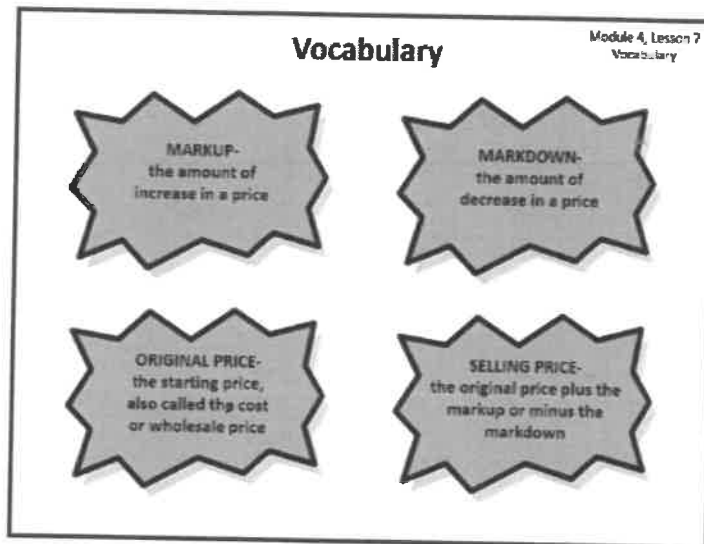


Lesson 7: Markup and Markdown Problems



Example 1: A Video Game Markup

Games Galore Super Store buys the latest video game at a wholesale price of \$30.00. The markup rate at Game's Galore Super Store is 40%. You use your allowance to purchase the game at the store. How much will you pay, not including tax?

What was the total markup of the video game? Explain.

You and a friend are discussing markup rate. He says that an easier way to find the total markup is by multiplying the wholesale price of \$30.00 by 40%. Do you agree with him? Why or why not?

Markup:

- Target buys Nintendo Switch for \$200. They have a 25% markup. What is the selling price?
- Lids buys Chicago Bears winter hats for \$10. They have a 30% markup. What is the selling price?
- A ski shop pays a wholesaler \$100 for a set of skis and sells them for \$325. What is the markup rate?
- Macy's pays a designer \$50 for a sweater and sells it for \$85. What is the markup rate?

Markdown:

- Mrs. Emerson is buying a new math shirt from Target. The price tag reads \$14.99 but she has a coupon code for 15% off. How much will she pay for the shirt (not including tax)?
- Mrs. Kueper is wasting her money on a new Green Bay Packers jersey. The jersey costs \$89.99 but she has a birthday coupon for 25% off! How much will she pay?
- Mrs. Haugen only paid \$14 for a new pink Starbucks cup that originally cost \$22. What was the discount rate?

Exercises

1. Sasha went shopping and decided to purchase a set of bracelets for 25% off the regular price. If Sasha buys the bracelets today, she will save an additional 5%. Find the sales price of the set of bracelets with both discounts. How much money will Sasha save if she buys the bracelets today?



Calculate the cost after the 25% discount.

Now take an additional 5% discount.

Working Backwards:

- A sign says the price marked on all spirit wear is 20% off the original price. You buy a t-shirt for \$10. What was the original price? How much money did you save?

- The cost of a Sox baseball hat is \$14. This is after a 40% discount. What was the original price?

Lesson 8: Percent Error Problems

$$\text{percent error} = \frac{\text{difference (subtract)}}{\text{actual (exact)}}$$

Exercises

Calculate the percent error for Problems 1–3.

1. A real estate agent expected 18 people to show up for an open house, but 25 attended.
2. In science class, Mrs. Moore's students were directed to weigh a 300-gram mass on the balance scale. Tina weighed the object and reported 328 grams.
3. Darwin's coach recorded that he had bowled 250 points out of 300 in a bowling tournament. However, the official scoreboard showed that Darwin actually bowled 225 points out of 300.

More Examples: *Find the Percent Error*

Ex: I thought 70 people would turn up to the concert, but in fact 80 did!

