Mathematics

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Parent Handbook

Grade 1

Dear Families,

This handbook contains information that will be helpful as your child learns mathematical concepts throughout the year. The first section will describe eight mathematical practices that your child will develop. Parent letters will go home at different points throughout the year that will reference these mathematical practices. Also included in this section are questions you can ask your child to develop these practices.

The second section contains important resources for you to utilize at home. Finally, the third section contains mathematical vocabulary that your child will utilize. This section will be helpful so you use the same mathematical language at home that your child has been exposed to in school. As always, if you have any questions or concerns speak to your child’s teacher. We hope this handbook becomes a useful tool for your family.

Sincerely,

The First Grade Teachers

Table of Contents

1. Introduction……………………………………..1
2. Mathematical Practices…………………………2-4
3. Resources……………………………………….5-13
4. Mathematical Vocabulary………………………...14-17

Introduction

In First Grade, students will focus on developing an understanding of three major content areas in mathematics. These content areas will be explored throughout the year by developing eight mathematical practices. Mathematically proficient students will utilize these practices to develop problem solving skills. Additionally First Grade students will go beyond the major content areas to continually develop mathematical practices.

First Grade Major Content Areas:

* Addition and Subtraction
  + Students will explore the different meanings of addition and subtraction to help them develop a strong foundation of these two operations.
  + Students will develop fluency with facts to 20 by using a variety of strategies.
  + Students will solve word problems within 20.
  + Students will understand the transverse relationship between addition and subtraction.
* Place Value of Numbers
  + Students will work with place value to develop knowledge of tens and ones.
  + Students represent numbers in a variety of ways
  + Students will compare numbers.
* Linear Measurement
  + Students are introduced to the meaning and processes of linear measurement.
* Time and Data Representations
  + Students will tell and write time to the hour and half hour
  + Students will represent and interpret data in various ways
* Geometry
  + Student will identify and reason shapes and their attributes

Mathematical Practices

Mathematical practices are the ways people think about and do math. The more your child learns about these practices, the better they will become at math.

1. Make sense of problems and persevere in solving them.

*Good math students start by explaining to themselves the meaning of the problem and looking for entry points to its solution. Students need to develop a plan. Students will need to check their answers for reasonableness. Your child will consistently ask themselves, “Does this make sense?” They will keep working until the solution makes sense, by utilizing what they already know.*

Questions to help your child develop this practice:

* What problem are you asked to solve?
* Have you solved similar problems?
* What is your plan for solving the problem?
* Did you use a different method to check your answer?

1. Reason abstractly and quantitatively.

*Good math students make sense of number relationships in solutions. They will need to use symbols to represent their thinking. Students will have flexibility by using different properties of operations. Students will conduct “math work” to solve a problem.*

Questions to help your child develop this practice:

* Can you think of a number sentence (equation) to match the story (situation)?
* What do the numbers in the number sentence mean?
* How are the facts in the problem related to one another?

1. Construct viable arguments and critique the reasoning of others.

*Good math students are able to use math language to support or oppose the work of others. Students are able to compare the effectiveness of two reasonable strategies, identify the correct logic, and explain any flaws within the argument.*

Questions to help your child develop this practice:

* What does your answer mean?
* How can you be sure your answer is correct?

1. Model with mathematics.

*Good math students use math to solve real-world problems, organize data, and understand the world around them. Students can apply mathematics that they know to solve problems arising in everyday life.*

Questions to help your child develop this practice:

* What number sentence (equation) describes this problem?
* What numbers will you use to solve the problem?
* How are the numbers in the problem connected?
* Is your answer reasonable?
* What does your solution represent?

1. Use appropriate tools strategically.

*Good math students think about the available tools and select the appropriate one to help them solve the problem.*

Questions to help your child develop this practice:

* What tools can help you solve this problem?
* Which tool is the most useful for this problem? Why is that your choice?

1. Attend to precision.

*Good math students speak and solve mathematics with exactness. Students will use clear definitions in discussions with others and in their own reasoning. Students will calculate accurately and efficiently.*

Questions to help your child develop this practice:

* What do the symbols that you used mean?
* What unit of measure are you using?
* Explain what [term from the lesson] means.

