

**Put
MATHS BACK ON TRACK**

**Save
the Children
&
MATHEMATICS!**

TEXT BOOKS

A Genuine
REFORM

Much Needed
and
Long Overdue

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for Excellence in Mathematics

Text Book vs Genuine Maths

Tamilnadu Govt. Textbook for Class 6

Example 32:

An article was bought at Rs. 450 and sold for Rs. 500. Find the profit or loss.

Solution:
C.P. of an article = Rs. 450
C.P. of an article = Rs. 500
S.P. is greater than C.P. so there is a profit.
Profit = S.P. – C.P.
= 500 – 450 = Rs. 50.

Example 33:

A television set was bought for Rs. 10,500 and sold at Rs. 9,500. Find the profit or loss.

Solution:
C.P. of the television set = Rs. 10500
S.P. of the television set = Rs. 9500
Here C.P. is greater than S.P. so there is a loss.
Loss = C.P. – S.P.
= 10,500 – 9,500 = Rs. 1000.

Example 34:

A bag is bought at Rs. 200 and sold at a profit of 10%. Find the selling price.

Solution:
Profit = 10% of Rs. 200
= $\frac{10}{100} \times 200 = \text{Rs. } 20$
S.P. = C.P. + Profit
= 200 + 20 = Rs. 220.

Discuss:

In the above example, we can simplify the procedure as follows:

$$\begin{aligned}\text{Selling Price} &= \left(\frac{100 + 10}{100} \right) \times \text{Cost Price} \\ &= \frac{110}{100} \times 200 = \text{Rs. } 220\end{aligned}$$

Genuine Maths Workings are with gray background

Article was bought for Rs.450;
Article was sold for Rs.500.
Profit = 500 – 450 = 50
Profit is Rs.50.

Television set was bought for Rs.10,500
Television set was sold for Rs. 9,500
Loss = 10,500 – 9,500 = Rs. 1000

Profit = 10% of 200 = 20
S.P. = 200 + 20 = 220
Selling Price = Rs.220.

Profit 10% \Rightarrow
cost is 100% and selling price is 110%
 \therefore selling price = 110% of 200
= 1.1 x 200 = Rs. 220

**Traditionally there is NO formula for Profit and Loss.
Nor is there a need for one.
This is just One of the Applications of Percentages.
These formulae have been INVENTED in the Last 10 years or so.**

Text Book vs Genuine Maths

NCERT Testbook for Class VIII

CHAPTER 4 - Profit, Loss and Discount

Example 1: Anwar purchased 120 oranges at the rate of Rs 2 per orange. He sold 60% of the oranges at the rate of Rs 2.50 per orange and the remaining oranges at the rate of Rs 2 per orange. Find his profit percent.

Solution: C.P. of 120 oranges = Rs 2 x 120 = Rs 240

$$60\% \text{ of } 120 \text{ oranges} = \frac{60}{100} \times 120 = 72 \text{ oranges}$$

Now S.P. of 72 oranges = Rs 2.50 x 72 = Rs 180

and S.P. of the remaining 120 – 72, i.e., 48 oranges = Rs 2x48 = Rs.96

$$\text{S.P. of all the 120 oranges} = \text{Rs } 180 + \text{Rs } 96 = \text{Rs } 276$$

Therefore profit = S.P. – C.P.

$$\therefore = \text{Rs } (276 - 240) = \text{Rs } 36$$

$$\text{Hence profit per cent} = \frac{36}{240} \times 100 = 15\%$$

Thus Anwar's profit is 15%

Example 2: Maninder bought two horses at Rs 20000 each. He sold one horse at 15% gain. But he had to sell the second horse at a loss. If he had suffered a loss of Rs 1800 on the whole transaction, find the selling price of the second horse.

Solution: Total C.P. of the two horses = 2 x Rs 20000 = Rs 40000

$$\text{Loss} = \text{Rs } 1800$$

$$\therefore \text{Total S.P.} = \text{Rs } 40000 - \text{Rs } 1800 = \text{Rs } 38200 \quad (1)$$

$$\text{Now S.P. of the first horse at 15\% profit} = \text{C.P.} \times \left(\frac{100 + \text{Profit \%}}{100} \right)$$

$$= \text{Rs } 20000 \frac{(100 + 15)}{100}$$

$$= \text{Rs } 23000 \quad (2)$$

$$\therefore \text{S.P. of the second horse} = \text{Rs } 38200 - \text{Rs } 23000$$

Thus, the selling price of the second horse is Rs 15200.

