13

TRADE & CASH DISCOUNT: MARKUP & MARKDOWN

CONTENTS

DISCOUNT

A **trade discount** is an amount removed from the list price. It is the difference between the list price and the net price. It is also the product of the discount rate and the list price. The **discount rate** is a percent of the list price. The **list price** is the suggested retail price determined by the manufacturer or distributor and listed in the product catalogue. The **net price** is the list price minus the trade discount.

Trade discount = Discount rate × List price
Net price = List price − Trade discount

☑ EXAMPLE 13.1

If a pen lists for \$80 and is discounted at 30%, what are (a) the amount of discount, and (b) the net price?

SOLUTION **tips**

a) Discount rate = 30% List price = \$80
Trade discount = Discount rate × List price
= 30% × \$80 = 0.3 × 80 = \$24
The trade discount is \$56.

Change the percent to a decimal number before multiplying.

b) Net price = List price - Trade discount = \$80 - \$24 = \$56
The net price is \$56.

☑ EXAMPLE 13.2

A piece of land in Lekki initially cost \$180 million. It is now on sale for 22% off. Find (a) the amount of discount, and (b) the net price?

SOLUTION **tips**

a) Trade discount = Discount rate × List price
= 0.22 × \$180 = \$39.6 million
b) Net price = List price – Trade discount
= \$180 − \$39.6 = \$140.4 million

NOTE: It is easier to compute the net price using the **Net Price Factor (NPF)** approach, using the following formula:

$$\textbf{Net Price} = (1 - \textbf{Discount rate})\textbf{List Price}$$

Or

$$\mathbf{N} = (1 - \mathbf{D})\mathbf{L}$$

☑ EXAMPLE 13.3

Mbappé's Choco sells chocolate for $25.25 less 25%. What is the net price?

SOLUTION**tips**

The net price is

$$N = (1 - 0.25) \times 25.25 = 0.75 \times 25.25$$
$$= \$18.94$$

So, the net price after the 25% discount is $18.93.

Discount Series

Often, to induce customers to buy a product, salespeople offer multiple discounts, called a **discount series**. In such a case, the first discount is based on the original price while the second and third discounts are based on the already discounted price.

The net price in a discount series can be calculated as follows:

If there are 2 discounts:

$$\mathbf{N} = (1 - \mathbf{D_1})(1 - \mathbf{D_2})\mathbf{L}$$

If there are more than 2 discounts:

$$\mathbf{N} = (1 - \mathbf{D_1})(1 - \mathbf{D_2})(1 - \mathbf{D_3}) \ldots\ldots (1 - \mathbf{D_N})\mathbf{L}$$

It is therefore possible to determine a **Single Equivalent Discount (SED)** equal to a series of discounts using the formula:

$$\mathbf{SED} = 1 - [(1 - \mathbf{D_1})(1 - \mathbf{D_2})(1 - \mathbf{D_3}) \ldots\ldots (1 - \mathbf{D_N})]$$

☑ EXAMPLE 13.4

An artwork is listed for $390 less 11%, 6%, and 3%. Find (a) the net price, (b) the total amount of discount, and (c) the exact single rate of discount.

SOLUTION**tips**

a) The net price is

$$N = (1 - D_1)(1 - D_2)(1 - D_3)L = (1 - 0.11)(1 - 0.06)(1 - 0.03)\$390$$
$$= (0.811502)\$390 = \$316.48$$

b) The total amount of discount = 390 − 316.48 = $73.52

c) The single equivalent discount, SED = 1 - 0.811502 = 0.188498 or 18.85%.

↘ WORKOUT 13.1

1. Find the net price for list price $30 less 30%.
2. A bank is listed for $100 billion less 10%, 5%, and 2%. Find (a) the net price, (b) the total amount of discount, and (c) the exact single rate of discount.
3. A used car listed at $5,284 is subject to discounts of 25%, 10%, 10%, and 5%. Find (a) the net price, (b) the total amount of discount, and (c) the exact single rate of discount?