# RIGHTSTART ${ }^{\text {TM }}$ MATHEMATICS 

 by Joan A. Cotter, Ph.D. with Tracy Mittleider, MSEdKINDERGARTEN LESSONS Second Edition

A special thank you to Kathleen Cotter Clayton for all her work on the preparation of this manual.

## Copyright © 2013 by Activities for Learning, Inc.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without written permission of Activities for Learning, Inc.

The publisher hereby grants permission to reproduce the Worksheets, Appendix, and the Practice Sheets for a single teacher's use only.

Printed in the United States of America

## www.RightStartMath.com

For more information: info@RightStartMath.com
Supplies may be ordered from: www.RightStartMath.com

Activities for Learning, Inc.
321 Hill Street
Hazelton, ND 58544-0468
United States of America
888-775-6284 or 701-782-2000
701-782-2007 fax

ISBN 978-1-931980-59-3
April 2023

# RightStart ${ }^{\text {TM }}$ Mathematics Objectives for Kindergarten 

Name $\qquad$ Year $\qquad$

## Numeration

Can recognize quantities to 100 by grouping in $5 \mathrm{~s} \& 10 \mathrm{~s}$
Knows even numbers
Knows odd numbers
Can count by twos to 100
Can count by fives to 100
Can count by tens to 100


| N/A |  |  |  |
| :--- | :--- | :--- | :--- |
| N/A | N/A |  |  |
| N/A | N/A |  |  |


| N/A |  |  |  |
| :--- | :--- | :--- | :--- |
| N/A |  |  |  |
| N/A | N/A |  |  |
| N/A | N/A |  |  |


| N/A | N/A |  |  |
| :--- | :--- | :--- | :--- |
| N/A | N/A |  |  |


| N/A | N/A |  |  |
| :---: | :---: | :--- | :--- |
| N/A | N/A |  |  |
| N/A | N/A |  |  |


|  |  |  |  |
| :--- | :--- | :--- | :--- |
|  |  |  |  |
|  |  |  |  |
| N/A |  |  |  |

Time
Knows days of the week
Knows months of the year
Can tell time to the hour
Can tell time to the half hour

## Measurement

Can determine length in centimeters and inches

## Fractions

Can divide into halves and fourths
Knows unit fractions up to $1 / 10$

| N/A |  |  |  |
| :---: | :---: | :---: | :--- |
| N/A |  |  |  |
| N/A | N/A | N/A |  |
| N/A | N/A | N/A |  |

## N/A N/A N/A

| N/A | N/A | N/A |  |
| :--- | :--- | :--- | :--- |
| N/A | N/A | N/A |  |

## Kindergarten: Table of Contents

Lesson 1
Lesson 2
Lesson 3
Lesson 4
Lesson 5
Lesson 6
Lesson 7
Lesson 8
Lesson 9
Lesson 10
Lesson 11
Lesson 12
Lesson 13
Lesson 14
Lesson 15
Lesson 16
Lesson 17
Lesson 18
Lesson 19
Lesson 20
Lesson 21
Lesson 22
Lesson 23
Lesson 24
Lesson 25
Lesson 26
Lesson 27
Lesson 28
Lesson 29
Lesson 30
Lesson 31
Lesson 32
Lesson 33
Lesson 34
Lesson 35
Lesson 36
Lesson 37

Subitizing 1 to 3
Subitizing 4 and Patterning
Sorting
Subitizing 5
More Patterning
Subitizing 6
Matching
Subitizing 7 and the AL Abacus
Subitizing 8 and Ordinal Counting
Ordering
Subitizing 9 and Tally Marks
Parallel Lines, Planes, and Making Triangles
Subitizing 10 and Quadrilaterals
AL Abacus Stairs
AL Abacus Stairs and Perpendicular
Comes After Game, Rectangles and Squares
Days of the Week and Writing Tally Marks
Making Geometric Figures
Making Rectangles with Tiles
Writing 1 and 7 \& Combining Tally Sticks
Presenting 2s \& Evens and Odds
Zero and Evens on the AL Abacus
Writing 4 and Take and Give
Writing 3 \& More Evens and Odds
Writing 2, Tens \& Equilateral Triangles
Writing 5, Tens \& the "Ten Triangle"
Writing 6 and Introducing Adding
Writing 8 and Evenness
Geoboard Patterns
Writing 9 and Number Sequencing
Assessment 1
Partitioning 5
Part-Whole Circle Sets
Partitioning Problem
More Part-Whole Circle Sets
Ones \& Finding and Reading Tens
Equal and Plus