Genuine Maths Workings are with gray background

Solution:

$$\text{Anwar's cost price} = 2 \times 120 = \text{Rs.}240 \quad \text{--- (1)}$$

He sold 60% of mangoes at a profit of Rs.0.50 each

$$60\% \text{ of } 120 = 0.6 \times 120 = 72$$

$$\text{Anwar made a profit of } 0.50 \times 72 = \text{Rs.}36 \quad \text{--- (2)}$$

He sold the rest at Rs.2 only which is his cost (no profit, no loss).

Anwar's total profit is Rs.36 on a C. P. of Rs.240

$$\text{Profit} = \frac{36}{240} \times 100 = 15\%$$

Anwar's profit is 15%

Solution:

$$\text{Cost of 2 horses is Rs.}40000 \quad [2 \times 20000]$$

$$\text{Total loss} \quad \text{Rs. } 1800$$

$$\text{Total selling price} \quad \text{Rs.}38200$$

$$\text{Profit on the first horse is } 15\% = \text{Rs.}3000 \quad [10\% \text{ is } 2000, 5\% \text{ is } 1000]$$

$$\text{Selling price of first horse: Rs.}23000$$

$$\text{So selling price of second} = 38200 - 23000 = \text{Rs. } 15200.$$

Text Book vs Genuine Maths

NCERT Testbook for Class VIII
CHAPTER 4 - Profit, Loss and Discount

Example 4: A farmer sold two bullocks for Rs 18000 each. On one bullock he gained 20% and on the other he lost 20%. Find his total loss or gain.

Solution: S.P. of the first bullock = Rs 18000
Gain = 20%

Therefore

$$\text{C.P.} = \frac{100 \times \text{S.P.}}{100 + \text{Profit \%}}$$
$$= \text{Rs} \frac{100 \times 18000}{100 + 20} = \text{Rs } 15000$$

(1)

S.P. of the second bullock = Rs 18000
Loss = 20%

Therefore

$$\text{C.P.} = \frac{100 \times \text{S.P.}}{100 - \text{Loss \%}}$$
$$= \text{Rs} \frac{100 \times 18000}{100 - 20} = \text{Rs } 22500$$

(2)

Now, total C.P. = Rs 15000 + Rs 22500
= Rs 37500
and total S.P. = 2 X Rs 18000 = Rs 36000
Hence loss = Rs 37500 – Rs 36000
= Rs 1500

Example 3: By selling 144 hens, Malleshwari lost the S.P. of 6 hens. Find her loss percent.

Genuine Maths Workings are with gray background

Solution:

First Gain = 20% \Rightarrow C. P. is 100% and S. P. is 120%
S.P. of one bullock = Rs 18000
120% is 18000, then 100% is $18000 \div 1.2 = 15000$
C. P. of first bullock is Rs.15000 (1)

Second: Loss = 20% \Rightarrow C. P. is 100% and S. P. is 80%
S.P. is Rs 18000
80% is 18000, then 100% is $18000 \div 0.8 = 22500$
C. P. of second bullock is Rs.22500 (2)

Total cost of two bullocks is Rs.37500 [from (1) and (2)]
Total selling price is $18000 \times 2 = \text{Rs.}36000$

Total loss is Rs.1500

Example 3: By selling 144 hens, Malleshwari lost the S.P. of 6 hens. Find her loss percent.

This is a **Planted Problem**, not blending with the level and intensity indicated by the syllabus here.

Even though there is 'loss' mentioned here, what is the practical, natural and simple concept here which the child will learn and apply?

How does a problem of this 'difficulty' fit in here? Check the syllabus: **Ratio & Proportion** - "Slightly advanced problems involving applications on percentages, profit & loss, overhead expenses, Discount, tax."

Text Book vs Genuine Maths

EXAMPLE 1.

Mohit bought a CD for Rs.750 and sold it for Rs.875. Find his gain per cent.

Solution: CP = Rs.750 and SP = Rs.875.
 Since (SP) > (CP), mohit makes a gain.
 Gain = Rs.(875 – 750) = Rs. 125

$$\begin{aligned} \text{Gain\%} &= \left(\frac{\text{gain}}{\text{CP}} \times 100 \right) \% \\ &= \left(\frac{125}{750} \times 100 \right) \% = \frac{50}{3} \% = 16\frac{2}{3} \% \end{aligned}$$

EXAMPLE 8.

Rohit buys a geyser for Rs.3680 and sells it at a gain of $7\frac{1}{2}\%$. For how much does he sell it?

