In the Utah Core State Standards for first grade there are four critical areas.

The critical areas define what students should know and understand (conceptual understanding), and be able to do (procedural understanding and fluency).

CRITICAL AREA ONE: By the end of first grade, students should:

1. Develop strategies for adding and subtracting whole numbers based on their work in kindergarten with small numbers.

2. Model addition and subtraction strategies such as add-to, take-from and put-together, take apart with objects and length based models (e.g., cubes connected to form lengths), and compare situations to understand the operations of addition and subtraction.

3. Develop strategies to solve arithmetic problems with addition and subtraction.

4. Understand the connection between counting and addition and subtraction.

5. Use properties of addition (commutative and associative) to add whole numbers and to create and use strategies to solve problems within 20. Students do not need to use the names of the properties at this point.

6. Build their understanding of the relationship between addition and subtraction.

Examples:

1. **Add to:** Two bunnies sat on the grass. Three more bunnies hopped over. How many bunnies are on the grass now?

   $2 + 3 = ?$

   Take from: Five apples were on the table. I ate two apples. How many apples are on the table now?

   $5 - 2 = ?$

   Put Together/Take Apart: Five apples are on the table. Three are red and the rest are green. How many apples are green?

   $3 + ? = 5, \ 5 - 3 = ?$

2. There are three students in Ms. Arnstein's class who have a total of 15 pencils. If Maria has 4 pencils and Anna has 5 pencils, how many pencils does Charlie have? Students may use any strategy to solve the problem, including using objects, drawings, and equations.

3. Commutative property of addition:
   Example: $4 + 2 = 6 \quad 2 + 4 = 6$

   Associative property of addition:
   Example: $5 + 5 + 2 = 10 + 2$ or $5 + 7$

4. Find three ways to solve this problem: Jenny has 4 toy cars, 5 teddy bears, and 5 dolls. How many toys does Jenny have?

   Possible solutions:
   Use objects.
   Draw the groups and add them.
   Use addition: $4 + 5 + 5 = 14$

   Use the associative property of addition:
   $$4 + 5 + 5 =$$
   $$4 + 10 = 14$$
   Use the commutative property of addition:
   $$4 + 5 + 5 =$$
   $$5 + 5 + 4 =$$
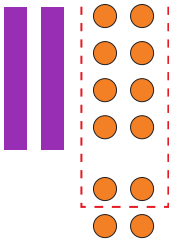   And then the associative property of addition
   $$10 + 4 = 14$$

CRITICAL AREA TWO: By the end of first grade, students should:

2

1. Use efficient and accurate methods to add within 100 and subtract multiples of ten.
2. Be able to compare numbers (e.g., greater than, less than, equal to, more, less) and solve problems using that comparison.
3. Understand whole numbers between 10 and 100 as tens and ones, especially recognizing numbers between 11 and 19 as a ten and some ones.
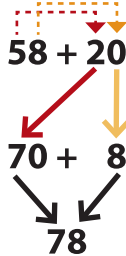
Examples:

1. 28
   +4

   2 tens plus 0 tens is 2 tens.
   Count the ones and find another ten plus 2 ones.
   20 + 10 = 30 + 2 = 32

   58
   +20

   58 + 20

   70 + 8

   78

   5 tens plus 2 tens equals 7 tens, 8 ones plus 0 ones = 8 ones, 70 tens plus 8 ones equals 78.

2. 43 > 32 because 4 tens is more than 3 tens, 65 < 68 because 6 tens and 5 ones is less than 6 tens and 8 ones. Use linking cubes to show the comparisons.

3. On Halloween night Meg and Troy count their Halloween candy. Meg has 64 pieces of candy and Troy has 59. Who has less candy? Explain how you know this.

CRITICAL AREA THREE: By the end of first grade, students should:

3

1. Understand the meaning of measurement.
2. Know and use methods of measurement, such as comparing objects to estimate their size.
3. Measure the length of an object using smaller objects of equal size lying end to end with no overlaps or gaps.

Examples:

1. You got a new book from the library. It is 10 paperclips tall and 8 paperclips wide. Will the book fit in your backpack? How do you know?
2. Johnny, Sally, and Juan are students in first grade. Johnny is taller than Sally. Sally is shorter than Juan. Juan is taller than Johnny. Who is the tallest? Who is not the tallest and not the shortest? How do you know?

CRITICAL AREA FOUR: By the end of first grade, students should:

4

1. Be able to compose (put together) and decompose (take apart) shapes.
2. Build their understanding of part-whole relationships through composing and decomposing shapes.
3. Recognize newly composed shapes from different orientations and perpsectives.
4. Describe the shapes geometrically.
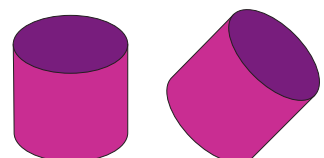5. Determine how the shapes are alike and different.

Examples:

1. What shapes can you compose with these two triangles?
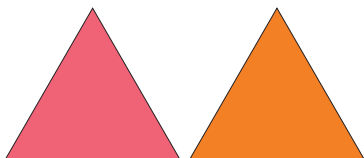
2. Decompose this shape into squares.

3. Are these shapes alike or different? How are they alike (or different)?

2

4. What shapes were composed to make this shape? Use a physical box for this problem so that students can look at it from different orientations and find the shapes.

TIPS FOR FAMILIES — HOMEWORK HELP

▶ **Help your child see that the mathematics he/she is learning is very much a part of everyday life.** From statistics in sports to the sale price of clothing to the amount of gas needed to travel from one city to another, mathematics is important to us every day. Help your child to link his/her "school" math to practical events.

▶ **Show your child that you like mathematics.** Letting your child see that you use math—and that you aren't afraid of it—will go much further to building positive attitudes than just telling her/him that she/he should learn it.

▶ **Set high standards for your child in mathematics achievement.** Challenge your child to succeed in math and encourage his/her interest by finding mathematics in books, on television, in movies, at the playground, or anywhere else you see the opportunity.

(Adapted from Helping Your Child Learn Math, *http://www2.ed.gov/parents/academic/help/math/index.html*)

Other tips for parents can be found at *http://www.nctm.org/resources/content.aspx?id=7928.*