



"Winter is the time for comfort, for good food and warmth, for the touch of a friendly hand and for a talk beside the fire: it is time for home."

- *Edith Sitwell*

### **Greeting!!!**

**Dear Students,**

**We hope your holiday preparations are underway and that you are enjoying your time with your family.**

**Cold weather and winter months can be hazardous. Plan ahead to stay safe and healthy.**

### **General Instruction for the Winter Assignment:**

- All the written work of the Winter Assignment is to be done on the loose sheets.
- Handwriting should be clear and legible.
- Project work/ Winter Assignment needs to be neat, creative and is to be done by the student only.
- The attempted work should be kept in safe custody as it is to be submitted to the concerned teacher once the school reopens.

## Winter Assignment

**Grade: 7<sup>th</sup>**

**Subject: English**

*Winter vacation is time of fun and frolic for children. The time is to be utilised in constructive activities.*

*Lets Begin..*

### **Tenses**

#### **Learning Outcomes:**

- To enable students to know the sentence structure of tenses.
- To enable students to practice proper usage of tenses.

#### **THE SIMPLE PRESENT TENSE (PRESENT INDEFINITE)**

**The Simple Present Tense** is formed by using the 1st form of the verb. However, 's' or 'es' are added to the 1st form of the verb if the subject is 3rd Person Singular (He, She, It, Mohan, Rajni etc.).

The **Negative** and **Interrogative** sentences are formed by using 'do' or 'does'.

**Study the following chart to understand the Simple Present Tense :**

Person	Form	Singular	Plural
<b>First</b>	<b>Affirmative</b>	I play football.	We play football.
	<b>Negative</b>	I do not play football.	We do not play football.
<b>Second</b>	<b>Interrogative</b>	Do I play football?	Do we play football?
	<b>Affirmative</b>	You play football.	You play football.
<b>Third</b>	<b>Negative</b>	You do not play football.	You do not play football.
	<b>Interrogative</b>	Do you play football?	Do you play football?
<b>Affirmative</b>	<b>Affirmative</b>	He plays football.	They play football.
	<b>Negative</b>	He does not play football.	They do not play football.
<b>Interrogative</b>	<b>Interrogative</b>	Does he play football?	Do they play football?

#### **USES OF SIMPLE PRESENT TENSE**

- **to describe a habitual action:** I get up early in the morning.
- **to express a universal or scientific truth:** The Sun rises in the east.
- **to express a fact which is true at the time of speaking:** My parents live in village Khair.
- **in describing running commentaries:** Rahul passes the ball and Pulkit hits it into the goal.

## **PRESENT CONTINUOUS TENSE**

**The Present Continuous Tense** is formed in the following way :

**Affirmative** : Subject + is/am/are + V<sub>1</sub> + ing

**Negative** : Subject + is/am/are + not + V<sub>1</sub> + ing

**Interrogative** : Is/Are + subject + V<sub>1</sub> + ing + ?

**Study the following chart to understand the Present Continuous Tense :**

Person	Form	Singular	Plural
First	<b>Affirmative</b>	I am telling a lie.	We are telling a lie.
	<b>Negative</b>	I am not telling a lie.	We are not telling a lie.
Second	<b>Interrogative</b>	Am I telling a lie?	Are we telling a lie?
	<b>Affirmative</b>	You are telling a lie.	You are telling a lie.
Third	<b>Negative</b>	You are not telling a lie.	You are not telling a lie.
	<b>Interrogative</b>	Are you telling a lie?	Are you telling a lie?
Affirmative	<b>Affirmative</b>	He is telling a lie.	They are telling a lie.
	<b>Negative</b>	He is not telling a lie.	They are not telling a lie.
<b>Interrogative</b>	<b>Interrogative</b>	Is he telling a lie?	Are they telling a lie?

## **USES OF PRESENT CONTINUOUS TENSE**

- **to express what is happening at the time of speaking:** The mother is cooking food while the father is reading a newspaper.
- **to express an action which is likely to happen in near future:** He is appearing for the final exam next month.
- **to express an action which may not be actually going on at the time of speaking, but is going on in general:** I am writing poetry these days.

