Once Upon a Time
There Was a Word Problem:
Using Story Elements to Teach Word Problems

April 26, 2018
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<tr>
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<table>
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<td></td>
<td>How many more?</td>
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<td>Part-Whole</td>
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<td>How many less?</td>
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<table>
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2nd Grade Word Problem Analysis
Blank chart for addition and subtraction problem types
GOOD READERS...

VISUALIZE
Use pictures or make a movie in their mind as they read

PREDICT
Guess what will happen next

SUMMARIZE
Retell the story in order

CONSTRUCT MEANING
Make connections

QUESTION
Decide if what they are reading makes sense

ORGANIZE
Use conventions and tools to give structure and track information
GOOD MATHEMATICIANS...

VISUALIZE
Use pictures or make a movie in their mind as they read problems

PREDICT
Guess what will happen next

SUMMARIZE
Retell the story in order

CONSTRUCT MEANING
Make connections

QUESTION
Decide if what they are doing makes sense

ORGANIZE
Use conventions and tools to give structure and track information
What does the plate look like now?
What does the basket look like now?
Match each picture to the correct expression: 2 + 3, 5 - 3, 5 - 2, 3 + 2.
1st: VISUALIZE - CONSTRUCT MEANING - PREDICT

Coach Cheryl planted 7 flowers
Coach Cheryl’s dog had 7 puppies
Coach Cheryl planted 7 flowers

Coach Cheryl’s dog had 7 puppies
1st: ORGANIZE

Hard to believe, but this is an example of what I used to get from my dad when he first learned how to text.

reservation
six
will meet you at the restaurant

Why is this text message so hard to read?
1st: ORGANIZE

While organized and easy to count, tallies can be problematic when representing subtraction.

It is hard to tell here what constitutes an individual item and the total number of items is not easy to count.

The subtraction and the individual items are clearer here, but the total number of items is still not easy to count.
1st: ORGANIZE

Which representation allows you to “see” the mystery number easiest?

Representation 1

[Linear arrangement of dots]

Representation 2

[Scattered arrangement of dots]

Representation 3

[Structured arrangement of dots in a grid]
Coach Cheryl represented a mystery number below. Fix her work to make the representation clearer.
1. There were 4 people on the bus. At the next stop 3 more people got on. How many people are on the bus now?

2. Allison bought 4 apples. She also bought 3 oranges. How many more apples did she buy?

3. There were 7 snacks in the bin. Four students took snacks. How many snacks are left in the bin?

4. There were 7 crayons in the box. Four of them were blue and the rest were red. How many were red?

5. Bobby ran 5 miles on Monday and another 2 miles on Tuesday. How many miles did he run altogether?
2nd: Construct Meaning - Summarize - Organize

What would you say happened in the BEGINNING?

What would you say happened in the MIDDLE?

What would you say happened in the END?
6 monkeys were jumping on the bed. Some more monkeys started jumping on the bed. Now there are 12 monkeys jumping on the bed.
Mary had some lambs. Then she lost 8 lambs. Now she has 11 lambs.
2ND: CONSTRUCT MEANING

Write your own story where the middle is unknown.

I had 10 cokes
My brother ate some cokes
How I have
5
How many is in The middle
You have 35 M&Ms. You eat some of your candy. Now you have 24 M&Ms. How many pieces of candy did you eat?

Number Model:

\[
\begin{align*}
\text{Beginning} & : 35 \\
\text{Middle} & : ? \\
\text{End} & : 24
\end{align*}
\]

Ten Frame Representation:

\[
\begin{align*}
? &= 11 \\
35 - 11 &= 24
\end{align*}
\]
There are some students on the bus. 8 more students get on the bus. Now there are 26 students on the bus. How many students were on the bus in the beginning?

Number Model:

Beginning  +  Middle  =  End

Ten Frame Representation:

\[ ? = 18 \text{ because } 18 + 8 = 26 \]
There was a stack of ♦️ books in the library. Stephanie returned ▶️ books and put them on top of the stack. Now there are ✔️ books in the stack.
You did 22 sit-ups. After a little break you did another 15 sit-ups. How many sit-ups did you do in all?
You did 22 sit-ups. After a little break you did another 15 sit-ups. How many sit-ups did you do in all?

\[ ? = 37 \]
Mandy got 64 pieces of candy trick-or-treating. Her little sister got 48 pieces of candy. How many more pieces of candy does Mandy have than her sister?

Determine ALL the word models that correctly show the relationship between the amount of candy Mandy has and the amount of candy her sister has.

1. Mandy’s Candy - Her Sister’s Candy = How Many More Pieces Mandy Has

2. Mandy’s Candy + Her Sister’s Candy = How Many More Pieces Mandy Has

3. Mandy’s Candy - How Many More Pieces Mandy Has = Her Sister’s Candy

4. Her Sister’s Candy + How Many More Pieces Mandy Has = Mandy’s Candy

5. Mandy’s Candy + How Many More Pieces Mandy Has = Her Sister’s Candy

6. How Many More Pieces Mandy Has + Her Sister’s Candy = Mandy’s Candy
Mandy got 64 pieces of candy trick-or-treating. Her little sister got 48 pieces of candy. How many more pieces of candy does Mandy have than her sister?

Write ONE MORE DIFFERENT word model that also correctly shows the relationship.

1. Mandy’s Candy – Her Sister’s Candy = How Many More Pieces Manday Has
2. Mandy’s Candy + Her Sister’s Candy = How Many More Pieces Manday Has
3. Mandy’s Candy – How Many More Pieces Mandy Has = Her Sister’s Candy
4. Her Sister’s Candy + How Many More Pieces Mandy Has = Mandy’s Candy
5. Mandy’s Candy + How Many More Pieces Mandy Has = Her Sister’s Candy
6. How Many More Pieces Mandy Has + Her Sister’s Candy = Mandy’s Candy
So What Are The Take Aways?

- Makes kids’ work physically easier to read
- Saves you time and annoyance
- Incorporates mathematical practices
- Allows you to differentiate more
- Uses strategies you already know
- Builds confidence teaching math
Thanks!

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