## Kindergarten: Table of Contents

Lesson 38
Lesson 39
Lesson 40
Lesson 41
Lesson 42
Lesson 43
Lesson 44
Lesson 45
Lesson 46
Lesson 47
Lesson 48
Lesson 49
Lesson 50
Lesson 51
Lesson 52
Lesson 53
Lesson 54
Lesson 55
Lesson 56
Lesson 57
Lesson 58
Lesson 59
Lesson 60
Lesson 61
Lesson 62
Lesson 63
Lesson 64
Lesson 65
Lesson 66
Lesson 67
Lesson 68
Lesson 69
Lesson 70
Lesson 71
Lesson 72
Lesson 73
Lesson 74

Combining 10s and 1 s
Composing Tens and Ones
Introducing the Math Balance \& Hexagons
Partitioning on the Math Balance
Doubles and Writing Equations
Ellipse and Folding Shapes
Pennies \& Reflections
The Less Game \& Reflections
More Doubles and Grouping
Nickels and Estimating Quantities
Dimes and Estimating with the AL Abacus
Introducing Halves and Half of a Set
Enrichment Making Circles and Ellipses
Combining Several Coins
Grouping by Fives
Assessment 2
Assessment 3
Finding Correct Coins \& Tally Mark Chart
Adding With Tally Marks
More about Evens and Odds
More Doubling and Halving
Introducing Multiplication
Adding and Writing Doubles Equations
More Adding with the Abacus
Pairs That Equal Ten
Halves and the Go to the Dump Game
Counting with Tally Marks \& More Adding
Counting Tiles \& Adding 1s
Partitioning Ten \& Adding Ones
More Partitioning Ten
Composing Tens and Ones
Enrichment Calendar Day 1
Enrichment Calendar Day 2
Working with Hundreds
Recording the Hundreds
Hundreds Problems
Adding Tens and Ones

## Kindergarten: Table of Contents

Lesson 75
Lesson 76
Lesson 77
Lesson 78
Lesson 79
Lesson 80
Lesson 81
Lesson 82
Lesson 83
Lesson 84
Lesson 85
Lesson 86
Lesson 87
Lesson 88
Lesson 89
Lesson 90
Lesson 91
Lesson 92
Lesson 93
Lesson 94
Lesson 95
Lesson 96
Lesson 97
Lesson 98
Lesson 99
Lesson 100
Lesson 101
Lesson 102
Lesson 103
Lesson 104
Lesson 105
Lesson 106
Lesson 107
Lesson 108
Lesson 109
Lesson 110
Lesson 111

Counting by Tens \& Making a Hundred Chart
Thousand Triangle
Regular Names for the Tens
Partitioning 50
Counting and Composing Tens to 200
Adding Tens
Regular Names for the Teens
Regular Names for Eleven and Twelve
Adding One to 2-Digit Numbers
One Plus a Number
Using the Commutative Property
Counting Objects by Twos
Working with Twos
Adding Twos
Working with a Calculator
Arranging from Greatest to Least
The "Round" Geometric Solids
More Geometric Solids
Constructing a Cube
Dozens \& Partitioning Teens into Tens
Introducing Subtraction Equations
Subtraction as the Missing Addend
Subtraction by Going Down
Comparing Addition and Subtraction
Review
Assessment 4
Measuring with Inches
Measuring with Centimeters
Measuring Lengths
Comparing Weights
Measuring with Grams
Parts of a Day
Enrichment Hour Numbers on a Clock
Enrichment Learning Hour Numbers
Enrichment The O'Clocks
Enrichment More about the O'Clocks
Reviewing Halving and Doubling

## Kindergarten: Table of Contents

| Lesson 112 | Symmetry |
| :---: | :---: |
| Lesson 113 | Enrichment The Half Hours |
| Lesson 114 | Tangram Puzzles |
| Lesson 115 | More Tangram Puzzles |
| Lesson 116 | Introducing Division |
| Lesson 117 | Introducing Fractions |
| Lesson 118 | Comparing Unit Fractions |
| Lesson 119 | Measuring with Water |
| Lesson 120 | Non-Unit Fractions |
| Lesson 121 | Making One with Fractions |
| Lesson 122 | Halving Fractions |
| Lesson 123 | Counting and Cardinality Review |
| Lesson 124 | Counting and Cardinality Assessment |
| Lesson 125 | Operations and Algebraic Thinking Review |
| Lesson 126 | Operations and Algebraic Thinking Assessment |
| Lesson 127 | Number and Operations in Base Ten Review |
| Lesson 128 | Number and Operations in Base Ten Assessment |
| Lesson 129 | Measurement and Data Review |
| Lesson 130 | Measurement and Data Assessment |
| Lesson 131 | Geometry Review |
| Lesson 132 | Geometry Assessment |

