Indiana Department of Education

Indiana Academic Standards for Mathematics – First Grade
Adopted April 2014 – Standards Resource Guide Document

This Teacher Resource Guide has been developed to provide supporting materials to help educators successfully implement the Indiana Academic Standards for First Grade Mathematics – Adopted April 2014. These resources are provided to help you in your work to ensure all students meet the rigorous learning expectations set by the Academic Standards. Use of these resources is optional – teachers should decide which resource will work best in their school for their students.

This resource document is a living document and will be frequently updated. Please send any suggested links and report broken links to:
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The Indiana Department of Education would like to thank Eric Craig, Tia Dinsmore, Ben Kemp, Pam Miller, Jim Mirabelli, and Erin Stump for their contributions to this document.

The examples in this document are for illustrative purposes only, to promote a base of clarity and common understanding. Each example illustrates a standard but please note that examples are not intended to limit interpretation or classroom applications of the standards.

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GOOD WEBSITES FOR MATHEMATICS:

http://nlvm.usu.edu/en/nav/vlibrary.html

http://www.math.hope.edu/swanson/methods/applets.html

http://learnzillion.com

http://illuminations.nctm.org

https://teacher.desmos.com

http://illustrativemathematics.org

http://www.insidemathematics.org

https://www.khanacademy.org/

https://www.teachingchannel.org/

http://map.mathshell.org/materials/index.php

https://www.istemnetwork.org/index.cfm

http://www.azed.gov/azccrs/mathstandards/

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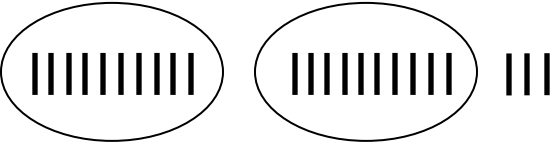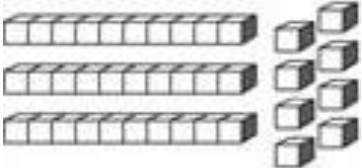Adopted April 2014 – Standards Resource Guide Document

	Indiana Academic Standard for MathematicsFirst Grade – Adopted April 2014	Highlighted Vocabulary Words from the Standard Defined	Specific First Grade Example for the Standard	Specific First Grade Electronic Resource for the Standard
			Number Sense	
MA.1.NS.1	Count to at least 120 by ones, fives, and tens from any given number. In this range, read and write numerals and represent a number of objects with a written **numeral**.	**Numeral** – a symbol or name that stands for a number; 0, 1, 2, 3, 4, 5, 6, 7, 8, 9	a) Count to 120 by ones, fives, and tens. b) Count to 120 by ones, fives, and tens beginning at 40. c) Read the following numbers: 43, 116, 79 d) How many bananas are below?	https://www.splashmath.com/math-skills/first-grade/counting-and-comparison/count-to-120
MA.1.NS.2	Understand that 10 can be thought of as a group of ten ones — called a "ten." Understand that the numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. Understand that the numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).		a) What number does the model below show? b) Draw a picture like the one above to show the number 17. c) Draw a picture like the one above to show the number 60.	https://www.georgiastandards.org/Common-Core/Common%20Core%20Frameworks/CCGPS_Math_1_Unit6FrameworkSE.pdf
MA.1.NS.3	Match the **ordinal numbers** first, second, third, etc., with an ordered set up to 10 items.	**Ordinal number** – a number that tells the position of something in a list	Put an X on the ninth apple and circle the fifth apple.	http://www.mathsisfun.com/numbers/cardinal-ordinal-nominal.html

| MA.1.NS.4 | Use **place value** understanding to compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. | **Place value**- the value of the place, or position, of a digit in a number | a) Use <, >, or = to make the number sentence true.

34 _____ 43

b) Circle the **TWO** number sentences that are true.

76 **<** 72   79 **>** 97

41 **=** 41   77 **<** 77

85 **<** 78   50 **>** 49

c) Fill in the blank for each sentence.

