

This is a one-week excerpt from the Starfall Kindergarten Mathematics Teacher's Guide.

If you have questions or comments, please contact us.

Email: helpdesk@starfall.com **Phone:** 1-888-857-8990 or 303-417-6414 **Fax:** 1-800-943-6666 or 303-417-6434



Measurement

Starfall Education Foundation
P.O. Box 359, Boulder, CO 80306



Starfall Education Foundation P.O. Box 359, Boulder, CO 80306 U.S.A.

Email: helpdesk@starfall.com

Phone: 1-888-857-8990 or 303-417-6414

Fax: 1-800-943-6666 or 303-417-6434

Copyright © 2016 by Starfall Education and its licensors. All rights reserved. Starfall® is a registered trademark in the US, the European Union, and various other countries.

Measurement

Week 30

Summary & Preparation	578
Measuring Time	582
Concepts of Time	585
Numbers on a Clock	588
Hands on the Clock	590
Learning Centers	592

Week 30 Summary

This week the children will be introduced to the concept of time and the importance of measuring time with calendars and clocks. They will compare and order events based on time and use appropriate vocabulary (days of week, months, yesterday, today, tomorrow). The first week of Unit 13 serves as a preview. Its emphasis is to identify the measurement of time. Mastery is not expected.

The children will also:

- Sequence events
- Recognize that a clock is used to tell time to the hour
- Distinguish the correct time measurement tool for a specific purpose

Preparation

DAY 1

Have the “Going to School” Sequence Cards available, and prepare sets of index cards by writing a numeral from 1 to 5 on each card. You will need enough sets for each child to have one numeral.

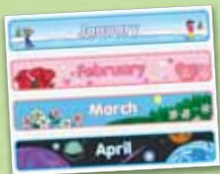
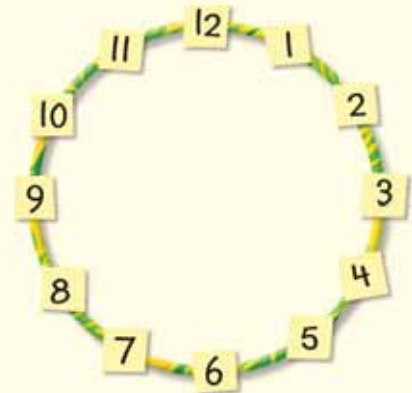
DAY 2

Duplicate a set of “Months of the Year” cards for use in today’s lesson.

Optional: Prepare a Hula Hoop with the numbers 1 through 12 attached around the rim to represent the hours on a clock.

DAY 3

Use the prepared Hula Hoop clock with numbers detached, and create construction paper hour and minute hands to fit inside. You may use a length of yarn and a large dot for the center to create a clock on the floor instead. You will also use a digital clock or the digital clock picture card.



DAY 4

The children will observe the numbers and spaces on a classroom (analog) clock.

You will use a clock, timer or stopwatch to designate a 20 minute time interval for the children to play. The children will use their math bags and math mats.

DAY 5

Activity Center 1 — Navigate classroom computers to *Starfall.com*.

Activity Center 2 — Duplicate a “Washing the Dog - Sequencing Worksheet” and prepare a long strip of paper that will fit the six sequence boxes for each child.

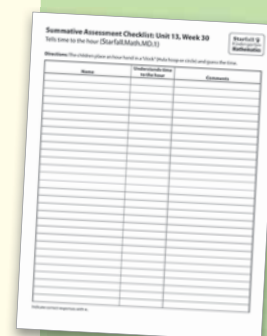
Activity Center 3 — The children will create Kinderary calendars using *Backpack Bear's Math Workbook #2*, page 42. They will also need pencils, crayons, scissors and glue sticks.

Activity Center 4 — Prepare materials for this week's Teacher's Choice Activity.

Activity Center 5 — Prepare a copy of the Summative Assessment Checklist for Unit 13, Week 30. You will record your observations of the children showing times on a “clock.”



