

Section 1.2: Percentages, Mark-Ups, and Discounts

Part I: Review of Percentages

The term percent means: "PER 100" (OUT OF 100)

$$20\% = \frac{20}{100} = 0.20$$

$$92\% = \frac{92}{100} = 0.92$$

$$7\% = \frac{7}{100} = 0.07$$

Examples:

1. What is 15% of 40? \$6 TIP

$$X = 15\% \times 40$$

$$X = 0.15 \times 40$$

$$X = 6$$

2. 32% of 674 is what?

$$32\% \cdot 674 = X$$

$$0.32 \cdot 674 = X$$

$$215.68 = X$$

Part II: The concept of a Mark-up

As consumers, when we purchase an item from a retailer, the item is marked-up a percentage so the retailer can make a profit on the sale.

Examples of Retailers: R. V. BOOKSTORE : 30% MARKUP

WALMART : 15% MARKUP

BEST BUY : 35% MARKUP

TAX : 2.5% MARKUP

The Mark-up Formula:

$$\text{RETAIL PRICE} = \text{WHOLE SALE PRICE} + \text{MARKUP}$$

PROFIT

Part III: The concept of a discount

When items are on sale, a discount (usually a percentage) off and original retail price exists usually to entice a consumer to make a purchase of an item.

The Discount Formula:

$$\text{SALES PRICE} = \text{RETAIL PRICE} - \text{DISCOUNT}$$

Section 1.2: Examples of Mark-ups and Discounts

Part I: Mark-Up Examples

1. Walmart buys a TV from Sony for \$300 and marks the TV up 35%. What was the retail price of the TV at Walmart that a consumer must pay?

$$\begin{aligned}\text{RETAIL PRICE} &= \text{WHOLESALE} + \text{MARKUP} \\ \text{RETAIL PRICE} &= \$300 + 35\% (\$300) \\ &= \$300 + 0.35 (\$300) \\ &= \$300 + \$105 \text{ PROFIT!} \\ &= \$405\end{aligned}$$

2. What is the retail price of a car that was purchased by a dealership for \$12,000 if the car is marked-up 55% by the dealership?

$$\begin{aligned}\text{RETAIL PRICE} &= \$12,000 + 55\% (\$12,000) \\ &= \$12,000 + 0.55 (\$12,000) \\ &= \$12,000 + \$6600 \leftarrow \text{PROFIT!} \\ &= \underline{\underline{\$18,600}}\end{aligned}$$

3. **What was the wholesale price of a book that retails at the RU bookstore for \$120 and was marked up 30%?

$$\begin{aligned}\text{RETAIL PRICE} &= \text{WHOLESALE} + \text{MARKUP} \\ \$120 &= X + 30\% X \\ \$120 &= 1X + 0.30X \\ \frac{\$120}{1.30} &= \frac{1.30X}{1.30} \quad \boxed{X = \$92.31}\end{aligned}$$

4. ** What is the wholesale price of a car that retails for \$17,000 if it was marked up 15% by the dealership?

$$\begin{aligned}\text{RETAIL PRICE} &= \text{WHOLESALE} + \text{MARKUP} \\ \$17,000 &= X + 15\% (X) \\ \$17,000 &= 1X + 0.15 (X) \\ \frac{\$17,000}{1.15} &= \frac{1.15X}{1.15} \\ \boxed{\$14,782.61 = X}\end{aligned}$$

Part II: Discount Examples

1. A jacket retails for \$120 at The Gap. If it is discounted 20%, what is the sales price of the jacket?

$$\begin{aligned}\text{SALES PRICE} &= \text{RETAIL} - \text{DISCOUNT} \\ \text{SALES PRICE} &= \$120 - 20\% (\$120) \\ &= \$120 - 0.20 (\$120) \\ &= \$120 - \$24 \\ &= \$96\end{aligned}$$

2. **What is the retail price of a necklace if the sales price is \$45 and the discount is 20%?

$$\begin{aligned}\text{SALES PRICE} &= \text{RETAIL} - \text{DISCOUNT} \\ \$45 &= x - 20\% (x) \\ \$45 &= x - 0.20(x) \\ \$45 &= 1x - 0.20(x) \\ \$45 &= 0.80x \\ \frac{\$45}{0.80} &= \frac{0.80x}{0.80} \\ x &= \$56.25\end{aligned}$$

3. What is the retail price of a shirt if the sales price is \$30 and the discount is 25%?

$$\begin{aligned}\$30 &= x - 25\% (x) \\ \$30 &= 1x - 0.25(x) \\ \frac{\$30}{0.75} &= \frac{0.75x}{0.75} \\ \$40 &= x\end{aligned}$$