**DESIGNING LEARNING TEMPLATE 7.4 D**

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| Essential Learning Target: | Verbs | Nouns | Prerequisite Skills |
|  **7.4D** Solve problems involving ratios, rates,and percents, including multi-stepproblems involving percent increase and percent decrease, and financial literacy problems. | solveincludinginvolvingchargeincreased, marked updecreased, marked downchanged‘how many’‘what is the percent’‘how much’percent change‘what is the new price’owetotal cost‘what should they charge’ | percentproportionrateratiosales taxtotal costunit ratemark up, mark downdiscountretail pricesale priceoriginal pricenew priceinitial value/pricepercent changepercent of increase (change)percent of decrease (change)quantitytip | In 6th grade, students represented ratios and rates using tables,graphs & proportions. Students used proportions & models to solve simple percent problems including the following:\*find the percent given the part and whole\*find the whole given the part and the percent\*find the part given the whole and the percentStudents will need to convert fractions to decimals to percents.  |

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| Essential Questions/ Guiding Questions: | Assessment Question Stems/ Examples: |
| * Why is it important to be able to describe increases or decreases by using percent?
* How can we see this in the real world?
* How is markup and markdown similar to percent of change?
* How is it different?
* What are some ways that we use percents in everyday life?
* Is an item marked 50% off with an additional 25% off really 75% off?
* Can the same operation be used to find sales tax and income tax?
* How does sales tax affect the amount you pay?
* How is income tax different from this?
* What are some of the processes you can use to decide if you are getting the best deal?
* What are some real world examples when you would use this?
 | * About what percent made an A?
* What is the percent increase for a population that changed from 25,000 to 30,000?
* What is the percent markup?
* James got 25% of the problems on his test incorrect. If there were 24 problems on his test, how many did he get correct?
* A radio station lost 34% of its listeners. If there were an estimated 83,000 listeners, how many do they have now?
* Given an original price and a sales percentage, how much is the discount?
* What is the percent change?
* If the original price was \_\_\_, and it was marked down \_\_%, what is the new price?
* Which proportion can be used to determine the percent of change?
* What is the total cost of a meal including tip?
* A market buys mixed nuts for $12.50 per pound. They want to mark it up 22%. What should they charge for the retail price?
* 85% of the students ride the bus. If there are 760 students, how many do not ride the bus?
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| Learning Goal/ Big Idea or Concept: | Success Criteria/ “I can…” Statement: |
| Our goal is to be able to solve real-world problems that include finding the percent of a number, sales tax, tips, and percent of change.  | I can…* find solutions to problems involving rates and ratios
* solve problems involving percents
* solve problems involving percent increase and decrease
* solve money problems involving percents

So that I can…* figure out the cost of turkey per pound
* figure out how much I would pay for a shirt that is on sale
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| Evidence of Learning / Feedback & Coaching Opportunities | Assessment: |
| 1. Students using academic language in conversation, including setting up % of change and understanding each part of the ratios (monitoring students to make sure they set the ratios up correctly)
2. Students are recognizing basic conversions of fractions to percents.
3. Students are able to use a ratio table; good labeling.
4. Students are able to set up problem as a proportion.
5. Students will be able to find the percent of a number.
6. Students will be able to calculate multiple-step problems involving percent of a number or percent change.
 | 1. CFA for Percent of Change to include percent of numbers relating to money.
2. Major Grade PBL- Students will complete PBL in which they will solve a real-world problem that include finding the percent of a number, sales tax, tips, and percent of change.
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| Possible Misconceptions/ Clean Up Strategies: | Re-engagement Opportunities:  |
| 1. Be sure students understand the difference in the percent of change equation compared to the percent of a number equation. Need to understand that the original number is where it started BEFORE it changed, in setting up ratios.
2. Students want to answer the percent of change as the

 point difference, rather than the percent difference. 1. Forgetting to change decimals to percent.
2. Not knowing which is dividend and divisor when dividing

to find percent or number of percent. 1. Misunderstanding value of percent. For ex.- 32% seen as a whole value of 32 instead of 32 parts of 100s.
2.
 | 1. Teacher uses tape to mark a starting line on the floor. A student volunteer begins at the starting line and takes five normal-sized steps. The student freezes on the last step so that another student can measure the total distance covered. Students write a ratio of the number of steps to the total distance covered. Based on the rate, students determine how many steps the student would take in order to cover a certain distance.
2. Students write three ratios using color tiles. Students write three ratios to represent the part of each color to the number of total tiles. Students convert each ratio into a percent using a proportion.
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| Stations/ Practice Opportunities: | Extend/ Enrich Opportunities: |
| * Student will be given Fractions, Decimals, or Percents and they will convert them in a Poster Activity.
* Students will complete interactive Nearpod assignment to extend understanding percent problems.
* Students will compile date from a student survey (5 questions). Then they will find the percent from the totals.
* Students will complete practice stations: Percent of number maze, Sum It Up group activity on percent word problems, fraction to percent converting squares game, and task cards on percent of number.
 | The teacher divides the class into two groups for a debate. One group supports the concept of calculating percent increase or decrease by calculating the percent of change and then adding to or subtracting from the original value. The second group supports the concept of using percents greater than 100 to find percent of increase and percent less than 100 to find percent of decrease. Student groups work together to create opening statements and justifications. |