“Washing the Dog - Sequencing Worksheet”



Summative Assessment
Unit 13 - Week 30

DAY 1

DAY 2

Daily Routines

- Calendar
- Weather
- Number Line
- Place Value
- Hundreds Chart

Magic Math Moment

Which takes longer?

Number order

Math Concepts

- Compare length of time to complete tasks
- Ways to measure time
- Determine which measuring tool to use
- Sequence numbers 1 – 5
- Sequence an event

- Concepts of time
- The Months of the Year
- Time order of days and months
- Numbers on a clock

Formative / Summative Assessment

Time concepts (longer and shorter)

Workbooks & Media

Math Melodies Track 15, "Months of the Year"

DAY 3

DAY 4

DAY 5

- Calendar
- Weather
- Number Line
- Place Value
- Hundreds Chart

Learning Centers

60 Seconds in a Minute

Counting by fives (Increments on a clock)

Starfall.com:

- Monthly Calendar
- Geometry and Measurement: "Time,"
- Math Songs: "The Time Song," "Today is Monday," and "The Months of the Year"

1

Introduce Grandfather Clock (pendulum)

60 Minutes in an hour

Order of Numbers on a Clock

Hands on a clock

Introduce Hour Hand and Minute Hand

Use a clock, timer or stopwatch to measure play time

Types of clocks (digital and analog)

Estimate clean up time and compare to actual time (measured by a clock, timer or stopwatch)

Sequence an Event

"Washing the Dog" Sequencing Worksheet

2

Trace numbers and add hour and minute hands to a clock

Determine which activity takes longer

Calendar – Create a new month

Workbook p. 42



3

Math Melodies CD, Track 11

Workbook p. 41



Starfall.com: Math Songs, "The Time Song"

Teacher's Choice

4

Summative Assessment: Place hands on a clock and determine the time

5

Which Takes Longer?

Materials

- Estimate with Backpack Bear

Say: **Backpack Bear would like us to read some of his estimation book.** Indicate page 15, read the page and discuss it with the children. Repeat for page 19.

Say: **Let's play "Which Takes Longer?" Who can come to the front of the classroom and clap 10 times?** A volunteer does this.

Continue: **Who can walk from the front of the classroom to the back of the classroom?** A volunteer does this.

Ask: **Which takes longer? Raise your hand if you think it takes longer to clap 10 times.** (The children do this.) **Raise your hand if you think it takes longer to walk from the front of the classroom to the back of the classroom.** (The children do this.) **Let's try an experiment to find out which takes longer.**

Two volunteers perform the actions simultaneously. Discuss the results.

Choose two different volunteers, one with a short name and one with a long name. Repeat the above experiment having the two children write their names on a whiteboard at the same time. Discuss the results.

Counting & Cardinality

CC.5 - Identify ordinal numbers.

Measurement & Data

A.2 - Compare two objects with a common measurable attribute.

MD.1 - Identify and use time measurement tools.

Measuring Time

1 Ways to Measure Time

Say: **We have learned to measure how long objects are, how much objects weigh, and how much containers can hold. Today let's learn how to measure time.**

Indicate the Measuring Tools Cards displayed in a pocket chart.

Say: **These pictures each tell something about time.**

Discuss each Picture Card. Discussion questions might include:

- **For what do we use ____ ?**
- **How can a ____ help us?**
- **Can you find a ____ in our classroom?**

Materials

- Pocket chart
- Measuring Tools Cards: *digital clock, analog clock, watch, calendar, stopwatch*
- Prepared index cards
- "Going to School" Sequence Cards

2 Which Measuring Tool Would I Use?

Say: **Let's play "Which Measuring Tool Would I Use?" Listen carefully to the story then raise your hand when you know the answer to the question.**

Volunteers come to the pocket chart and hold the Picture Cards that represent the answers.

