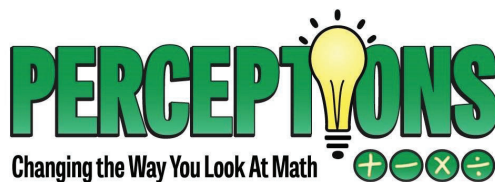# PERCEPTIONS

**Changing the Way You Look At Math**

**Intensive Mathematics Intervention**
Addition & Subtraction Facts with Regrouping
Multiplication & Division Facts and Beginning Fractions

# Instruction Manual

**by**
**Angela Carnes Sinclair**
**and**
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**Artwork and Design by**
**Angela Carnes Sinclair**
**and**
**Daniel C. Sinclair**

# PERCEPTIONS
**Changing the Way You Look At Math**

Perceptions™ (Green) is dedicated to
our children, Daniel, Chad & Becka, and Emaleigh,
who have taught us more about teaching than we ever expected!

We would like to thank:

Forrest Hobbs for your friendship, feedback, and amazing support

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Dr. Mary Little, Dr. Joe Sencibaugh, and Dr. Michelle Sencibaugh
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and especially to Gary & Anne (aka Dad & Mom) for your
perseverance in encouraging us to complete Perceptions

Phone: 800-745-8212

www.PerceptionsMath.com

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# Table of Contents

## Unit 1 - Place Value & Addition

## Unit 2 - Time, Money, Data, & Regrouping

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### Daily Sequence

*This is designed as a 16-week intensive intervention for students entering 3rd grade or higher. A basic understanding of numbers, addition, and subtraction is helpful.*

- *Built-in Progress Monitoring for every lesson*

- *16 weeks equals 80 days*

- *Each lesson is designed to take 2 days, although some may be one or three days. The 33 Lessons equal 66 of the 80 days, allowing for days of testing and days for application, additional practice, or make-up.*

*Example:  Unit 1*

*Day 1  Level Pre-Test*

*Day 2 & 3 Unit Pre-Test & Lesson 1*

*Day 4 & 5 Lesson 2*

*Day 6 & 7 Lesson 3*

*Day 8 & 9 Lesson 4*

*Day 10 & 11 Lesson 5*

*Day 12 & 13 Lesson 6*

*Day 14  Unit 1 Post-Test*

## Unit 3 - Subtraction & Beginning Fractions

Lesson 15: Subtraction-Finding the Difference/Adding Up/Facts -0, -1, -2, -3

Lesson 16: Subtraction with Regrouping/One-Half & One-Fourth/Facts -4, -5

Lesson 17: One-Third & One-Sixth/Facts -6,-7

Lesson 18: Repeated Addition/Facts -8,-9

Lesson 19: Subtraction with Regrouping to 100/Mental Math +10, +100, -10, -100

Lesson 20: Subtraction with Regrouping through the 1000s

## Unit 4 – Multiplication Facts & Measurement

Lesson 21: More Polygons/Skip Counting x3, x4/Perimeter

Lesson 22: Multiplication/Area/Facts x0, x1, x2

Lesson 23: Commutative Property/Symbols/Measurement/Facts x3

Lesson 24: Measurement/Facts x5, x10

Lesson 25: Associative Property/Distributive Property/Facts x4, x8

Lesson 26: Measuring Centimeters/Line Plots/Facts x6

Lesson 27: Perimeter vs. Area/Facts x9, x7

## Unit 5 – Factoring, Division, Fractions, & Elapsed Time

Lesson 28: Factoring/Beginning Division

Lesson 29: Solving for Unknown/Facts ÷0, ÷1, ÷2, ÷3

Lesson 30: Elapsed Time/Facts ÷5, ÷10

Lesson 31: Beginning Fractions/Facts ÷4, ÷8

Lesson 32: Fractional Number Line/ Whole Numbers as Fractions/Facts ÷6, ÷7, ÷9

Lesson 33: Equivalent Fractions/Fraction Inequalities

# Purpose, Goal, and Philosophy
# Perceptions Green - A 16-Week Intensive Intervention
# by Perceptions Math

## Purpose (Reason) for this Intervention

Research[1] has shown that quality instruction needs to be explicit and systematic. This includes using visual representations to model proficient problem solving.  The **Perceptions Green** program is designed to meet these recommendations and provide instruction for interventionists to become proficient in using visual representations.  This series will help ensure that teachers and students have a strong knowledge of the mathematical concepts of the early levels of arithmetic.

## The Goal of this Intervention

1.  Provide a supplementary intervention covering addition, subtraction, multiplication, and division facts, along with regrouping in addition and subtraction, data and graphing, telling time and elapsed time along with the beginning concepts of fractions.
2.  To increase the conceptual understanding of mathematics in teachers
3.  To increase the conceptual understanding of mathematics in students

## Methodology and Philosophy - *Construct, Express, & Apply*

*Construct***:  Demonstrate through both concrete and semi-concrete representations of mathematical concepts and ideas**

Whenever the instructions indicate to *construct,* we recommend using the *MasterPieces*[TM] to **build** or **draw** the problem given and develop conceptual understanding.

