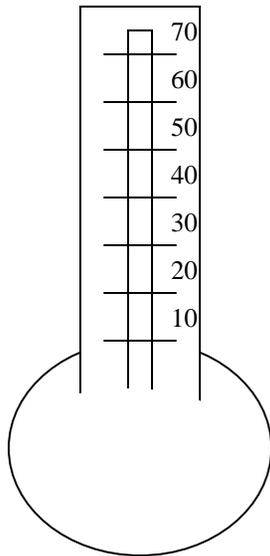
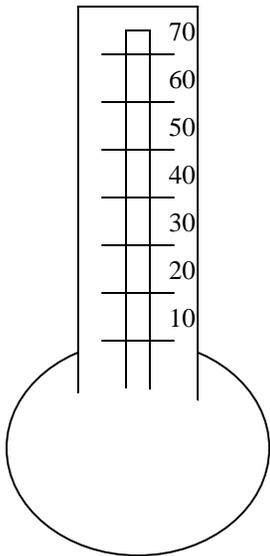
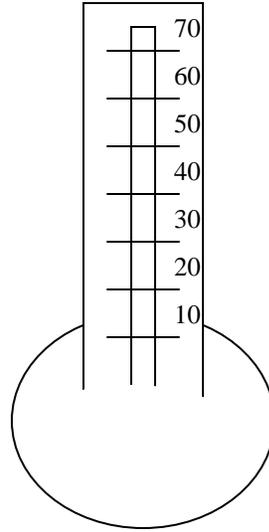
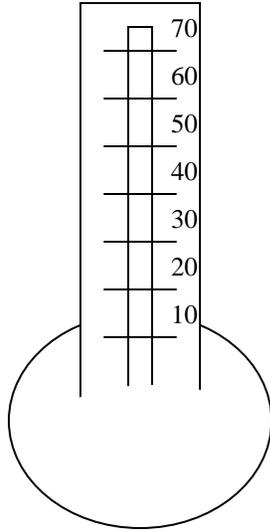
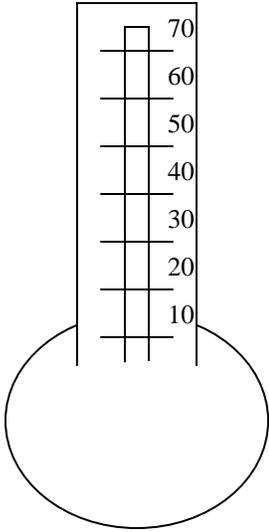
Heat Causes Changes	
This ↓	Changes to... when it is in the sun
	
	
	
	
	

Name _____

Cold Causes Changes	
This 	Changes to... when it gets cold
	
	
	
	
	
	

Appendix O-1

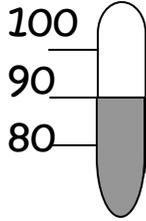
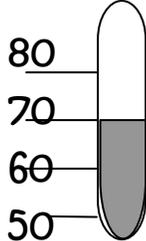
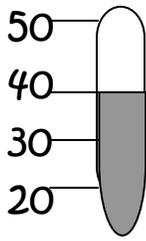
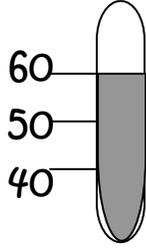
When You're Hot When You're Not



Sort the Seasons

Name _____

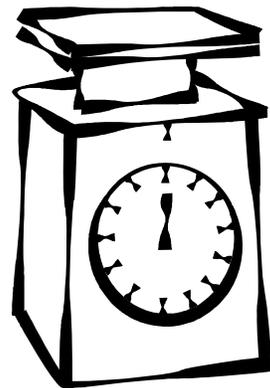
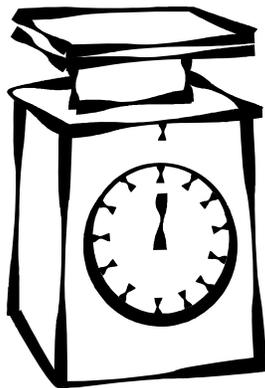
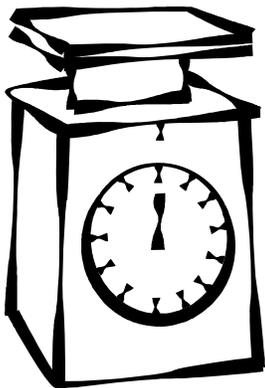
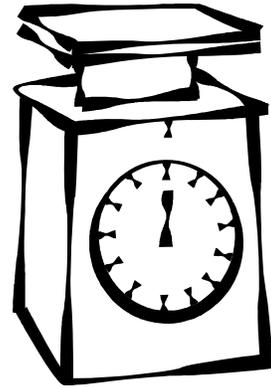
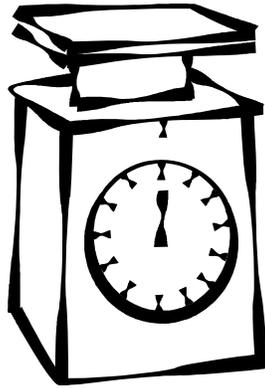
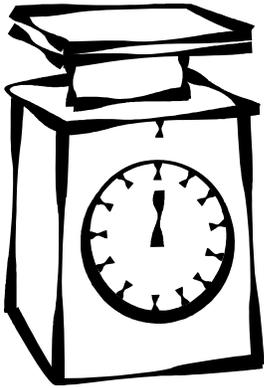
Write the temperature. Cut and past the pictures next to the correct temperature.