Solution: CP of the geyser = Rs. 3680.

$$\text{Gain\%} = 7\frac{1}{2}\% = \frac{15}{2}\%$$

$$\begin{aligned} \text{SP of the geyser} &= \left\{ \frac{(100 + \text{gain\%})}{100} \times \text{CP} \right\} \\ &= \text{Rs} \left\{ \frac{\left(100 + \frac{15}{2} \right)}{100} \times 3680 \right\} \\ &= \text{Rs} \left(\frac{215}{200} \times 3680 \right) \\ &= \text{Rs } 3956 \end{aligned}$$

EXAMPLE 6. If the cost price of 10 greeting cards is equal to the selling price of 8 greeting cards, find the gain or loss per cent.

EXAMPLE 7. By selling 33 m of cloth, a draper loses an amount equal to the selling price of 3 m of cloth. Find his gain or loss per cent.

Genuine Maths Workings are with gray background

Solution:

☺ Buying price = Rs.750; Selling price = Rs.875
 or Bought for = Rs.750; Sold for = Rs.875
 Profit = 875 – 750 = 125 (this is out of the cost: 750)

$$\therefore \text{Profit percent is } \frac{125}{750} \times 100 = \frac{100}{6} = 16\frac{2}{3}\%$$

Solution

☺	Gain = $7\frac{1}{2}\%$ of 3680 = 0.075×3680 = 276 Gain is Rs.276	$\begin{array}{r} 3680 \\ \underline{75} \\ 18400 \\ 25760 \\ \underline{27600} \end{array}$
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He sells it for $3680 + 276 = \text{Rs}3956$

This calculation also can be done in a straightline in one step by 'QuickMaths'

Planted Problems, not blending with the level and intensity indicated by the syllabus here.

Text Book vs Genuine Maths

Samples From Board (BORED) Textbooks

1) Convert 8.37 into an ordinary fraction.
(Tamil Nadu Std.VI Textbook 2009)

$$\begin{aligned}
 \textcircled{\ominus} \quad 8.37 &= 8 \times 1 + 3 \times \frac{1}{10} + 7 \times \frac{1}{100} \\
 &= 8 + \frac{3}{10} + \frac{7}{100} \\
 &= \frac{8 \times 100}{1 \times 100} + \frac{3 \times 10}{10 \times 10} + \frac{7}{100} \\
 &= \frac{800}{100} + \frac{30}{100} + \frac{7}{100} \\
 &= \frac{837}{100} \textcircled{\ominus}
 \end{aligned}$$

**Normal
Working in
Boxes**

☺

$$\begin{aligned}
 8.37 &= 8 + \frac{37}{100} \\
 &= 8 \frac{37}{100}
 \end{aligned}$$

Note: What is ordinary fraction?

$8 \frac{37}{100}$ is a mixed number. $\frac{837}{100}$ not used;

2) A Simplification. (Tamil Nadu Std.VII Textbook 2009)

$$\begin{aligned}
 \textcircled{\ominus} \quad \frac{9}{22} \div \frac{5}{33} &= \frac{9}{22} \times \frac{33}{5} \\
 &= \frac{297}{110} \\
 &= 2 \frac{77}{110} \\
 &= 2 \frac{7}{10}
 \end{aligned}$$

☺

$$\begin{aligned}
 \frac{9}{22} \div \frac{5}{33} &= \frac{9}{\cancel{22}^2} \times \frac{\cancel{33}^3}{5} \\
 &= \frac{27}{10} \\
 &= 2 \frac{7}{10}
 \end{aligned}$$

3) Express 1000 as the product of powers of prime factors.
(NCERT Std.VII Textbook 2010)

$$\begin{aligned}
 \textcircled{\ominus} \quad 1000 &= 10 \times 100 \\
 &= 10 \times 10 \times 10 \\
 &= (2 \times 5) \times (2 \times 5) \times (2 \times 5) \\
 &= 2 \times 5 \times 2 \times 5 \times 2 \times 5 \\
 &= 2 \times 2 \times 2 \times 5 \times 5 \times 5 \\
 \text{or } 1000 &= 2^3 \times 5^3
 \end{aligned}$$

☺

$$\begin{aligned}
 1000 &= 10^3 \\
 &= (2 \times 5)^3 \\
 &= 2^3 \times 5^3.
 \end{aligned}$$

