



## MATHEMATICS

In first grade, your child will work with whole numbers and place value, including grouping numbers into tens and ones as he learns to add and subtract up through 20. Your child will also use charts, tables, and diagrams to solve problems. Activities in these areas will include:

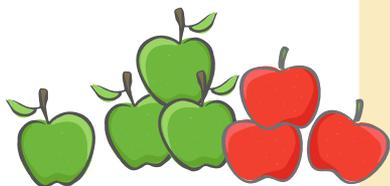
- Adding numbers together that total up to 10 or less and subtracting from numbers up through 10 quickly and accurately.
- Understanding the rules of addition and subtraction (e.g.,  $5 + 2 = 2 + 5$ ).
- Solving word problems that involve adding or subtracting numbers up through 20.
- Understanding what the different digits mean in two-digit numbers (place value).
- Comparing two-digit numbers using the symbols  $>$  (greater than),  $=$  (equal to) and  $<$  (less than).
- Understanding the meaning of the equal sign ( $=$ ) and determining if statements involving addition and subtraction are true or false (e.g., Which of the following statements are true?  $3 + 3 = 6$ ,  $4 + 1 = 5 + 2$ ).
- Adding one and two-digit numbers together.
- Measuring the lengths of objects using a shorter object as a unit of length.
- Putting objects in order from longest to shortest or shortest to longest.
- Organizing objects into categories and comparing the number of objects in different categories.
- Dividing circles and rectangles into halves and quarters.

In addition, your child will begin to write about the math he is learning by answering questions about how he solves problems and understands things.



Your child can 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).

- Know numbers 0 – 20.
- Understand the symbols for addition (+) and subtraction (-).
- Use math strategies for adding and subtracting to solve problems.
- Understand that math problems can be solved in more than one way.



### HELP AT HOME

- ▶ Use everyday life situations to create story problems for your child. For example, while buying groceries, have your child get 3 red apples and 4 green apples. Have him create a math sentence to solve. While at a restaurant, have your child determine how many more chairs are needed to seat everyone. Practice these types of real-world problems often.

Your child can 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).

- Know numbers 0 – 20.
- Understand the symbols for addition (+) and subtraction (-).
- Use math strategies for adding and subtracting to solve problems.
- Understand that math problems can be solved in more than one way.
- Add with 5 fluently.
- Understand the part-part-whole relationship.

### HELP AT HOME

- ▶ Place three sets of colored counters on the table. Have your child create a three number math equation that represents the sets of counters.
- ▶ Use everyday situations to make story problems for your child. For example, have your child count the cans of different types of vegetables in the pantry.



## Your child can apply properties of operations as strategies to add and subtract.

- Know numbers 0 – 20.
- Understand the symbols for addition (+) and subtraction (-).
- Use math strategies for adding and subtracting to solve problems.
- Understand that math problems can be solved in more than one way.
- Add with 10 fluently.
- Understand that numbers in an addition sentence do not have to be added in the order they are presented.

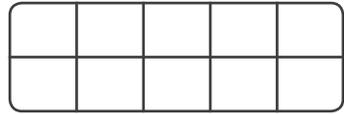
### HELP AT HOME

- ▶ Using counters, create a simple addition problem ( $8 + 5$ ). Using the same group of counters, have your child separate the counters by making a group of 10 and then adding the rest. Help your child to understand that numbers can be grouped differently but they still equal the same as what the number sentence was originally.
- ▶ Have your child use a ten frame (2 rows of 5 boxes) to visually see a math fact.

### RESOURCES

#### TEN FRAME AND COUNTERS

On a sheet of notebook paper or construction paper, draw a ten frame. Use small objects such as buttons, stones, or bottle caps as counters.



## ADDITION AND SUBTRACTION STRATEGIES

### COUNTING ON

Start with the largest number and count forward.

### DOUBLES

A number is doubled (e.g.,  $3 + 3$ ,  $7 + 7$ ).

### COUNTING BACK

Start with the largest number and count backward.

### DOUBLES PLUS 1

The doubled fact,  $8 + 8$ , then add 1 (e.g.,  $8 + 9 = 17$ ).

