

1st Grade Texas Mathematics: Unpacked Content

What is the purpose of this document?

To increase student achievement by ensuring educators understand specifically what the new standards mean a student must know, understand and be able to do. This document may also be used to facilitate discussion among teachers and curriculum staff and to encourage coherence in the sequence, pacing, and units of study for grade-level curricula. This document, along with on-going professional development, is one of many resources used to understand and teach the new math standards.

What is in the document?

Descriptions of what each standard means a student will know, understand, and be able to do. The “unpacking” of the standards done in this document is an effort to answer a simple question “What does this standard mean that a student must know and be able to do?” and to ensure the description is helpful, specific and comprehensive for educators.

At A Glance:

New to 1st Grade:

- Recognize instantly the quantity of structured arrangements
- Use concrete and pictorial models to determine the sum of a multiple of 10 and a one digit number in problems up to 99
- Compose 10 with two or more addends with and without concrete objects
- Write a number with the cent symbol to describe the value of a coin
- Use relationships to count by 2s, 5s, and 10s to determine the value of a collection of pennies, nickels, and/or dimes
- Identify examples and non-examples of halves and fourths
- Create two-dimensional figures, including circles, triangles, rectangles, and squares, as special rectangles, rhombuses, and hexagons
- Define money earned as income
- Identify income as a means of obtaining goods and services, oftentimes making choices between wants and needs
- Distinguish between spending and saving
- Consider charitable giving
- Represent, compare, and skip count by 2s, 5s, and 10s numbers up to 120
- Use pictorial models to compose and decompose numbers
- Use pictures, expanded and standard forms to represent numbers
- Use comparative language to compare numbers
- Use open number lines to order numbers
- Solve addition and subtraction word problems in which any of the terms can be unknown
- Use making 10 and decomposing a number leading to 10 to add and subtract basic facts
- Add and subtract three numbers
- Classify and sort irregular two-dimensional shapes
- Understand attributes that do and do not define a shape
- Identify rhombuses, hexagons and triangular prisms
- Use formal geometrical language to describe attributes
- Use two or more figures to produce a target shape in more than one way
- Describe a length to the nearest whole non-standard unit
- Use tally marks and t-charts to collect, sort, and organize data in up to three categories

Moved from 1st Grade:

- Compare numbers that are equal
- The use of sets as a whole
- Partition of figures into three equal parts.
- Compare & order two objects according to length, area, capacity, weight/mass and relative temperature
- Order three or more events according to duration
- Real-object graphs (although they can be applied in the process standards)
- Identify events as certain or impossible
- Use of the term “fact families”
- Select or develop an appropriate problem-solving plan or strategy including drawing a picture, looking for a pattern, systematic guessing & checking, or acting it out in order to solve a problem

Instructional Implications for 2013-14: First Grade students are being asked to use concrete and pictorial models to determine the sum of a multiple of ten and a one-digit number up to 99 (formally a second grade TEK).

- There is a new expectation that students will recite numbers forward and backward from any give number between 1 and 120.

Professional Learning Implications for 2013-14:

- Teachers will need time to identify the gaps that will need to be addressed in the 2013-14 school year.
- Embed the process standards into instruction and application
- PD and resources regarding Personal Financial Literacy
- Initial learning of the teachers’ grade level TEKS (teachers unpacking the TEKS at their grade level)
- Vertical study of the strands to know how the TEKS align and progress from Kinder through 2nd grade.
- Identify academic vocabulary

Grade 1 Primary Focal Areas:

The Primary Focal Areas are designed to bring focus to the standards at each grade by describing the big ideas that educators can use to build their curriculum and to guide instruction.

1. The desire to achieve educational excellence is the driving force behind the Texas essential knowledge and skills for mathematics, guided by the college and career readiness standards. By embedding statistics, probability, and finance, while focusing on computational thinking, mathematical fluency, and solid understanding, Texas will lead the way in mathematics education and prepare all Texas students for the challenges they will face in the 21st century.
2. The process standards describe ways in which students are expected to engage in the content. The placement of the process standards at the beginning of the knowledge and skills listed for each grade and course is intentional. The process standards weave the other knowledge and skills together so that students may be successful problem solvers and use mathematics efficiently and effectively in daily life. The process standards are integrated at every grade level and course. When possible, students will apply mathematics to problems arising in everyday life, society, and the workplace. Students will use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Students will select appropriate tools such as real objects, manipulatives, algorithms, paper and pencil, and technology and techniques such as mental math, estimation, [and] number sense, and generalization and abstraction to solve problems. Students will effectively communicate mathematical ideas, reasoning, and their implications using multiple representations such as symbols, diagrams, graphs, computer programs, and language. Students will use mathematical relationships to generate solutions and make connections and predictions. Students will analyze mathematical relationships to connect and communicate mathematical ideas. Students will display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication.
3. For students to become fluent in mathematics, students must develop a robust sense of number. The National Research Council's report, "Adding It Up," defines procedural fluency as "skill in carrying out procedures flexibly, accurately, efficiently, and appropriately." As students develop procedural fluency, they must also realize that true problem solving may take time, effort, and perseverance. Students in Grade 1 are expected to perform their work without the use of calculators.
4. The primary focal areas in Grade 1 are understanding and applying place value, solving problems involving addition and subtraction, and composing and decomposing two-dimensional shapes and three-dimensional solids.
 - (A) Students use relationships within the numeration system to understand the sequential order of the counting numbers and their relative magnitude.

(B) Students extend their use of addition and subtraction beyond the actions of joining and separating to include comparing and combining. Students use properties of operations and the relationship between addition and subtraction to solve problems. By comparing a variety of solution strategies, students use efficient, accurate, and generalizable methods to perform operations.

(C) Students use basic shapes and spatial reasoning to model objects in their environment and construct more complex shapes. Students are able to identify, name, and describe basic two-dimensional shapes and three-dimensional solids.

5. Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

Mathematical process standards

Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

(A) apply mathematics to problems arising in everyday life, society, and the workplace;

(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

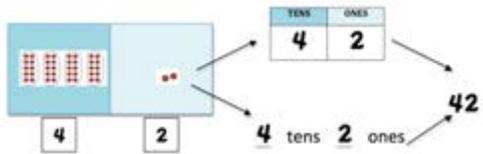
(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

(E) create and use representations to organize, record, and communicate mathematical ideas;

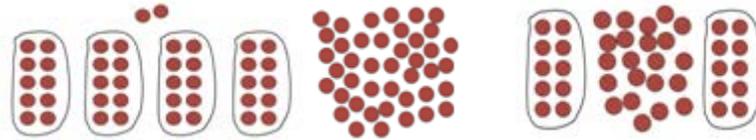
(F) analyze mathematical relationships to connect and communicate mathematical ideas; and

