Percent of Change Lesson Notes

7.RP.A Analyze proportional relationships and use them to solve real world and mathematical problems.

7.RP.3 Use proportional relationships to solve multi-step ratio and percent problems including markup, markdown, tax, commission, gratuities, and percent of increase and decrease.

Aspects of Rigor targeted: Day one-conceptual understanding of percent change, including models of percent change and identifying and using a formula. Day two-continuing with conceptual understanding and moving towards Fluency and Application to Real World tasks.

CORE MATH IDEA: How can we use our understanding of proportional relationships to solve real world problems involving percent?

Essential Understanding: I can identify if a change between two values is an increase or a decrease and calculate a percent value to describe that change.

PART ONE

1. Students will follow a set of teacher and written directions to model percent change using arrays. During this time, teacher will direct them to compare the amount of change to the original amount and estimate the percentage. (Students will access prior knowledge about estimating percent)
2. With partners, students will discuss their comparisons and come to agreement about estimations. Teacher will select students to share their models and their estimates with the class.
3. Students will read close read of text regarding percent of change including the problem they will solve. Students will highlight information from text.
4. Going back to models from part one, students will access the information from the close read and use it to calculate the actual percent increase or decrease.
5. Teacher will select students to share methods for calculations
   1. dividing the ratio to get a decimal which is then changed to a percent (Prior knowledge)
   2. using a proportion to find an equivalent ratio that is out of 100. (prior knowledge)
6. Introduce Grizzly bear problem. Have students privately reason through problem, determining if this is a percent of increase or decrease, using evidence from text to support their reason.
7. Students will then pair share:

Partner A: “I think the answer to the question will be a percent \_\_\_\_\_\_\_\_\_\_\_ because in the text it says \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.”

Partner B: “I agree or disagree because in the text it says \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.”

Teacher will assess whether whole group share out is necessary based on conversation.

1. Students will work independently, using the graphic organizer (they are familiar with this organizer) given to model, verbally describe, and calculate using two methods the percent of change for the grizzly problem. Students will turn in work completed for review by teacher.

PART TWO:

1. Warm up: Students will be given graph paper and a set of percent of change problems. Students will first sort problems based on whether they are increase or decreases problems, accessing information from their close read, if necessary. Then, students will choose three to draw the models for on their graph paper and use the information from the close read to find the percent of change.
2. Students will be given back their graphic organizers from the previous day. Teacher will assess whether a whole group discussion needs to be had based on their progress from yesterday’s work.
3. Introduce Garden problem. Have students privately reason through problem, determining if this is a percent of increase or decrease, using evidence from text to support their reason.
4. Students will then pair share:
5. Partner A: “I think the answer to the question will be a percent \_\_\_\_\_\_\_\_\_\_\_ because in the text it says \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.”

Partner B: “I agree or disagree because in the text it says \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.”

Teacher will assess whether whole group share out is necessary based on conversation.

1. Students will work independently, using the graphic organizer (they are familiar with this organizer) given to model, verbally describe, and calculate using two methods the percent of change for the garden problem.
2. This group of students is familiar with the effect that changing dimensions has on the area of an object, so a possible connection here could be to compare the effects of doubling dimensions of the garden which they know to be 4 times larger and then calculate the % increase and describe the connection. This will require some heavy teacher guiding probably, but if they draw the model of the garden , they’ll see that doubling the dimensions is in fact adding three of the original array (100% x 3), which is the 300% increase.
3. Teacher will chose students to help make a public display of the work.
4. \*\*\*\*Teacher then will break students into groups. Given grocery advertisements, students will compare prices for common items to prices from 1970 (Information about these prices will be given to students.) Students will work together to calculate percent of change for each item and create a display of their work.
5. Lesson Close: In their journals, students will write responses to following questions:
   1. In a percent of change, what are the two numbers being compared?
   2. How can you tell if a percent of change is a percent of increase or a percent of decrease?
   3. Tell how to find the amount of increase and the amount of decrease.
   4. Find an example of something in your life that has increased or decreases in the past year, such as your height in the past year. Calculate the percent of change and describe.

\*\*\*I’m worried there may not be time for this part of the lesson, and will cut it if time does not permit.

This is an idea I’d like to try, but not exactly sure how to implement it

Garden Problem: A garden has a length of 5ft and a width of 4ft. If the length is increased to 7ft, but the width stays the same, by what percent will the area increase?