Grade 1

Developing Number Sense and Problem Solving

Our Plan

Explore Fractions Tasks
Analyze Standards
Explore Measurement Fractions Tasks
Explore Possibilities for Lesson Structures
Look at Resources
Plan a Lesson that you will teach

Pulse Check

How are your students doing in math?

The one topic or issue that you need to go back and spend more time with your students is…?

Guess My Number

- My number is smaller than 10
- My number is larger than 5
- My number can be broken up into 2 identical smaller numbers
- My number can be paired with 4 to make a ten

Guess My Number

- My number is smaller than 10.
- It is larger than 5.
- My number cannot be broken into 2 equal piles.

Guess My Number

- My number is smaller than 15.
- My number can be divided into two equal piles.
- My number will fill up a ten frame and have leftovers.
- The sum of my digits is 5

Guess My Number

Write your own number puzzle.
Include 3 or 4 clues.
Try to make sure the clues don't narrow the possible answers too soon.

Bunny Hopping

A bunny can jump either 1 foot or 2 feet each time it jumps. Find out all of the possible ways that the bunny could travel 6 feet.
Prove your answer with cubes, pictures, and equations.

Bunny Hopping

Approaches to solving the problem?

Solutions?

Organization of different solutions?

Bunny Hopping

How would you modify the task for your students?

1 + 1 + 1 + 1 + 1 + 1 = 6
6 = 2 + 2 + 2
6 = 2 + 2 + 1 + 1
6 = 2 + 1 + 2 + 1

Problem Solving in Grade 1

What are the grade level expectations in the Unpacking Document?

Where do your students typically struggle?

Problem solving

Having more than 1 solution
Language of story problem (add always)
All problems same way
Explaining their thinking, strategy
Equal sign, true-false (8+1 = 6+3)

Change Unknown- Add To

There are 9 children on the playground. More children join them. There are now 15 children on the playground. How many children joined them?
Solve with: Counters, Pictures, Number Line, and Equation

counters

Started with 9
Add cube and said 10
Add cube and said 11
Add cube and said 12….. Until 15

Counters

List the step by step process that students need to do to solve the task in this way.

Pictures

List the step by step process that students need to do to solve the task in this way.

Number Line

List the step by step process that students need to do to solve the task in this way.

Equations

What equation matches the action of the problem?

What other equation(s) could students use to solve this problem?

Comparing Strategies

Counters, Pictures, Number Line, Equation

Which approach is our “ideal” for our students by the end of the year?

Where are most of your students right now? What data have you collected about this?

Properties of operations

1.OA.3. Apply properties of operations as strategies to add and subtract.2 *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.)*

Properties of Operations

What are the expectations of this standard?

Professional Reading

Let’s look at a short piece on problem solving strategies.

How does this inform how we should teach this subject?

Thoughts on addition and subtraction?

- Addition for a long time and then subtraction for a long time.
- Addition briefly then subtraction briefly then spend time on both simultaneously.
- Teaching them both together and simultaneously.

Exploring some tasks…

Susan has 7 hair clips. Tina has 4 more hair clips than Susan. How many hair clips does Susan have?

Aaron has 11 baseballs. Bernie has 3 fewer baseballs. How many baseballs does Bernie have?

Three Towers

Pull a number card and build a cube tower
Your partner does the same
Continue
Once you build a tower of 10 start a new tower
Keep track of your total by writing an equation each round.

Close to 15

Turn over 15 number cards face up.
You are looking for 3 addends that make 15.
Once you find 3 addends pick up those cards and replace them.

Difference of 2

Play like Go Fish
Each player gets 5 cards
A “pair” of numbers has a difference of 2 (e.g., 3 and 1, 7 and 5, etc.)
Draw from the stack if you don’t have a match

Cave Game

Start with 10 counters
Cover some up
Ask- “how many are hiding in the cave?”

Building Numbers

Pull 2 number cards
Build the number with base ten blocks
Pull another card
Add or subtract that many rods (10s)
Write an equation to match your action
Example: 6 and a 5. I made 65. Then I pulled a 4. 65 – 40 = 25.

Fluency Games

Why should we play games?

What does it look like in your classroom?

What A Classroom *Could* Look Like

Students ALWAYS have access to manipulatives and concrete objects.
Concrete- physical objects that have 1 to 1 correspondence (cubes, counters, etc.)
Representational- pictures or drawings represent quantities
Abstract- equations (numbers and symbols) represent quantitites

What a Lesson *Could* Look Like

Opening- Number talk
Mini lesson- Pose a task focused on the concept of the day and have students share strategies.
Centers/small group (1)- Students work independently or in small groups on tasks and games while the teacher conducts formative assessment and supports students
Centers/small group (2)- Teacher pulls a group while students work independently or with partners
Closing discussion- 1 or 2 questions to get students talking about what they learned.

Lesson Planning

With people around you plan a lesson
Topic- "solving a subtraction story problem"
Find the standard and plan away.
Your lesson should include-
a number talk, a mini lesson, description of centers activities

Lesson Planning

Before we come back again:
- Teach your lesson
- Collect student work samples
- Jot a quick set of notes about how it went

Bring them back with you

Questions?

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