(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

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| <p>Number and Operations: TEKS 1.2</p> | <p>The student applies mathematical process standards to represent and compare whole numbers, the relative position and magnitude of whole numbers, and relationships within the numeration system related to place value. The student is expected to:</p> |
| <p>1.2(A) Recognize instantly the quantity of structured arrangements</p> | <p>Students use their counting ability to compare sets of objects. They may use matching strategies, counting strategies or equal share to determine whether one group is great than, less than, or equal to the number of objects in another group.</p> <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>Student 1 I lined up one square and one triangle. Since there is one extra triangle, there are more triangles than squares.</p>  </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>Student 2 I counted the squares and I got 4. Then I counted the triangles and got 5. Since 5 is bigger than 4, there are more triangles than squares.</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>Student 3 I put them in a pile. I then took away objects. Every time I took a square, I also took a triangle. When I had taken almost all of the shapes away, there was still a triangle left. That means that there are more triangles than squares.</p> </div> </div> |
| <p>1.2(B) Use concrete and pictorial models to compose and decompose numbers up to 120 in more than one way as so many hundreds, so many tens, and so many ones;</p> | <p>What do these standards mean a child will know and be able to do?</p> <p>First Grade students are introduced to the idea that a bundle of ten ones is called “a ten”. This is known as unitizing. When First Grade students unitize a group of ten ones as a whole unit (“a ten”), they are able to count groups as though they were individual objects. For example, 4 trains of ten cubes each have a value of 10 and would be counted as 40 rather than as 4. This is a monumental shift in thinking, and can often be challenging for young children to consider a group of something as “one” when all previous experiences have been counting single objects. This is the foundation of the place value system and requires time and rich experiences with concrete manipulatives to develop.</p>  |

A student's ability to conserve number is an important aspect of this standard. It is not obvious to young children that 42 cubes is the same amount as 4 tens and 2 left-overs. It is also not obvious that 42 could also be composed of 2 groups of 10 and 22 leftovers. Therefore, first graders require ample time grouping proportional objects (e.g., cubes, beans, beads, ten-frames) to make groups of ten, rather than using pre-grouped materials (e.g., base ten blocks, pre-made bean sticks) that have to be "traded" or are non-proportional (e.g., money).

Example: 42 cubes can be grouped many different ways and still remain a total of 42 cubes.

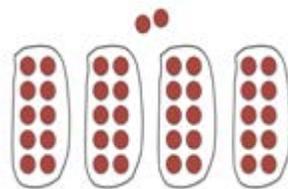


"We want children to construct the idea that all of these are the same and that the sameness is clearly evident by virtue of the groupings of ten. Groupings by tens is not just a rule that is followed but that any grouping by tens, including all or some of the singles, can help tell how many." (Van de Walle & Lovin, p. 124)

As children build this understanding of grouping, they move through several stages: **Counting By Ones**; **Counting by Groups & Singles**; and **Counting by Tens and Ones**.

Counting By Ones: At first, even though First Graders will have grouped objects into tens and left-overs, they rely on counting all of the individual cubes by ones to determine the final amount. It is seen as the only way to determine how many.

Example:

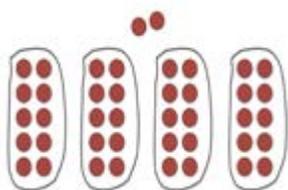


Teacher: How many counters do you have?

Student: 1, 2, 3, 4, ...41, 42. I have 42 counters.

Counting By Groups and Singles: While students are able to group objects into collections of ten and now tell how many groups of tens and left-overs there are, they still rely on counting by ones to determine the final amount. They are unable to use the groups and left-overs to determine how many.

.Example:



Teacher: How many counters do you have?

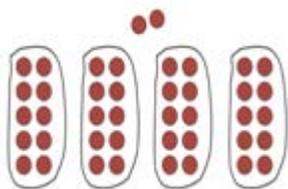
Student: I have 4 groups of ten and 2 leftovers.

Teacher: Does that help you know how many? How many do you have?

Student: Let me see. 1, 2, 3,4, 5,...41, 42. I have 42 counters.

Counting by Tens & Ones: Students are able to group objects into ten and ones, tell how many groups and left- overs there are, and now use that information to tell how many. Ex: "I have 3 groups of ten and 4 left-overs. That means that there are 34 cubes in all." Occasionally, as this stage is becoming fully developed, first graders rely on counting by ones to "really" know that there are 34, even though they may have just counted the total by groups and left-overs.

Example:



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| | <p>Teacher: How many counters do you have?</p> <p>Student: I have 4 groups of ten and 2 left overs.</p> <p>Teacher: Does that help you know how many? How many do you have?</p> <p>Student: Yes. That means I have 42 counters.</p> <p>Teacher: Are you sure?</p> <p>Student: Um. Let me count just to make sure... 1, 2, 3, ...41, 42. Yes. I was right. There are 42 counters.</p> <p>Base Ten Materials: Groupable and Pre-Grouped</p> <p>Ample experiences with a variety of groupable materials that are proportional (e.g., cubes, links, beans, beads) and ten frames allow students opportunities to create tens and break apart tens, rather than “trade” one for another. Since students first learning about place value concepts primarily rely on counting, the physical opportunity to build tens helps them to “see” that a “ten stick” has “ten items” within it. Pre-grouped materials (e.g., base ten blocks, bean sticks) are not introduced or used until a student has a firm understanding of composing and decomposing tens. (Van de Walle & Lovin, 2006)</p> |
| <p>1.2(C) Use objects, pictures, and expanded and standard forms to represent numbers up to 120</p> | <p>First grade students read and write numerals to represent a given amount.</p> |
| <p>1.2(D) Generate a number that is greater than or less than a given whole number up to 120;</p> | <p>As first graders learn to understand that the position of each digit in a number impacts the quantity of the number, they become more aware of the order of the digits when they write numbers. For example, a student may write “17” and mean “71”. Through teacher demonstration, opportunities to “find mistakes”, and questioning by the teacher (“I am reading this and it says seventeen. Did you mean seventeen or seventy-one? How can you change the number so that it reads seventy-one?”), students become precise as they write numbers to 120.</p> |
| <p>1.2(E) Use place value to compare whole numbers up to 120 using comparative language</p> | <p>First Grade students use their understanding of groups and order of digits to compare two numbers by examining the amount of tens and ones in each number. Students should have numerous experiences verbally comparing two sets of objects using comparison vocabulary (e.g., 42 is more than 31. 23 is less than 52, 61 is the same amount as 61.).</p> |

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| <p>1.2(F) Order whole numbers up to 120 using place value and open number lines</p> | <p>A number line offers a visual way to show first-graders how to count, skip count and perform basic addition and subtraction. Ideally, every class should have a number line taped to the floor so that students not only can see the number line, but also can physically use it. Number lines also can be drawn with chalk outside for activities.</p> <p>Bigger and Smaller</p> <p>During this game, the teacher holds up a card with a number between 1 and 20 printed on it. One student is on the number line, starting at number 10. The student on the number line moves to a random number, and the class tells the student "bigger" or "smaller" to help guide him to the number on the card. Students take turns until everyone has had a chance to participate.</p> <p>Number Line Card Game</p> <p>Teacher uses a deck of number cards (or numbered index cards) to play this game by asking the first-grade student to draw a card and tell which number comes before or after it.</p> |
| <p>1.2(G) Represent the comparison of two numbers to 100 using the symbols $>$, $<$, or $=$</p> | <p>After numerous experiences verbally comparing two sets of objects using comparison vocabulary (e.g., 42 is more than 31. 23 is less than 52, 61 is the same amount as 61.), first grade students connect the vocabulary to the symbols: greater than ($>$), less than ($<$), equal to ($=$).</p> <p>Example:</p> <p>Compare these two numbers. 42 ___ 45</p> <p>Student A</p> <p>42 has 4 tens and 2 ones. 45 has 4 tens and 5 ones. They have the same number of tens, but 45 has more ones than 42. So, 42 is less than 45.</p> <p>42 < 45</p> |