4) This is a problem with Right Circular Cone.
(NCERT Std.IX Textbook 2010)

$$\begin{aligned}
 \textcircled{\ominus} \quad \text{Now } l^2 &= r^2 + h^2 \\
 \text{Therefore, } h &= \sqrt{l^2 - r^2} \\
 &= \sqrt{25^2 - 7^2} \text{ m} \\
 &= \sqrt{625 - 49} \text{ m} \\
 &= \sqrt{576} \text{ m} \\
 &= 24 \text{ m}
 \end{aligned}$$

☺

$$\begin{aligned}
 h &= \sqrt{l^2 - r^2} \\
 &= \sqrt{25^2 - 7^2} \\
 &= \sqrt{32 \times 18} \\
 &= \sqrt{16 \times 2 \times 18} \\
 &= 4 \times 6 \\
 &= 24 \text{ m}
 \end{aligned}$$

Why this PRIMITIVE Approach in every step!?!?

In IX Std. why do we need the first line on top?

And why derive the relation for h?

How do they square 25?

How they find root of 576?

Text Book vs Genuine Maths

GENUINE MATHEMATICAL PRACTICES:

- ❖ **Teach/Learn proper Addition & Multiplication tables.**
There is no alternative.
- ❖ Teach/Learn *Basic concepts*; These have to be 'mugged up'.
- ❖ Teaching/Learning *Concepts* is learning maths; Otherwise it is CHEATING
- ❖ Solve problems using the basic concepts, logic, reasoning and lateral thinking
- ❖ This **evolves** formulae;
These formulae will 'stay' in memory (without mugging up)
- ❖ Mugging up formulae alone (& plugging numbers) is not mathematics
- ❖ At end of topic, teach/learn *lateral, short-cut (Aptitude) techniques.*
(Like *MagicMaths*)

AND CONVENTIONS:

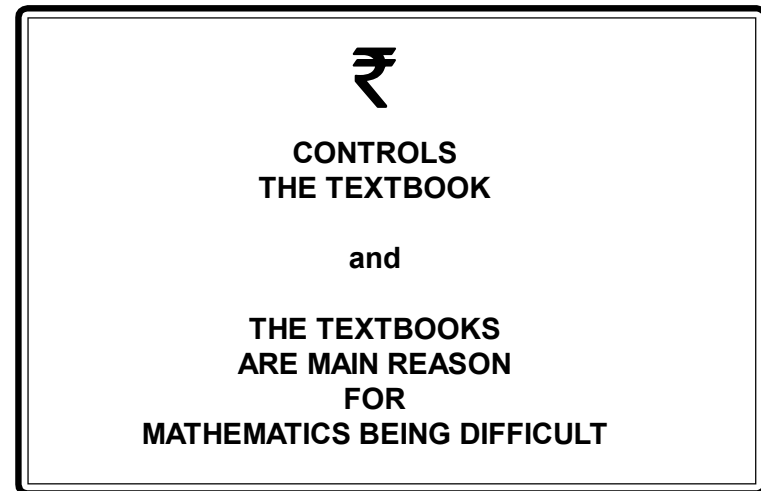
- ❖ Mathematics is not a language essay;
uses *numbers, symbols* and only a *few words*
- ❖ *Units* indicated in the beginning and in the end; not all over the work.
- ❖ Choose, or convert to, *proper units* in the beginning.
- ❖ *Ordinary* decimals do not use 0's at the end (except in special cases)
- ❖ *Common Fractions* do not involve decimal numbers
- ❖ Suitable brackets are necessary but not to be used unnecessarily

- ❖ Always reduce fractions first, before going further
- ❖ Simplify only if addition or subtraction follow
- ❖ Do not simplify, if 'times' or 'division' follow
- ❖ Necessary written calculations to be shown on right margin as 'rough'
(With *Quick Maths* there is no need for rough calculations.)

- ❖ Mathematics Solutions & Presentations to be trim, slim with no flab
- ❖ Use free-hand rough diagrams (in pencil); these must be reasonably accurate
- ❖ Presentation must be consistent, logical, well-spaced and well-indented
- ❖ Answers in common fractions are accurate; Decimal answers may not be
- ❖ Decimal answers only when asked for

Note: The need to list the above implies that **all these practises and conventions have been abandoned and discarded** by the Mathematics teaching fraternity and the **System** that manages Mathematics - (Ministry, Boards, Authors, etc.)

BITTER TRUTH



**Not A Single Textbook
(that I have seen)**

**CONFORMS
to the Syllabus Guidelines**

or

**ADHERES
to the Conventions!**

(For the past many, many years now!)