Say:

- **My friend's birthday is this month. I'm so excited! Which measuring tool would I use to count how many more days there are until my friend's birthday? Right, I would use a calendar.**
- **Coach would like to time us when we race to measure how fast we can run, but there are no clocks outside. Which measuring tool would Coach use to measure how fast we run? Yes, Coach would use a stopwatch.**
- **When the teacher says we have 1 hour before lunch, which measuring tool would we use to know when it is time for lunch? (clock or watch)**
- **You and your friend are going to the zoo. Your friend says you should wear something that tells what time it is. Which measuring tool would you wear? (watch)**
- **Which measuring tool would you use if you want a clock that has numbers and pointers or hands on it? (analog clock) **Note:** The children may select the correct clock without saying its name.**
- **Which measuring tool would you use if you want a clock that only has numbers on it and no hands that point to the numbers? (digital clock)**



3 Index Card Sequence Activity

Say: **Here are some index cards. Each index card has a number from 1 to 5 on it.**

Distribute index cards to five children and instruct them to stand in the front of the classroom. Continue: **Hold your index card so everyone can see it, and put yourselves in order from 1 to 5.** The children do this.

Touch each child on the head saying first, second, third, fourth, fifth.

Divide the remaining children into groups of 5 and distribute a set of index cards to each group. Say: **Place yourselves in order according to your numbers.**

When the children are in order, touch their heads as you and the class count the children in each group first, second, third, fourth, fifth.

Say: **Now exchange numbers with someone in your group and get in order again. The children do this and you count with the remaining children again.**

Gather the children and collect their index cards.



4 Sequence Event

Display the “Going to School” Sequence Cards in random order in a pocket chart. Identify and discuss each Sequence Card.

Say: **We do things in a special order. Think about what you do to get ready for school in the morning. Let’s put these Sequence Cards in the order we do these things to get ready for school.** Volunteers order the Sequence Cards.

Ask:

- **What would happen if you put on your shoes before you put on your socks?**
- **What if you went to school before you changed out of your pajamas?**

Allow the children time to imagine and enjoy discussing the consequences of performing these actions out of order.

If time allows, choose volunteers to take off one of their shoes and one sock to demonstrate what happens when they try to put the shoe on before the sock.

Ask: **What if you woke up at 9:00 but school started at 8:00?** (Volunteers respond.) **Right, you would be late! How could a clock help you get to school on time?**

Note: There is no formative assessment since this lesson is an overview.

Number Order

Materials

- Pointer

Say: **Let's take a look at the alphabet chart.**

- **Who can use the pointer to point to Aa?**
- **Who can point to Zz?**
- **Why could you find Aa and Zz so quickly?**

Explain: **Right, the letters in the alphabet are in order and you know that Aa is first, and Zz is last.**

Write the numbers 0-10 on the whiteboard. Ask:

- **Who can find the number 0? 10?** (Volunteers do this.)
- **Why were you able to find those numbers so quickly? Right, numbers come in order, too!**

Counting & Cardinality

B.4c - Each successive number refers to one more.

Measurement & Data

MD.1 - Identify and use time measurement tools.

Concepts of Time

Essential Question: *Why is a calendar or clock important?*

Materials

- Math Melodies*, Track 15
- Pocket chart
- Calendar Months Cards
- Classroom (analog) clock
- Optional: Hula Hoop with hour numbers attached
- Number Cards 1-12

1 Calendar

Say: **Lots of things come in a special order. We also do many things in a special order. Look at the calendar. What comes in a special order on the calendar?**

Explain: **The days of the week come in the same order every week. Let's name the days of the week in order together.** Do this.

2 Months of the Year

Say: **Something else on a calendar comes in a special order, the months of the year. Let's listen to this song. It will help us learn the months of the year in order.**

Play *Math Melodies*, Track 15, "Months of the Year." The children join in when they are asked to repeat the names of the months.