*Express***: Demonstrate through artistic, written, and verbal expression, the fluency and accuracy of the concept and computation of the mathematical process**

Whenever the instructions indicate to **solve, show, draw, etc...** we recommend **drawing, written,** and **verbal** communications to have students *express* what they have learned.  Get creative on how the students will express these to you or to others the understanding they have of a given concept and process.   Ideally, a student who has mastered a concept can hear the problem verbally and express back the computation, concept, and application of the problem in a written or verbal manner.

*Apply***: Demonstrate the correct application of the mathematical concept and computation in real world settings**

Word Problems & Mastery Challenges - Being able to apply what has been learned is the greatest sign of achievement!

[1]*Assisting Students Struggling with Mathematics: Response to Intervention (RtI) for Elementary and Middle Schools NCEE 2009-4060 U.S. DEPARTMENT OF EDUCATION  - Institute of Educational Sciences*

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# What Mathematical Concepts does Perceptions Cover?

*Perceptions Green* is a multi-grade, multi-concept program covering concepts related to the operations of addition and subtraction facts with regrouping, multiplication and division facts, data and graphing, telling time and elapsed time, along with beginning fractions.

Students will have exposure to:

- Mathematical operations related to whole numbers and fractions
- Critical thinking for algebra including equations, factoring, and solving for unknowns
- Developing number sense and how numbers work in the decimal system

*Perceptions Green* specifically does not cover:

- Multiple Digit Multiplication
- Multiple Digit Division
- Addition, Subtraction, Multiplication and Division of Fractions

- Negative Integers
- Rates
- Exponents
- Geometry (other than area and perimeter)
- Decimals (other than money)

*Multiple Digit Multiplication, Multiple Digit Division, along with Addition, Subtraction, Multiplication, and Division of Fractions is taught in *Perceptions Blue.* Additional topics and concepts will be covered in future *Perceptions* Levels released by Perceptions Math.

# Mathematics is the Study of...

We believe that the study of mathematics is important.  Please use the following to help explain to your students that math is much more than formulas and numbers.

| | |
|---|---|
| **Numbers** | (0, 1, 2, 3, 4, 5, 6, 7, 8, 9) |
| **Quantity** | (Value, Amount, Magnitude, Extent, Range, Scope, etc.) |
| **Shape** | (Square, Rectangle, Circle, Triangle, etc.) |
| **Space** | (Size, Length, Width, Height, Base, Dimensions, Volume, etc.) |
| **And their Interrelationships** | (How they go together, Combining, Comparing, etc.) |
| **Using specialized notations** | (Symbols, Lines, Shapes, Letters, etc.) |

*"Notation" (a system of graphic symbols for a specialized use, other than ordinary writing)*

# Individual or Collaborative Learning

The ***Mastery Challenges*** found in the *Student Workbook* are designed to test a student's application of what they know.  As the teacher you can have these challenges done individually or in a collaborative learning environment.  It is acceptable to delay giving the Mastery Challenges until the student has progressed several lessons past that challenge. For example, give Mastery Challenge 5 when in Lesson 8.  These are to be used at the teacher's discretion.

# How to Use Perceptions

Each component is a valuable tool in order to create understanding.

The **Instruction Manual** is the guide for the teacher.  It provides lesson specific help, lesson objectives, lesson vocabulary, and solutions.

The **Lesson Videos** are designed to be watched by **BOTH the teacher and the student**.  We recommend that the teacher watch the video before watching with the student.  The videos contain the lesson instruction and are designed to provide a launching platform for teachers to develop differentiated instructional approaches for their students.

Videos are found online at **www.PerceptionsMath.com**.  You will need to have your password to log into the video portion of the website.

The **Student Workbook** is designed for REVIEW, PRACTICE, and APPLICATION.  The workbook is not designed to teach the students.  That is the job of a teacher.  Please feel free to use the workbook to work problems with the students.  There are more pages per lesson than you might need.  Please use the problems in the workbook as you see fit.  Not all pages have to be completed.  If mastery is achieved, move to new material.