## Lesson 2: Subitizing 4 and Patterning

## OBJECTIVES:

1. To learn finger sets and tally marks for 4
2. To recognize quantities 1 to 4 without counting
3. To recognize and continue a simple pattern

## MATERIALS:

1. Music for "Yellow is the Sun"
2. Yellow is the Sun book
3. Finger cards, cut apart (Appendix p. 2)*
4. Tally sticks
5. Tiles

## ACTIVITIES FOR TEACHING:

Warm-up. Gather in the circle; continue teaching the song, "Yellow is the Sun."

## Yellow is the Sun

Yellow is the sun.
This is only one. (Raise one finger.)
Why is the sky so blue?
Let me show you two. (Raise two fingers.)
Salty is the sea.
One more and it's three. (Raise three fingers.)
Hear the thunder roar.
Here's the mighty four. (Raise four fingers.)
Ducks will swim and dive.
My whole hand makes five. (Raise five fingers.)
Read the book Yellow is the Sun to the children.
Quantities 1 to 3. Show the finger card* with 2 fingers for one to two seconds and ask the children to show the quantity with their fingers on their left hands and to build it with tally sticks. Repeat with finger cards 1 and 3. Also, clap 2 times. Ask: How many claps did you hear? [2] Repeat with 3.
Subitizing 4. Show 4 with your fingers and ask the children to show 4 with their left hand. Then show 4 tiles and say: This is 4 . See the figures below.


Four.


Four tiles.

Rearrange the 4 tiles and ask how many they see. Remove 1 tile and ask: How many? [3] Replace it and again ask: How many? [4] Now clap 4 times and ask: How many claps they hear? [4]

## EXPLANATIONS:





It is unimportant which fingers on the left hand the children use to show the quantities.
*The finger cards are found on page 2 in the Appendix. In future lessons, the dot, bead, and tally cards will be needed. They are also found in the Appendix pages 6, 7, and 19.
Use one color for the sets of finger cards, another color for the dot cards, a third color for the bead pattern cards, and a fourth color for the tally stick cards. You will need two of each of the four card sets.

Changing quantities. Tell them to make 4 with 4 tally sticks. Then ask them to remove 2 sticks and say how many? [2] Ask them to add 1 and say how many? [3] Repeat with one more.


## Four.

Introducing patterning. Take a group of tally sticks and lay one out horizontally. Place another next to the first vertically, the third one horizontally and the fourth one vertically. Give a child a tally stick and ask: What do you think comes next? Tell them we will call this the "dore" (doe-ray) pattern. Tell the children to continue to lay out the pattern.


Next take out the tiles and lay out a red tile followed by a blue tile and then another red tile. Ask the children which color would come next in the do-re pattern? [blue] Ask the children to continue the pattern.


Encourage the children make the same pattern with different colors.
In conclusion. Ask the children to say how many fingers they see while you do the following: Raise 4 fingers, then put 1 down and back up several times. [4, 3, $4,3, \ldots$. Ask: Do you hear a do-re pattern? [yes]

Our brains are wired to look for patterns.
Patterns are often named using letters of the alphabet. The letters are used sequentially, naming each different element of the pattern. For example, a strictly alternating pattern is $A B$. To avoid using the letters of the alphabet for beginning readers, we will use musical scale names to designate pattern names. The names are do (doe), re (ray), mi (me), fa (fah).

You might want to teach the children the "Do Re Mi" song from the "Sound of Music."

Conclusions may be a summary of the day's lesson or an expansion of the lesson to challenge higher level thinking.

## Lesson 8: Subitizing 7 and the AL Abacus

## OBJECTIVES:

1. To subitize 7
2. To learn the terms above and below
3. To learn the terms top and bottom
4. To enter 1 to 5 beads on the AL Abacus without counting

## MATERIALS:

1. Yellow is the Sun book
2. Finger cards
3. Tally sticks
4. Tiles
5. AL Abacuses

## ACTIVITIES FOR TEACHING:

## EXPLANATIONS:

Warm-up. Continue reading the book and singing the song, "Yellow is the Sun."

Show the finger cards 1 to 6 at random for 2 seconds and ask the children to show them on their fingers. Also have them show the number with tally sticks and say the numbers.
Quantity 7. Show 7 to the children with your fingers. Ask them to show it on their fingers. Also ask them to build it with the tally sticks. Now, ask them to make a 7 with the tiles, using two colors as shown below.