### **Assignment**

**I. Convert the following sentences into their *INTERROGATIVE* Form. The first one has been done as an example :**

**1. Some children are playing in the garden.**

**Ans.** Are some children playing in the garden ?

2. His father works in a bank.

3. Vedant is migrating to Australia after his exams.

4. He gives his dog almonds to eat.

5. The juggler entertains the audience.

6. She is creating trouble for everyone.

7. His advocate is planning to appeal in the High Court.

8. The police is looking for the culprit.

9. He drives his car at a fast speed.

10. Scars do not change a person.

## **II. Change the following sentences into *NEGATIVE* Form.**

**For example : He goes to office regularly.**

**He does not go to office regularly.**

- (a) This dish tastes delicious.
- (b) Veronica is participating in the quiz contest.
- (c) This road leads to Goa.
- (d) The children of this colony love to play football.
- (e) My mother goes to the kitty parties.
- (f) We are going for fishing this Sunday.
- (g) My brother is studying medicine in Pune.
- (h) Her mother-in-law sends her gifts on her birthday.
- (i) Dr Ansari charges huge fees from his patients.
- (j) See, the ship is sinking.
- (k) I see a bird.
- (l) I am going to the International Trade Fair next month.
- (m) He knows your problems.
- (n) She is completing her homework.
- (o) Students are revising their lessons.

## **Direct/ Indirect Speech**

There are two ways of reporting the speech:

**Direct speech:** In this form of speech, the actual words spoken by the speaker have been kept within inverted commas.

For example: He said to me, " i shall give you a story book."

She said to her mother, "i am going to the market."

**Indirect speech:** In indirect speech, the meaning or the sense of the words spoken by a speaker are conveyed by some other person.

For example: He told me that he would give me a storybook.

She told her mother that she was going to the market.

### **Study the sentence :**



The words of speech kept within the inverted commas is called the reported speech. The words outside the inverted commas, that is the reporting verb (she said to me) has three parts :

Subject : He

Verb: said

Object :me

## Change of Statements into Indirect Speech

Tense	Direct Speech	Indirect Speech
Present simple	I like ice cream	She said that she liked ice cream.
Present continuous	I am living in London	She said that she was living in London.
Past simple	I bought a car	She said that she had bought a car. OR She said that she bought a car.
Past continuous	I was walking along the street	She said that she had been walking along the street.
Present perfect	I haven't seen Julie	She said that she hadn't seen Julie.
Past perfect*	I had taken English lessons before	She said that she had taken English lessons before.
will	I'll see you later	She said that she would see me later.
would*	I would help, but.."	She said that she would help but...
can	I can speak perfect English	She said that she could speak perfect English.
could*	I could swim when I was four	She said that she could swim when she was four.
shall	I shall come later	She said that she would come later.
should*	I should call my mother	She said that she should call her mother.
might*	I might be late	She said that she might be late.
must	I must study at the weekend	She said that she must study at the weekend. OR She said she had to study at the weekend

## Assignment

### I. Convert the following into INDIRECT SPEECH.

1. The teacher said to me, "Why haven't you done your homework?"
2. The manager said to the clerk, "How many people are there in the hall?"
3. I said to her, "Are you going to the party?"
4. John said to Dianna, "Have you come by a taxi or by the metro train?"
5. The woman said to the salesman, "Can you show me some silk sarees?"
6. Mother said, "Neeta, where did you put my red jacket?"
7. The beggar said to the boys, "Why are you throwing stones at me?"
8. She said to her mother, "When shall we move to the new house?"
9. Javed said to Sabina, "Do you miss your grandmother?"
10. The teacher said to me, "Are you participating in the contest?"
11. The boss said to me, "Did you go to the bank?"
12. Jasmine said, "Rehana, where is my bag?"
13. The little child said to his grandfather, "When can I drive a car?"
14. The police officer said to the accused, "Aren't you afraid of the law?"
15. I said to her, "when will you board the train?"

## **II. Multiple Choice Questions. Choose the correct option**



## Literary Devices

Literary devices also called as poetic devices are essential techniques used by a writer or a poet to add up a great substance or have an effect to the text they are writing. These poetic devices are often employed in written work like fiction and non-fiction works.

## **Importance of literacy devices**

- These devices help the reader to paint the picture of the character being studied.
  - It is a great way to assist the reader in gaining a deeper understanding of the writing.
  - It is an excellent way for writers to make their readers connect with the character within a story.