At the beginning of each lesson there will be specific Lesson Steps.  By following these steps, the instruction will build a consistent pattern and develop understanding.
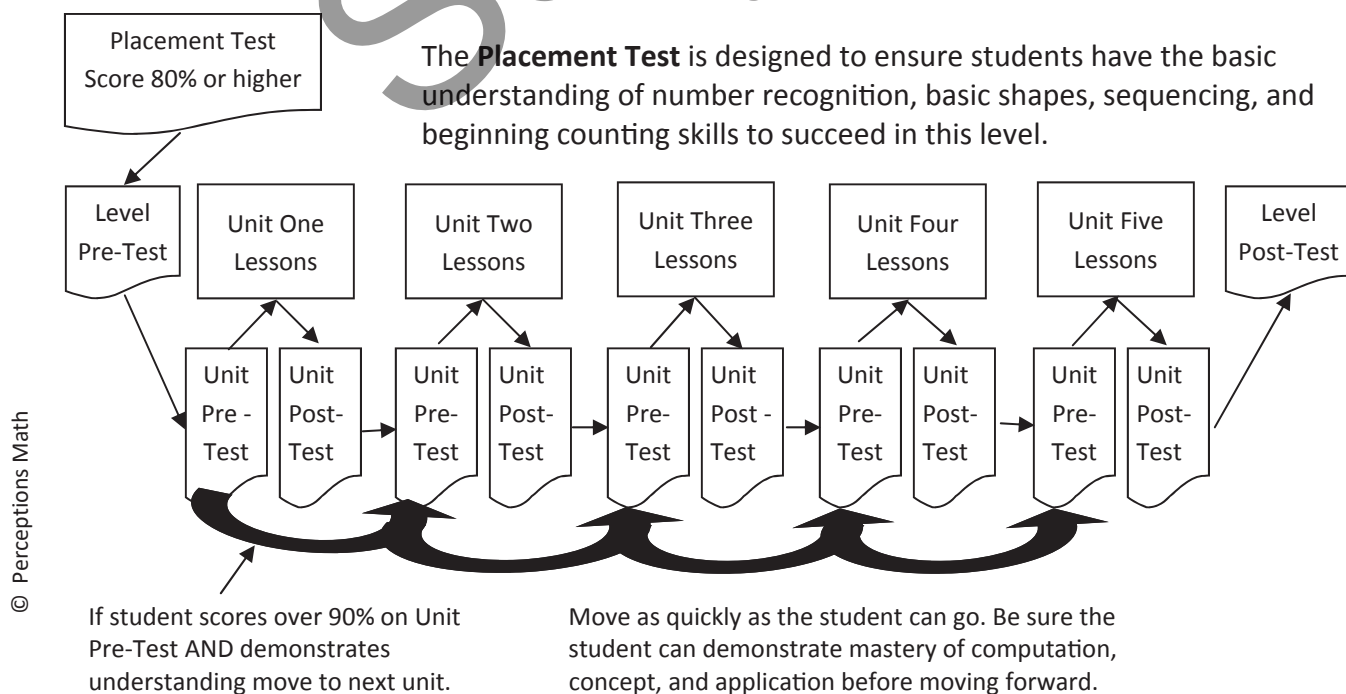
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### Lesson Steps:

**Step 1: Both Teacher and Student Watch Video**

**Step 2: Explicitly Instruct Students Using Manipulatives**

**Step 3: Student Proceeds to Workbook Pages for Practice**

**Step 4: Student Demonstrates Mastery - Teaching Back to You**

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# Flowchart of Perceptions Program

Placement Test Score 80% or higher

The **Placement Test** is designed to ensure students have the basic understanding of number recognition, basic shapes, sequencing, and beginning counting skills to succeed in this level.

Level Pre-Test → Unit One Lessons → Unit Two Lessons → Unit Three Lessons → Unit Four Lessons → Unit Five Lessons → Level Post-Test

Unit Pre-Test / Unit Post-Test (for each unit)

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If student scores over 90% on Unit Pre-Test AND demonstrates understanding move to next unit.

Move as quickly as the student can go. Be sure the student can demonstrate mastery of computation, concept, and application before moving forward.

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# Tools Needed for Perceptions (Green)

During the course of this program students will need to have:

**Manipulatives** - *MasterPieces* are required  - - - *MasterFractions* are optional (see below)

**Ruler** - for use in measurement lessons

**Colored Pencils** - for use in only a few lessons.  Crayons may also be used.

**Pencil and Paper** - will be used to express the math concepts

# Using Manipulatives in Math

Research has shown that using manipulatives and graphics help to reduce barriers, such as language, in the classroom.  They help to illustrate key concepts non-linguistically.  Additionally, manipulatives reduce barriers and help students understand the relationship between the physical (concrete) and symbolic (abstract) representations.

# Introduction to the Manipulatives Used

The manipulatives used in this program have been designed to provide explicit, concrete representations of the mathematical concepts and ideas presented.

*MasterPieces™* - Colorful, multi-unit blocks are made out of molded ABS plastic.  Each bar is able to demonstrate concretely, representationally, and abstractly the value of the bar.  This is accomplished with raised buttons, individual delineations, and the numeral printed on the side clearly identifying the amount of units in each bar. Each set comes with twenty 1s, twenty 10s, fourteen 5s, and ten each 2s, 3s, 4s, 6s, 7s, 8s, 9s, and 100s blocks.