### MAKING 10

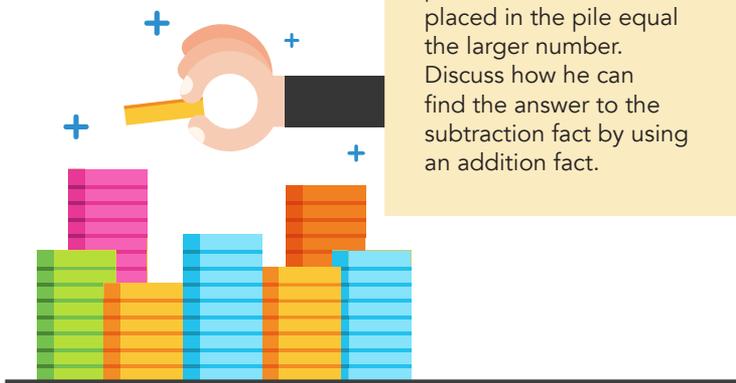
Use two numbers to make ten (e.g.,  $6 + 4$ ,  $8 + 2$ ).

## Your child can understand subtraction as an unknown addend problem.

- Know addition facts within 20.
- Understand “counting on” to find the difference.
- Understand that addition is the inverse of subtraction.

### HELP AT HOME

- ▶ Use a ten frame (see page 25 for an example) to visually see the subtraction fact and how many more counters would be needed to complete the problem.
- ▶ Give your child a simple subtraction fact ( $10 - 8$ ). Have your child place counters in his hand for the smaller number (8). Then “count on” to the bigger number (10) by placing the additional counters (2) needed in a pile. Show your child that the number of counters that he has in his hand, plus the counters that he placed in the pile equal the larger number. Discuss how he can find the answer to the subtraction fact by using an addition fact.



## Your child can relate counting to addition and subtraction.

- Know how to count to 100.
- Count forward from any number.
- Use “counting on” for addition and “counting back” for subtraction.

### HELP AT HOME

- ▶ Call out any number between 0 - 100 to your child. Have him verbally start counting from the number either counting up or counting back.

## Your child can add and subtract within 20, demonstrating fluency for addition and subtraction within 10.

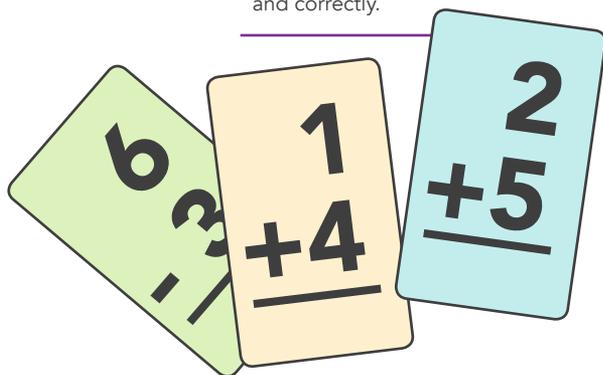
- Know numbers 0 – 20.
- Know addition facts 0 – 10.
- Understand that numbers can be broken into two parts to create a number sentence.
- Understand how to reason with numbers abstractly.
- Know common addition strategies (e.g., doubles, doubles +1, making 10).

### HELP AT HOME

- ▶ Use flash cards in order to practice math fact fluency.
- ▶ Help your child remember different strategies that he has learned. By using these strategies, your child will become more fluent in learning math facts.
- ▶ Use a ten frame to visually see the math fact. (See page 25 for an example of a ten frame.)

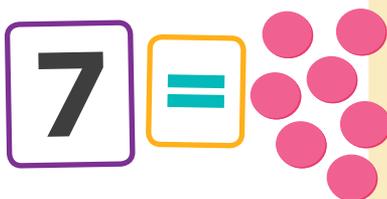
### VOCABULARY

**FLUENCY** is remembering math facts quickly and correctly.



Your child can 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?  $6 = 6$ ,  $7 = 8 - 1$ ,  $5 + 2 = 2 + 5$ ,  $4 + 1 = 5 + 2$ .

- Understand that the equal sign (=) means “the same.”
- Understand the concept of true and false.
- Know addition and subtraction facts up to 10.
- Understand that number sentences can be written in different orders (e.g.,  $5 = 3 + 2$ ,  $2 + 3 = 5$ ,  $3 + 2 = 5$ ).



### HELP AT HOME

► Place a number card on one side of an equal sign. Have your child count out that many counters. Then have him count out the same amount of counters for the other side of the equal sign. Discuss how these are now equal or the same. Do this with several different numbers. To enhance this game, place two addition or subtraction sentences on both sides of the equal sign then have your child determine if they are equal.

Your child can determine the unknown whole number in an addition or subtraction equation relating three whole numbers.

