



## 7.G.1 and 6

I can find the tax on items using proportional relationships in either one-step or multi-step actions.

Investigation

3

## Markups, Markdowns, and Measures: Using Ratios, Percents, and Proportions

Latasha bought a concert ticket. She does not remember the price of the ticket, but she remembers that she had to pay \$1 in tax. Sales tax where Latasha lives is 8%. She drew a percent bar to find the original price.

Ticket Price

Ticket Price

Percent bars can help you keep track of values in a problem involving percents. You can also use a percent table to organize the information in a percent problem. Latasha used a percent table to solve the same problem.

Ticket Price				
Percent	8% (tax)	1%	100% (original ticket price)	108% (total price)
Dollars	1	0.125	■	■

- How are percent tables and rate tables similar? How are they different?
- How can Latasha find the missing values in the table?

As a team, answer the questions on [page 71](#). Record the answers in your graph paper.

For #1-3, set up and solve a proportion to find the sales tax. Then calculate the final cost.

1. a sweater for \$36.00 at 7% sales tax

For #1-3, set up and solve a proportion to find the sales tax. Then calculate the final cost.

2. a skateboard for \$62.80 at 6% sales tax
3. a baseball hat for \$22.90 at 5% sales tax

## Class Work Answers:

1. tax = \$2.52, total cost = \$38.52
 
$$\frac{\$36.00}{100\%} = \frac{\$x}{7\%}$$
2. tax = \$3.77, total cost = \$66.57
 
$$\frac{\$62.80}{100\%} = \frac{\$x}{6\%}$$
3. tax = \$1.15, total cost = \$24.05
 
$$\frac{\$22.90}{100\%} = \frac{\$x}{5\%}$$

For #4-5, set up and solve a proportion to find the final cost including sales tax.

4. a digital camera for \$249.99 at 4% sales tax

5. a board game for \$29.95 at 8% sales tax

## Class Work Answers:

4. total cost = \$259.99

$$\frac{\$249.99}{100\%} = \frac{\$x}{104\%}$$

5. total cost = \$32.35

$$\frac{\$29.95}{100\%} = \frac{\$x}{108\%}$$

## 3.1 Commissions, Markups, and Discounts

Proportions With Percents

Salespeople who sell cars, houses, and fancy jewelry often work on commission. Typically, a **commission** is a percentage of the sale price of an item.

Alternatively, a commission may be a percentage of the item's markup. The **markup** is the difference between the *buying price*, the cost for a store or dealer to buy an item, and the *selling price*, the price the store or dealer sets for their customers.

### Did You Know?

**Car dealerships** buy cars at a certain cost. Then, they mark up the price of the car. They do this so that they can pay their salespeople and make any repairs to the used cars, but still make a profit. To make a profit, the *selling price* must be higher than the *buying price*.

### commission

The amount earned, based on the percent of total sales.

ex:

a salesperson earns 10% commission and sells \$60,000 worth of cars  
commission = 10% of \$60,000 = \$6,000

### markup

The amount added to the buying price of an item (usually a percent of the price), used to set the selling price.

ex:

at the used car lot, there is a 15% markup on the buying price of \$20,000  
markup = 15% of \$20,000 = \$3,000  
selling price = \$3,000 + \$20,000 = \$23,000

As a team, answer the questions on page 64.  
Record the answers in your graph paper.

A At Carla's Used Cars, Huan earns a commission that is 25% of the markup on the car. Huan recently sold the cars below.

the sedan

1. For each car, what was Huan's commission in dollars? Explain how you found the commissions.



## Class Work Answers:

A. 1. The commission is a percentage of the markup, so the markup would be considered the whole. This means the markup is equivalent to 100%, and the commission is equivalent to 25%.

$$\text{sedan: } \frac{\$300}{100\%} = \frac{\$c}{25\%} \quad c = 300 \cdot 0.25 = \boxed{\$75}$$

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markup = 15% of \$20,000 = \$3,000  
selling price = \$3,000 + \$20,000 = \$23,000

## Warm-Up

In your graph paper, answer the following questions:

Latasha paid \$1 in tax when she bought a concert ticket, and the sales tax where she lives is 8%.

How much money would 1% be?  
Write and solve a proportion to find the answer.

## Good Morning

Today you will need:

- corrected homework
- graph spiral
- calculator
- pencil

Head your graph spiral for Problem 3.1

## 3.1 Commissions, Markups, and Discounts

Proportions With Percents

Salespeople who sell cars, houses, and fancy jewelry often work on commission. Typically, a **commission** is a percentage of the sale price of an item.