Each unit is 1/2" x 1/2" and so a bar that is 4 units long is 1/2" x 2" long.  This helps with measurement in situations where measurement with non-traditional objects is directed.

Each kit comes in a plastic storage box with a locking lid.

Although not a necessity for this level, *MasterFractions™* can make teaching fractions extremely easy and fun for your students.  They are colorful, multi-piece, squares, rectangles, and clear overlays designed to bring understanding to fractions.  Each set comes with halves, thirds, fourths, fifths, sixths, and tenths clear plastic overlays, along with corresponding solid pieces to clearly demonstrate fractions. Each kit comes in a plastic storage box.

**If you don't already have these items, they can be purchased**

**at  www.PerceptionsMath.com**

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# Progress Monitoring (Also See Flowchart)

Paper and pencil tests are downloadable on our website at www.PerceptionsMath.com.

These tests include:

The **Placement Test** is designed to ensure the student meets the necessary criteria to successfully complete this course. A score of 80% or higher, with understanding, is recommended.

The **Level Pre/Post Test** is designed to establish the data-driven starting point at the beginning of the program. To demonstrate the student's progress, this same test will be given at the end of the level.

The **Unit Pre/Post Tests** are given prior to and after a student completes each unit. These tests are identical and are designed to help document the progress of a student through the materials.

**Note:** Due to the intensive nature of the program, there are no lesson tests.

If you have any questions, please contact us at www.PerceptionsMath.com. We will be glad to assist you!

# Student Self-Assessment

On the back side of each of the *Student Workbook* lesson pages, you will find the rubric shown below. This will assist the students in communicating if they are understanding the materials or if they need additional help.

After the students complete each page, they can shade in the symbol that best describes how they feel about the work completed.

**STOP** means "I don't get it." The student needs more help in understanding the concept or completing the problems.

**SLOW** means "I'm beginning to understand, but I will need additional practice." The student will need additional practice to gain confidence.

**GO** means "I got it!" The student understands the concept and can do the problems given with confidence.

This rubric will help the student to take additional responsibility for his own learning. It is not required that a student complete the rubric, however it will greatly add to the student's awareness of his skill.
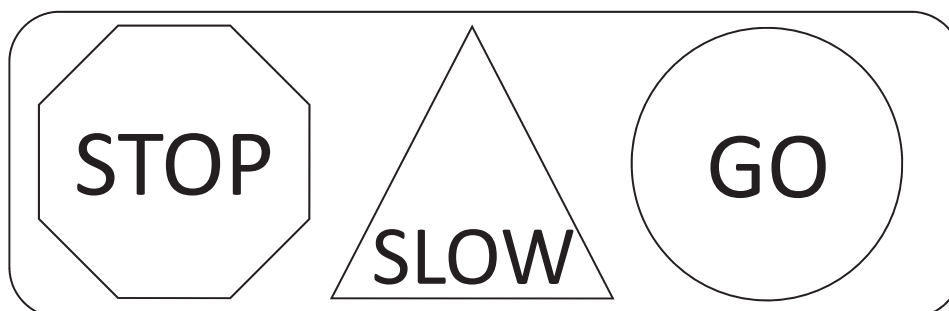
# Mastery - What does it mean?

**Below are the key areas related to true mastery of mathematics. All areas are desired to have a comprehensive understanding of mathematics.**

**Computation** – Having the skills and strategies available to quickly apply the correct process to the problem presented. (*How* to do the problem)

**Concept** – Having the understanding to carefully reason through each step of the process, prioritizing higher function and accuracy. (The reason *Why* each process and step is chosen)

**Application** – Knowing which process to apply to the given problem in each situation. (*When* to use which process)

**Memorization** – Committing to memory the processes and reasoning skills to move from proficiency to fluency to automaticity or immediate response.

**Reflection & Mastery** – What did you learn? Can you teach it to someone else?

Students need to master skills at each level of arithmetic, including complex applications of those skills, in order to become a true master of their craft. Also, a student teaching back what has been learned is a critical demonstration of the student's ability to:

- Grasp the problem

- Choose a process

- Develop a solution

- Articulate the reasoning behind their choices

- or… Reveal where there are gaps in their understanding

# Mastery Related to the *Perceptions* Program

*Perceptions* is designed as a **SUPPLEMENTAL INTENSIVE INTERVENTION**. Ideally, students will be given enough time to master the materials found in each lesson. However, due to the nature of this course, that may not be achievable to the depths that might be desired, especially for students that have significant issues with memorization or math facts application. The program can be taken at a slower pace for those who need additional time grasping concepts.

# Pacing

The **Pacing Guide** on the next page is **ONLY A GUIDE. IT IS NOT THE LAW.** We encourage you to move at the pace of your student(s). If they get the material in the lesson quickly, move to the next lesson. If they need more time, take an extra day! You are the teacher, and we trust you to know when to move and when to stay. If you have questions, please do not hesitate to call us!

