(A) Profit and Loss

percentage profit =
$$\frac{\text{profit}}{\text{cost price}} \times 100\%$$

percentage loss =
$$\frac{loss}{cost price} \times 100\%$$

(B) Interest is the fee earned when you put money in the bank or the "fee" charged when you borrow money from a bank.

The formula for calculation of interest is:

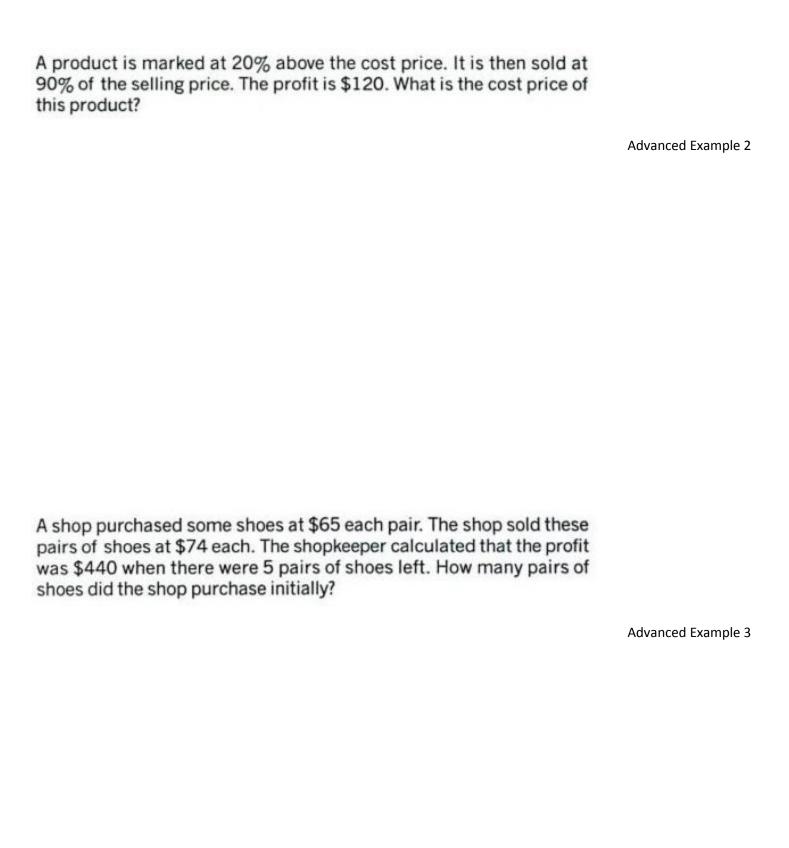
simple interest = principal
$$\times$$
 rate \times time

Where **principal** is the initial amount of money, **rate** is the percentage earned or charged by the bank, **time** is the period in order to earn or being charged on the interest, usually on a yearly or quarterly basis.

In the computation of Compound Interest, the interest earned for the first period of the time forms part of the principal for the computation of interest for the second period of the time and so on.

The selling price of a figurine is \$8000. If it is sold at \$4800, the profit is 20%. How much should it be sold for if the profit has to be 75%?

Advanced Example 1



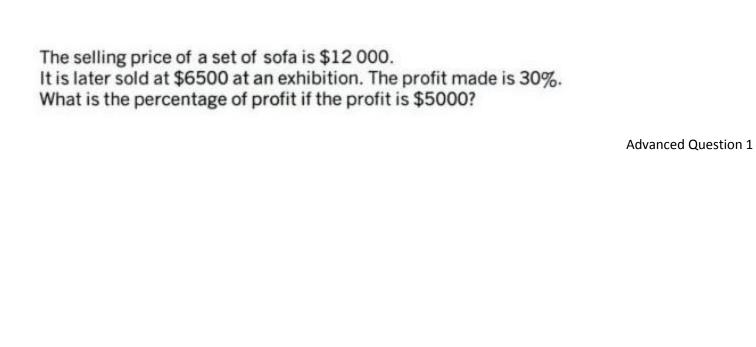
A bank charged 8% annual interest on the money lent to the customers. John borrowed \$20 000 from the bank that was repayable within 6 years.

- (a) What was the payable interest?
- (b) What was the total amount payable?
- (c) What was the monthly repayment?