Some of the commonly used literary devices :-

  - **Alliteration** :-The features of this device are that of repetition of a vowel or a constant that are placed close to each other. For example Peter piper picked a pickled pepper.
  - **Simile**:It is the direct comparison of two things which have something in common using words such as "like" and "as". For example it is as dark as night.
  - **Metaphor** :- In this poetic device, a less direct comparison of two things with similarities without using words like and as. For example the world is a song.
  - **Hyperbole** :- it is the deliberate exaggeration claims or statements often impossible and basically going way over. For example i run faster than the wind.
  - **Irony**:- A statement whose true meaning is the opposite of its surface meaning thereby making it a tricky literary device. For example The police station was robbed by the robbers.

- **Personification** :- it is a literary device in which non - living things are given the human traits. For example The wind howled at night.

### Homophone

**A homophone is a word that is pronounced the same as another word but has a different meaning.**

**I. Circle the homophone that best fits the sentence.**

**For example:** I had to (add / ad) the two numbers to get the sum.

add

- (a) My parents told me to (cell / sell) my bicycle.
- (b) I had (eight / ate) dollars left in my wallet.
- (c) I did (not / knot) know about the surprise party.
- (d) We (one / won) the lottery!
- (e) Did you look (in / inn) the cabinet for the canned food?
- (f) We went on a boat to (sale / sail) around the world.
- (g) He was my (knight / night) in shining armour.
- (h) (I led / lead) my mom down the aisle.
- (i) My (sun / son) did very well on the test.
- (j) The (Some / Sum) of the two numbers was fifty.
- (k) I lost my (hair / hare) as I got older.
- (l) We (rowed / rode) the boat towards the shore

### Active and Passive Voice

A voice is the form of a verb which expresses its connection with the doer (the subject). It makes clear whether the subject is doing something or something is being done to it.

#### **KINDS OF VOICES**

There are two kinds of Voices:

- Active Voice
- Passive Voice

#### **ACTIVE VOICE**

In Active Voice, the verb shows that the subject does something.

For example:

The farmer grows fruits and vegetables.

#### **PASSIVE VOICE**

The Passive Voice shows that something is done to the subject.

For example:

Fruits and vegetables are grown by the farmer.

## **Assignment**

### **I. Convert the following into Passive Voice.**

- 1 The court ordered Baba's arrest.
2. Indian Railways employed two lakh workers last year.
3. They did not obey the traffic rules.
4. Somebody stole my mobile phone.
5. Did the farmer file a complaint?
6. Where did you keep your wallet?
7. Who shot the bullet?
8. Shreya cleaned this room.
9. The government launched a new scheme for the poor.
10. I did not write this letter.

### **II. Convert the following into Active Voice.**

1. The plane was landed safely by the pilot.
2. The cows were milked by her.
3. This monument was built by Emperor Ashoka.
4. A heavy tarriff was charged by the hotel.
5. Was he punished by the teacher?
6. Were they informed by the office?
7. By whom was this window pane broken?
8. A delicious meal was served by the host.
9. I was praised by my teachers.
10. The patient was discharged on Monday.

## **Gerunds and Participles (verbals)**

A gerund is an "ING form of a verb" (progressive form) that acts as a noun or object in sentences.

Examples

1. Reading romance novels is relaxing.
2. She is interested in dancing.
3. I don't mind driving if you're tired.
4. How about going to the cinema?
- 5 It's no use arguing with a drunk.
6. It's no good fooling yourself.
7. He spends his time playing games.

8. There's no knowing what may happen.
9. Swimming is my newest hobby.
10. The film is worth watching.

A participle is a verbal ending in -ing (present) or -ed, -en, -d, -t, -n, or -ne (past) that functions as an adjective, modifying a noun or pronoun. A participial phrase consists of a participle plus modifier(s), object(s), and/or complement(s).

Present Participle Example: The crying baby had a wet diaper. Past Participle Example: The wrecked

## Gerunds and Participles



### Gerunds

What are they? They are verbal nouns.  
What forms do they have? They end in **-ing**.  
What uses do they have? They are used like other nouns as the subject or as an object.  
Subject: **Running** is not allowed.  
Object: I love **dancing**.  
Gerunds may have objects and modifiers.  
**Doing** work (direct object) **carefully** (adverb) is always worthwhile

### Participles

What are they? They are verbal adjectives.  
What forms do they have?  
1) Present participles end in **ing** **laughing**, **crying**, **singing**  
2) Past participles end in **ed** or **n** **wanted**, **tried**, **joined**, **given**,  
For irregular verbs say:  
"Today I go; I am going;"  
"Yesterday I went; I have gone"  
The form used after "I have" is the past participle.  
Today I see; I am seeing.  
Yesterday I saw; I have seen.