Indicate the Calendar Months displayed vertically in order in a pocket chart. Identify the months. Ask: **What do you see that helps tell the names of the months?** (words and pictures)

Say: **Let's play "I Spy." Ready? I spy the month when we celebrate Thanksgiving. Thanksgiving is a holiday that comes in the month of November. Say, November.** (Children repeat, *November.*) **Who can find the**



month of November? A volunteer does this. Classmates assist as needed.

Create "I Spy" questions for several other months.

Distribute the Calendar Months to 12 children. Say: **Let's work together to put the months of the year in order starting with January. Why should we start with January? Right, it is always the first month of the year. Raise your month card if you have January.** Continue until the months are sequenced. Classmates assist as needed.

If time permits (and you have enough children) redistribute the Calendar Months. Say the name of each month and instruct the children to arrange themselves in order.

Ask: **Why is it helpful to know the order of the months?** Children should understand that the order of the months is always the same. It repeats each year. This helps us anticipate and plan for birthdays, summer vacation, and holidays.

3 Numbers on a Clock

Draw a clock on a whiteboard or indicate the classroom clock or the Hula Hoop with the numbers 1 through 12 attached. Say: **Numbers on a clock have a special order too.**

Say: **The numbers on a clock tell us what time it is. What numbers do you see on the clock? Right, you see the numbers 1 through 12.**

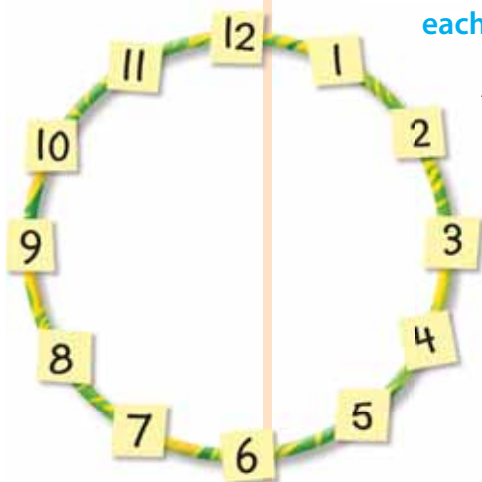
Distribute Number Cards 1-12 to volunteers. Say a number, and the child holding it matches it to the number on the clock. Repeat until each child has a turn.

Say: **Each number on a clock stands for an hour. Let's start at 1:00 and count how many hours are on the clock.** Do this.

Continue: **There are 12 numbers or 12 hours on the clock, but there are 24 hours in a day. How is that possible? (Volunteers respond.) Right, the hour hand on a clock points to each number 2 times every day.**

Continue: **Let's count the numbers starting at 1:00, but this time we will count them 2 times because the hour hand has to go around the clock 2 times each day to equal 24 hours.**

Ask: **How do you know if it is 10:00 in the morning or 10:00 at night? (Volunteers respond.) Exactly, in the morning it is light outside and at night it is dark.**





Formative Assessment

Longer or Shorter?

Partner the children and ask the following questions. Allow time for the partners to discuss their answers. At your signal, volunteers raise their hands to answer.

Ask:

- Which is longer, a day or a week?
- Which is shorter, a month or a day?
- Which is longer, a month or a year?
- Which is shorter, a minute or an hour?
- Which is longer, an hour or a day?
- Which is shorter, a minute or a year?

60 Seconds in a Minute

Indicate *Nursery Rhymes*, page 17. Encourage the children to say “Hickory, Dickory, Dock” along with you. Play *Math Melodies* CD Track 11 and sing the song together.

Indicate the picture of the clock on page 17. Say: **This is a grandfather clock. What do you see on this clock? (Volunteers respond.) The part that moves back and forth every second on this clock is called a pendulum. Say, pendulum.** (Children repeat, *pendulum*.)

Continue: **Each time the pendulum moves 60 times, a minute has passed. That tells the “big” or minute hand, when to move. Let’s count to 60 together.**

Instruct the children to watch the seconds hand on the classroom clock as they count to 60.