## Prior to Starting

Assess the students using the **Placement Test** found online at www.PerceptionsMath.com

Be sure to observe the student during the test in order to determine their understanding. If the student is slow or hesitant, then they are not ready for this level of Perceptions.

If the student scores **over 80%** on the Placement Test then give the

### Level Pre-Test

Pre-Tests, like the Placement Test, are designed to determine what a student knows. These tests should go on as long as the student is fluently moving through the test. If the student is unsure, starts guessing, or stops, then you have the information you need.

**Be sure to record your observations.**

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This guide provides an overview of Perceptions (Green) as a 16-week Intensive Intervention.

### SPEED

It is only a guide. You as the teacher must determine if the pace is too fast or too slow. It is quite reasonable that students may quickly move through Units 1, 2, and 3, but slow down for Units 4 and 5. The pace should be set by the students as guided by the teacher.

### Homework

Consider using *EARLIER* lesson pages or Mastery Challenge pages for additional practice or homework.

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# Suggested Pacing Guide

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| Week 1 | Level Pre-Test | Unit 1 Pre-Test & Lesson 1 | Lesson 1 | Lesson 2 | Lesson 2 |
| Week 2 | Lesson 3 | Lesson 3 | Lesson 4 | Lesson 4 | Additional Practice Day |
| Week 3 | Lesson 5 | Lesson 5 | Lesson 6 | Lesson 6 | Unit 1 Post-Test |
| Week 4 | Unit 2 Pre-Test Lesson 7 | Lesson 7 | Lesson 8 | Lesson 8 | Lesson 9 |
| Week 5 | Lesson 9 | Lesson 10 | Lesson 10 | Lesson 11 | Lesson 11 |
| Week 6 | Lesson 12 | Lesson 12 | Lesson 13 | Lesson 13 | Unit 2 Post-Test |
| Week 7 | Unit 3 Pre-Test & Lesson 14 | Lesson 14 | Lesson 15 | Lesson 15 | Additional Practice Day |
| Week 8 | Lesson 16 | Lesson 16 | Lesson 17 | Lesson 17 | Lesson 18 |
| Week 9 | Lesson 18 | Lesson 19 | Lesson 19 | Additional Practice Day | Additional Practice Day |
| Week 10 | Lesson 20 | Lesson 20 | Unit 3 Post Test | Unit 4 Pre-Test & Lesson 21 | Lesson 21 |
| Week 11 | Lesson 22 | Lesson 22 | Lesson 23 | Lesson 23 | Additional Practice Day |
| Week 12 | Lesson 24 | Lesson 24 | Lesson 25 | Lesson 25 | Lesson 26 |
| Week 13 | Lesson 26 | Lesson 27 | Lesson 27 | Unit4 Post-Test | Unit 5 Pre-Test |
| Week 14 | Lesson 28 | Lesson 28 | Lesson 29 | Lesson 29 | Lesson 30 |
| Week 15 | Lesson 30 | Lesson 31 | Lesson 31 | Additional Practice Day | Lesson 32 |
| Week 16 | Lesson 32 | Lesson 33 | Lesson 33 | Unit 5 Post-Test | Level Post-Test |

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# Key Academic Vocabulary and Symbols

**Lesson 1**
decimal System
base-ten
place value
hundred
ten
unit
skip counting
numerals

**Lesson 2**
addition
plus sign +
equal sign =
sum
same  as
whole numbers
combine
add
addend
adding

**Lesson 3**
regrouping
parentheses
counting backwards

**Lesson 4**
associative property
doubles
odd
even
evenly
2-dimensional
3-dimensional

**Lesson 5**
balanced equation
solving for
    unknowns

**Lesson 6**
number line
horizontal
vertical
greater than >
less than <
comparative words
(see lesson)

**Lesson 7**
time
minutes
hours
seconds
noon
midnight
a.m. & p.m.
minute hand
hour hand
day = 24 hours

**Lesson 8**
coins
dollar
penny
nickel
dime
quarter
place value notation
expanded form
$, ¢, .
decimal point

**Lesson 9**
metric system
meter
liter
gram
deci-
centi-

**Lesson 10**
data
tally marks
data table
pictograph
line plot
interpret

**Lesson 11**
uni- & mono
bi- & duo
tri-
quad - & tetra-
polygon
angle
vertex
quadrilaterals
laterals
parallel
parallelogram
rhombus
trapezoid
perimeter

**Lesson 12**
thousands
millions
billions
kilo-
hecto-
deka-

**Lesson 13**
estimate
approximate
rounding
halfway

**Lesson 14**
group (Subjects)
categories
variable
variation
statistical question
quantity
quality
bar graph
Venn diagram

