

The background is a colorful collage. On the left, there are stacks of books in shades of purple and blue. On the right, there is a large, semi-transparent clock face with numbers 1 through 12. At the bottom, there are green hands, possibly representing a clock or a pair of hands. The entire scene is set against a background of soft, blended colors including purple, pink, yellow, and green.

# First Grade Math and Science

Giving you tools, skills, and an overall better understanding so you can help your first grader!

**1.OA.1- Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.**

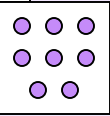
- *Your child should be able to figure out an unknown number in an addition or subtraction word problem in order to solve the equation.*
- **For example: “Maria put 12 books on a shelf. Chris gave her some more books. Then Maria had 20 books on the shelf. How many books did Chris give Maria?”**
- *Solve the problem. Show your thinking with pictures, numbers, and/or words. Use an equation that matches this story.*
- *Students must “show their thinking” in order to receive FULL credit so we encourage them to draw a picture or use a strategy they’ve been taught. They must also look back and check over their work!*

*Word Problem Strategy:*

*Example Solution:*

**Picture  
Equation  
Answer  
Strategy**

P

	20
12	

E  $12 + \triangle ? = 20$

A 8


S Part/Part Whole Model




# Additional Sample Problems and Strategies for Solving

- "Lucy has 7 apples. Julie has 9 apples. How many fewer apples does Lucy have than Julie?"
- "Nine bunnies were sitting on the grass. Some more bunnies hopped there. Now there are 13 bunnies on the grass. How many bunnies hopped over there?"
- "13 apples are on the table. 6 of them are red and the rest are green. How many apples are green?"
- Additional Strategies: Touchpoints, T chart, tens frame, counting on, counting back, UPSL (Underline, Plan, Solve, Look Back & Check)





**1.OA.2-** Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.


- 
- *Your child should be able to add three numbers together whose value adds up to 20 or less.*
  - *For example, “8 + 5 + 6.”*
  - *Students can use blocks, counters, or draw a picture to solve this.*
  - *Once your child has mastered this with manipulatives, students can move to counting up using a number line or using touchpoints, but they must “SHOW THEIR THINKING.”*



Example Test Question:

**Sam brought rocks to school for the science table. He had 8 white rocks, 6 pink rocks, and 2 brown rocks. How many rocks did he have?**

Solve the problem. Show your thinking with pictures, numbers, or words. Write an equation that matches the story.



**P**

$$8 \begin{array}{c} \diagup \quad \diagdown \\ \textcircled{6} + \textcircled{2} \end{array} = \underline{16}$$

**E**  $8 + 6 + 2 = ?$

**A** 16

**S** Number Line





## 1.OA.3- Apply properties of operations as strategies to add and subtract.

- *Your child should be able to understand the commutative property of addition that states that the numbers being added in an addition problem can be added in any order and still give you the same sum ( $8 + 3 = 11$  and  $3 + 8 = 11$ ).*
- *Also, your child should be able to understand the associative property of addition that states that numbers can be regrouped in an equation and still give you the same sum. So,  $(2 + 6) + 4 = 12$  and  $2 + (6 + 4) = 12$ .*
- *Show him/her how you can change the position of numbers in an addition sentence and still end up with the same sum. Show them  $8 + 3 = 11$  and  $3 + 8 = 11$  or  $5 + 4 = 9$  and  $4 + 5 = 9$ , etc. Your child should catch on to this strategy much more easily than the associative property.*
- *For the associative property, show your child multiple problems such as  $2 + 6 + 4 = 12$  and  $6 + 4 + 2 = 12$  or  $5 + 3 + 7 = 15$  or  $3 + 7 + 5 = 15$  (remember to add one group of blocks at a time and to count up with 3 digit number sentences!)*

# Additional Sample Problems and Strategies for Solving

- "There are 9 red jelly beans, 7 green jelly beans, and 3 black jelly beans. How many jelly beans are there in all?"
- Student 1: "I know that  $7+3$  is 10. And  $10+9$  is 19. There are 19 jelly beans."
- Student 2: "I added  $9+7$  to make 16. Then I added 16 and 3 and got 19."
- Your student should understand that both of these statements from the above students are true.