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| | <p>Student B</p> <p>42 is less than 45. I know this because when I count up I say 42 before I say 45.</p> <p>$42 < 45$</p> <p>This says 42 is less than 45.</p> |
| <p>Number and Operations: TEKS 1.3</p> | <p>Number and operations. The student applies mathematical process standards to develop and use strategies for whole number addition and subtraction computations in order to solve problems. The student is expected to:</p> |
| <p>1.3(A) Use concrete and pictorial models to determine the sum of a multiple of 10 and a one-digit number in problems up to 99</p> | <p>First Grade students use concrete materials, models, drawings and place value strategies to add within 100. They do so by being flexible with numbers as they use the base-ten system to solve problems.</p> |
| <p>1.3(B) Use objects and pictorial models to solve word problems involving joining, separating, and comparing sets within 20 and unknowns as any one of the terms in the problem such as $2 + 4 = []$; $3 + [] = 7$; and $5 = [] - 3$;</p> | <p>In a Compare situation, two amounts are compared to find “How many more” or “How many less”.</p> |

Table 1 Common addition and subtraction situations¹

| | Result Unknown | Change Unknown | Start Unknown |
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| 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? $? + 3 = 5$ |
| | (K) | (1 st) | One-Step Problem (2 nd) |
| 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? $? - 2 = 3$ |
| | (K) | (1 st) | One-Step Problem (2 nd) |
| | Total Unknown | Addend Unknown | Both Addends Unknown ² |
| Put Together/ Take Apart ³ | 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? $5 = 0 + 5, 5 = 5 + 0$ $5 = 1 + 4, 5 = 4 + 1$ $5 = 2 + 3, 5 = 3 + 2$ |
| | (K) | (K) | (1 st) |
| | Difference Unknown | Bigger Unknown | Smaller Unknown |
| Compare ⁴ | ("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? (1 st) | (Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (1 st) | (Version with "more"): Julie has 3 more apples than Lucy. Julie has five apples. How many apples does Lucy have? $5 - 3 = ?$ $? + 3 = 5$ (2 nd) |
| | ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? $2 + ? = 5, 5 - 2 = ?$ (1 st) | (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? $2 + 3 = ?$ $3 + 2 = ?$ (2 nd) | (Version with "fewer"): Lucy has three fewer apples than Julie. Julie has five apples. How many apples does Lucy have? (1 st) |

K: Problem types to be mastered by the end of the Kindergarten year.

1st: Problem types to be mastered by the end of the First Grade year, including problem types from the previous year(s). However, First Grade students should have experiences with all 12 problem types.

2nd: Problem types to be mastered by the end of the Second Grade year, including problem types from the previous year(s).

Compare problems are more complex than those introduced in Kindergarten. In order to solve compare problem types, First Graders must think about a quantity that is not physically present and must conceptualize that amount. In addition, the language of "how many more" often becomes lost or

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| | not heard with the language of 'who has more'. With rich experiences that encourage students to match problems with objects and drawings can help students master these challenges. | | |
| 1.3(C) Compose 10 with two or more addends with and without concrete objects | Addends are numbers used in an addition problem, $2 + 3 = 5$. Two and 3 are the addends, while 5 is the sum. Addition problems can have two or more addends, which can be single- or double-digit numbers. | | |
| 1.3(D) Apply basic fact strategies to add and subtract within 20, including making 10 and decomposing a number leading to a 10 | <p>In First Grade, students learn about and use various strategies to solve addition and subtraction problems. When students repeatedly use strategies that make sense to them, they internalize facts and develop fluency for addition and subtraction within 10. When students are able to demonstrate fluency within 10, they are accurate, efficient, and flexible. First Graders then apply similar strategies for solving problems within 20, building the foundation for fluency to 20 in Second Grade.</p> <p>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 $6 + 6 + 1 = 12 + 1 = 13$).</p> <p>Developing Fluency for Addition & Subtraction within 10. Example: Two frogs were sitting on a log. 6 more frogs hopped there. How many frogs are sitting on the log now?</p> <table border="1" data-bbox="648 971 1675 1130"> <tr> <td data-bbox="648 971 1131 1130"> <p style="text-align: center;"><u>Counting- On</u></p> <p>I started with 6 frogs and then counted up, Sixxxx... 7, 8. So there are 8 frogs on the log.</p> <p style="text-align: center;">$6 + 2 = 8$</p> </td> <td data-bbox="1178 971 1675 1130"> <p style="text-align: center;"><u>Internalized Fact</u></p> <p>There are 8 frogs on the log. I know this because 6 plus 2 equals 8.</p> <p style="text-align: center;">$6 + 2 = 8$</p> </td> </tr> </table> <p>Add and Subtract within 20. Example: Sam has 8 red marbles and 7 green marbles. How many marbles does Sam have in all?</p> | <p style="text-align: center;"><u>Counting- On</u></p> <p>I started with 6 frogs and then counted up, Sixxxx... 7, 8. So there are 8 frogs on the log.</p> <p style="text-align: center;">$6 + 2 = 8$</p> | <p style="text-align: center;"><u>Internalized Fact</u></p> <p>There are 8 frogs on the log. I know this because 6 plus 2 equals 8.</p> <p style="text-align: center;">$6 + 2 = 8$</p> |
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Making 10 and Decomposing a Number

I know that 8 plus 2 is 10, so I broke up (decomposed) the 7 up into a 2 and a 5. First I added 8 and 2 to get 10, and then added the 5 to get 15.

$$\begin{aligned}7 &= 2 + 5 \\8 + 2 &= 10 \\10 + 5 &= 15\end{aligned}$$

Creating an Easier Problem with Known Sums

I broke up (decomposed) 8 into 7 and 1. I know that 7 and 7 is 14. I added 1 more to get 15.

$$\begin{aligned}8 &= 7 + 1 \\7 + 7 &= 14 \\14 + 1 &= 15\end{aligned}$$

Example: There were 14 birds in the tree. 6 flew away. How many birds are in the tree now?

Back Down Through Ten

I know that 14 minus 4 is 10. So, I broke the 6 up into a 4 and a 2. 14 minus 4 is 10. Then I took away 2 more to get 8.

$$\begin{aligned}6 &= 4 + 2 \\14 - 4 &= 10 \\10 - 2 &= 8\end{aligned}$$

Relationship between Addition & Subtraction

I thought, '6 and what makes 14?'. I know that 6 plus 6 is 12 and two more is 14. That's 8 altogether. So, that means that 14 minus 6 is 8.

$$\begin{aligned}6 + 8 &= 14 \\14 - 6 &= 8\end{aligned}$$

First Graders also extend the sophistication of the methods they used in Kindergarten (counting) to add and subtract within this larger range. Now, First Grade students use the methods of counting on, making ten, and doubles +/- 1 or +/- 2 to solve problems.

Example: 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?

Counting On Method

Student: Niiinnnee... *holding a finger for each next number counted* 10, 11, 12, 13. *Holding up her four fingers,* 4! 4 bunnies hopped over there."

Example: 8 red apples and 6 green apples are on the tree. How many apples are on the tree?

Making Tens Method

Student: I broke up 6 into 2 and 4. Then, I took the 2 and added it to the 8. That's 10. Then I add the 4 to the 10. That's 14. So there are 14 apples on the tree.

Example: 13 apples are on the table. 6 of them are red and the rest are green. How many apples are green?

Doubles +/- 1 or 2

Student: I know that 6 and 6 is 12. So, 6 and 7 is 13. There are 7 green apples.