Advanced Example 4

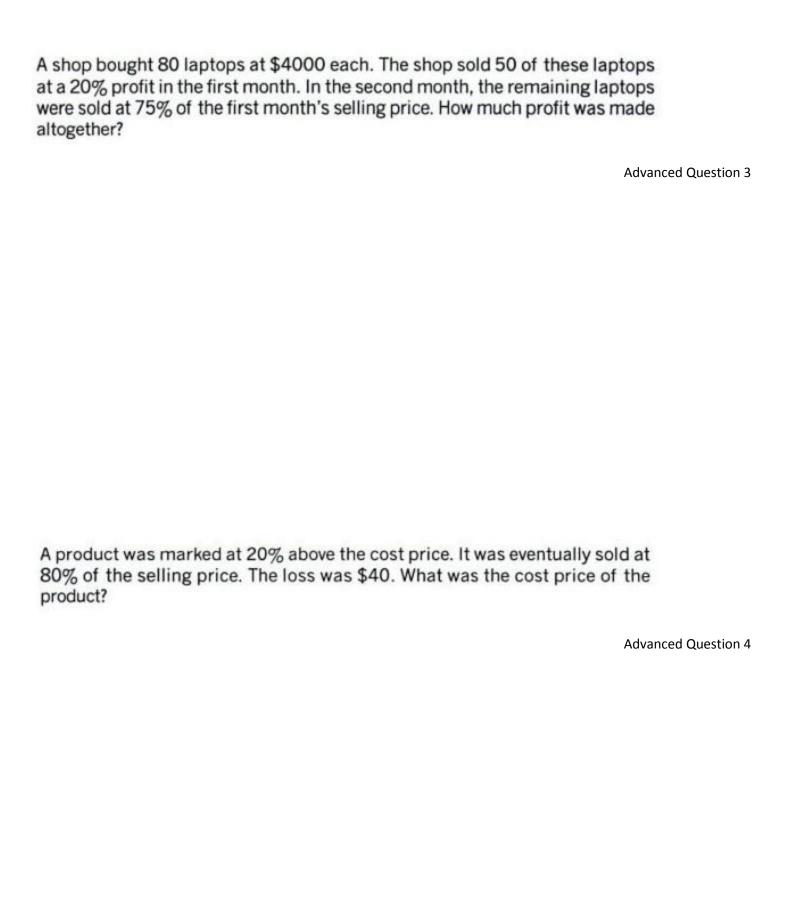
Mr Young deposited \$30 000 with a bank which pays an interest of 5%. How much interest will be earned at the end of 3 years if the rate is compounded every year?

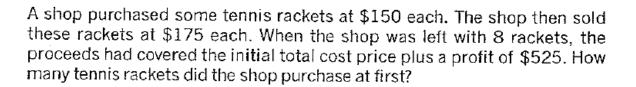
Advanced Example 5



The Megamart sold 60% fewer cans of soft drinks than mineral water on Sunday. The profit of each can of mineral water is 70% less than that of each can of soft drinks. The profit gained from selling the cans of soft drinks was \$1200. What was the profit gained from the sales of cans of mineral water?

Advanced Question 2

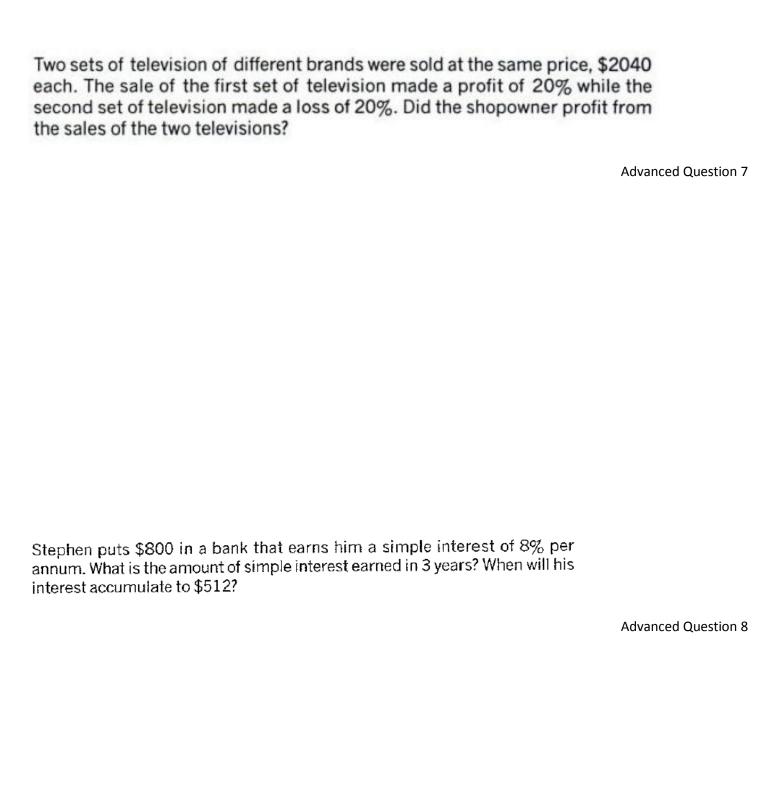




Advanced Question 5

The cost of publishing a children book for a publishing house has gone up by 10% as compared to last year but the publisher wishes to maintain the selling price of the book. The profit for each book drops by 40% as a result. The number of books purchased, however, increases by 80%. What is the percentage increment in the profit?