• 62 > 32 because 62 has ___more tens than 32

• 83 = 83 because both numbers have the _____ number of tens and ones | http://www.mathisfun.com/algebra/compare-numbers.html |
| MA.1.NS.5 | **Find mentally** 10 more or 10 less than a given two-digit number without having to count, and explain the thinking process used to get the answer. | **Find mentally** – determine the answer without pencil, paper, or calculator | Activity: Ask a student to give the numbers that are 10 more and 10 less than a given 2-digit number. Then, ask another student to "check" the answer and explain why they think the answer is correct or not. | http://www.ixl.com/math/grade-1/ten-more-or-less |

| MA.1.NS.6 | Show equivalent forms of **whole numbers** as groups of tens and ones, and understand that the individual **digits** of a two-digit number represent amounts of tens and ones. | **Whole numbers** - the set of numbers 0, 1, 2, 3, 4, 5, etc. **Digit** - a symbol used to make numerals. 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are the ten digits we use in everyday numbers. | a) What number does the picture below show?

b) What number does the picture below show?

c) Draw a picture like the ones above to show 64.

d) How many tens and ones are in 93? | http://www.helping withmath.com/by_s ubject/place_value/ pla_place_value01.h tm |

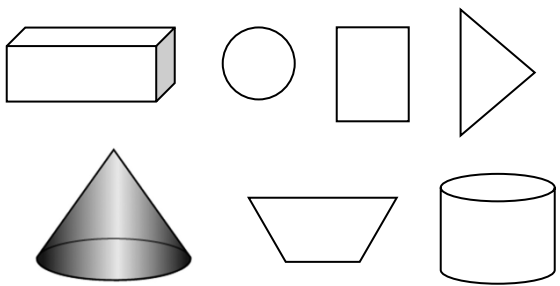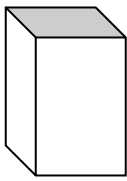|				
Computation and Algebraic Thinking				
MA.1.CA.1	Demonstrate fluency with addition facts and the corresponding subtraction facts within 20. Use strategies such as **counting on**; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 – 4 = 13 – 3 – 1 = 10 – 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 – 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known **equivalent** $6 + 6 + 1 = 12 + 1 = 13$). Understand the role of 0 in addition and subtraction.	**Counting on**- an addition/subtraction strategy which may involve using fingers, mental images, or physical actions such as head bobs to keep track of how many they counted on; for example in $7 + 5$, a student might start with 7 and then count on 5 times from there (i.e. 8, 9, 10, 11, 12), keeping track of the 5 counts using their fingers. Or, in an unknown addend problem like $9 + \square = 13$, a student might see 9 as part of 13 and count from 9 to 13, keeping track of how many counts it takes to reach 13. **Equivalent**- having the same or equal value	a) $7 + 9 = \square$ [possible strategy: $7 + 9 = 6 + 1 + 9 = 6 + 10 = 16$] b) $12 – 8 = \square$ [possible strategy: $12 – 8 = 12 – 2 – 6 = 10 – 6 = 4$] c) $5 + 8 = \square$ [possible strategy: $5 + 8 = 5 + 5 + 3 = 10 + 3 = 13$] d) $17 – 8 = \square$ [possible strategy: $8 + 9 = 17$ so $17 – 8 = 9$] e) $8 + 7 = \square$ [possible strategy: $8 + 7 = 7 + 7 + 1 = 14 + 1 = 15$] Note: Provide opportunities for students to add and subtract numbers within 20 and verbally express the strategy they use to determine the answer.	http://www.eduplace.com/math/mathsteps/1/a/ http://college.cengage.com/education/resources/res_prof/students/spec_ed/pdf/lsample.pdf

