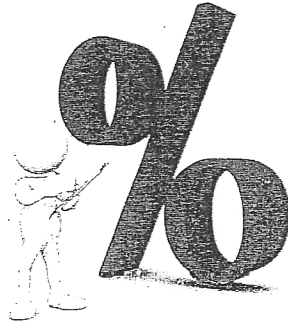


Name _____

Period Key

Markup, Markdown, Tax, and Commission Problems



Definition:

- A markup is the amount of increase in a price.
- A markdown is the amount of decrease in a price.
- The original price is the starting price. It is sometimes called the cost or wholesale price.
- The selling price is the original price plus the markup or minus the markdown.
- The markup rate is the percent increase in the price, and the markdown rate (discount rate) is the percent decrease in the price.

Markup Problems: $Selling Price = (1 + r)(original price)$, where r is the markup rate.

Markdown/Discount Problems: $Selling Price = (1 - r)(original price)$, where r is the mark down ra

Example 1: Markup

Games Galore Super Store buys the latest video game at a ^{original} wholesale price of \$30.00. The markup rate at Game's Galore Super Store is 40%. How much will you pay, not including tax?

selling price?

$$\begin{aligned} \text{selling price} &= (1+r)(\text{original amt}) \\ &= (1+.40)(30) \\ &= (1.40)(30) \\ &= \$42 \end{aligned}$$

This makes sense because the selling price should be more than the original price (with the markup).

Example 2: Double Discount

A \$300 mountain bike is discounted by 30% and then discounted an additional 10% for shoppers who arrive before 5:00 a.m. Find the sales price of the bicycle.

1st calculate discount 30%

2nd calculate discount 10%

$$\begin{aligned} \text{Selling price} &= (1-r)(\text{original}) \\ &= (1-.30)(300) \\ &= (.70)(300) \\ &= \boxed{\$210} \end{aligned}$$

$$\begin{aligned} \text{Selling price} &= (1-r)(\text{original}) \\ &= (1-.10)(210) \\ &= (.90)(210) \\ &= \boxed{\$189} \end{aligned}$$

The bike cost \$210 after 30% discount

Final price

Example 3: Sales Tax

A new snowmobile is \$6,500 and the sales tax is 8.75%. Find the total cost.

original

r = .0875

$$\begin{aligned} \text{selling price} &= (1+r)(\text{original}) \\ &= (1+.0875)(6500) \\ &= (1.0875)(6500) \\ &= \$7,068.75 \end{aligned}$$

Tax makes price increase... because it is a markup

How much was the tax?

$$\begin{array}{r} 7068.75 \\ -6500.00 \\ \hline \$568.75 \end{array} \text{ or}$$

$$\begin{aligned} \text{Part} &= \% \times \text{whol.} \\ &= .0875(6500) \\ &= \$568.75 \end{aligned}$$

Example 4: Commission

What is the commission if ^{selling price} sales are \$291.50 and the rate of commission is 3.75%.

$$r = .0375$$

Part = % of whole

$$\text{Commission} = \% (\text{selling price})$$

$$= .0375 (291.50)$$

$$= 10.93125$$

$$= \$10.93$$

money is always rounded to the hundredths...
2 decimal places

Example 5: Discount and Sales Tax

Jim buys a TV on sale. If it was ^{original} originally marked \$350 but is on sale at 30% off, find his total cost including $8\frac{3}{4}\%$ sales tax.

$$r = .30$$

$$r = 8.75 = .0875$$

1st calculate sales price

2nd calculate tax

$$\text{selling price} = (1 - r)(\text{original})$$

$$= (1 - .30)(350)$$

$$= .70(350)$$

$$= \$245$$

$$\text{selling price} = (1 + r)(\text{original})$$

$$= (1 + .0875)(245)$$

$$= 1.0875(245)$$

$$= \$266.44$$

Example 6: Working Backwards

A car that normally sells for \$20,000 is on sale for \$16,000. Find the discount rate.

$$r = ?$$

$$\text{selling price} = (1 - r)(\text{original})$$

$$\frac{16,000}{20,000} = \frac{(1 - r)(20,000)}{20,000}$$

$$\begin{array}{r} .8 = 1 - r \\ -1.0 \quad -1.0 \\ \hline -0.2 = -r \end{array}$$

$$.2 = r$$

$$.2 \times 100 = 20\%$$

discount
↳ markdown

To solve...
÷ both sides by 20,000

Name _____ Period _____

MARKUP AND DISCOUNT

PRACTICE: Complete the following Table:

Original Price	Markup Rate	Markup	Selling Price
\$100	20%	_____	_____
\$350	_____	_____	\$371
_____	10%	_____	\$550
\$200	_____	\$50	_____

PRACTICE: Complete the following Table:

Original Price	Discount Rate	Discount	Sale Price
\$300	20%	_____	_____
\$400	_____	_____	\$320
_____	10%	_____	\$585
\$200	_____	\$50	_____

APPLICATION PROBLEMS:

1. A Jewelry Store uses a markup rate of 80% on all items. If a necklace cost the store \$30.00, find the selling price.
2. The cost of a baseball glove is \$50.00, the Sporting Goods Store sells it for \$60.00. Find the markup rate.
3. A Scrabble Game is on sale for \$8.50. If the regular price is \$10.00, find the discount rate.
4. A \$250 Suede Jacket is on sale for 20% off. How much should you pay for the jacket?
5. A dress was on sale for \$75. Find the original price if the dress had been discounted 25%.
6. A computer company uses a markup rate of 50%. If a computer game costs the company \$40.00, find the selling price.
7. A tennis racket is sold for \$39.00. If the cost to the store was \$30.00, find the markup rate.
8. A set of golf clubs sells for \$300. If the clubs were marked up 20%, find the cost of the clubs.
9. A bracelet that regularly sells for \$44 is on sale for 25% off. Find the sale price of the bracelet.
10. A car that normally sells for \$20,000 is on sale for \$18,000. Find the discount rate.