Fill in the blanks with gerunds used as subjects:

\_\_\_\_\_ is a terrible habit.  
\_\_\_\_\_ is good for ones health.  
\_\_\_\_\_ is a wonderful hobby.  
\_\_\_\_\_ is not permitted.  
\_\_\_\_\_ is interesting.  
\_\_\_\_\_ was necessary.  
\_\_\_\_\_ is wonderful.  
\_\_\_\_\_ is good medicine.



### Participles

What uses do they have?  
Present and past participles have similar uses.  
1) They are used as part of compound verbs:  
**She is crying.** They **have given**.  
2) As Adjectives:  
A **talking** clock. A **wanted** man.  
3) In an absolute phrase:  
**Walking** along the beach, she met a man.  
**Seen** from the plane, the people looked like ants.

### Participles: Fill in the blanks

They are \_\_\_\_\_.  
He is \_\_\_\_\_.  
I am \_\_\_\_\_.  
They have \_\_\_\_\_ the work. (to do)  
I have \_\_\_\_\_ the money. (to give)  
She is \_\_\_\_\_.  
He has \_\_\_\_\_ it. (to want)  
We have \_\_\_\_\_ it. (to see)  
They have \_\_\_\_\_ to church. (to be)



### As Adjectives

A \_\_\_\_\_ face  
A \_\_\_\_\_ fact  
A \_\_\_\_\_ cat  
A \_\_\_\_\_ method  
The \_\_\_\_\_ few

Fill in the blanks with gerunds used as objects:

I love \_\_\_\_\_.  
I like \_\_\_\_\_.  
She likes \_\_\_\_\_ it. (to see)  
They like \_\_\_\_\_ there. (to be)  
We love \_\_\_\_\_ home. (to go)  
He likes \_\_\_\_\_.  
You like \_\_\_\_\_.  
They love \_\_\_\_\_.

### Participles: Fill in the blanks

\_\_\_\_\_ down the road, she looked back to see him.  
\_\_\_\_\_ on the stage, he spied her in the crowd.  
\_\_\_\_\_ into the microphone, he asked everyone to wait.



Fill in the blanks with gerunds that have objects:

\_\_\_\_\_ music is fun.  
\_\_\_\_\_ meetings is dull.  
\_\_\_\_\_ horses is expensive.  
\_\_\_\_\_ money is necessary.

car was totaled

## **Reading comprehension**

**Read the given passage and answer the questions.**

### **Birds of Prey**

Birds of prey, also known as raptors, hunt and feed on other animals. These birds are characterized by keen vision that allows them to detect prey during flight and powerful talons and beaks.

Many species of birds may be considered partly or exclusively predatory. In ornithology, the definition for “bird of prey” has a narrower meaning: birds that have very good eyesight for finding food, strong feet for holding food, and a strong curved beak for tearing flesh. Birds of prey generally prey on vertebrates, which are usually quite large relative to the size of the bird. Most also eat carrion, at least occasionally, and vultures and condors eat carrion as their main food source. Many raptor species are considered apex predators. Raptors are not birds that fly by flapping their wings; they have wings made so they can glide across the sky like most airplanes today.

The common names for various birds of prey are based on structure:

Eagles tend to be large birds with long, broad wings and massive feet. Booted eagles have legs and feet feathered to the toes and build very large stick nests.

Ospreys, a single species found worldwide that specializes in catching fish and builds large stick nests.

The hawks are medium-sized birds of prey that usually belong to the genus Accipiter. They are mainly woodland birds that hunt by sudden dashes from a concealed perch. They usually have long tails for tight steering.

Harriers are large, slender hawk-like birds with long tails and long thin legs. Most use a combination of keen eyesight and hearing to hunt small vertebrates, gliding on their long broad wings and circling low over grasslands and marshes.

Owls are variable-sized, typically night-specialized hunting birds. They fly almost silently due to their special feather structure that reduces turbulence. They have particularly acute hearing.

### **Answer the questions.**

- Q1. What is the main idea of the passage?
- Q2. Underline the most important information in each paragraph.
- Q3. Write the summary of the given passage.

## Exponents and Power

### OVERVIEW

The chapter deals with the concept of exponents and its laws.