- Know numbers 1 – 20.
- Know addition and subtraction facts within 10.
- Understand symbols used in a number sentence (+, -, =).
- Understand that addition and subtraction are inverse operations.

### HELP AT HOME

► Write several math facts on index cards. Cover one of the numbers with a sticky note (e.g.,  $8 + \underline{\quad} = 11$  or  $5 = \underline{\quad} + 2$ ). Have your child determine the missing number to make the equation true.

Your child can count to 120, starting at any number less than 120. Your child can also read and write numerals and represent a number of objects with a written numeral.

- Know how to count to 100 by ones and tens.
- Write numbers from 0 – 20.
- Understand that numbers represent quantities.

## HELP AT HOME

- ▶ Create a set of number cards 0 - 100. Have your child draw a card and begin counting forward from that number until you call stop. Then have your child draw another number and continue counting forward.
- ▶ Using a hundred chart, have your child locate a number on the chart. Then give him a second number in which to stop counting. Have your child begin counting, while pointing to the number that he is saying until he reaches the second number.

## RESOURCES

### HUNDRED CHART

Print a hundred chart or create your own on a sheet of notebook paper or construction paper.

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

## Your child can understand that the two digits of a two-digit number represent amounts of tens and ones.

- Understand the following as special cases:
  - a. 10 can be thought of as a bundle of ten ones – called a “ten.”
  - b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
  - c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
- Understand that a number represents a quantity.
- Understand how to decompose a number into tens and ones (place value).

### HELP AT HOME

- ▶ Using straws, create a number 0 - 100 by counting out that many straws. Using a rubber band, bundle each group of ten. Practice counting the bundles by 10's then counting the remaining straws ( $60 + 8 = 68$ ).
- ▶ Hand your child bundles of 10 straws and some individual straws.

Have your child count out the number by counting by tens and then adding on the rest.



Your child can compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols  $>$ ,  $=$ , and  $<$ .

- Understand that a number represents a quantity.
- Understand place value or numbers in two and three digit numbers.
- Identify if a group of objects are greater, less, or equal to another group of objects.
- Understand comparison symbols  $>$  (greater than),  $<$  (less than),  $=$  (equal to).

### RESOURCES

#### PLACE VALUE



### HELP AT HOME

- ▶ Write down two numbers between 0 - 100. Have your child use a yellow crayon to highlight the number in the tens place. This will help him see the numbers clearly in order to compare. Have your child highlight the ones place in a different color.
- ▶ Play "Greater or Less Than." Make three cards, one with the less than ( $<$ ) sign, one with the greater than ( $>$ ) sign and one with an equal ( $=$ ) sign. Then play a game in which you put down two numbers written on index cards. Ask your child to put the correct sign between the numbers and do this as fast as possible.

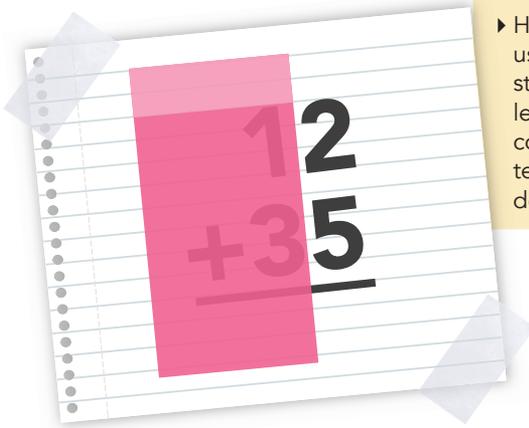


Your child can add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. Your child can also relate the strategy to a written method and explain the reasoning used.

- Use strategies for solving basic addition facts within 20.
- Fluently add within 10.
- Understand the part-part-whole relationship.
- Understand that when adding two-digit numbers, you add the tens with the tens and the ones with the ones.

## HELP AT HOME

- ▶ Write an addition problem on a piece of paper vertically. Place a sheet of paper over the tens place, where only the numbers in the ones place are showing. Have your child add the ones place first then shift the paper over to cover the ones place showing only the tens place. Have your child then add the tens place.
- ▶ Have your child practice using problem solving strategies that he has learned (e.g., counting on, counting back, making a ten, doubles facts, doubles +1)



Your child can mentally find 10 more or 10 less than the number, without having to count and can explain the reasoning used.

- Count to 100 by 10's.
- Understand place value.
- Understand when adding (counting on) the total will be larger than what you started with and when subtracting (counting back) the total will be less than what you started with.
- Understand that counting mentally means without pencil/paper or other manipulatives.