Advanced Question 6



Maurice deposits \$500 with the bank. The interest rate is calculated at 3% on a yearly basis. How much will she get at the end of 2 years?

Advanced Question 9

Solution for Advanced Example 1

cost price =
$$\frac{$4800}{120\%} \times 100\% = $4000$$

To make a 75% profit,
 $$4000 \times 175\% = 7000
it should be sold for **\$7000**.

Solution for Advanced Example 2

If the cost price is \$n, marked price = $n \times (1 + 20\%)$ = 1.2 nselling price = $1.2 n \times 90\%$ = 1.08 nprofit = selling price – cost price = 1.08 n - n= 0.08 n 0.08 n = \$120n = \$1500

The cost price of this product is \$1500.

Solution for Advanced Example 3

Total profit = $$440 + 74×5 = \$810Profit from each pair = \$74 - \$65 = \$9Number of pairs of shoes = $$810 \div $9 = 90$ The shops purchased **90** pairs of shoes initially.

Solution for Advanced Example 4

- (a) Interest = $$20\,000 \times 0.08 \times 6 = 9600 The payable interest was \$9600.
- (b) \$20 000 + \$9600 = \$29 600 The total amount payable was \$29 600.
- (c) \$29 600 ÷ (6 × 12) = \$411 $\frac{1}{9}$ or \$411.11 The monthly repayment was \$411.11.

Solution for Advanced Example 5

The interest earned for each year:

\$4728.75 will be earned at the end of 3 years if the rate is compounded every year.

Solution for Advanced Question 1

cost price =
$$\frac{$6500}{130} \times 100 = $5000$$

 $\frac{5000}{5000} \times 100\% = 100\%$

The percentage of profit is 100% if the profit is \$5000.

Solution for Advanced Question 2

Ratio of profits = (100% - 60%) : (100% - 70%)= 40 : 30= 4 : 3Profit from selling mineral water = $1200 \div \frac{4}{3} = 1200 \times \frac{3}{4} = 900

The profit gained from the sales of cans of mineral water was \$900.

Solution for Advanced Question 3

profit in the first month
= $(\$4000 \times 20\%) \times 50$ = \$40 000selling price in the second month
= $(100\% + 20\%) \times 75\%$ = $120\% \times 75\%$ = 90%loss in the second month
= $\$4000 \times (100\% - 90\%) \times (80 - 50)$ = \$12 000Total profit = \$40 000 - \$12 000= \$28 000A profit of \$28 000 was made altogether.

Solution for Advanced Question 4

Let the cost price be C.

marked price =
$$C \times (1 + 0.2) = 1.2 C$$

selling price = 1.2
$$C \times 0.8 = 0.96 C$$

loss =
$$C - 0.96 C = 0.04 C$$

$$0.04 C = $40$$

 $C = 1000

The cost price of the product was \$1000.

Solution for Advanced Question 5

total profit =
$$$525 + 8 \times $175 = $1925$$

The shop purchased 77 tennis rackets at first.

Solution for Advanced Question 6

(1) Suppose the cost price of the book is \$8 and was sold for \$10.

Last year's profit = \$10 - \$8
= \$2 each book
The cost increased to =
$$8 \times 110\%$$

= \$8.80
This year's profit = \$10 - \$8.80
= \$1.20
Percentage drop = $\frac{2-1.20}{2} \times 100\%$
= $\frac{0.80}{2} \times 100\%$

(2) Suppose the number of books sold during last year was 1000, this year will be 1800.

Profit last year =
$$1000 \times $2$$

= $$2000$
Profit this year = $1800 \times 1.2
= $$2160$

$$= \frac{2160 - 2000}{2000} \times 100\%$$

$$= \frac{160}{2000} \times 100\%$$

The percentage increment in the profit is 8%.

Solution for Advanced Question 7

Cost price of the 1st set = \$2040
$$\div$$
 (1 + 0.2)
= \$1700
Cost price of the 2nd set = \$2040 \div (1 - 0.2)
= \$2550
profit amount = \$2040 - \$1700 = \$340

$$$510 - $340 = $170$$

No, the shopowner did not profit from the sales of the two televisions.

Solution for Advanced Question 8

Interest for 3 years = $$800 \times 0.08 \times 3 = 192 The amount of simple interest earned in 3 years is \$192.

Suppose it takes *n* years to have an interest of \$512.

 $512 = $800 \times 0.08 \times n$ 512 = 64n $n = 512 \div 64 = 8$

His interest will accumulate to \$512 in 8 years.

Solution for Advanced Question 9

Interest at the end of 1^{st} year = \$500 × 3% × 1 = \$15

Total amount at the end of 1st year = \$500 + \$15 = \$515

Interest at the end of 2^{nd} year = $$515 \times 3\% \times 1 = 15.45

Total amount at the end of the 2^{nd} year = \$515 + \$15.45 = \$530.45

She will get \$530.45 at the end of 2 years.