**Lesson 15**
difference
minuend
subtrahend
minus sign (-)

**Lesson 16**
partition
portion
half
fourth
quarter

**Lesson 17**
third
sixth

**Lesson 18, 19, 20**
no vocab

**Lesson 21**
pentagon
hexagon
penta-
hexa-
regular polygon
irregular polygon

**Lesson 22**
dimensions
total
base
height
length
width
over
up
area
rows
columns

**Lesson 23**
factor
product
dot •
asterisk  *
triple
ruler
yardstick
foot
yard
inch

**Lesson 24**
multiple
tape Measure

**Lesson 25**
distributive property
    a(b+c) = ab + ac

**Lesson 26, 27**
no vocab

**Lesson 28**
factoring
regroup
dividend
divisor
quotient
inverse

**Lesson 29**
coefficient
division

**Lesson 30**
partitive division
quotative division
elapsed time

**Lesson 31**
fraction
numerator
denominator

**Lesson 32**
no vocab

**Lesson 33**
equivalent fractions

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## Congratulations!  You are ready to start Unit 1!

Steps to take **BEFORE** starting Unit 1

A.  Deliver the *LEVEL Assessment Pre-Test* to all students to establish a data driven starting point

B.  Deliver the *UNIT* 1 Pre-Test.  Be sure to observe the students and document your observations

C.  Record the data for progress monitoring purposes

**Recommended Options:**

A.  As the teacher, watch all of the videos for Unit 1 before teaching the Unit

B.  Be sure you know how to demonstrate the concepts using the manipulatives prior to teaching

C.  Make sure you thoroughly understand the terms used in the Unit

**Questions?  Please call us at 800-745-8212. We are here to help!**

# Unit 1- Place Value & Addition

# Have Fun!

# Watch the Videos!

# Use the Manipulatives!

# Enjoy Teaching!

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# Lesson 2:  Addition/Commutative Property/Facts +0, +1, +2

An **equation** is a mathematical statement where two quantities of the statement have the same value (equivalent).  An equation must have an equal sign (=).  Each side of the equal sign must have the same value.  The value on one side of the equal sign must be the same as the other side.  This is called a **balanced equation**.

*Fig. E*

$$4 + 2 = 6$$

Addend   Addend   Sum

*Fig. F*

$$0 + 2 = 2$$

Anything added to zero is itself!

*Fig. G*

$$1 + 1 = 2$$
$$2 + 1 = 3$$
$$3 + 1 = 4$$
$$4 + 1 = 5$$
$$5 + 1 = 6$$
$$6 + 1 = 7$$
$$7 + 1 = 8$$
$$8 + 1 = 9$$
$$9 + 1 = 10$$

Show the students that the two blocks above are the same as the colored block below.

Addition of 1s is just like counting!

*Fig. H*

Show the students that the two blocks above are the same as the colored block two spaces below.

$$1 + 2 = 3 \leftarrow Odd$$
$$2 + 2 = 4 \leftarrow Even$$
$$3 + 2 = 5 \leftarrow Odd$$
$$4 + 2 = 6 \leftarrow Even$$
$$5 + 2 = 7 \leftarrow Odd$$
$$6 + 2 = 8 \leftarrow Even$$
$$7 + 2 = 9 \leftarrow Odd$$
$$8 + 2 = 10 \leftarrow Even$$
$$9 + 2 = 11 \leftarrow Odd$$

When demonstrating the act of addition, be sure to show the students that it does not matter the order in which the numbers are added.  Show them that 2 + 4 is the same as 4 + 2, as both equal 6.  This is called the **commutative property of addition**.  It doesn't matter the order in which the numbers are added, as the total will be the same.
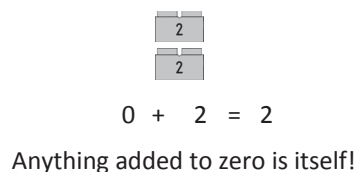
The root word of commutative is "commute."  This term can mean to travel back and forth from a location.  Show students that it doesn't matter which direction you travel, the total distance traveled is the same.
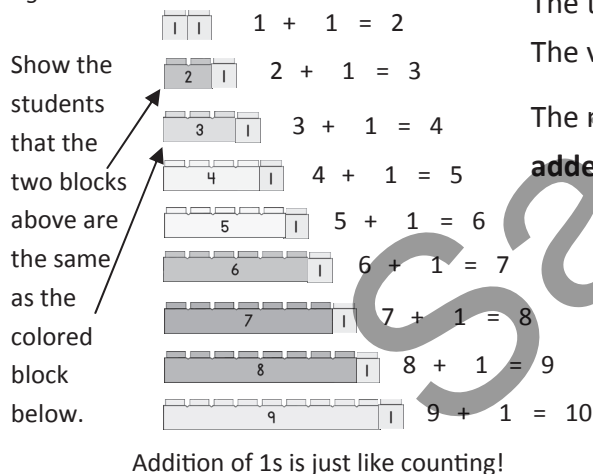
The total amount of the values added is called the **sum**.  The value of 6 is the sum of 2 + 4 (*Fig. E*).

