

Developing Strong Problem Solvers through Number Stories



Objectives

- TWBAT explain the rationale for including Number Stories in the math curriculum as a dedicated time for productive struggle by:
 - Observing Number Stories from two grade levels
 - Participating in the Number Stories protocol led by the session facilitator
 - Planning and laying out criteria for success for a grade-appropriate Number Story

Agenda

1. Introduction to Number Stories (10 min)
2. **Observe** Number Stories (30 min)
 - a. Video of K-2 Number Story
 - b. Video of 3-5 Number Story
3. **Experience** a Number Story (25 min)
4. **Plan** a Number Story (20 min)
5. Closing (5 min)

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Introduction

What are Number Stories? (10 min)

What is a Number Story?

- The Number Story protocol was developed by **Achievement First Charter Schools** as a way to build in time in the math day for students
 - **To productively struggle through complex word problems.**
 - **To discuss and critique their work with their peers**
 - **To be exposed to many different types of representations of the same problem.**

What is a Number Story?

- What: A complex word problem
- How:
 - Representing and retelling the problem
 - Showing and discussing with peers
 - Stretching thinking based on group discussion

Link to Mathematical Practices

MP 1: Make sense of problems and persevere in solving them

MP 3: Construct viable arguments and critique the reasoning of others

MP 4: Model with mathematics

Basic Number Stories Protocol (see document 2)

- Read and **visualize** the story problem
- **Represent** with a model
- **Retell** the story to your partner using your representation
- **Share** 1-2 student representations with the group
- **Discuss** and critique
- **Solve**

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Observe Number Stories

K-2 Number Story (10 min)
3-5 Number Story (10 min)
Debrief (5 min)



Kinder Number Story Video



3rd Grade Number Story Video



Debrief

- Noticings/Wonderings
- What specific teacher actions do you notice that make Number Stories different from typical math instruction?
- How was the showcasing of student work strategic?

3

Experience a Number Story

4th Grade Number Story (20 min)
Debrief (5 min)

For your reference...

- Read and **visualize** the story problem
- **Represent** with a model
- **Retell** the story to your partner using your representation
- **Share** 1-2 student representations with the group
- **Discuss** and critique
- **Solve**

Number Story

Corn muffins cost \$4. Chocolate muffins cost \$3. Fruit muffins cost \$4 also. Jayden buys 5 corn muffins, 7 fruit muffins and 6 chocolate muffins. He receives \$14 in change. How much money did he start with?

●

Debrief

- Noticings/Wonderings
- What did it feel like to be a participant in Number Stories?
- What do students need to be able to do to be successful in Number Stories?

4

Plan a Number Story

Sample Number Stories

K	(TF-RU) Lila has 14 math problems in her packet. She solved 3 of the problems. How many problems does she have left to solve?
1	(TF-RU) 30 apples were on the table. The class ate 9 apples. How many apples are on the table now?
2	(TF-RU with an imbedded AT-RU) The clothing store had 29 shirts to sell. The store sold 7 long sleeve shirts and 8 short sleeve shirts. How many shirts does the store have left to sell?
3	(TF-RU with an embedded AT-RU) Mr. Weiss and Mr. Fields went to Hawaii last summer. They found 273 seashells the first day and 123 seashells on the second day. Unfortunately, the next day they lost 155 of the seashells. How many seashells are left?
4/5	(TF-RU with two embedded EG-UP) Jaylen loves Skittles. There are 43 Skittles in each bag and he just got 19 bags from his friends. If he gives 160 Skittles back to each of his friends, how many will be left for him to eat?



Planning

- Split into K-2 and 3-5 teams
- Look at the provided lesson plan
 - Solve as adult
 - **Create sample student representations**
 - Next Steps

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Closing



Reflection

- Why do we build a time for Number Stories into our math day?
- How does Number Stories help students become stronger mathematical thinkers?



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Thank you!
