Solving Multi-Step Percent Problems

Participant Name:	**Britney Lawton**
District:	**Massena Central School District**
Grade Level:	**7**
Subject/Course:	**Math**
Cross-curricular Link:	
Approximate Time (IN MINUTES):	**30 minutes**

CONTENT AND SKILLS
Learning Objectives: ● Students will be given various multi-step percentage problems and will have to break down the problem into various steps. ● Students will develop a plan to solve the problems with their partner. ● Students will practice solving multi-step percentage problems.
Essential Questions (optional):
Students' I can statements . . . ● I can break down a complex problem into smaller parts. ● I can solve multi-step percentage problems.
How will you meet the needs of SWD and ELL/MLL students? ● All students will be provided scaffolding as needed and extra support.
NYS COMPUTER SCIENCE AND DIGITAL FLUENCY STANDARDS List all standards that authentically align (e.g., K-1.CT.4)
● 7-8.CT.4 Write a program using functions or procedures whose name or other documentation convey their purpose within the larger task.
OTHER SPECIFIC STANDARDS (e.g., Content, SEL Benchmarks) List all standards that authentically align https://www.p12.nysed.gov/sss/documents/SELBenchmarks2022.pdf
● NY-7.RP.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.

INSTRUCTIONAL PLAN

List the steps of the lesson, including instructions for the students.
Add and highlight Standard Indicator next to activity that aligns

To start, we will review all of the formulas that students can potentially use to solve percentage problems. Students will do a think-pair-share to discuss/remember the formulas.

- They will write what formulas they can remember on the strategy sheet. After 1-2 minutes, they can compare answers with their partner and look in their notes for formulas they couldn't remember. ($\frac{part}{whole} = \frac{\%}{100}$, $\% = \frac{part}{whole} \times 100$, $Part = r \times whole$ where r is the percentage as a decimal) After they have checked with their partner, we will review the formulas as a class to ensure accuracy.

Students will be split into stations with a group of 2-3. Each station will have a variety of multi-step percentage problems.

I will have students choose a problem they want to analyze. Students will be given 30 seconds-1 minute to read the problem to their group and think about what the problem is asking. Students will then be directed to think for a few seconds and write down all of the things the problem is asking them to do to get to the final answer as well as what the question is asking them to do. Once they have thought independently and come up with a list, they should discuss for 1-2 minutes everything that is required to solve the problem, what the question is asking, and discuss a strategy that they should follow.

Once they come up with a strategy, students will be directed to start implementing their strategy.
NY-7.RP.3 7-8.CT.4

I will be monitoring groups making sure their strategy is correct and that correct numbers are being used. I will also ask follow-up questions to encourage conversation about their strategies and other potential strategies they could have used.

After they work through their first problem, they should continue working through the rest of the problems at their station using the same strategy of breaking down the problem into manageable parts.

Close to the end of the class, we will come back together as a class and do a thumbs up, sideways, or down to indicate understanding of the material.

- A student will read one learning target at a time and students will do a thumbs up for full understanding, thumbs sideways for partial understanding/need more practice, and a thumbs down for being very confused about the target. I will check in with students with a thumbs sideways or down to see where the disconnect is.

SPECIFIC NEEDS: MATERIALS / RESOURCES / TECHNOLOGY

Add additional resources needed for this lesson such as instructional technology templates, images, videos, etc.

- Percentage worksheet
- Strategy worksheet
- TI-30 XS MultiView scientific calculator (or similar)