The names of the two values being added are called **addends.**  By adding two addends, you create a sum.

## The Equal Sign Method: Addition Facts 0s, 1s, & 2s

Learning the addition facts is a critical step toward higher level math. During this course we will be using the **equal sign method** to learn the facts.

The equal sign method is exactly what is shown in *Figures D, E, & F*.  Use the *MasterPieces* to show that the values are the same lengths which, in turn, makes an equal sign.

All of the facts can be taught by using the equal sign method.

*Figures G & H* provide examples of the 1s and 2s fact models.

Odd and even numbers will be taught in a future lesson.
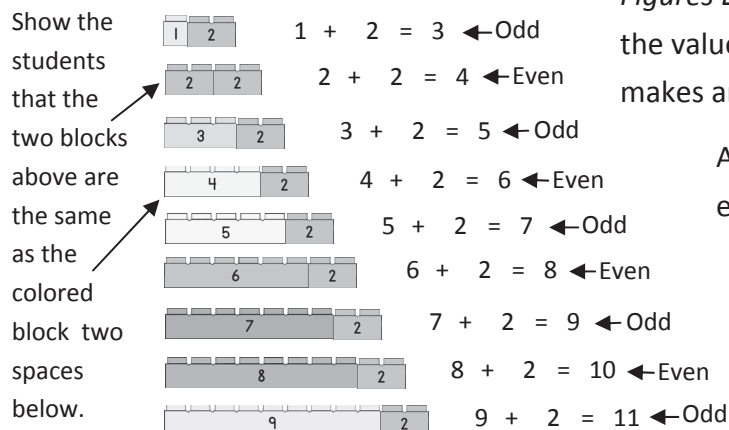
**Addition** is combining two or more values.

The **equal sign** is used to show when two values are the same.

The **plus sign** means to combine.

The **commutative property** says that 3 + 5 and 5 + 3 produce the same answer.

**addend**      5
**addend**   + 3
      **sum**      8

Construct with your *MasterPieces*. Draw the needed blocks. Make sure to build the equal sign. Fill in the blanks. Add, then write the sum. The first one is done for you.
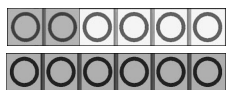
 _2_  +  _4_          ___ + ___                    ___     + ___

 _2_ + _4_ = _6_          ___ + ___ = ___                    ___ + ___ = ___

Show the equivalent equation using the commutative property.

2 + 3 = 5     So, _3_ + _2_ = 5          6 + 2 = 8     So, ___ + ___ = ___

1 + 6 = 7     So, ___ + ___ = 7          3 + 0 = 3     So, ___ + ___ = ___

0 + 5 = 5     So, ___ + ___ = 5          1 + 5 = 6     So, ___ + ___ = ___

Add, then write the sum. (If needed, construct or draw your *MasterPieces*.)

9 + 2 = ____     1 + 0 = ____     7 + 1 = ____     6 + 0 = ____

3 + 1 = ____     0 + 9 = ____     2 + 7 = ____     1 + 1 = ____

8 + 0 = ____     2 + 3 = ____     9 + 1 = ____     2 + 2 = ____

```
   3        5        6        4        1        4        0
 + 0      + 1      + 2      + 0      + 8      + 2      + 2
 ___      ___      ___      ___      ___      ___      ___
```

```
   1        8        1        2        1        5        7
 + 6      + 2      + 4      + 5      + 2      + 0      + 0
 ___      ___      ___      ___      ___      ___      ___
```

Caleb has three pieces of pizza, and Hope has one piece.  How many pieces of pizza do they have altogether?

Darius has five trucks.  Ezekiel has one truck.  How many trucks do they have altogether?

STOP SLOW GO
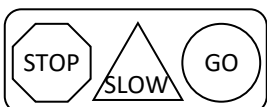
_____ is combining two or more values.

The _____ sign is used to show when two values are the same.

The plus sign means to _____.

The _____ property says that 3 + 5 and 5 + 3 produce the same answer.

$$
\begin{array}{r}
\underline{\phantom{xxxx}} \quad 5 \\
\underline{\phantom{xxxx}} \quad +\ 3 \\
\text{sum} \quad\quad 8
\end{array}
$$

Construct with your *MasterPieces*. Draw the needed blocks. Make sure to build the equal sign. Fill in the blanks. Add, then write the sum.

___ + ___          ___ + ___              ___      + ___

___ + ___ = ___          ___ + ___ = ___              ___ + ___ = ___

Show the equivalent equation using the commutative property.

