

A Machine Costs Rs. 480. It Is Sold At A Profit Of 40%. What Is The Selling Price

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Understanding the concept of profit and selling price is fundamental in the world of business and commerce. Whether you are a student preparing for exams, a small business owner, or someone interested in financial calculations, grasping how to determine the selling price based on cost and profit percentage is essential. In this article, we will explore the process of calculating the selling price of a machine that costs Rs. 480 and is sold at a profit of 40%. We will go step-by-step, explain key concepts, and provide practical examples to ensure clarity.

Understanding Cost Price and Selling Price

Before diving into the calculation, it is crucial to understand the fundamental terms involved:

Cost Price (CP)

- The amount paid to acquire the product or service.
- Includes expenses like purchase price, manufacturing costs, transportation, taxes, etc.
- In our case, the cost price (CP) of the machine is Rs. 480.

Selling Price (SP)

- The amount at which the product or service is sold to customers.
- The ultimate price paid by the buyer.
- The goal is to determine the selling price when profit margins are specified.

Profit and Profit Percentage

- Profit is the gain obtained from selling a product.
- Profit percentage indicates the profit as a percentage of the cost price.
- In this scenario, profit is 40%.

Calculating the Selling Price

The fundamental formula to find the selling price when profit percentage is known is:

$$\text{Selling Price (SP)} = \text{Cost Price (CP)} + \text{Profit}$$

Since profit is expressed as a percentage of the cost price, we can write:

$$\text{Profit} = (\text{Profit Percentage} / 100) \times \text{Cost Price}$$

Putting it all together:

$$\text{SP} = \text{CP} + (\text{Profit Percentage} / 100) \times \text{CP}$$

Simplify the expression:

$$\text{SP} = \text{CP} \times (1 + \text{Profit Percentage} / 100)$$

Now, substitute the known values:

- CP = Rs. 480
- Profit Percentage = 40%

So,

$$\text{SP} = 480 \times (1 + 40 / 100) = 480 \times (1 + 0.40) = 480 \times 1.40$$

Calculating:

$$\text{SP} = 480 \times 1.40 = \text{Rs. } 672$$

Thus, the selling price of the machine is Rs. 672.

Step-by-Step Breakdown of the Calculation

Let's break down the process further for clarity.

Step 1: Identify the Cost Price

- Given: Rs. 480
- This is the amount paid to acquire the machine.

Step 2: Determine the Profit Percentage

- Given: 40%
- This means the seller aims to make a profit equal to 40% of the cost price.

Step 3: Calculate the Profit Amount

- Profit = (Profit Percentage / 100) × Cost Price
- Profit = (40 / 100) × 480 = 0.40 × 480 = Rs. 192

Step 4: Add Profit to Cost Price to Find Selling Price

- Selling Price = Cost Price + Profit
- Selling Price = 480 + 192 = Rs. 672

Additional Considerations

While the calculation above provides a straightforward method for determining the selling price given the cost and profit percentage, there are additional factors businesses might consider:

1. Markup Pricing

- Markup is the amount added to the cost to arrive at the selling price.
- It is often expressed as a percentage of the cost.

2. Profit Margin

- Profit margin refers to the percentage of the selling price that is profit.
- It differs from profit percentage based on cost.

3. Competitive Pricing

- Market conditions can influence the final selling price, sometimes leading to adjustments from the calculated price.

Practical Applications of Profit Calculation

Understanding how to calculate the selling price based on cost and profit percentage is vital across various scenarios:

- **Retail Business:** Setting prices for products to ensure profitability.
- **Manufacturing:** Determining the selling price of machinery, tools, or parts.
- **Service Industry:** Calculating service charges to include desired profit margins.
- **Financial Planning:** Budgeting and forecasting profits for future growth.

Example Problems for Practice

To reinforce understanding, here are some practice questions:

1. If a machine costs Rs. 600 and is sold at a profit of 25%, what is the selling price?
2. Calculate the profit percentage if a machine costing Rs. 800 is sold for Rs. 1,000.
3. A machine is sold at Rs. 1,200 after a profit of 20%. What was its cost price?

Solutions involve similar calculations using the formulas discussed.

Summary

In summary, to find the selling price when the cost price and profit percentage are known, the key formula is:

$$\text{Selling Price} = \text{Cost Price} \times (1 + \text{Profit Percentage} / 100)$$

In the specific case where a machine costs Rs. 480 and is sold at a profit of 40%, the selling price is Rs. 672. This calculation is fundamental for business owners, students, and professionals engaged in financial planning, ensuring they price their products appropriately to achieve desired profit margins.

Conclusion

Understanding and correctly applying profit calculations is essential for effective pricing strategies. By mastering this simple yet powerful formula, you can accurately determine the selling price of any product or machinery, ensuring profitability and competitiveness in the market. Remember, always clearly identify your cost price and desired profit percentage before performing your calculations. Whether you are selling machinery, goods, or services, these fundamental principles will guide you to make informed pricing decisions and achieve your business goals efficiently.

Frequently Asked Questions

What is the cost price of the machine if it is sold at a profit of 40% for Rs. 480?

The cost price is Rs. 342.

How do you calculate the selling price when the profit percentage is given?

$\text{Selling Price} = \text{Cost Price} + (\text{Profit Percentage} \times \text{Cost Price}) / 100.$

What is the formula for selling price given cost price and profit percentage?

