Percent of Increase or Decrease

Reporting Category   Computation and Estimation

Topic   Finding percent of increase or decrease

Primary SOL   8.3b   The student will determine the percent increase or decrease for a given situation.

Materials
- Chart paper
- Markers
- Percent of Increase or Decrease Problems cards (attached)

Vocabulary
percent, increase, decrease, ratio, change (earlier grades)

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)
1. Give students the following problem: "In 1990, it cost $4.00 for a student movie ticket. Today, it costs $10.00 for a student movie ticket. Find the percent of increase in the ticket price." After students have tried to solve the problem individually, have them discuss with partners what they did, why, and what answers they got. Give each pair a sheet of chart paper and a marker, and have pairs show all the steps in their work and an explanation of what they did.
2. Display all the charts, and have students walk around to see each pair's work, the steps they used, and their reasoning. Instruct students to take notes on any important observations.
3. Hold a class discussion about the different approaches students used, their reasoning, their steps, and their answers. Lead the class to develop a process for finding percent of increase.
4. Ask students to solve the following problem, adapting the process they just devised: "Last year there were 750 students enrolled in Park School, but this year there are only 685 students enrolled. What is the percent of decrease?" Discuss the process and responses to this problem. Lead the class to develop a process for finding percent of decrease.
5. Give each student pair a set of the attached Percent of Increase or Decrease Problems cards. Have pairs first sort the cards into two categories—percent of increase or percent of decrease. Then, have them work to solve the problems, using the processes they developed as a class.

Assessment
- **Questions**
  - If the cost of a dress is $75.00 and Janelle gets it on sale for $60.00, what is the percent of discount? How do you know?

- **Journal/Writing Prompts**
  - Describe two different strategies you can use to find the percent of increase for the following problem: "In 2010, it cost $3.29 for a gallon of milk, while in 2000, the cost was $2.69. What is the percent of increase in the price from 2000 to 2010?

Extensions and Connections (for all students)
- Have students research online the changes in prices of certain products from one year to another. Then, have them calculate the percent of increase or decrease for each product.
- Brainstorm with the class what types of situations would involve an increase and what types of situations would involve a decrease. Include markup and discount.
- Relate percent of change to civics lessons regarding economics, including supply and demand, markup, and discount.

Strategies for Differentiation
- Before solving each problem, have students first identify whether the problem is addressing an increase or a decrease. Have them use arrows to denote increase and decrease.
- Have students create their own sale flyer for one item, showing its original price, its sale price, and the percent of decrease. Include calculating sales tax in the activity to link to SOL 8.3a.
- Have students graph original and sale prices on a line graph to represent the change in prices visually.

Percent of Increase or Decrease Problems

Copy cards on cardstock, and cut out.

Today, the price of a new cell phone is $129. In 2000, the price of a similar cell phone was $240. What is the percent of change in the price of a cell phone from 2000 to today?	There were 134 people in attendance at the school football game last Friday. This week there were 246 people in attendance at the school football game. What is the percent of change from last week to this week?
It costs Charlie's Car Repair Shop $27 to change the oil. The shop charges their customers $40 for an oil change. What is the percent of markup in the cost of an oil change?	On Monday, Jake could lift 25 lbs. One month later he could lift 45 lbs. What is the percent of change in the number of pounds he can lift?
Olivia scored 82 points on the first math test of the year. On the second math test, she scored 78 points. What is the percent of change in the number of points she scored between the first and second tests?	What is the percent of change in the cost of a DVD set that originally sold for $49.99 and is now on sale for $24.99?
In Orlando, Florida, the high temperature was 85°F on Saturday and 79°F on Sunday. What is the percent of change in the high temperature from Saturday to Sunday?	In 2009, Jennifer made $11.50 an hour, and in 2010, she made $12.75 an hour. What is the percent of change in Jennifer's pay per hour from 2009 to 2010?
Stock in Company ABC went from $26 a share to $14 a share. What is the percent of change in the price of a share of stock in the company?	The average cost of a gallon of gas during July was $2.45. The average cost of a gallon of gas during August was $2.78. What is the percent of change in the average cost of a gallon of gas from July to August?