Numberless Word Problems

How to slow down the problem solving process so your students focus on the content and the meaning of the problem.
WHY would we want to have a word problem without any numbers?

Do you have students who freeze or panic when presented with a word problem? Do they just grab the numbers and do any operation without really thinking about the situation in the story?

Numberless Word Problems forces students to think about the situation first because there aren’t any numbers.
Example of typical word problem:

There are 14 boxes of notebooks with 20 notebooks in each box. How many total notebooks are there?
TIPS: Problem Solving Strategy

Think:
- Read the entire problem
- Picture in your head

Information:
Who or What is the story about?
Rewrite the question as a statement

Plan:
- Draw a model
- Write an equation(s)

Solve:
- Solve your equation(s)
- Check your answer, “Is it reasonable?”

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___ \times 5 = 15

\[
\begin{array}{c}
5 \\
5 \\
5 \\
\end{array}
\]

\[
\frac{15}{5} = ___
\]
WHAT is a numberless word problem?

- Values sense-making, not just getting answers
- Gets students to grapple with relationships
- Slows down the problem-solving process so students need to focus on the content rather than just grab numbers and perform operations
- Scaffolds the problem-solving process
Template for solving numberless word problems

Example of numberless word problem:

Some girls entered a school art competition. Fewer boys than girls entered the competition.

What do you notice?
Some girls entered a school art competition. Fewer boys than girls entered the competition.

What do you wonder?
135 girls entered a school art competition. Fewer boys than girls entered the competition.

- Picture in your head
- Turn and talk
- Draw a picture or model

What other information do you need?
135 girls entered a school art competition. 15 fewer boys than girls entered the competition.

- Make changes to your picture/model
- Does this mean 15 boys entered?
- What question(s) might be asked?
135 girls entered a school art competition. 15 fewer boys than girls entered the competition. How many girls and boys total entered the art competition?

- Rewrite the question as a statement with a blank for the answer
- Solve
Video of Numberless Word Problem with Kindergarten

- Student work
- Student work
- Group share
WHEN can I use Numberless Word Problems?

- Intervention/Extension - Classroom teachers
- Intervention - Tutors
- Solve and Share
Modifications

- Let students choose the numbers
- Let students choose their own question
- Swap papers for solving
- In small groups, rotate papers for each step in the process
- Provide the answer in the beginning
CCSS.MATH.PRACTICE.MP1 - Make sense of problems and persevere in solving them.

CCSS.MATH.PRACTICE.MP2 - Reason abstractly and quantitatively.

CCSS.MATH.PRACTICE.MP3 - Construct viable arguments and critique the reasoning of others.
More Resources

Brian Bushart - https://bstockus.wordpress.com/numberless-word-problems/

District Math Folder