$\text{Selling Price} = \text{Cost Price} \times (1 + \text{Profit Percentage} / 100).$

If a machine costs Rs. 480 and is sold with a 40% profit, what is the actual profit amount?

Profit amount = Rs. 192.

What is the selling price of the machine when it costs Rs. 480 and has a 40% profit?

The selling price is Rs. 672.

How do you find the profit percentage if you know the cost price and selling price?

$\text{Profit Percentage} = [(\text{Selling Price} - \text{Cost Price}) / \text{Cost Price}] \times 100.$

Is Rs. 480 the cost price or the selling price in this problem?

Rs. 480 is the cost price of the machine.

What is the importance of understanding profit percentage in business transactions?

It helps determine the selling price to ensure desired profit margins and assess profitability.

Can the formula for selling price be used to find the price if profit percentage changes?

Yes, the formula adjusts based on the new profit percentage to find the updated selling price.

Additional Resources

A Machine Costs Rs. 480. It Is Sold At A Profit Of 40%. What Is The Selling Price? – this is a common question in business mathematics and financial calculations that helps entrepreneurs, students, and professionals understand the concept of profit margins and selling price determination. Calculating the selling price of an item after a profit margin is added is fundamental in commerce, retail, manufacturing, and accounting. Whether you're setting a price for a new product, evaluating the profitability of an existing sale, or simply sharpening your financial acumen, mastering this calculation is essential.

In this article, we will explore the step-by-step process to determine the selling price of a machine that costs Rs. 480 and is sold at a profit of 40%. We will break down the concepts, provide formulas, and walk through the calculations in detail, ensuring clarity and understanding for readers at all levels.

Understanding the Basic Concepts

Before diving into the calculation, it's important to understand some basic terms:

Cost Price (CP)

The amount paid to acquire an item or the value of the item before adding any profit or profit margin. In our case, the cost price (CP) = Rs. 480.

Profit

The financial gain made when selling an item above its cost price. Profit is

usually expressed as a percentage of the cost price.

Profit Percentage

The profit percentage indicates how much profit is earned relative to the cost price. Here, profit percentage = 40%.

Selling Price (SP)

The final price at which the item is sold, including the profit. Our goal is to find this value.

Step-by-Step Calculation of Selling Price

1. Recognize the relationship between Cost Price, Profit, and Selling Price

The fundamental formula connecting these terms is:

$$\text{Selling Price (SP)} = \text{Cost Price (CP)} + \text{Profit}$$

Since profit is a percentage of the cost price, it can be expressed as:

$$\text{Profit} = (\text{Profit Percentage} / 100) \times \text{Cost Price}$$

Thus, the formula for selling price becomes:

$$\text{SP} = \text{CP} + (\text{Profit Percentage} / 100) \times \text{CP}$$

or more simply,

$$\text{SP} = \text{CP} \times (1 + \text{Profit Percentage} / 100)$$

2. Apply the values into the formula

Given:

- CP = Rs. 480
- Profit Percentage = 40%

Substituting into the formula:

$$\text{SP} = 480 \times (1 + 40 / 100)$$

which simplifies to:

$$\text{SP} = 480 \times (1 + 0.40)$$

$$\text{SP} = 480 \times 1.40$$

3. Perform the multiplication

Calculating:

$SP = 480 \times 1.40 = \text{Rs. } 672$

Hence, the selling price of the machine is Rs. 672.

Summary of the Calculation Process

Step	Description	Calculation	Result
1	Identify cost price	-	Rs. 480
2	Convert profit percentage to decimal	$40\% = 0.40$	0.40
3	Calculate selling price	$SP = CP \times (1 + \text{profit}\%)$	$\text{Rs. } 480 \times 1.40$
4	Final calculation	480×1.40	Rs. 672

The seller needs to set a selling price of Rs. 672 to realize a profit of 40% on the machine that costs Rs. 480.

Additional Insights and Related Concepts

Why Use the Percentage Formula?

The percentage formula provides a straightforward way to calculate the selling price when profit margins are given, which is common in real-world scenarios. It simplifies calculations and ensures consistency.

Alternative Methods

- Markup Method: If you know the markup percentage (profit over cost), you can add that directly to the cost.
- Using Ratio: Sometimes, expressing profit as a ratio of cost helps in complex pricing strategies.

Real-World Applications

- Setting retail prices for machinery, electronics, or any product.
- Determining profit margins for manufacturing companies.
- Pricing strategies in competitive markets.

Practice Problems

1. A laptop costs Rs. 30,000. It is sold at a profit of 25%. What is the selling price?

Solution: $SP = 30,000 \times (1 + 25/100) = 30,000 \times 1.25 = \text{Rs. } 37,500$

2. A car costs Rs. 5,00,000. The dealer wants to make a profit of 10%. What should be the selling price?

Solution: $SP = 5,00,000 \times (1 + 10/100) = 5,00,000 \times 1.10 = \text{Rs. } 5,50,000$

Conclusion

Calculating the selling price of an item based on its cost price and desired profit margin is an essential skill in business mathematics. By understanding the relationship between cost, profit percentage, and selling price, you can make informed pricing decisions that ensure profitability and competitiveness. In our example, a machine costing Rs. 480 sold at a 40% profit results in a selling price of Rs. 672. Mastering such calculations empowers entrepreneurs, students, and professionals to navigate the complexities of business finance with confidence and precision.

Remember: Always verify your calculations and consider other factors like taxes, discounts, and market conditions when setting actual selling prices in real-world scenarios.

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