**1.OA.4- Understand subtraction as an unknown-addend problem within 20.**

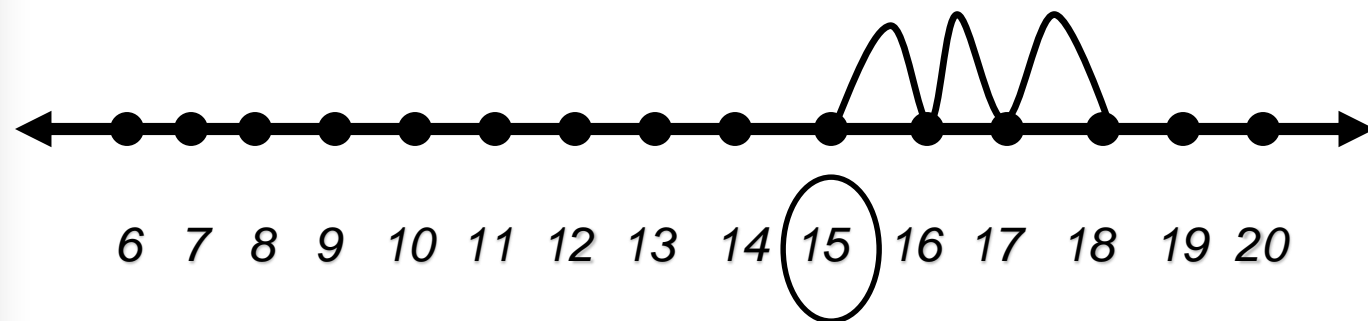
- *Your child should be able to realize that subtraction is an inverse of addition thus  $10 - 8$  can also be represented as  $8 + ? = 10$ .*
- *For example, your child should know that  $9 - 3$  is also the same as  $3 + ? = 9$ .*
- **Strategies:** Part/Part/Whole T chart, tens frame, counting on, counting back




**1.OA.5- Relate counting to addition and subtraction  
(e.g., by counting on 2 to add 2) within 20.**


- *Your child should be able to add by counting up from a certain number to get the sum of a number sentence. So,  $2 + 3$  would sound like this: 3, 4, 5!*
- *Your child should be able to use his/her fingers or a number line for this activity, however, if you need to use counters or draw out tally marks, that's fine too.*
- *Say, "I wonder what  $6 + 4$  is? Let's count up 4 from 6 using our fingers! We're going to put 6 in our head and then say, 7, 8, 9, 10 (your child should have 4 fingers up.)"*
- *Let's try  $13 + 6$  by counting up 6 from 13! Put 13 in your head and then use the number line to say 14, 15, 16, 17, 18, 19.*

Example:  $15 + 3 = \underline{\quad}$





1.OA.6- Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. 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.




■ *Your child should be able to use strategies like:*

*Making ten  $3+7$ ,  $2+8$ ,  $1+9$ ,  $4+6$*


*Counting on*

*Doubles  $2+2$ ,  $3+3$ ,  $4+4$ ,  $5+5$*

*Doubles +1  $6+7$  "If I know  $6+6$  is 12, then  $6+7$  is 13 because it's just one more.*



*To help them solve single digit addition and subtraction problems **FLUENTLY**.*



1.OA.7- Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false?

■ *Examples:*

$$7=7$$

$$6=5+1$$

$$8-3=5$$

$$5+2=2+5$$

$$4+1=5+2$$

■ *Students should be able to tell if the statements are true and false and “explain their thinking.”*

$10 - 6 = 2 + 2$

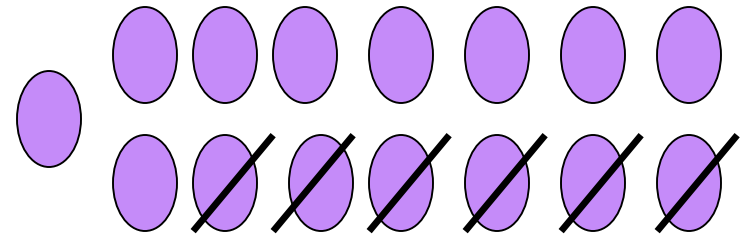
4 = 4 True



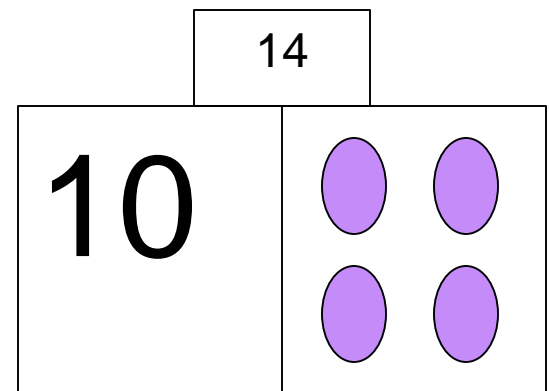
1.OA.8- Determine the unknown whole number in an addition or subtraction equation relating three whole numbers.