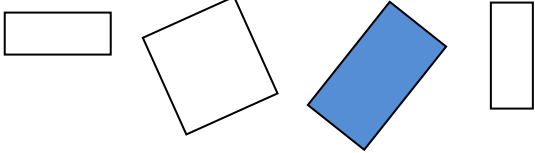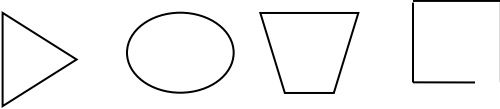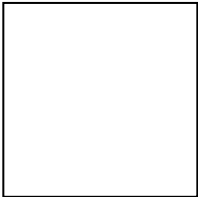| MA.1.CA.2	Solve real-world problems involving addition and subtraction within 20 in situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all parts of the addition or subtraction problem (e.g., by using objects, drawings, and **equations** with a **symbol** for the **unknown number** to represent the problem).	**Equation** - an equation says that two things are the same, using mathematical symbols. An equal sign (=) is used. **Symbol** - a pattern or image; not words **Unknown number** - having an unknown value	a) Tom had 6 baseball cards. His mom gave him 7 more. How many cards does he have now? b) Bill had 4 toy cars. His dad gave him some more. He now has 13 toy cars. How many toy cars did his dad give him? c) Stephen had 15 mints. He gave 6 of his mints to Jill. How many mints does Stephen have now? d) Sally has 12 dolls. Lily has 5 dolls. How many more dolls does Sally have than Lily? * See Table 1 on the last page of this document. Table 1 is copied from the CCSS and contains common addition and subtraction situations. These types of situations can be used to create tasks using numbers within 20.	https://www.illustrativemathematics.org/1.OA http://www.ixl.com/standards/common-core/math/grade-1
MA.1.CA.3	Create a real-world problem to represent a given **equation** involving addition and subtraction within 20.	**Equation** - an equation says that two things are the same, using mathematical symbols. An equal sign (=) is used.	a) Write a story problem for 12 + 5 = 17. b) Write a story problem for 14 – 6 = 8.	http://www.mathsisfun.com/algebra/word-questions-addition.html
MA.1.CA.4	Solve real-world problems that call for addition of three **whole numbers** whose **sum** is within 20 (e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem).	**Whole numbers** - the set of numbers 0, 1, 2, 3, 4, 5, etc. **Sum** - the result of adding two or more numbers	a) Alex has 5 blocks, Tristan has 3 blocks, and Stacy has 4 blocks. How many blocks do they have altogether? b) Mary had 6 pencils. Her mom gave her 2 more and her brother gave her 7 more. How many pencils does Mary have now?	http://www.doe.k12.de.us/assessment/files/Math_Grade_1.pdf

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MA.1.CA.5	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using models or drawings and strategies based on place value, **properties of operations**, and/or the relationship between addition and subtraction; describe the **strategy** and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones, and that sometimes it is necessary to compose a ten.	**Properties of operations** - mathematical rules, such as: associative property of addition: $(a+b)+c = a+(b+c)$ commutative property of addition: $a+b = b+a$ additive identity property of 0: $a+0 = 0 + a = a$ **Strategy** - a careful plan or method for solving a problem	a) $34 + 9 = \square$ b) $6 + 69 = ?$ c) $16 + 30 = \square$ d) $48 + 50 = ?$ [Have students verbally explain how they found their answers.]	http://www.doe.k12.de.us/assessment/files/Math_Grade_1.pdf Pages 15 through 19 in the PDF http://www.commoncoresheets.com/SortedByGrade.php?Sorted=1oa2
MA.1.CA.6	Understand the meaning of the **equal sign**, and determine if equations involving addition and subtraction are true or false (e.g., Which of the following equations are true and which are false? $6 = 6$, $7 = 8 – 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$).	**Equal sign** - the symbol =, which shows that what is on the left of the equal sign is equal in value or amount to what is on the right of the equal sign	a) Circle True or False for each equation. | $4 = 4$	True or False
$6 + 2 = 3 + 5$	True or False
$8 – 1 = 7 – 2$	True or False	 b) Circle the 3 equations that are true. $6 = 6$ $\qquad$ $7 = 8 – 1$ $5 + 2 = 2 + 5$ $\qquad$ $4 + 1 = 5 + 2$	http://firstgradeadventureinteaching.blogspot.com/2013/04/the-meaning-of-equals-sign-first-grade.html http://www.mathsisfun.com/definitions/equal-sign.html

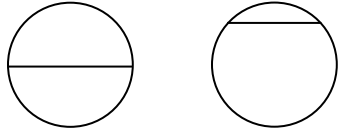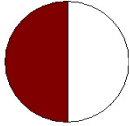| MA.1.CA.7 | Create, extend, and give an appropriate rule for **number patterns** using addition within 100. | **Number pattern** - a list of numbers that follow a certain sequence or pattern | a) What are the next two numbers in the pattern below? Describe the rule for this pattern.