Seven.


Seven.
Above and below. To help the children understand the words above and below, ask the children is your nose above or below your mouth. Ask: Is your chin above or below your eyes? Repeat with different parts of the face using the words above or below.
Now have the children show you something under the table or desk. Ask them to name something above their heads.
Top and bottom. Point out examples of top and bottom, such as "Where is the top of the window" and "Where is the bottom of the window." Repeat for the top and bottom of a page in a book.
AL Abacus. Show the children the AL Abacus. Help them learn to handle it with respect, as due any tool. You might give them a few minutes to make patterns and designs.

It might help to say "sev-en" as you point to the "two" part of 7.

As this point, 7 must be shown as 5 on the left hand and 2 on the right, not, for example, as 4 on one hand and 3 on the other.

The terms above, below, top, and bottom are part of the spatial terms suggested by the Common Core State Standards.

ACTIVITIES FOR TEACHING CONTINUED:
Entering quantities. Show them how to place the abacus with the circle logo at the top. This means the circle will be on the right and the wires horizontal. Demonstrate clearing the abacus by lifting the left edge so the beads fall toward the side with the circle. See the figure below.


AL Abacus cleared.
Ask the children to clear the abacus. Ask them to show 2 with their fingers. Ask them to enter 2 on the top wire. See the figures below.


Entering 2 as a unit.


Two.

Ask them to clear the abacus. Then ask them to show 3 with fingers and enter 3 on the abacus. Repeat for 5 and ask how they could tell it was 5. [a whole hand, all the dark colored beads on a wire] Lastly, ask them to show 4 and enter 4.


Three.


Five.

In conclusion. Show 5 on your fingers and ask: How much is this? [5] Repeat for 7.

To enter a quantity on the AL Abacus, move the beads from right to left. This allows the eyes to travel from left to right as in reading.

Quantities are entered on the abacus as a group; they are not counted. If a child counts when entering a quantity, simply say: Okay, now can you enter (3) without counting.

# Lesson 94: Dozens \& Partitioning Teens into Tens 

## OBJECTIVES:

1. To introduce the term dozen
2. To partition teens

## MATERIALS:

1. Egg carton with 2 eggs or other objects
2. Place-value cards
3. AL Abacuses
4. Dry erase boards
5. Worksheet 34, Partitioning Teens

## ACTIVITIES FOR TEACHING:

## EXPLANATIONS:

Warm-up. Ask the children to count by 1 s to 80 .
Ask the children to count by 10 s to 200.
Ask the children to count by 5 s to 100 .
Ask: How much is $43+1$ ? [44] How much is $44+2$ ?
[46] How much is $78+1$ ? [79] How much is $99+1$ ? [ 1 hundred]
Ask the children to show parallel lines using their arms. Then ask them to show perpendicular lines.
Ask the children to listen to the pattern and to continue it with the next number: 46, 47, 48; [49] 57, 56, 55; [54] and 50, 60, 70. [80]

Dozen. Show the children an egg carton. Tell them that it holds one dozen eggs. Open the carton and display it as shown below. Ask them: How many eggs would fit? [12] Ask: How many eggs are in a dozen eggs? [12] How many buns are in a package of a dozen buns? [12]


An egg carton.

Then ask the children to solve the following problem:
How many eggs are in 2 dozen eggs.
Let them solve the problem in their own way and to explain how they did it. Ask them to show their solution with place-value cards. [24]
If appropriate, ask them to find the number of eggs in 3 dozen. [36]

While the term dozen has virtually no mathematical significance, 12 continues to be important in a cultural sense. We have 12 in a dozen, 12 months in a year, 12 hours on the clock, and 12 inches in a foot.

Showing the egg carton with two eggs (or similar objects) makes the ten empty spaces more prominent.

Ask the children if it is easier to count by dozens or by tens and why.
Partitioning the teens. Draw a part-whole circle set and write 12 in the whole and 10 in the left part-circle. Ask: What goes in the other part-circle? Ask them to demonstrate the partitioning on the abacus and to explain it.


Partitioning 12 into 10 and 2.