When solving addition and subtraction problems to 20, First Graders often use counting strategies, such as counting all, counting on, and counting back, before fully developing the essential strategy of using 10 as a benchmark number. Once students have developed counting strategies to solve addition and subtraction problems, it is very important to move students toward strategies that focus on composing and decomposing number using ten as a benchmark number, as discussed in 1.OA.6, particularly since counting becomes a hindrance when working with larger numbers. By the end of First Grade, students are expected to use the strategy of 10 to solve problems.

Counting All: Students count all objects to determine the total amount. Counting On & Counting Back: Students hold a “start number” in their head and count on/back from that number.

Example: $15 + 2 = \square$

Counting All

The student counts out fifteen counters. The student adds two more counters. The student then counts all of the counters starting at 1 (1, 2, 3, 4,...14, 15, 16, 17) to find the total amount.

Counting On

Holding 15 in her head, the student holds up one finger and says 16, then holds up another finger and says 17. The student knows that $15 + 2$ is 17, since she counted on 2 using her fingers.

Example: $12 - 3 = \square$

Counting All

The student counts out twelve counters. The student then removes 3 of them. To determine the final amount, the student counts each one (1, 2, 3, 4, 5, 6, 7, 8, 9) to find out the final amount.

Counting Back

Keeping 12 in his head, the student counts backwards, “11” as he holds up one finger; says “10” as he holds up a second finger; says “9” as he holds up a third finger. Seeing that he has counted back 3 since he is holding up 3 fingers, the student states that $12 - 3 = 9$.

1.3(E) Explain strategies used to solve addition and subtraction problems up to 20 using spoken words, objects, pictorial models, and number sentences

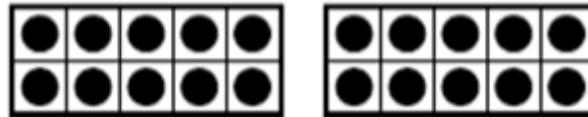
In order for students to read and use equations to represent their thinking, they need extensive experiences with addition and subtraction situations in order to connect the experiences with symbols (+, -, =) and equations ($5 = 3 + 2$). In Kindergarten, students demonstrated the understanding of how objects can be joined (addition) and separated (subtraction) by representing addition and subtraction situations using objects, pictures and words. In First Grade, students extend this understanding of addition and subtraction situations to use the addition symbol (+) to represent joining situations, the subtraction symbol (-) to represent separating situations, and the equal sign (=) to represent a relationship regarding quantity between one side of the equation and the other.

Example:

24 red apples and 8 green apples are on the table. How many apples are on the table?

Student A:

I used ten frames. I put 24 chips on 3 ten frames. Then, I counted out 8 more chips. 6 of them filled up the third ten frame. That meant I had 2 left over. 3 tens and 2 left over. That's 32. So, there are 32 apples on the table.

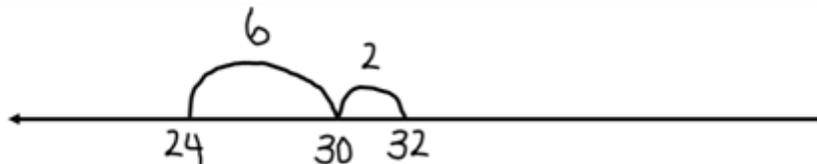


$$24 + 6 = 30$$

$$30 + 2 = 32$$

Student B:

I used an open number line. I started at 24. I knew that I needed 6 more jumps to get to 30. So, I broke apart 8 into 6 and 2. I took 6 jumps to land on 30 and then 2 more. I landed on 32. So, there are 32 apples on the table.



$$24 + 6 = 30$$

$$30 + 2 = 32$$

Student C:

I turned 8 into 10 by adding 2 because it's easier to add. So, 24 and ten more is 34. But, since I added 2 extra, I had to take them off again. 34 minus 2 is 32. There are 32 apples on the table.

$$8 + 2 = 10$$

$$24 + 10 = 34$$

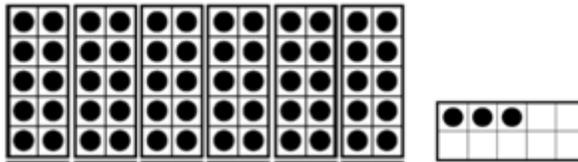
$$34 - 2 = 32$$

Example:

63 apples are in the basket. Mary put 20 more apples in the basket. How many apples are in the basket?

Student A:

I used ten frames. I picked out 6 filled ten frames. That's 60. I got the ten frame with 3 on it. That's 63. Then, I picked one more filled ten frame for part of the 20 that Mary put in. That made 73. Then, I got one more filled ten frame to make the rest of the 20 apples from Mary. That's 83. So, there are 83 apples in the basket.



$$63 + 10 = 73$$



$$73 + 10 = 83$$

Student B:

I used a hundreds chart. I started at 63 and jumped down one row to 73. That means I moved 10 spaces. Then, I jumped down one more row (that's another 10 spaces) and landed on 83. So, there are 83 apples in the basket.

$$63 + 10 = 73$$

$$73 + 10 = 83$$

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|
| 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 |

Student C:

I knew that 10 more than 63 is 73. And 10 more than 73 is 83. So, there are 83 apples in the basket.

$$63 + 10 = 73$$

$$73 + 10 = 83$$

| | |
|--|--|
| <p>1.3(F) Generate and solve problem situations when given a number sentence involving addition or [and] subtraction of numbers within 20.</p> | <p>Addends are numbers used in an addition problem, $2 + 3 = 5$. Two and 3 are the addends, while 5 is the sum. Addition problems can have two or more addends, which can be single- or double-digit numbers.</p> |
| <p>Number and Operations: TEKS 1.4</p> | <p>Number and operations. The student applies mathematical process standards to identify coins, their values, and the relationships among them in order to recognize the need for monetary transactions. The student is expected to:</p> |
| <p>1.4(A) Identify U.S. coins, including pennies, nickels, dimes, and quarters, by value and describe the relationships among them</p> | <p>At the first grade level, students should have an idea of what each coin looks like and how much it is worth. Regular review of the coins and their values helps reinforce this information. Additional money-themed activities teach first grade students about counting money.</p> <p>Matching Cards</p> <p>Play a matching game to help students pair up coins with their values. For first graders who are still learning the value of individual coins, create pairs of cards with single coins. Place a picture of the coin on one card, and write the value of the card on its corresponding coin. Have the kids pair up the cards to practice the values. For students learning to count multiple coins together, place pictures of several coins on a card and write the total value of the coins on the other card. For example, if you had two quarters, a dime, two nickels and three pennies on the picture card, you would write ".73" on the matching card to represent the total.</p> <p>Daily Money Count</p> <p>Daily practice of counting coins keeps the information fresh. To integrate money into morning calendar activities, track the school days with coins. On the first day of school, you would place one penny on the chart. Each day, add another penny until you have enough to trade in for a nickel. Continue trading in for nickels, dimes and quarters when you reach enough days. Another option is to display a grouping of coins on the overhead or chalkboard. Have the kids count the money in the picture to get the total. Count the money together as a class to check the students' answers.</p> |

1.4(B) Write a number with the cent symbol to describe the value of a coin

Counting Coins

Add the value of the coins in each coin purse.
Write the total amount below each purse.