Ex: The reporter said the carpark held 240 cars, but we counted 200 parking spaces.

Ex: Sam does an experiment to find how long it takes an apple to drop 2 meters.

The theoretical value (using physics formulas) is 0.64 seconds, but Sam measured 0.62 seconds.

Now YOU try!

1. Sammy guessed that the jar of gumballs in the SSC had 1,200 inside. The actual amount was 1,500. What was his percent error?
2. Declan estimated that Mrs. Emerson's marble jar had 575 inside. She put 734 in there. How far off was his estimate?
3. The veterinarian weighed Ms. Byron's new puppy, Max, on a defective scale. He weighed 39 pounds. However, Max weighs exactly 34.5 pounds. What is the percent of error in measurement of the defective scale?

Time Other Than One Year

- 1) Mr. Pham has \$410,000 in a retirement account that earns 3.85% simple interest each year. Find the amount earned after **6 months** by this investment.
- 2) How much interest will Hannah earn in **4 months** if she deposits \$630 in a savings account at 6.5% simple interest?
- 3) Terry invested \$2,200 in the stock market for 2 years. If the investment earned 12%, how much money did Terry earn in **18 months**?

Solving for P , r , or t

- 1) Mrs. Williams wants to know how long it will take an investment of \$450 to earn \$200 in interest if the yearly interest rate is 6.5%, paid at the end of each year. ***(find t)**
- 2) Malik deposited \$1,050 in a savings account, and it earned \$241.50 in simple interest after four years. Find the interest rate on Malik's savings account. ***(find r)**
- 3) Find the initial amount invested if Mr. Mendoza earns \$600 in interest after 3 years at a 4% interest rate. ***(find p)**

Exercises

The school board has approved the addition of a new sports team at your school.

1. The district ordered 30 team uniforms and received a bill for \$2,992.50. The total included a 5% discount.
 - a. The school needs to place another order for two more uniforms. The company said the discount will not apply because the discount only applies to orders of \$1,000 or more. How much will the two uniforms cost?

**hint: \$2992.50 is what percent of the total original cost? It reflects a 5% discount...*

So, cost of 1 uniform = _____ Cost of 2 uniforms = _____

- b. The school district does not have to pay the 8% sales tax on the \$2,992.50 purchase. Figure out the total amount of sales tax the district saved on the \$2,992.50 purchase.
 - c. A student who loses a uniform must pay a fee equal to 75% of the school's cost of the uniform. For a uniform that cost the school \$105, will the student owe more or less than \$75 for the lost uniform?
2. A taxpayer claims the new sports team caused his school taxes to increase by 2%.
If a taxpayers' school taxes rose from \$4,000 to \$4,020, was there a 2% increase?

You try... with a partner

3. The sports booster club sold candles as a fundraiser to support the new team. The club earns a commission on its candle sales (which means it receives a certain percentage of the total dollar amount sold). If the club gets to keep 30% of the money from the candle sales, what would the club's total sales have to be in order to make at least \$500?

***hint: \$500 is 30% of what amount?**

4. Christian's mom works at the concession stand during sporting events. She told him they buy candy bars for \$0.75 each and mark them up 40% to sell at the concession stand. What is the amount of the markup? How much does the concession stand charge for each candy bar?

Markup amount = _____

Cost of each candy bar = _____

5. For the next school year, the new soccer team will need to come up with \$600. Suppose the team earns \$500 from the fundraiser at the start of the current school year, and the money is placed for one calendar year in a savings account earning 0.5% simple interest annually. How much money will the team still need to raise to meet next year's expenses?

**reminder: $I = prt$*

6. The soccer players decide to buy 15 team t-shirts on their own that cost \$14.99 each and they get a 25% discount for ordering more than 10 shirts. However, they also have to pay 8% sales tax. What is the total amount a player would owe for 1 shirt?

Total amount for all shirts (plus tax) = _____

Cost of 1 shirt (with tax) = _____