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**A** At Carla's Used Cars, Huan earns a commission that is 25% of the markup on the car. Huan recently sold the cars below.

the sedan

1. For ~~each car~~, what was Huan's commission in dollars? **Explain** how you found the commissions.

The commission is a percentage of the markup, so the markup would be considered the whole. This means the markup is equivalent to 100%, and the commission is equivalent to 25%.

$$\text{sedan: } \frac{\$300}{100\%} = \frac{\$C}{25\%} \quad C = 300 \cdot 0.25 = \boxed{\$75}$$



As a team, answer the questions on pages 64 and 65.  
Record the answers in your graph paper.

2. At Carla's, the markup on a car is 10% of the buying price, the price at which Carla bought the car.

the sedan

- a. For ~~each car~~, what was Carla's buying price? **Explain**.



2. At Carla's, the markup on a car is 10% of the buying price, the price at which Carla bought the car.

the sedan

b. For each car, what was the selling price? Explain.



## Class Work Answers:

A. 2. The markup is a percentage of the buying price, so the buying price would be considered the whole. This means the buying price is equivalent to 100%, and the markup is equivalent to 10%.

$$\text{sedan: } \frac{\$300}{10\%} = \frac{\$B}{100\%} \quad B = 300 \cdot 10 = \$3000 \text{ buying price}$$

3. The selling price is equal to the buying price plus the markup, so the selling price of the sedan is \$3,300.

3. a. Carla buys a minivan for \$20,500. She writes a proportion to find the selling price  $S$ .

$$\frac{S}{110} = \frac{20,500}{100}$$

Is Carla's method correct? Explain.

c. Huan checks the selling price Carla found. He uses  $M$  to represent the markup.

$$\frac{M}{10} = \frac{20,500}{100}$$

Is Huan's method correct? Explain.

## Class Work Answers:

A. 3. a. Carla's method is correct. The selling price (110%) is the buying price (100%) plus the markup (10%).

c. Huan's method is correct, but he will have to add the answer ( $M$ ) to the buying price.

## Good Morning

Today you will need:

- corrected homework
- blue vocab sheet
- graph spiral
- calculator
- pencil

Head your graph spiral for Problem 3.1

## 3.1 Commissions, Markups, and Discounts

Proportions With Percents

Salespeople who sell cars, houses, and fancy jewelry often work on commission. Typically, a **commission** is a percentage of the sale price of an item.

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### Did You Know?

**Car dealerships** buy cars at a certain cost. Then, they mark up the price of the car. They do this so that they can pay their salespeople and make any repairs to the used cars, but still make a profit. To make a profit, the *selling price* must be higher than the *buying price*.

As a team, answer the questions on page 65.  
Record the answers in your graph paper.

**C** Huan takes the job at Otto's Used Autos. Otto has a luxury sedan for sale at a selling price of \$20,700. At Otto's, the markup is 15% of the buying price.

**2.** Otto offers a discount on his cars. If Otto takes 15% off the selling price of the luxury sedan, what will be the final price for customers? Write and solve a proportion to find the discount. Then, calculate the final price.



## Class Work Answers:

**C.** 1. \$18,000 buying price

$$\frac{\$20,700}{115\%} = \frac{B}{100\%}$$

2. The final price will be \$17,595

$$\frac{\$20,700}{100\%} = \frac{D}{15\%}$$

$$20,700 - 3105 = \$17,595$$

### discount

The amount subtracted from the price of an item (usually a percent of the price).

ex:

**sweaters are on sale at a discount of 25% off \$50**

$$\text{discount} = 25\% \text{ of } \$50 = \$12.50$$

$$\text{price} = \$50 - \$12.50 = \$37.50$$

As a team, answer the questions on page 78.  
Record the answers in your graph paper.

**38.** Bill's bike shop has a sale where the bike shop pays the customer's tax. By law, Bill has to charge a 6% sales tax, so he finds a different way to take the tax off the bill. Bill decides to give each customer a 6% discount. Bill sells a bike that originally costs \$100.

Write and solve a proportion to find the cost with sales tax. Then, write and solve a proportion to find the amount of the discount. Then, calculate the final cost.

## Class Work Answers:

**38.** \$106 after 6% tax

$$\frac{\$100}{100\%} = \frac{\text{price with tax}}{106\%}$$

Discount of \$6.36

$$\frac{\$106}{100\%} = \frac{\text{discount}}{6\%}$$

Final cost of \$99.64

## Homework:

none

**discount**

The amount subtracted from the price of an item (usually a percent of the price).

**ex:**

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$$\text{discount} = 25\% \text{ of } \$50 = \$12.50$$

$$\text{price} = \$50 - \$12.50 = \$37.50$$

