HPISD First Grade Math

Unit Name	Estimated Duration	9 Weeks			
UNIT 5- ADDITION AND SUBTRACTION FACTS TO 20	**4 WEEKS**	1	**2**	3	4

Unit Overview

Students will deepen their understanding of addition and subtraction strategies and apply their knowledge of number relationships to solve related facts.

Enduring Understandings

The student will understand that:	● Basic addition facts that are near doubles can be found using a related doubles fact. ● Sometimes the answer to one problem/ question is needed to find the answer to another problem/ question. ● Some addition facts can be found by changing to an equivalent fact with 10. ● Number relationships, doubles, near doubles, and making 10 are some strategies for finding addition facts. Subtraction facts with teen numbers can be simplified by making use of the number' relationships to 10. ● Addition and subtraction have an inverse relationship. The inverse relationship between addition and subtraction can be used to find subtraction facts; every subtraction fact has a related addition fact. ● Use the components of number sentences to write word problems. Some problems can be solved by using objects to act out the actions in the problem.

Concepts

Operation Meanings and Relationships	There are multiple interpretations of addition, subtraction, multiplication, and division of rational numbers, and each operation is related to other operations.
Properties	For a given set of numbers there are relationships that are always true, called properties, and these are the rules that govern arithmetic and algebra.
Basic Facts and Algorithms	There is more than one algorithm for each of the operations with rational numbers. Some strategies for basic facts and most algorithms for operations with rational numbers, both mental math and paper and pencil, use equivalence to transform calculations into simpler ones.
Practices, Processes, and Proficiencies	Mathematics content and processes can be applied to solve problems.

Guiding/Essential Questions

What strategies can you use for adding and subtracting to 20?
How do you know if a number sentence is a near double?
Give a non-example of a near double?

Learning Targets & Prerequisites	Progressions
Prerequisite: ● Understand the meaning of the equal sign in addition or subtraction number sentences. **Learning Target:** ● The student will calculate and solve problems given a number sentence for addition and subtraction facts to 20. **Second Grade Connection:** ● 2.7 (C) represent and solve addition and subtraction word problems where unknowns may be any one of the terms in the problem. ● 2.4 (A) recall basic facts to add and subtract within 20 with automaticity.	● Use the basic fact strategy of making 10 to add for sums to 20. ● 1 Write a number sentence to represent problems for sums and differences to 20. 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?** Counting-On I started with 6 frogs and then counted up, Sixxxx.... 7, 8. So there are 8 frogs on the log. 6 + 2 = 8 Internalized Fact There are 8 frogs on the log. I know this because 6 plus 2 equals 8. 6 + 2 = 8 Add and Subtract within 20. Example: **Sam has 8 red marbles and 7 green marbles. How many marbles does Sam have in all?** 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. 7 = 2 + 5 8 + 2 = 10 10 + 5 = 15 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. 8 = 7 + 1 7 + 7 = 14 14 + 1 = 15 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. 6 = 4 + 2 14 − 4 = 10 10 − 2 = 8 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. 6 + 8 = 14 14 − 6 = 8

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Prerequisite: ● Understand the concept of a fact family (related fact) **Learning Target:** ● The student will create a fact family for a given model and use addition to subtract for facts to 20. **Second Grade Connection:** ● 2.7 (C) represent and solve addition and subtraction word problems where unknowns may be any one of the terms in the problem.	● Find the unknown number in an addition or subtraction sentence.
Prerequisite: ● Recall near double facts to 12 **Learning Target:** ● The student will apply basic fact strategies to add near doubles for sums to 20. **Second Grade Connection:** ● 2.4 (B) add up to four two-digit numbers and subtract two-digit numbers using mental strategies and algorithms based on knowledge of place value and properties of operations.	● Explain how to use addition and subtraction strategies for facts to 20. ● Apply properties of operations to find basic addition or subtraction facts to 20.
Formative Assessments	**Summative Assessments**
TEKS: Readiness Standards	**TEKS: Supporting Standards**
1.5 D Represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences. 1.3 F Generate and solve problem situations when given a number sentence involving addition or subtraction of numbers within 20.	1.3 D Apply basic fact strategies to add and subtract within 20, including making 10 and decomposing a number leading to a 10. 1.3 E explain strategies used to solve addition and subtraction problems up to 20 using spoken words, objects, pictorial models, and number sentences.

| | 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.