### HELP AT HOME

- ▶ Begin by using a 100 chart. Place a counter or coin on a number. Have your child count up or count back 10. Help him understand that ten more than a number is the number directly beneath the number he started with and that ten less will be the number directly above the number he started with.
- ▶ Show your child that when adding or subtracting 10 from a given number, that only the tens place will change. The ones place will remain the same.

HUNDRED CHART									
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	●	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



Your child can 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. Your child can relate the strategy to a written method and explain the reasoning used.

- Know how to count by 10's to 100.
- Compose and decompose numbers through 19.



### HELP AT HOME

- ▶ Using a hundred chart, choose any number and place a coin on that number. Have your child count back 10 spaces. Help your child understand that 10 less than a number on a hundred chart is the number right above.
- ▶ Write a number from 0 - 100 on a marker board. Have your child count back 10 and write the new number.

Your child can order three objects by length and compare the lengths of two objects indirectly by using a third object.

- Understand length is used to determine how long an object is.
- Describe the length of an object using terms such as longer, smaller, shorter, etc.
- Understand that when comparing the length of objects, the objects must be lined up at the same point (starting point).

### HELP AT HOME

- ▶ Choose two similar objects that have different lengths. Have your child line them up evenly at a starting point. Using a third object, have your child use it to compare the measurements of the other two objects. For example, use a baby spoon to compare and contrast the lengths of a teaspoon and serving spoon.

Your child can express the length of an object as a whole number of units, by laying multiple copies of a shorter object (the length unit) end to end. Your child can understand that the length measurement of an object is the number of same size length units that span it with no gaps or overlaps.

- Understand length is used to determine how long an object is.
- Describe the length of an object using terms such as longer, smaller, shorter, etc.
- Understand that when comparing the length of objects, the objects must be lined up at the same point (starting point).

### HELP AT HOME

- ▶ Using different objects (e.g, paperclips, blocks, straws, coins), have your child measure random objects found around the house. Discuss with your child how the length changes based on what object is used to measure.

Your child can tell and write time in hours and half-hours using analog and digital clocks.

- Understand the difference between an analog clock and a digital clock.
- Know how to count by 5's from 0 – 60.
- Understand halves and a whole.
- Understand that the “short hand” tells the hour and the “long hand” tells the minutes.

### HELP AT HOME

- ▶ Using a paper plate, have your child label the plate like a clock face. Punch a hole in the center of the clock and place two pipe cleaners (one for the hour hand and one for the minute hand) in the hole. Have your child practice counting by 5's as he moves the minute hand around the clock.
- ▶ Using your paper plate clock, call out times to the hour and half hour and have your child move the hands on the clock to the correct time. Use the clock to show your child a time and have him tell you what time the clock says.



**Your child can organize, represent, and interpret data with up to three categories. Your child can 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.**

- Count objects to answer the question “How many?”
- Use terms such as “more than,” “less than,” and “equal to.”
- Sort objects into given categories.
- Understand that each category represents a separate set of data.

### HELP AT HOME

- ▶ Help your child create a graph. This graph could be any information (e.g., boys/girls, pets, favorite super hero). Have your child answer questions based on the graph he created (e.g., How many pets do we have in all? How many more boys are there than girls?).

**Your child can distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size). Your child can build and draw shapes to possess defining attributes.**

- Identify basic shapes (e.g., circle, square, triangle, rectangle and hexagon).
- Know the attributes of basic shapes.
- Sort shapes based on their attributes.

### HELP AT HOME

- ▶ Cut out several different shapes (e.g., circles, squares, triangles, etc.) in several different sizes and colors. Have your child sort the shapes based on different attributes. Have him discuss what defining attribute was used to sort the shapes.
- ▶ Compare the sizes of different objects. Ask your child which object is larger, smaller, and smallest. Ask your child to order some of his toys in size order.



Your child can divide 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. Your child can describe the whole as two of, or four of the shares.

- Understand for these examples that decomposing into more equal shares creates smaller shares.
- Understand that “equal” means “the same.”
- Know that shapes can be decomposed into smaller shapes.

### HELP AT HOME

► Cut three circles, squares, and rectangles out of construction paper. Have your child draw a line to divide one circle in half, and one into fourths and leave one whole and then cut on each line. Discuss with your child how each circle started as a whole but was then cut into smaller equal pieces. Repeat the activity with squares and then rectangles.

