> **Lesson Summary**
>
> - There are many real-world problems that involve percents. For example, gratuity (tip), commission, fees, and taxes are applications found daily in the real world. They each increase the total, so all questions like these reflect a percent increase. Likewise, markdowns and discounts decrease the total, so they reflect a percent decrease.
> - Regardless of the application, the percent relationship can be represented as
>
> $$\text{Quantity(Part)} = \text{Percent(\%)} \times \text{Whole}$$

Problem Set

1. A school district's property tax rate rises from 2.5% to 2.7% to cover a $300,000 budget deficit (shortage of money). What is the value of the property in the school district to the nearest dollar? (Note: Property is assessed at 100% of its value.)

2. Jake's older brother Sam has a choice of two summer jobs. He can either work at an electronics store or at the school's bus garage. The electronics store would pay him to work 15 hours per week. He would make $8 per hour plus a 2% commission on his electronics sales. At the school's bus garage, Sam could earn $300 per week working 15 hours cleaning buses. Sam wants to take the job that pays him the most. How much in electronics would Sam have to sell for the job at the electronics store to be the better choice for his summer job?

3. Sarah lost her science book. Her school charges a lost book fee equal to 75% of the cost of the book. Sarah received a notice stating she owed the school $60 for the lost book.

   a. Write an equation to represent the proportional relationship between the school's cost for the book and the amount a student must pay for a lost book. Let B represent the school's cost of the book in dollars and N represent the student's cost in dollars.

   b. What is the constant or proportionality? What does it mean in the context of this situation?

   c. How much did the school pay for the book?

4. In the month of May, a certain middle school has an average daily absentee rate of 8% each school day. The absentee rate is the percent of students who are absent from school each day.

  a. Write an equation that shows the proportional relationship between the number of students enrolled in the middle school and the average number of students absent each day during the month of May. Let s represent the number of students enrolled in school, and let a represent the average number of students absent each day in May.

  b. Use your equation to complete the table. List **5** possible values for s and a.

s	a

  c. Identify the constant of proportionality, and explain what it means in the context of this situation.

  d. Based on the absentee rate, determine the number of students absent on average from school during the month of May if there are 350 students enrolled in the middle school.

5. The equation shown in the box below could relate to many different percent problems. Put an X next to each problem that could be represented by this equation. For any problem that does not match this equation, explain why it does not. $\boxed{\text{Quantity} = 1.05 \cdot \text{Whole}}$

  _____ Find the amount of an investment after 1 year with 0.5% interest paid annually.

  _____ Write an equation to show the amount paid for an item including tax, if the tax rate is 5%.

  _____ A proportional relationship has a constant of proportionality equal to 105%.

  _____

Whole	0	100	200	300	400	500
Quantity	0	105	210	315	420	525

  _____ Mr. Hendrickson sells cars and earns a 5% commission on every car he sells. Write an equation to show the relationship between the price of a car Mr. Hendrickson sold and the amount of commission he earns.