___ ¢



___ ¢



___ ¢



___ ¢

1.4(C) Use relationships to count by twos, fives, and tens to determine the value of a collection of pennies, nickels, and/or dimes

Hundreds Chart Counting

A hundreds chart provides a counting tool for kids learning to total up the value of several coins. Have students place each coin on the chart to represent its value. Tell them to always start with the largest coins and work down to the smallest value coins. If the coins included were a quarter, two dimes, a nickel and three pennies, the quarter would go first. In this example, the students would place the quarter on the 25 square on the grid. Since the dimes are worth 10 cents, the first dime would go on the 35 square since it adds 10 cents to the total. The second dime goes on the 45 square. The nickel would go on the 50 square and the three pennies go on the 51, 52 and 53 squares. This tells the child that the coins are worth 53 cents.

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|---|--|--|---|---|---|---|--|---|---|---|---|--|---|---|---|---|--|---|---|--|--|---|--|
| <p>Algebraic Reasoning: TEKS 1.5A</p> | <p>Algebraic reasoning. The student applies mathematical process standards to identify and apply number patterns within properties of numbers and operations in order to describe relationships. The student is expected to:</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>1.5(A) Recite numbers forward and backward from any given number between 1 and 120;</p> | <p>First Grade students rote count forward to 120 by counting on from any number less than 120. First graders develop accurate counting strategies that build on the understanding of how the numbers in the counting sequence are related—each number is one more (or one less) than the number before (or after)</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>1.5(B) Skip count by twos, fives, and tens to determine the total number of objects up to 120 in a set</p> | <div data-bbox="709 584 1407 1088"> <p style="text-align: center;">I can count by fives. <small>Count by 5's and fill in the missing numbers on the hands. Use your book to help you count.</small></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td> 5</td> <td></td> <td></td> <td></td> <td> 25</td> </tr> <tr> <td></td> <td></td> <td> 40</td> <td></td> <td></td> </tr> <tr> <td></td> <td> 60</td> <td></td> <td></td> <td> 75</td> </tr> <tr> <td></td> <td></td> <td> 95</td> <td></td> <td></td> </tr> <tr> <td> 105</td> <td></td> <td></td> <td></td> <td> Nice work!</td> </tr> </table>  </div> |  5 |  |  |  |  25 |  |  |  40 |  |  |  |  60 |  |  |  75 |  |  |  95 |  |  |  105 |  |  |  |  Nice work! |
|  5 |  |  |  |  25 | | | | | | | | | | | | | | | | | | | | | | |
|  |  |  40 |  |  | | | | | | | | | | | | | | | | | | | | | | |
|  |  60 |  |  |  75 | | | | | | | | | | | | | | | | | | | | | | |
|  |  |  95 |  |  | | | | | | | | | | | | | | | | | | | | | | |
|  105 |  |  |  |  Nice work! | | | | | | | | | | | | | | | | | | | | | | |



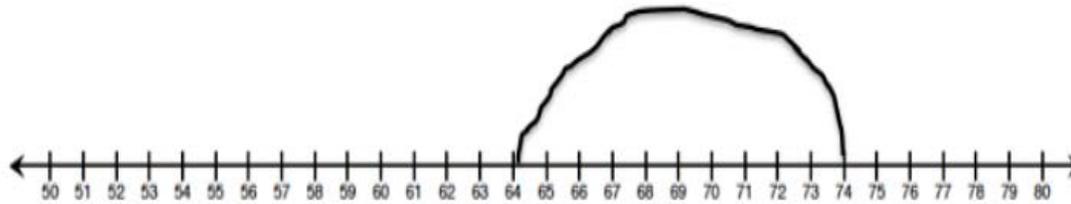
1.5(C) Use relationships to determine the number that is 10 more and 10 less than a given number up to 120;

First Graders build on their counting by tens work in Kindergarten by mentally adding ten more and ten less than any number less than 100. First graders are not expected to compute differences of two-digit numbers other than multiples of ten. Ample experiences with ten frames and the number line provide students with opportunities to think about groups of ten, moving them beyond simply rote counting by tens on and off the decade. Such representations lead to solving such problems mentally.

Example: There are 74 birds in the park. 10 birds fly away. How many birds are in the park now?

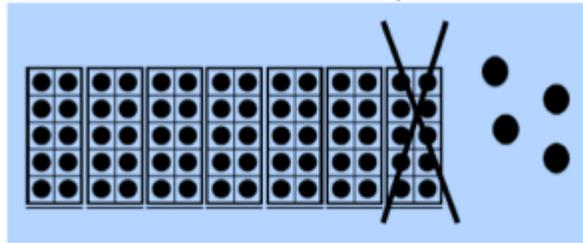
Student A

I thought about a number line. I started at 74. Then, because 10 birds flew away, I took a leap of 10. I landed on 64. So, there are 64 birds left in the park.



Student B

I pictured 7 ten frames and 4 left over in my head. Since 10 birds flew away, I took one of the ten frames away. That left 6 ten frames and 4 left over. So, there are 64 birds left in the park.



Student C

I know that 10 less than 74 is 64. So there are 64 birds in the park

1.5(D) Represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences

Word problems help students relate math to the real world by giving them a context for learning. There is usually more than one way to solve a math problem, so give first grade students simple word problems and allow them to find their own strategies. Help your students by making the wording simple and reading through problems with them. Make sure students know they can ask you if they are unsure of a word. Use illustrations to make word problems easy to understand and more engaging for young students.

·When teaching addition you could try an example such as the following: "There are three blue

| | |
|---|---|
| | <p>cars on Fred's driveway and two red cars. How many cars are there on the driveway?" Try using funny characters and interesting stories. "Lucy the Ladybug has six spots. She lost two of them. How many does she now have?" Accompany problems with pictures if possible.</p> |
| <p>1.5(E) Understand that the equal sign represents a relationship where expressions [statements] on each side of the equal sign represent the same value(s) [are true]</p> | <p>In order to determine whether an equation is true or false, First Grade students must first understand the meaning of the equal sign. This is developed as students in Kindergarten and First Grade solve numerous joining and separating situations with mathematical tools, rather than symbols. Once the concepts of joining, separating, and "the same amount/quantity as" are developed concretely, First Graders are ready to connect these experiences to the corresponding symbols (+, -, =). Thus, students learn that the equal sign does not mean "the answer comes next", but that the symbol signifies an equivalent relationship that the left side 'has the same value as' the right side of the equation.</p> <p>When students understand that an equation needs to "balance", with equal quantities on both sides of the equal sign, they understand various representations of equations, such as:</p> <ul style="list-style-type: none"> ● an operation on the left side of the equal sign and the answer on the right side ($5 + 8 = 13$) ● an operation on the right side of the equal sign and the answer on the left side ($13 = 5 + 8$) ● numbers on both sides of the equal sign ($6 = 6$) ● operations on both sides of the equal sign ($5 + 2 = 4 + 3$). Once students understand the meaning of the equal sign, they are able to determine if an equation is true ($9 = 9$) or false ($9 = 8$) |
| <p>1.5(F) Determine the unknown whole number in an addition or subtraction equation when the unknown may be any one of the three or four terms in the equation;</p> | <p>First Graders use their understanding of and strategies related to addition and subtraction as described in 1.3D to solve equations with an unknown. Rather than symbols, the unknown symbols are boxes or pictures.</p> <p>Example: Five cookies were on the table. I ate some cookies. Then there were 3 cookies. How many cookies did I eat?</p> <p>Student A: What goes with 3 to make 5? 3 and 2 is 5. So, 2 cookies were eaten. Student B: Five, four, three (holding up 1 finger for each count). 2 cookies were eaten (showing 2 fingers). Student C: We ended with 3 cookies. Three, four, five (holding up 1 finger for each count). 2 cookies were eaten (showing 2 fingers).</p> |

Example: Determine the unknown number that makes the equation true. $5 - 1 = 2$

Student: 5 minus something is the same amount as 2. Hmm. 2 and what makes 5? 3! So, 5 minus 3 equals 2. Now it's true!