Say: **It took us about a minute to count to 60.**

Note: If the pendulum explanation is too confusing you may omit it.

Materials

- Starfall’s Selected Nursery Rhymes*, page 17
- Math Melodies* CD, Track 11

Measurement & Data

MD.1 - Identify and use time measurement tools.

Numbers on a Clock**1 Numbers on a Clock**

Draw a large circle on a whiteboard to represent a clock, or indicate the Hula Hoop or yarn circle.

Say: **We talked about the 12 numbers on a clock. On every clock, the 12 numbers are always in the same order.**

Place the 12 Number Card at the top of the circle, and distribute Number Cards 1-11 to volunteers.

Say: **Let’s create our own clock. Who has Number Card 1?** The child with Number Card 1 comes forward and places it in the proper place on the clock with your direction if necessary. Repeat for the numbers 2-11.

Materials

- Hula Hoop clock (with numbers detached) or length of yarn to create a clock on the floor
- Number Cards 1-12
- Hour and minute hand to fit inside the hula hoop or yarn circle
- Large construction paper dot for the center of the “clock”
- Digital clock or Digital Clock Picture Card
- Backpack Bear’s Math Workbook #2*, page 41
- Pencils

2 Hands of a Clock

Ask: **Who knows what is missing on this clock?** (Volunteers respond.)

Right, the clock needs two hands.

Draw or place a large dot in the center of the clock. Explain: **The hands on a clock are like pointers. They point to numbers. Each hand has a different job.**

Indicate the minute hand. Say: **The big hand has the hardest job. It is called the minute hand. Say, *minute hand*.** (Children repeat, *minute hand*.) **It moves around the clock every minute of every day. Maybe that is why the minute hand is the biggest!**

Place a minute hand on the clock pointing to 12.

Say: **The shorter or smaller hand is called the hour hand. Say, *hour hand*.** (Children repeat, *hour hand*.) **It moves from number to number every hour.**

Place an hour hand on 1.

Say: **The hour hand is pointing to 1. That means it is 1 o'clock. Who can move the smaller, or hour hand, to 2?** (A volunteer does this.) **Now it is 2 o'clock.**

Mix the numbers and the children continue to move the hour hand to represent the corresponding time.

3 Different Types of Clocks

Indicate the digital clock or digital clock Picture Card.

Say: **Here is another kind of clock. It shows time a different way. Lead the children to discuss how this clock is both like the clock they just created and how it is different.**

Explain: **This is called a digital clock. Say, *digital*.** (Children repeat, *digital*.) **On a digital clock the hour is displayed first, followed by the minutes.**

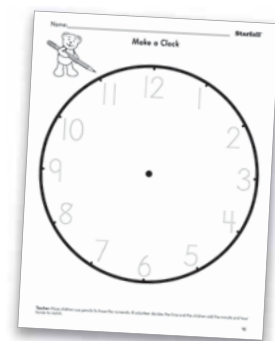


Formative Assessment

Draw a Clock

Distribute *Backpack Bear's Math Workbook #2* and instruct the children to turn to page 41. Say: **Use your pencil to trace the numerals.**

When they have finished tracing, a volunteer decides on a "time" (hour) for the clock. Draw a clock on the whiteboard and model the time by adding a minute hand first and then the hour hand. The children copy the clock on their workbook pages.



Counting By Fives

Materials

- Classroom clock
- Pointer

Indicate the classroom clock. Say: **We have learned that there are numbers on a clock. Let's name the numbers.** Use a pointer to indicate the numbers as you identify them.

Say: **Look at the space between the numbers. There are 4 little dots between each number, so when the minute hand goes from one number to the next, 5 minutes have passed. Let's count by fives to find out how many minutes pass as the minute hand goes from the 12 back around to the 12 again. Ready?** Count by fives as you point to each number.

