

Numberless Word Problems

Purpose

This routine is designed to help students decipher word problems and consider the context of the problem rather than immediately calculating.

Time

One word problem will take 10 - 20 minutes.

Supported standards

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

Materials

- Word problem to be used in class. This problem should already be numberless and ready to add layers (the instructor should have multiple copies of the problem as it expands or use slides).
- Numberless Word Problems (<https://numberlesswp.com/>). This website has a variety of numberless word problems and recommendations about how to use them.

Procedure

1. Instructors can use this routine in individual and small group settings as well as in person or remotely.
2. The instructor presents a word problem to the student(s). The word problem contains no numbers. The instructor asks the student(s) what the problem is about, allowing the student(s) time to consider this, as they are used to finding numbers and calculating right away.
3. The instructor can ask the student(s) questions like, “What is this problem about?”, “What math do you see?”, or “So what does that tell us?”
4. As the student(s) start to understand the context of the problem, the instructor adds a new layer. This layer could contain more information or numbers but will not be the entire problem.
5. The instructor can ask the student(s) questions such as, “What new information do you see?” or “How does it change your understanding of the situation?”
6. The instructor continues to add layers and ask questions until all that is left is to reveal the final question and start calculating. Before the question is revealed, the instructor should ask the student(s) what question would be asked given the situation.

7. The instructor reveals the question, and the student(s) can calculate the problem.

Example

Here is a sample sequence from the Numberless Word Problems website¹:

- 1. A baker is packaging some cupcakes to sell at her bakery. She fills some boxes with all of the cupcakes.**

Instructor: What is this problem about? What do you notice? What do you wonder?

Student: A baker has some cupcakes to sell. She's putting them in boxes.

- 2. A baker is packaging 30 cupcakes to sell at her bakery. She fills some boxes with all of the cupcakes.**

Instructor: How does this change what we know?

Student: We know the total number of cupcakes that the baker has and she's putting them all into boxes.

- 3. A baker is packaging 30 cupcakes to sell at her bakery. She fills five boxes with all of the cupcakes.**

Instructor: What new information do you see? How does this change your understanding of the situation?

Student: I see that there are five boxes that the cupcakes need to be split into.

Instructor: What question do you think can be asked based on the situation?

Student: How many cupcakes are in each box?

- 4. A baker is packaging 30 cupcakes to sell at her bakery. She fills five boxes with all of the cupcakes. If she puts the same number of cupcakes in each box, how many cupcakes are in one box?**

Students can now calculate the answer to the problem.

¹ Adapted from Brian Bushart's Numberless Word Problems under [Creative Commons Attribution-Noncommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/)