1.5(G) Apply properties of operations [as strategies] to add and subtract two or three numbers [such as if $2 + 3 = 5$ is known, then $3 + 2 = 5$].

Elementary students often believe that there are hundreds of isolated addition and subtraction facts to be mastered. However, when students understand the commutative and associative properties, they are able to use relationships between and among numbers to solve problems. First Grade students apply properties of operations as strategies to add and subtract. Students do not use the formal terms “commutative” and “associative”. Rather, they use the understandings of the commutative and associative property to solve problems.

Examples:

If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.)

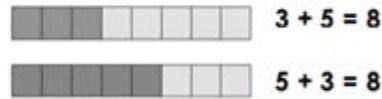
| Commutative Property of Addition | Associative Property of Addition |
|--|--|
| The order of the addends does not change the sum. For example, if $8 + 2 = 10$ is known, then $2 + 8 = 10$ is also known. | The grouping of the 3 or more addends does not affect the sum. For example, when adding $2 + 6 + 4$, the sum from adding the first two numbers first ($2 + 6$) and then the third number (4) is the same as if the second and third numbers are added first ($6 + 4$) and then the first number (2). The student may note that $6 + 4$ equals 10 and add those two numbers first before adding 2. Regardless of the order, the sum remains 12. |

Students use mathematical tools and representations (e.g., cubes, counters, number balance, number line, 100 chart) to model these ideas.

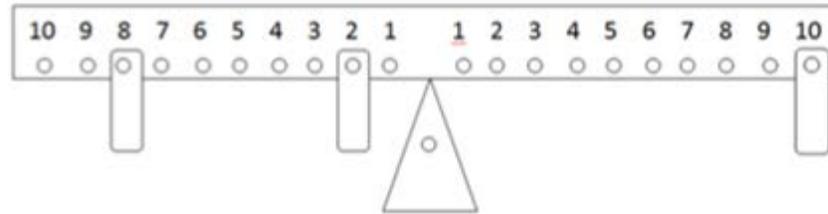
Commutative Property Examples:

Cubes A student uses 2 colors of cubes to make as many different combinations of 8 as possible. When recording the combinations, the student records that 3 green cubes and 5 blue cubes equals 8 cubes in all. In addition, the student notices that 5 green cubes and 3 blue cubes also equals 8

cubes.

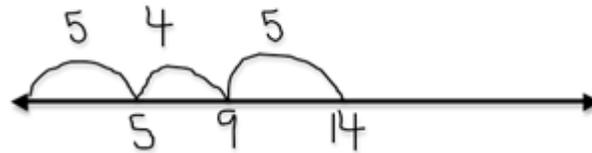


Number Balance A student uses a number balance to investigate the commutative property. “If 8 and 2 equals 10, then I think that if I put a weight on 2 first this time and then on 8, it’ll also be 10.”

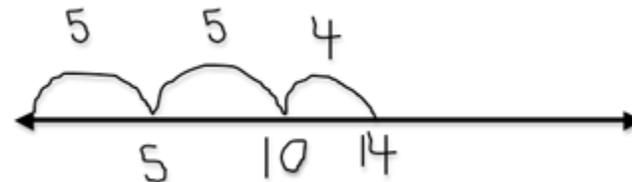


Associative Property Examples: Number Line: ? = 5 + 4 + 5

Student A: First I jumped to 5. Then, I jumped 4 more, so I landed on 9. Then I jumped 5 more and landed on 14.



Student B: I got 14, too, but I did it a different way. First I jumped to 5. Then, I jumped 5 again. That’s 10. Then, I jumped 4 more. See, 14!



Mental Math: There are 9 red jelly beans, 7 green jelly beans, and 3 black jelly beans. How many jelly beans are there in all?

Student: "I know that $7 + 3$ is 10. And 10 and 9 is 19. There are 19 jelly beans."

First Grade students solve multi-step word problems by adding (joining) three numbers whose sum is less than or equal to 20, using a variety of mathematical representations.

Example: Mrs. Smith has 4 oatmeal raisin cookies, 5 chocolate chip cookies, and 6 gingerbread cookies. How many cookies does Mrs. Smith have?

Student A: I put 4 counters on the Ten Frame for the oatmeal raisin cookies. Then, I put 5 different color counters on the ten frame for the chocolate chip cookies. Then, I put another 6 color counters out for the gingerbread cookies. Only one of the gingerbread cookies fit, so I had 5 leftover. Ten and five more makes 15 cookies. Mrs. Smith has 15 cookies.

$$4 + 5 + 6 = \text{☼}$$


Student B: I used a number line. First I jumped to 4, and then I jumped 5 more. That's 9. I broke up 6 into 1 and 5 so I could jump 1 to make 10. Then, I jumped 5 more and got 15. Mrs. Smith has 15 cookies.



$$4 + 5 + 6 = \text{☼}$$

Student C:

I wrote: $4 + 5 + 6 = 15$ I know that 4 and 6 equals 10, so the oatmeal raisin and gingerbread equals 10 cookies. Then I added the 5 chocolate chip cookies. 10 and 5 is 15. So, Mrs. Smith has 15 cookies.

**Geometry and Measurement:
TEKS 1.6**

The student applies mathematical process standards to analyze attributes of two-dimensional shapes and three-dimensional solids to develop generalizations about their properties. The student is expected to:

1.6(A) Classify and sort regular and irregular two-dimensional shapes based on attributes using informal geometric language;



1.6(B) Distinguish between attributes that define a two-dimensional or three-dimensional figure

First Grade students use their beginning knowledge of defining and non-defining attributes of shapes to identify, name, build and draw shapes (including triangles, squares, rectangles, and trapezoids). They understand that defining attributes are always-present features that classify a particular object (e.g., number of sides, angles, etc.). They also understand that non-defining attributes are features that may be present, but do not identify what the shape is called (e.g., color, size, orientation, etc.).

Example:

All triangles must be closed figures and have 3 sides. These are defining attributes. Triangles can be different colors, sizes and be turned in different directions. These are non-defining attributes.

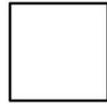
Student

I know that this shape is a triangle because it has 3 sides. It's also closed, not open.



Student

I used toothpicks to build a square. I know it's a square because it has 4 sides. And, all 4 sides are the same size.



TEACHER NOTE: In the U.S., the term "trapezoid" may have two different meanings. Research identifies these as inclusive and exclusive definitions. The inclusive definition states: A trapezoid is a quadrilateral with *at least* one pair of parallel sides. The exclusive definition states: **A trapezoid is a quadrilateral with exactly one pair of parallel sides.** With this definition, a parallelogram is not a trapezoid.