Next ask them to say and write the equation. [12 = $10+2]$ Also ask them for the inverse: What is $10+2$ ? [12]
Repeat with 15 written in the whole-circle and 10 in the left part-circle. Continue with other teen numbers.
Practice. Ask the children: Sixteen is 10 and what. [6] Fifteen is 5 and what? [10] Thirteen is 3 and what? [10] Nineteen is 10 and what? [9]
Problem. Give them the following problem:
Lee hid a dozen eggs. Lee's friends found 10 of them. How many of them are still hidden?
Ask: What does the word dozen means? [12] How many eggs were found? [10] How many eggs are still hidden? [2]
Worksheet 34. Ask the children to do the worksheet for partitioning the teens into 10 and another number. The problems and solutions are as follows:

$$
\begin{aligned}
& 15=10+5 \\
& 19=10+9 \\
& 13=10+3 \\
& 11=10+1 \\
& 17=10+7 \\
& 16=10+6 \\
& 14=10+4 \\
& 18=10+8 \\
& 12=10+2 \\
& 20=10+10
\end{aligned}
$$

In conclusion. Ask: How much is a dozen? [12] How much is a half dozen? [6]

English-speaking children usually have difficulty conceptualizing the teen numbers as $10+$ another number. In other words, the children tends to see 14 as 14 ones, rather than a ten and 4 ones. The following activities are designed to help them make that connection, which becomes harder since they started using the traditional names. Refer back to math way saying the numbers, if necessary.

Name: $\qquad$
$20=10+$

## Lesson 104: Comparing Weights

## OBJECTIVES:

1. To become aware of weight
2. To introduce the term heavier
3. To compare weights

## MATERIALS:

1. Two identical glasses, one empty and with
2. Geometric solids
3. *Math balance, two weights, two 4-inch (10 cm) paper cups, and two rubber bands
4. Small objects to weigh: plastic, metal, etc.

## ACTIVITIES FOR TEACHING:

Warm-up. Ask: How much is 15 plus 1? [16] How much is 15 minus 1 ? [14] How much is 10 plus 1? [11] How much is 10 minus 1? [9] How much is 12 plus 1? [13] How much is 12 minus 1? [11]
Ask the children: Is 1 plus 1, adding or subtracting? [adding] Is 9 and 2 more, adding or subtracting? [adding] Is 10 minus 1 , adding or subtracting? [subtracting] Is taking 2 from 8, adding or subtracting? [subtracting]
Ask the children: After adding on the abacus, will your answer be greater or less? [greater] After subtraction, will your answer be greater or less? [less]
Ask the children: How long is one edge of a tile? [1 inch] How long are 2 edges of a tile? [ 2 inches] How long are 3 edges of a tile? [3 inches] How long are all four edges of a tile? [4 inches]
Ask: Which is longer, an inch or a centimeter? [inch] Which is shorter? [centimeter]
Comparing weights. Set two glasses in front of the children, one empty and one half full of water. Ask one child to carefully lift the empty glass and set it down. Then ask him to lift the glass with water and tell him the second glass is heavier. Explain that the glasses look alike, but the one with water feels heavier.
Ask the children to find the two cylinders from the geometric solids. Ask: Which one is taller? [the right cylinder shown below] Ask one child to lift each one. Which cylinder is heavier? [the left cylinder]


## EXPLANATIONS:


*To prepare the math balance to be used as a scale, punch holes in two paper cups and insert a rubber band in the holes as shown above. Instead of the rubber bands, twist ties or two paper clips per side will also work.
Clear plastic cups allow the children to see the contents of the cups more easily, but use only cups with plastic code 1 . The code is found in the recycling triangle, usually on the bottom. A cup with plastic code 6 is brittle and often breaks when making the hole, leaving sharp edges.

Comparing weights using the scale. Hang a cup from each 10-peg on the math balance as shown below. Tell the children we will now use this as a scale and we will not using the numbers.


The math balance converted to a scale.

Ask the children: What do you think will happen if we put a blue weight in each cup? Tell them to try it. [stays balanced]
Comparing the solids using the scale. Ask: What do you think will happen if we put one cylinder from the geometric solids in each cup? Ask them to try it. [The cup with the heavier cylinder sinks.]
Ask them to choose any two geometric solids, guess which is heavier, and then check with the scale. Ask them to try several combinations.
As a challenge, give them several solids and ask them to use the scale to figure out which one is heaviest. Then ask them to put the solids in order from heaviest to lightest.


Four geometric solids in order by weight.
Comparing other objects using the scale. Ask them to compare two other objects, such as a piece of styrofoam and a piece of plastic or metal. Encourage them to find things to compare.
In conclusion. Ask: Can you always tell which of two things is heavier by just looking? [no] How can you find out? [by weighing]

If necessary, move the little white weights to adjust the balance.

This can be done by first comparing any two items. Then take the heavier one and compare it with the others.

Your solids may have a different order because the weights may vary.

