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# **OBJECTIVE INSTANT ARITHMETIC**

**QUESTIONS & THEIR ANSWERS WITH  
SHORT-CUT METHODS & TRICKY FORMULAE**

**O I A**



**Dr. M. B. LAL  
&  
P. K. GOSWAMI**

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**OBJECTIVE**  
**INSTANT**  
**ARITHMETIC**  
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*By*  
Dr. M.B. Lal  
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## Few Words

Dear Readers,

In competitive examinations, these days, the students are generally not able to maintain speed and time in mathematics and thus fail to achieve their desired success. To solve this problem, we are happy in presenting a really matchless book '**Objective Instant Arithmetic**'.

In this book 'Tricky' formulae have been derived and methods have been suggested to remember them easily. If there be any difficulty in remembering any 'Tricky' formula, method suggested in the book to remember it may be adopted or some own method may be framed. If this book is once read carefully and then regular practice is undertaken, these shortcut methods are easily committed to memory.

As you have remembered basic formulae and laws, you should also commit to memory the 'Tricky' formulae suggested by us in this book so that you may not waste time in the examination in recalling them to memory. During examination or in doing practice do not solve questions by writing these formulae but start directly applying them to avoid unnecessarily wasting time. Remember these Tricky formula in such a way that they come to your mind while you are reading the question.

Your valuable suggestions are invited for making the book more useful and for its easy availability. We hope that you may prepare 35 chapters of the book in 35 days and then undertake their regular practice. By so doing you will be able to solve questions in minimum possible time, secure high marks and ensure your success in the examination.

With best wishes.

—Authors



## Directions to readers before making preparations

1. Commit to memory the formulae given in the book and the method of using them in such a way that they come to your mind as you read the question.
2. It is possible that our method of solving a certain question may not appear as suitable as your own method of solving it. In such a case solve the question by your own method.
3. In case there be some difficulty in remembering a formula, either take help of 'the method of remembering' given in the book or commit it to memory by any other method.
4. After once reading and understanding the book, daily practice will enable you to remember the formulae.
5. During examination or in practising the text try to solve a question in least possible steps by using your mental power more to avoid unnecessary waste of time in using your pen to write more.
6. On remembering all the formulae, practise solving questions by merely reading and understanding them or at the most in one or two steps.
7. Shortcut methods of solving only those questions are given in the book which generally require more time in solving by usual methods. General methods only are suitable for solving those questions which are easily solved by usual methods.

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# **Arithmetic**

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**Important Points/Facts :**

- The term per cent means for every hundred. It can be best defined as—“A fraction whose denominator is 100 is called a **percentage**, and the numerator of the fraction is called the **rate per cent.**”
- To express  $a$  in per cent of  $b$  can be written as

$$\frac{a}{b} \times 100$$

**Note**—The numerator is the term to be expressed while the denominator is the term in which the percentage is to be expressed. The following example will illustrate it clearly.

**Example**—How much per cent 15 is of 60 ? Or what per cent of 60 is 15 ?

Here, 15 is to be expressed in percentage of 60, therefore, we will write 15 as numerator, while 60 as denominator, *i.e.*,

$$\frac{15}{60} \times 100\% = 25\%$$

- To express  $x\%$  as a fraction, we divide it by 100, as—

$$x\% = \frac{x}{100}$$

and  $20\% = \frac{20}{100} = \frac{1}{5}$

For quicker memory, remember the following—

$$\begin{array}{lll} 5\% = \frac{1}{20}, & 6\frac{1}{4}\% = \frac{1}{16}, & 6\frac{2}{3}\% = \frac{1}{15} \\ 10\% = \frac{1}{10}, & 12\frac{1}{2}\% = \frac{1}{8}, & 16\frac{2}{3}\% = \frac{1}{6} \\ 20\% = \frac{1}{5}, & 25\% = \frac{1}{4}, & 33\frac{1}{3}\% = \frac{1}{3} \\ 40\% = \frac{2}{5}, & 50\% = \frac{1}{2}, & 60\% = \frac{3}{5} \\ 66\frac{2}{3}\% = \frac{2}{3}, & 80\% = \frac{4}{5}, & 87\frac{1}{2}\% = \frac{7}{8} \\ 15\% = \frac{3}{20}, & 75\% = \frac{3}{4}, & 90\% = \frac{9}{10} \end{array}$$

- To express a fraction as a per cent, multiply it by 100.

**Example**—  $\frac{4}{5} = \frac{4}{5} \times 100\%$   
 $= 80\%$

*i.e.*, Symbol of per cent is equivalent to  $\frac{1}{100}$ .

$$\% = \frac{1}{100}$$

- Percentages are simply a convenient way of expressing fractions or decimals.

$$b\% \text{ of } a = a \times \frac{b}{100} = \frac{ab}{100}$$

and  $a\% \text{ of } b = b \times \frac{a}{100} = \frac{ab}{100}$

*i.e.*,  $a\% \text{ of } b = \frac{ab}{100} = b\% \text{ of } a$

Percentages are used very frequently in every day life and are misunderstood by a large number of people.

**SIMPLE QUESTIONS**

- (i) What is 20% of 400 ?  
 (ii) How much per cent of 75 is 60 ?  
 (iii) What is the number, of which 25% is 16 ?  
 (iv) What is  $b\%$  of two-third of  $a$  ?

**Note**—In such questions ‘of’ means multiplication.

**Solution :**

(i)  $20\% \text{ of } 400 = 400 \times \frac{20}{100}$   
 $= 80$  **Ans.**

(ii) If  $x\%$  of 75 is 60, then

$$75 \times \frac{x}{100} = 60$$

$\therefore x = \frac{60 \times 100}{75} = 80$  **Ans.**

# Objective Instant Arithmetic



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