1.6(C) Create two-dimensional figures, including circles, triangles, rectangles, and squares, as special rectangles, rhombuses, and hexagons

create two-dimensional shapes using:

- playdoh
- wiki sticks
- straws
- toothpicks

1.6(D) Identify two-dimensional shapes, including circles, triangles, rectangles, and squares, as special rectangles, rhombuses, and hexagons and describe their attributes using formal geometric language

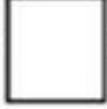
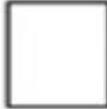
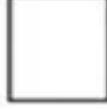
| | | | | | | | |
|---|---|---|--|--|---|--|--|
| Build a  rectangle | Build a  Square | Build a  Trapezoid | Build a  rectangle | Build a  Triangle | Build a  Square | Build a  Circle | START |
| Build a  Circle | <h1>Shape Shuffle</h1>  | | | | | <p>Directions: Work in partners. Roll a die and move that many spaces. Build the shape using 10000. Sides or zones. Record the shape on your data sheet!</p> | |
| Build a  Triangle | Build a  Trapezoid | Build a  rectangle | Build a  Square | Build a  Triangle | Build a  Circle | Build a  Trapezoid | Build a  Triangle |
| END | Build a  Triangle | Build a  Circle | Build a  Trapezoid | Build a  Square | Build a  rectangle | Build a  Triangle | Build a  Circle |

1.6(E) Identify three-dimensional solids, including spheres, cones, cylinders, rectangular prisms (including cubes), and triangular prisms, and describe their attributes using formal geometric language

Name: _____ Date: _____

3-D SHAPES CUT AND POSTER

Directions: Cut out the shapes at the bottom of the page and glue them next to the correct shape word.

| | |
|---|---|
| <p>1.  Sphere</p> <p>2.  Pyramid</p> <p>3.  Cone</p> | <p>4.  cylinder</p> <p>5.  cube</p> <p>6.  Rectangular Prism</p> |
|---|---|

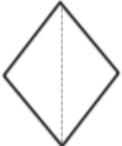


1.6(F) Compose two-dimensional shapes by joining two, three, or four figures to produce a target shape in more than one way if possible;

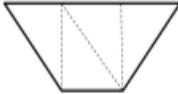
As first graders create composite shapes, a figure made up of two or more geometric shapes, they begin to see how shapes fit together to create different shapes. They also begin to notice shapes within an already existing shape. They may use such tools as pattern blocks, tangrams, attribute blocks, or virtual shapes to compose different shapes.

Example: What shapes can you create with triangles?

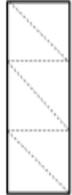
Student A: I made a square. I used 2 triangles.



Student B: I made a trapezoid. I used 4 triangles.



Student C: I made a tall skinny rectangle. I used 6 triangles.

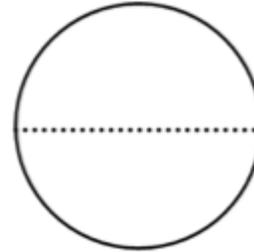


First graders learn to perceive a combination of shapes as a single new shape (e.g. recognizing that two isosceles triangles can be combined to make a rhombus, and simultaneously seeing the

| | |
|---|---|
| | <p>rhombus and the two triangles). Thus, they develop competencies that include:</p> <ul style="list-style-type: none"> • Solving shape puzzles • Constructing designs with shapes • Creating and maintaining a shape as a unit <p>As students combine shapes, they continue to develop their sophistication in describing geometric attributes and properties and determining how shapes are alike and different, building foundations for measurement and initial understandings of properties such as congruence and symmetry.</p> <p>(Progressions for the <i>CCSS in Mathematics: Geometry</i>, The Common Core Standards Writing Team, June 2012)</p> |
| <p>1.6(G) Partition two-dimensional figures [such as circles and rectangles] into two and four fair shares or equal parts and describe the parts using words [such as "halves," "half of," "fourths," or "quarters"]</p> <p>1.6(H) Identify examples and non-examples of halves and fourths</p> | <p>First Graders begin to partition regions into equal shares using a context (e.g., cookies, pies, pizza). This is a foundational building block of fractions, which will be extended in future grades. Through ample experiences with multiple representations, students use the words, <i>halves</i>, <i>fourths</i>, and <i>quarters</i>, and the phrases <i>half of</i>, <i>fourth of</i>, and <i>quarter of</i> to describe their thinking and solutions. Working with the “the whole”, students understand that “the whole” is composed of two halves, or four fourths or four quarters.</p> <p>Example:</p> <p>How can you and a friend share equally (partition) this piece of paper so that you both have the same amount of paper to paint a picture?</p> <div style="text-align: center; margin: 10px 0;">  </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%; border: 1px solid black; padding: 5px;"> <p>Student 1</p> <p>I would split the paper right down the middle. That gives us 2 halves. I have half of the paper and my friend has the other half of the paper.</p> <div style="text-align: center; margin-top: 10px;">  </div> </div> <div style="width: 45%; border: 1px solid black; padding: 5px;"> <p>Student 2</p> <p>I would split it from corner to corner (diagonally). She gets half of the paper and I get half of the paper. See, if we cut on the line, the parts are the same size.</p> <div style="text-align: center; margin-top: 10px;">  </div> </div> </div> |

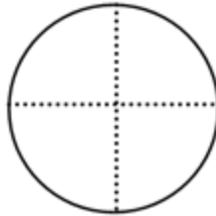
Example:

Let's take a look at this pizza. Teacher: There is pizza for dinner. What do you notice about the slices on the pizza



Student: There are two slices on the pizza. Each slice is the same size. Those are big slices!

Teacher: If we cut the same pizza into four slices (fourths), do you think the slices would be the same size, larger, or smaller as the slices on this pizza?



Student: When you cut the pizza into fourths, the slices are smaller than the other pizza. More slices mean that the slices get smaller and smaller. I want a slice from that first pizza!

Include nonexamples so that students have a better understanding.

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| <p>Geometry and Measurement: TEKS 1.7</p> | <p>The student applies mathematical process standards to select and use units to describe length and time. The student is expected to:</p> |
| <p>1.7(A) Use measuring tools [such as adding machine tape, ribbon, or string] to measure the length of objects to reinforce the continuous nature of linear measurement;</p> | <p>First Graders use objects to measure items to help students focus on the attribute being measured. Objects also lend itself to future discussions regarding the need for a standard unit.</p> |
| <p>1.7(B) Illustrate [demonstrate] that the length of an object is the number of same-size units of length that, when laid end-to-end with no gaps or overlaps, reach from one end of the object to the other;</p> | <p>First Grade students use multiple copies of one object to measure the length larger object. They learn to lay physical units such as centimeter or inch manipulatives end-to-end and count them to measure a length. Through numerous experiences and careful questioning by the teacher, students will recognize the importance of careful measuring so that there are not any gaps or overlaps in order to get an accurate measurement.</p> <p>Example:</p> <p>How long is the pencil, using paper clips to measure?</p> <p>Student: I carefully placed paper clips end to end. The pencil is 5 paper clips long. I thought it would take about 6 paperclips.</p>  <p>When students use different sized units to measure the same object, they learn that the sizes of the units must be considered, rather than relying solely on the amount of objects counted.</p> |

Example:

Which row is longer?



Student Incorrect Response: The row with 6 sticks is longer. Row B is longer. **Student Correct Response:** They are both the same length. See, they match up end to end.

In addition, understanding that the results of measurement and direct comparison have the same results encourages children to use measurement strategies.

Example:

Which string is longer? Justify your reasoning.

Student: I placed the two strings side by side. The red string is longer than the blue string. But, to make sure, I used color tiles to measure both strings. The red string measured 8 color tiles. The blue string measure 6 color tiles. So, I was right. The red string is longer.