- *Your child should be able to figure out unknown numbers in addition or subtraction number sentences.*
- *For example:*

$$6 + ? = 15$$




$$14 - 10 = ?$$





1.NBT.1- Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.


- 
- *Your child should be able to count and fill in missing numbers, in an ordered number sequence, from 1-120.*



*Example:*

95, 96, 97, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

111, 112, 113, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

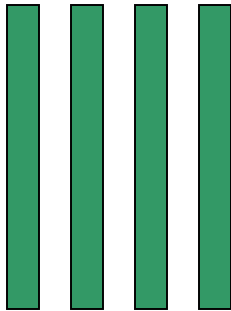
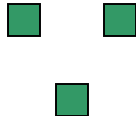


*Non Example:* 111, 112, 113, 1014, 1015, 1016



**1.NBT.2A- Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: 10 can be thought of as a bundle of ten ones — called a “ten.”**

- *Your child should be able to recognize that there are groups of 10 in two digit numbers and some ones left over. He/she should know that the number in the tens place represents the number of groups of tens in that number.*
- *For example, Show your child the number 43; They should tell you that there are 4 groups of 10 and 3 ones. They need to also be able to count the groups of 10 by tens, saying 10, 20, 30, 40 and then continue counting on 41, 42, 43.*


Tens	Ones
	









1.NBT.2B- Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

- *Your child should be able to recognize that there is one group of 10 in the numbers 11-19 and some ones. And for the numbers 1-9, there are no groups of tens, but there are ones.*




1.NBT.2C- Understand that the two digits of a two-digit number represent amounts of tens and ones.

- 
- *Your child should be able to recognize that there are different groups of 10 in the numbers 10, 20, 30, 40, 50, 60, 70, 80, 90.*
  - *They should know that there are 3 groups of 10 in the number 30 because there is a 3 in my tens place and 0 in the ones place.*
- 
- 



1.NBT.3- Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols  $>$ ,  $=$ , and  $<$ .

- 
- *Your child should be able to recognize which numbers are “greater than”, “less than” or “equal too” when shown 2 numbers ranging from 10-99.*



**Example: Use one of the 3 symbols below to make each expression true.  $<$ ,  $>$ ,  $=$**



86  68

93  103

75   $70+5$

45   $50+4$

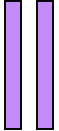

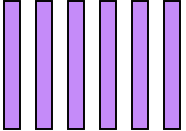





1.NBT.4- Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

- *Your child should be able to add one and two digit numbers together up to 100.*
- *The best strategy to use in a tens and ones chart to add double digit numbers to begin with then transition to touchpoints and/or vertical addition.*
- *Examples:  $50 + 10 = 60$  and  $60 + 2 = 62$  so  $29 + 33 = 62!$*

Tens		Ones	
	2		5
+	6		4

Tens		Ones	
			
+			



1.NBT.5- Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. 1.NBT.6- Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

- *Your child should be able to mentally add and subtract 10 to any number by changing the number in the 10s digit.*
- *For example, your child should be able to do this by saying it out loud to you. If you say 10 more than 76, they need to say 86 almost immediately. Or 10 less than 68, they should respond 58.*
- *The best way to practice this is to use the hundreds chart until they are fluent at mental math by moving directly up or down.*
- *The other option is to draw tens and ones, and practice adding a stick of ten or subtracting a stick of ten.*

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100




# 1.MD.3- Tell and write time in hours and half-hours using analog and digital clocks.

- *Your child should be able to tell and write time in hours and half-hours using analog and digital clocks.*
- *Make sure you focus on telling time to the half hour and the hand placement on the analog clock when it is to the half hour.*







1.MD.4- Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

- *Your child should be able to organize, record and understand data by answering questions about the total, how many in each category, and how many more and how many less in each category.*
- *They need to be able to “analyze” the data from bar graphs, picture graphs, etc.*

1.G.1- Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size) ; build and draw shapes to possess defining attributes.