4 + 2 = 6    So, ___ + ___ = 6          2 + 7 = 9    So, ___ + ___ = ___

1 + 3 = 4    So, ___ + ___ = ___          0 + 2 = 2    So, ___ + ___ = ___

8 + 0 = 8    So, ___ + ___ = ___          1 + 8 = 9    So, ___ + ___ = ___

Add, then write the sum. (If needed, construct or draw your *MasterPieces*.)

0 + 2 = _____     3 + 2 = _____     9 + 1 = _____     0 + 5 = _____

4 + 1 = _____     6 + 1 = _____     2 + 8 = _____     1 + 9 = _____

8 + 1 = _____     2 + 6 = _____     1 + 1 = _____     4 + 0 = _____

```
   3        5        6        4        1        2        0
 + 1      + 2      + 0      + 2      + 3      + 2      + 8
```

```
   1        7        1        9        7        2        1
 + 0      + 2      + 5      + 2      + 0      + 1      + 7
```

Julie made eight bracelets.  Then she made one more.  How many bracelets has she made?

David ate two muffins at breakfast on Monday.  He ate two muffins on Tuesday.  How many muffins did he eat on Monday and Tuesday?

STOP  SLOW  GO
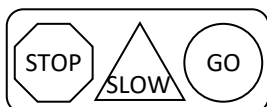
Addition is _____ two or more values.

The equal sign is used to show when two values are the _____.

The _____ sign means to combine.

The commutative property says that 3 + 5 and 5 + 3 produce the _____ answer.

addend        5
addend     +  3
_____     8

Construct with your *MasterPieces*. Draw the needed blocks. Make sure to build the equal sign. Fill in the blanks. Add, then write the sum.

___ + ___                    ___ + ___                              ___ + ___

___ + ___ = ___          ___ + ___ = ___               ___ + ___ = ___

Show the equivalent equation using the commutative property.

1 + 2 = 3    So, ___ + ___ = ___          6 + 2 = 8    So, ___ + ___ = ___

0 + 4 = 4    So, ___ + ___ = ___          1 + 7 = 9    So, ___ + ___ = ___

5 + 1 = 6    So, ___ + ___ = ___          2 + 5 = 7    So, ___ + ___ = ___

Add, then write the sum. (If needed, construct or draw your *MasterPieces*.)

6 + 2 = ____       1 + 3 = ____       7 + 0 = ____       6 + 1 = ____

4 + 1 = ____       0 + 5 = ____       2 + 3 = ____       2 + 1 = ____

3 + 0 = ____       2 + 2 = ____       0 + 1 = ____       8 + 2 = ____

```
   6        5        4        4        1        7        0
+  0      + 2      + 0      + 2      + 5      + 2      + 9
```

```
   1        9        1        8        1        2        9
+  8      + 2      + 1      + 0      + 7      + 0      + 1
```

| Chelsea made six cakes on Friday and one cake on Saturday. How many cakes did she make? | Sam built one marble roller coaster right after breakfast. After lunch he built five more roller coasters. How many roller coasters has he built today? <br><br> If he builds two more roller coasters after dinner, how many will he have made today? |
|---|---|

STOP SLOW GO

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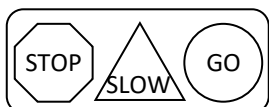
# Mastery Challenge 2

Fill in the circle with the correct number for the answer.

Valerie has four eggs, and Sophia has two eggs. How many eggs do they have altogether?

○  6
○  5
○  7

Nathan brought in nine bags of groceries.  Suzzannah went to help, but found there weren't any more bags left in the car.  How many bags of groceries were brought in altogether?

○  9
○  10
○  8

Shelby found six empty boxes.  Zach saved two empty boxes.  How many empty boxes do they have?

○  9
○  8
○  7

Greg has five guitar picks in one drawer and found two more in his guitar bag.  How many guitar picks does he have?

○  5
○  6
○  7

Christina has six spools of thread in her sewing basket. She has one spool of thread on her sewing machine.  How many spools of thread does she have?

○  6
○  8
○  7

Fill in the grids.  You will add 2 to each number in the first grid.  You will add 0 to each number in the second grid.  You will add 1 to the number in the third grid.  Have fun!

| Number | Add 2 |
|--------|-------|
| 4 | |
| 7 | |
| 5 | |
| 2 | |
| 0 | |
| 3 | |
| 9 | |
| 6 | |
| 1 | |
| 8 | |

| Number | Add 0 |
|--------|-------|
| 3 | |
| 5 | |
| 1 | |
| 6 | |
| 4 | |
| 9 | |
| 8 | |
| 0 | |
| 7 | |
| 2 | |

| Number | Add 1 |
|--------|-------|
| 8 | |
| 3 | |
| 0 | |
| 7 | |
| 4 | |
| 9 | |
| 1 | |
| 5 | |
| 2 | |
| 6 | |

Sample