    1, 4, 7, 10, 13, _____, _____

b) What are the next two numbers in the pattern below? Describe the rule for this pattern.

    35, 40, 45, 50, 55, _____, _____

c) Activity: Have students create their own number pattern. Then, have them switch patterns with another student and try to determine each other's rule. | http://www.mathsisfun.com/numberpatterns.html |

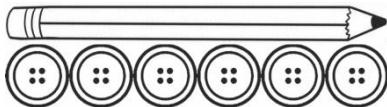| Geometry				
MA.1.G.1	Identify objects as two-dimensional or three-dimensional. Classify and sort two-dimensional and three-dimensional objects by shape, size, roundness and other **attributes**. Describe how two-dimensional shapes make up the **faces** of three-dimensional objects.	**Attributes** - characteristics or features **Face** - the flat plane of a three-dimensional figure.	a) Circle the two-dimensional shapes and place an "X" on the three-dimensional objects. b) What shapes make up the faces of the object below? c) Activity: Have students identify different objects in the room and describe them by shape, size, roundness, etc. Also, have them describe the shapes that make up the faces of three-dimensional objects.	http://mathsframe.co.uk/en/resources/category/569/

MA.1.G.2	Distinguish between **defining attributes** of two- and three-dimensional shapes (e.g., triangles are closed and three-sided) versus **non-defining attributes** (e.g., color, orientation, overall size). Create and draw two-dimensional shapes with defining attributes.	**Defining attribute** - a feature of a shape that is true for all instances of that shape **Non-defining attributes** - attributes that do not define the shape such as color and size	What do all of the rectangles have in common? What makes them different from the figures that are not rectangles? What is true for some but not all of the rectangles? These are rectangles These are NOT rectangles *See the 4th web link in the far right column for the full task.	https://www.georgiastandards.org/Common-Core/Common%20Core%20Frameworks/CCGPS_Math_1_Unit3FrameworkSE.pdf http://www.sharemylesson.com/article.aspx?storyCode=50003442 https://www.illustrativemathematics.org/illustrations/1104 https://www.illustrativemathematics.org/illustrations/752
MA.1.G.3	Use two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a **composite shape**, and compose new shapes from the composite shape. [In grade 1, students do not need to learn formal names such as "right rectangular prism."]	**Composite shape** – a shape that can be divided into more than 1 of the basic geometric shapes (e.g., rectangle, triangle)	Activity: Give each student a square of colored paper, scissors, and an envelope. Have the students cut the square into four pieces and then put those pieces in the envelope. The students can then trade puzzles and try to solve each others' puzzles by reassembling the shapes into a square. 	https://grade1commoncoremath.wikispaces.hcpss.org/Assessing+1.G.2 http://www.doe.k12.de.us/infosuites/schools/charterschools/files/NCSMath2013Gr1.pdf https://www.illustrativemathematics.org/illustrations/1164 https://www.illustrativemathematics.org/illustrations/1311

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MA.1.G.4	**Partition** circles and rectangles into two and four equal parts; describe the parts using the words **halves**, **fourths, and quarters**; and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of, the parts. Understand for partitioning circles and rectangles into two and four equal parts that **decomposing** into equal parts creates smaller parts.	**Partition** - to divide into parts or shares **Decompose** - separating into smaller parts **Halves**- one of two equal parts of a whole **Fourths/Quarters** -one of four equal parts of a whole	a) Explain why the circle on the left shows a circle divided into halves and the circle on the right does not. b) Fill in the blank to describe the circle below. _____ of the circle is shaded. c) Draw a rectangle and divide it into 4 equal parts.	https://learnzillion.com/lessonsets/651-partition-circles-and-rectangles-into-two-three-or-four-equal-shares-not-necessarily-with-the-same-shape-describe-the-shares-using-fraction-vocabulary http://www.cpalms.org/Public/PreviewStandard/Preview/5327