1. Look for and make use of structure.

*Good math students find patterns and reasoning that can help them solve more complex problems. Students will be able to identify multiple strategies and select the best one to solve the problem.*

Questions to help your child develop this practice:

* What do you notice about the solutions you’ve just completed?

1. Look for and express regularity in repeated reasoning.

*Good math students keep their eye on the big picture. Students look for general methods and shortcuts to solve problems. Students maintain oversight of the process, while attending to the details. Students are efficient problems solvers who think about problems they have already seen to solve unknown problems.*

Questions to help your child develop this practice:

* Are there shortcuts to solving similar problems?

Resources

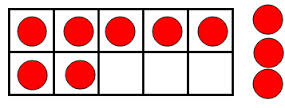
Ten Frames:

Throughout the year, your child will be utilizing ten frames to help them understand and solve many number problems in math.

Ten Frames are a way for your child to recognize numbers without having to stop their thought process and resort to counting. Student use 5 and 10 as benchmarks in number relationships

Ten Frames are a set of 10 boxes set up into two rows of 5. Students use counters to represent numbers and number relationships.

Example:



Bar Diagrams:

Throughout the year, your child will be utilizing different types of bar diagrams to help them understand and solve many number relationships in math.

A Bar Diagram is a way for your child to model number sense and addition/subtraction number relationships. At times, the diagram will contain a number sentence as well.

A Bar Diagram is a large rectangle with a line in the middle. The two areas inside the rectangle are the two parts of a number relationship. The area outside the rectangle is the whole in a number relationship.

Example:

**6**

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

**4** + **2** = **6**

The following pages will be resources printed from pearsonrealize.com and added to the handbook prior to printing.

* Teaching Tool page 4, 5, 14: Blank Ten Frames and Counters
* Teaching Tool page 9, 10: Number Cards 0-20
* Teaching Tool page 11: Hundreds Chart
* Teaching Tool page 16: Pattern Blocks

Mathematical Vocabulary

**Topic 1:**

part: a piece of a whole

whole: you add parts to find the whole

add: find out how many there are in all

addend: the numbers you add together to find the whole

sum: the answer to an addition problem

addition sentence: a way to show an addition problem

missing part: that part that is not known

order: how one thing follows another

**Topic 2:**

same amount: the same amount is on each side of the equal sign

subtract: to take a part from the whole to find the missing part

difference: the amount that is left after you subtract

subtraction sentence: a way to show a subtraction problem.

**Topic 4:**

double: an addition fact that has the same addends

near double: an addition fact that has an addend that is one more than the other addend.

doubles plus 2: a double plus 2 more with addends that are 2 apart

**Topic 6:**

related facts: addition and subtraction facts that have the same numbers

fact family: a group of related addition and subtraction facts

**Topic 8:**

place value: the value of a digit based upon its place in a number

ones: the digit in the ones place shows how many ones are in a number

tens: the digit in the tens place shows how many groups of 10 are in a number

**Topic 9:**

10 more: 10 more than a number has 1 more ten or 10 more ones

10 less: 10 less than a number has 1 less ten or 10 less ones

greater than: the value is more

less than: the value is less

equal to: two numbers that are the same

**Topic 12:**

estimate: an planned guess

measure: to find the size or amount of something

taller: greater in height

shorter: lesser in length or height

longer: greater in length

**Topic 13:**

hour hand: the short hand on a clock that shows the hour

minute hand: the long hand on a clock that shows the minute.

one hour: 60 minutes

half hour: 30 minutes

o’clock: minute hand is on the 12

schedule: a list that shows what time events happen

**Topic 14:**

data: information you collect

bar graph: a graph that uses bars to show data

picture graph: a graph that uses pictures to show data

tally mark: marks that keep track of data

**Topic 15:**

plane shape: a flat shape

solid figure: a shape that takes up space

vertex (vertices): a point or a corner on a shape

sort: to group things according to how they are similar

compare: to find out how things are alike or different

**Topic 16:**

equal parts: parts of whole that are the same size