Ask: **How far did we count? Right, we counted to 60! There are 60 minutes in 1 hour. Do you think it is faster to count each minute one at a time or to count by fives?**

Counting & Cardinality

CC.4 - Count to 100 by twos and by fives.

Measurement & Data

MD.1 - Identify and use time measurement tools.

Hands on the Clock

Materials

- Bell or other signal
- Clock, timer, or stopwatch
- Math bags, math mats

1 Review Time

Project *Starfall.com*: Math Songs, "The Time Song," or navigate a classroom computer to the website, and have the children gather around it. Play the song once while the children listen. Play the song again and encourage them to sing along.

2 Play!

Distribute math bags and math mats to the children.

Say: **Today we are going to play! You will use your math mats and the materials in your math bags. Think of different activities or games you can play. You can even find other children to play with.**

Continue: **Let's see what time it is. It's (current time). You can play for 20 minutes. How will we know when 20 minutes is up?**

Explain that they can use the classroom clock to see what time play time starts and what time it will be 20 minutes later.

Write the time play will end on the board. Say: **At the end of 20 minutes you will hear a signal to stop and freeze.** Walk around the classroom to observe and assist if needed as the children play for 20 minutes. At the end of 20 minutes give the signal to stop.

3 Estimate Clean Up Time

Say: **Now we will estimate how long you think it will take you to clean up and come back to your places. Who can estimate how many minutes it will take to clean up?** Volunteers respond.

Write the estimates on a whiteboard. Say: **I will time you using a (clock, timer, or stopwatch). Remember, this is not a race to see how fast you can clean up. We want to see how long it takes for you to clean up nicely! Ready? Begin cleaning.**

Discuss the actual amount of time it took to clean up and compare it with the estimates.



Formative Assessment

Which Would Take Longer?

Say: **Listen to the names of two activities. Think about which of the two activities would take a longer time to do and which would take less time to do. Ready?**

Give the following choices, and the children determine which activity takes longer and which activity takes less time. They explain their answers.

Ask: **Would it take longer to...**

- **Clean up your bedroom or pick up a book**
- **Eat lunch or put on your pajamas**
- **Go to the zoo or play a game at home**
- **Write your name or write a story**

Discuss why it is important to know approximately how long an activity will take to complete.

Learning Centers

1 Computer

The children explore:

- Monthly calendar
- Geometry and Measurement: "Time"
- Math Songs: "The Time Song," "Today Is Monday," "The Months of the Year"

Children may navigate to other *Starfall.com* math activities after they have explored those suggested above.

Materials

- Computers navigated to *Starfall.com*

2 Sequence an Event

The children cut apart the "Washing the Dog" sequencing worksheets and glue the boxes in order on long strips of paper. Then they color the pictures.

Materials

- "Washing the Dog" sequencing worksheet for each child
- Long strip of paper that will fit the 6 sequence boxes
- Pencils, crayons, scissors, glue

3 Create a New Month

The children get *Backpack Bear's Math Workbook #2* and turn to page 42. They cut apart the days of the week on the Kinderary page and glue them in the empty spaces at the top of the calendar.

The children trace the numbers and draw a picture to represent the month of "Kinderary."

Materials

- Backpack Bear's Math Workbook #2*, page 42
- Pencils, crayons, scissors, glue

4 Teacher's Choice

Review or expand a skill from this unit according to the needs of your students.

Counting & Cardinality

A.2 - Count forward from a given number.

Measurement & Data

MD.1 - Identify and use time measurement tools.



5 Summative Assessment

Place the minute hand in the Hula Hoop or yarn circle to point to the number 12. The children take turns to place the hour hand inside the Hula Hoop or circle pointing to another number. The others guess the time shown on the clock.

Observe the children as they play, and record your observations on the Summative Assessment Checklist for Unit 13, Week 30.

Materials

- Hula Hoop or yarn circle with numbers 1-12
- Minute hand (pointing to the number 12)
- Hour hand
- Summative Assessment Checklist for Unit 13, Week 30