- *Your child should be able to recognize triangles, rectangles, squares, circles, hexagons, trapezoids, etc. and their **defining attributes** or traits (such as a triangle is a closed shape with 3 sides and 3 corners.)*
- *Students should use words such as vertices, sides, angles, parallel lines, etc in their description of plane shapes.*



1.G.2- Compose 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.

- *Your child should be able to put together shapes (two-dimensional or three-dimensional) by combining shapes such as a rectangle and a triangle to create new shapes.*
- *Your child must be able to describe the new shape using defining attributes.*





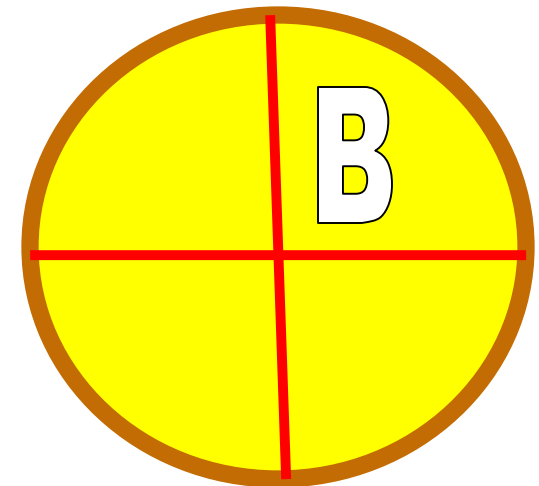
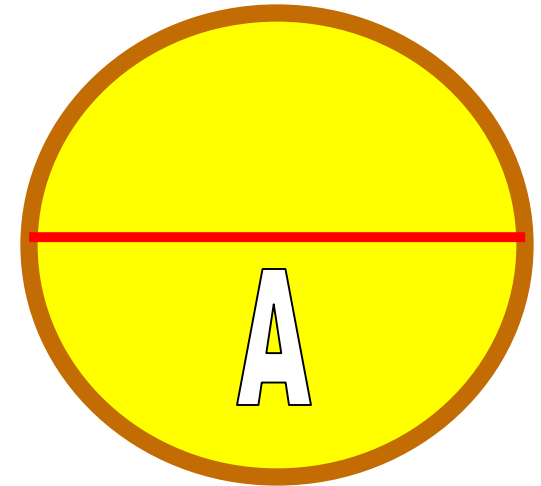
1.G.3- Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

- *Your child should be able to partition a shape, such as circles and/or rectangles into halves, quarters/fourths.*
- *Students also need to be able to compare a partitioned shape.*
- *Example: How can you and a friend share a candy bar equally? Partition the rectangles to show how you would share it equally.*



# Additional Sample Assessment Problems

- *“A teacher has two pizzas for her class. Which slice of pizza would you rather have and why?”*



# Additional Resources

- <http://maccss.ncdpi.wikispaces.net/First+Grade>







# Questions?

# Science

1.P.1 Understand how forces (pushes or pulls) affect the motion of an object.

Students will know:

- A force is a push or pull.
- Force can change the motion of an object.
- Magnets exert an unseen force that make some things move.
- The size of the change in motion of an objects is based on the amount of force.
- Balance is associated with position and weight.



# Science

1.E.1 Recognize the features and patterns of the earth/moon/sun system as observed from Earth.

Students will know:

- About the sun, moon, and stars.
- The reason for day and night.
- Moon phases and patterns in the phases of the moon.





# Science

1.E.2 Understand the physical properties of Earth materials that make them useful in different ways.

Students will know:

- The physical properties of earth materials, including rocks, minerals, soil, and water.
- Soils have different properties based on where they are located on earth.
- Some soils retain more water, nutrients, and provide better support.



# Science

1.L.1 Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive.

1.L.2 Summarize the needs of living organisms for energy and growth

Students will know:

- Living things such as plants and animals need food, water, and air.
- North Carolina, from the coast to the mountains, has several different environments to support the needs of different organisms.
- Basic needs of plants and animals





# Questions?