	Degrees	Temperature	Match the Picture
	<input type="text"/>		
	<input type="text"/>		
	<input type="text"/>		
	<input type="text"/>		



Appendix P

Weight for Me



Appendix Q

Cup for Cup



A pint is _____ cups.

A quart is _____ cups.

A gallon is _____ cups.

A quart is _____ pints.

A gallon is _____ pints.

A gallon is _____ quarts.

Appendix R-1

Inch by Inch

Draw a picture of the item here ↓	How Many Inches?	How Many Centimeters?

Appendix R2

Measuring's a Cinch

In each box, draw or write an object that is the size shown in the box.

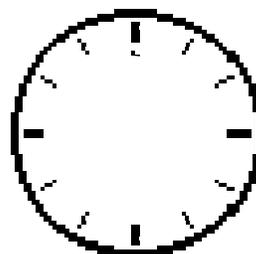
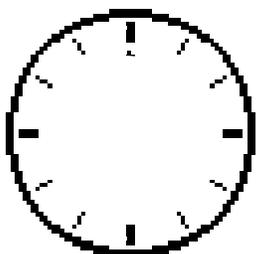
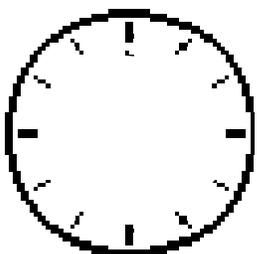
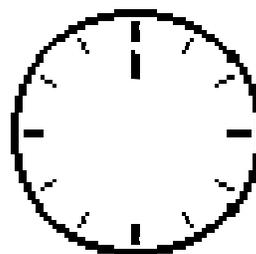
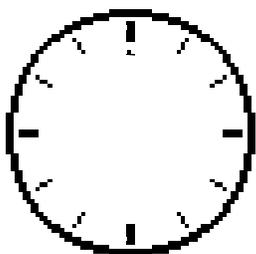
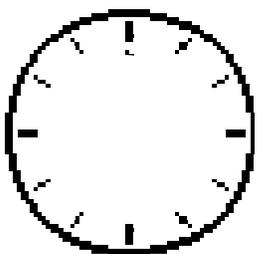
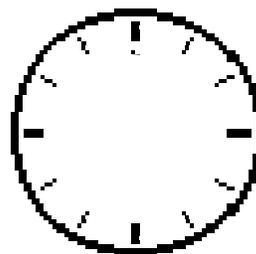
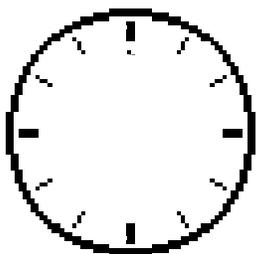
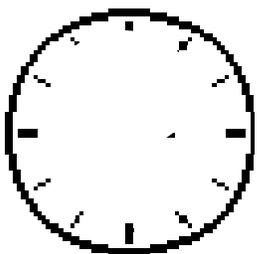
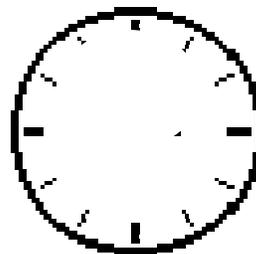
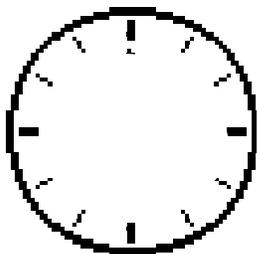
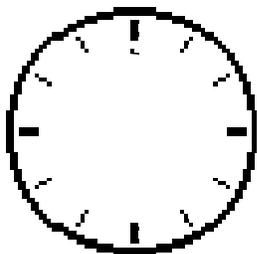
about 1 inch	about 10 cm	about 2 inches
about 7 cm	about 4 inches	about 15 cm
about 10 inches	about 8 inches	about 3 cm

Appendix S1
Digital Time Cards

12:00	12:30	1:00	1:30
2:00	2:30	3:00	3:30
4:00	4:30	5:00	5:30
6:00	6:30	7:00	7:30
8:00	8:30	9:00	9:30
10:00	10:30	11:00	11:30

Appendix S2

Just Face It



Appendix S3
Clock Face Cards