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Measurement				
MA.1.M.1	Use direct comparison or a **nonstandard unit** to compare and order objects according to length, area, capacity, weight, and temperature.	**Nonstandard unit** – measuring in units other than English or metric units (e.g., shoes, paper clips, string)	Activity: Have students use connecting blocks or some other nonstandard unit to measure three pencils and then put them in order from shortest to longest. For example, students may use buttons to measure the pencils and determine that a pencil is 6 buttons long. 	http://nzmaths.co.nz/length-units-work https://www.engageny.org/sites/default/files/resource/attachments/math-g1-m3-full-module.pdf
MA.1.M.2	Tell and write time to the nearest half-hour and relate time to events (before/after, shorter/longer) using **analog clocks**. Understand how to read hours and minutes using **digital clocks**.	**Analog clock** – includes an hour hand (short) and a minute hand (long) to represent the time **Digital clock** - a clock or watch that shows the time using numbers, not hands	a) What time does the clock below show? b) What time does the clock below show? 5:30 c) Would you rather play outside for 5 minutes or 2 hours? Explain your answer. d) Would you rather read a story before or after lunch? Explain your answer.	http://www.homeschoolmath.net/worksheets/clock.php http://www.internet4classrooms.com/skill_builders/telling_time_math_first_1st_grade.htm
MA.1.M.3	Find the **value** of a collection of pennies, nickels, and dimes.	**Value** - how much something is worth	What is the value of the coins? 	http://www.eduplace.com/math/mw/models/overview/1_14_1.html http://www.ixl.com/math/grade-1/count-pennies-nickels-and-dimes

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Data Analysis				
MA.1.DA.1	Organize and interpret **data** with up to three choices (What is your favorite fruit? apples, bananas, oranges); ask and answer questions about the total number of data points, how many in each choice, and how many more or less in one choice compared to another.	**Data** - a collection of facts, such as values or measurements	Ask students if they would rather have a dog, cat, or fish for a pet. Then, make a chart with the three choices listed and have them record their choice by making a mark on the chart. Then, ask them questions about the data, such as: • What is the total number of people that answered the pet question? • Which pet was chosen the most? • Which pet was chosen the least? • How many more people chose "X" than "Y"?	http://www.internet4classrooms.com/common_core/organize_represent_interpret_data_up_three_measurement_data_first_1st_grade_math_mathematics.htm

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TABLE 1. Common addition and subtraction situations.[6]

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? $2 + 3 = ?$	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? $2 + ? = 5$	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? $? + 3 = 5$ ✳
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? $5 - 2 = ?$	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? $5 - ? = 3$	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? $? - 2 = 3$ ✳

	Total Unknown	Addend Unknown	Both Addends Unknown[1]
Put Together/ Take Apart[2]	Three red apples and two green apples are on the table. How many apples are on the table? $3 + 2 = ?$	Five apples are on the table. Three are red and the rest are green. How many apples are green? $3 + ? = 5$, $5 - 3 = ?$	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? $5 = 0 + 5$, $5 = 5 + 0$ $5 = 1 + 4$, $5 = 4 + 1$ $5 = 2 + 3$, $5 = 3 + 2$

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[3]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? $2 + ? = 5$, $5 - 2 = ?$	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? ✳ (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? $2 + 3 = ?$, $3 + 2 = ?$	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? ✳ (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? $5 - 3 = ?$, $? + 3 = 5$

[1]These take apart situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean makes or results in but always does mean is the same number as.

[2]Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation, especially for small numbers less than or equal to 10.

[3]For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using more for the bigger unknown and using less for the smaller unknown). The other versions are more difficult.

Grade 1 students should work on all subtypes shown in this table. The four subtypes that contain a yellow box with an asterisk mark (*) are typically the most challenging types of problems for students. These four subtypes should be practiced in Grade 1, but not mastered until Grade 2.