1.5 E Understand that the equal sign represents a relationship where expressions on each side of the equal sign represent the same values.

*1.5 G Apply properties of operations to add and subtract two or three numbers. |
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TEKS Process Standards

1.1 (A) Apply mathematics to problems arising in everyday life, society, and the workplace.

1.2 (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.

1.1 (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.

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

1.1 (E) Create and use representations to organize, record, and communicate mathematical ideas.

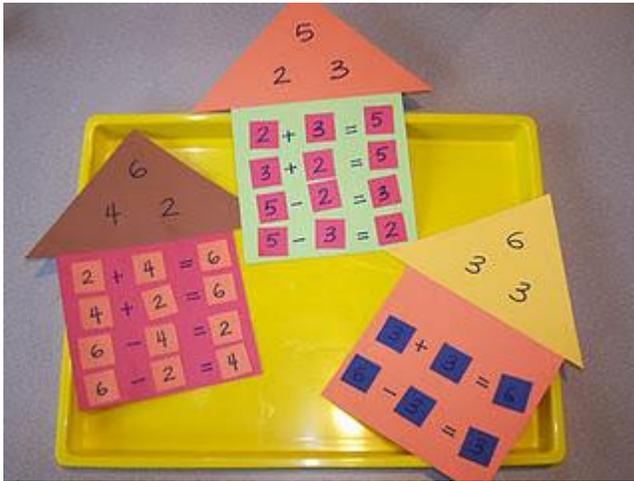1.1 (F) Analyze mathematical relationships to connect and communicate mathematical ideas.

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

Processes and Skills: **What students should be able to DO**	Facts: **What students should KNOW**
- Calculate basic fact strategies to add and subtract 0, 1, or 2. - Use properties of operations to add and subtract 0. (8-0=8, 8+0=8, 8-8=0) - Identify and solve doubles facts for sums to 20. - Identify and solve near double for sums to 20. - Find different combinations of addends to make 10 and some more. (6+8 is the same as 6+4 (10) +4 = 14) - Solve subtraction number sentences to 20. - Draw a picture and write one or two number sentences to represent addition and subtraction problems for sums to 20. - Identify an appropriate strategy (make 10, doubles, near doubles, etc.)to use when given an addition or subtraction equation or story problem - When given number sentences with an unknown, the student will apply their knowledge of number relationships to determine the unknown in any position. - Identify the missing related number sentences when given 2 number sentences.	- Use doubles to add and subtract to 20. - Example: Nadia has 8 pencils. Tom has 1 more than Nadia. How many pencils do they have in all? They have 8+8 and 1 more. They have 17 pencils. - Make 10 to add and subtract to 20. - Example: Jacob found 8 yellow leaves and 5 red leaves. How many leaves did he find? 8+2=10; 10+3=13. Jacob found 13 leaves. - Use related facts in a fact family to add and subtract to 20. - Example: Given a model that shows the whole 16 and parts 7 and 9, write the related fact. 7+9=16; 9+7=16; 16-7=9; 16-9=7. - Use the inverse relationship between addition and subtraction to add and subtraction sentence 14- __=9? 9+5=14. So, 14-5=9.

Topics

Envision Topic 5	

Language of Instruction

doubles plus 1 fact
doubles plus 2 fact
fact family
make 10
related facts

State Assessment Connections	**National Assessment Connections**

Resources

Envision Topic 5

http://stepintosecondgrade.blogspot.com/2011/10/i-heard-your-cries.html