NOTE: The instructional progression for teaching measurement begins by ensuring that students can perform direct comparisons. Then, children should engage in experiences that allow them to connect number to length, using manipulative units that have a standard unit of length, such as centimeter cubes. These can be labeled “length-units” with the students. Students learn to lay such physical units end-to-end and count them to measure a length. They compare the results of measuring to direct and indirect comparisons.

1.7(C) Measure the same object/distance with units of two different lengths and describe how and why the measurements differ

Understand that the length of measurement of an object is the number of same-size length units that span it with no gaps or overlaps.

Example:

Use a pencil to measure a table top and then use a crayon to measure the same table. Describe how and why the measurements are different.

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| <p>1.7(D) Describe a length to the nearest whole unit using a number and a unit</p> | <p>Use unifix cubes to measure the length of an object and discuss the number of cubes needed to measure the length.</p> |
| <p>1.7(E) Tell time to the hour and half hour using analog and digital clocks.</p> | <p>For young children, reading a clock can be a difficult skill to learn. In particular, they must understand the differences between the two hands on the clock and the functions of these hands. By carefully watching and talking about a clock with only the hour hand, First Graders notice when the hour hand is directly pointing at a number, or when it is slightly ahead/behind a number. In addition, using language, such as “about 5 o’clock” and “a little bit past 6 o’clock”, and “almost 8 o’clock” helps children begin to read an hour clock with some accuracy. Through rich experiences, First Grade students read both analog (numbers and hands) and digital clocks, orally tell the time.</p> |
| <p>Data Analysis: TEKS 1.8</p> | <p>The student applies mathematical process standards to organize data to make it useful for interpreting information and solving problems. The student is expected to:</p> |
| <p>1.8(A) Collect, sort, and organize data in up to three categories using models/representations such as tally marks or T-charts;</p> | <p>As the teacher provides numerous opportunities for students to create questions, determine up to 3 categories of possible responses, collect data, organize data, and interpret the results. Example: Survey Station During Literacy Block, a group of students work at the Survey Station. Each student writes a question, creates up to 3 possible answers, and walks around the room collecting data from classmates.</p> |

Barbara

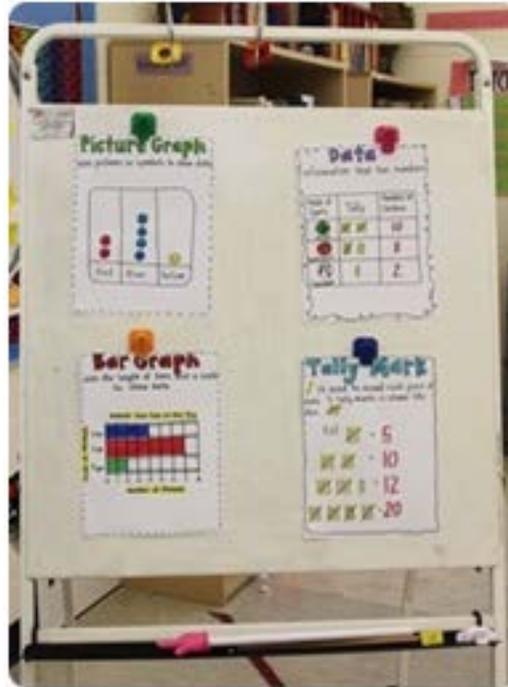
| What is your favorite flavor of ice cream? | |
|--|--|
| Chocolate | Amy Ethan Dylan Emma Ryan Elijah Ava Emily Aiden Brittany THOMAS Nathan 12 |
| Vanilla | sarah Maria Brian Katie KITTY 5 |
| Strawberry | Rodney Brandon Darrell Mia Tonya Jose 6 |

12 people liked chocolate. Chocolate has the most votes. Vanilla has 5 votes. 1 more vote and it can tie with strawberry.

Student: The question, "What is your favorite flavor of ice cream?" is posed and recorded. The categories chocolate, vanilla and strawberry are determined as anticipated responses and written down on the recording sheet. When asking each classmate about their favorite flavor, the student's name is written in the appropriate category. Once the data are collected, the student counts up the amounts for each category and records the amount.

1.8(B) Use data to create picture and bar-type graphs

Graphing data is one of the focus areas of math during this grade, and it requires students to use skills they have acquired --- counting and sorting --- in a more meaningful way.



1.8(C) Draw conclusions and generate and answer questions using information from picture and bar-type graphs

Once the data are collected, First Graders interpret the data to determine the answer to the question posed. They also describe the data noting particular aspects such as the total number of answers, which category had the most/least responses, and interesting differences/similarities between the categories. As the teacher provides numerous opportunities for students to create questions,

Each student then interprets the data and writes 2-4 sentences describing the results. When all of the students in the Survey Station have completed their own data collection, they each share with one another what they discovered. They ask clarifying questions of one another regarding the data, and make revisions as needed. They later share their results with the whole class.

The student then analyzes the data by carefully looking at the data and writes 4 sentences about the data.

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| Personal financial literacy: TEKS 1.9A | The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security. The student is expected to: |
| 1.9(A) Define money earned as income | Teacher Input/ Student Activities: Have each student draw/color a picture detailing the occupation of his/her parent/guardian. Do you think that people all over the world earn money in the same ways we do here in our community? Read <i>Work</i> by Ann Morris which is a photo essay of jobs around the world. Students will be fascinated to know the varied occupations around us. Assign each child a picture to create of one of the “new jobs” they learned about while reading the book. Create a bulletin board of Jobs At Home and Abroad. |
| 1.9(B) Identify income as a means of obtaining goods and services, oftentimes making choices between wants and needs | View “Brainpop Jr.” on wants and needs. |
| 1.9(C) Distinguish between spending and saving | Teacher Input/ Student Activities: After reading <i>Josh Has Many Wants</i> , create a chart showing the supplies Josh will need to take care of a hamster and a goldfish. Ask students to find the specific supplies listed on the chart paper for each pet. Write down the cost of the supplies and total how much taking care of each animal would cost. Discuss the questions at the end of the story. You could have students vote for their decision by creating a simple T-chart with one column labeled Goldfish and the other labeled Hamster. Give each student a colored sticky dot to stick under the column they feel Josh should buy. Then read <i>Josh Decides to Spend</i> to find out what decision Josh makes. You could also discuss goods and services that Josh wanted to purchase or did buy. |
| 1.9(D) Consider charitable giving | <p>Think creatively about how people share – donating to charity, giving blood, or feeding the dog next door when your neighbors go away for the weekend. Now that you think about it, you’re probably doing several of these things already. Look out for examples where people are sharing and giving. Not just on birthdays, but little things that happen every day. Talk to your students about what is happening, encourage them to discuss the actions and motivations, and answer any questions they have.</p> <p>These are some of the ways which people share, either their possessions, their skills, or their time:</p> <ul style="list-style-type: none"> ● Donating old clothes. Giving to the Salvation Army or the Goodwill. ● Giving food. Taking tins or prepared meals to friends or family that are sick, or who have |

recently come out of hospital.

- Giving blood.
- Helping with chores. Doing the vacuuming or gardening for elderly parents.
- Contributing. Giving money to a church or charitable organization.
- Volunteering. Talking with seniors, doing reading practice with young people, or driving the handicapped.
- Helping neighbors. Feeding pets or watering plants while they're on vacation