### LEARNING OUTCOMES

After instructions, the students will be able to :

- (a) define base and exponent of a given number.
- (b) identify with the base and exponent of a given number.
- (c) identify with  $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$  and apply it in simplifying expressions (where  $n$  is a natural number).
- (d) define reciprocal of a rational number.
- (e) compute reciprocal of a given rational number of the form  $\left(\frac{a}{b}\right)^n$ .
- (f) identify with and prove laws of exponents.
- (g) apply the laws of exponents in simplifying expressions.
- (h) define standard form of a given number.
- (i) express a given number in the standard form.

The teacher introduces the concept of exponents by taking examples.

$$2 + 2 + 2 + 2 = 2 \times 4$$

$$2 \times 2 \times 2 \times 2 = 2^4$$

$$(-9) + (-9) + (-9) = (-9) \times 3$$

$$(-9) \times (-9) \times (-9) = (-9)^3$$

The teacher asks the students to observe the difference between continued addition and continued multiplication.

Further, the concept of **exponent** is introduced as the number of times a number is multiplied by itself.

$3^4$  means 3 multiplied four times =  $3 \times 3 \times 3 \times 3$

The teacher now takes up a general form

$a^n \rightarrow a$  is introduced as the base

$n$  is introduced as the exponent

The teacher extends the concept to rational numbers as base with the help of examples.

$$\left(\frac{2}{3}\right)^4 = \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} = \frac{2^4}{3^4}$$

$$\left(\frac{a}{b}\right)^n = \frac{a \times a \times a \times \dots n \text{ times}}{b \times b \times b \times \dots n \text{ times}} = \frac{a^n}{b^n}$$

# Laws of Exponents

Name	The Rule	Example
<b>Product of Powers</b>	$x^m \cdot x^n = x^{m+n}$	$x^3 \cdot x^2 = x^5$
<b>Quotient of Powers</b>	$\frac{x^m}{x^n} = x^{m-n}$ or $\frac{1}{x^{n-m}}$	$\frac{x^7}{x^5} = x^2$ $\frac{x^7}{x^5} = \frac{1}{x^{-2}}$ or $x^2$
<b>Power of a Power</b>	$(x^m)^n = x^{mn}$	$(x^4)^6 = x^{24}$
<b>Power of a Product</b>	$(xy)^m = x^m \cdot y^m$	$(xy)^5 = x^5 \cdot y^5$
<b>Power of a Quotient</b>	$\left(\frac{x}{y}\right)^m = \frac{x^m}{y^m}$	$\left(\frac{2}{3}\right)^2 = \frac{2^2}{3^2} = \frac{4}{9}$
<b>Negative Exponent</b>	$x^{-m} = \frac{1}{x^m}$	$x^{-7} = \frac{1}{x^7}$ $\frac{1}{x^{-5}} = x^5$
<b>Identity Exponent</b>	$x^1 = x$	$8^1 = 8$
<b>Zero Exponent</b>	$x^0 = 1 (x \neq 0)$	$2^0 = 1$

## Worksheet

### 1. Fill in the blanks :

- (i) The value of  $(2^{-1} - 2^2)^2 = \dots$ .
- (ii) If  $a$  is any rational number and  $m$  and  $n$  are integers, then  $(a^m)^n = (\dots)^{mn}$ .
- (iii) The value of  $5^0 \times 5^0 \times 5^0 \times (5^0 - 5^0)$  is  $\dots$ .
- (iv) The reciprocal of  $\left(\frac{2}{3}\right)^5 \times \left(\frac{3}{2}\right)^5$  is  $\dots$ .
- (v) The value of  $(-1)^{123}$  is  $\dots$ .
- (vi)  $\left(\frac{1}{3}\right)^3 \times (\dots)^5 = \left(\frac{1}{3}\right)^8$ .
- (vii) In standard form 1172.5 can be written as  $\dots$ .
- (viii)  $2^x \times 2^y \times 2^z = \dots$ .
- (ix)  $\left(\frac{1}{2}\right)^{-2} + \left(\frac{1}{3}\right)^{-2} + \left(\frac{1}{4}\right)^{-2} = \dots$ .
- (x) If  $(-3)^{-1}$  is multiplied by a number, the product obtained is  $\left(\frac{4}{3}\right)^{-1}$ . The number is  $\dots$ .

### 2. Match the following:

Column A	Column B
(i) $\frac{3^0 \times 4^0 + 3^0 \times 2^0}{16^0}$	(a) 1
(ii) $(216)^8 - (6^2)^3$	(b) $\frac{1}{64}$
(iii) The value of $x$ , if $\left(\frac{4}{3}\right)^3 \div \left(\frac{-4}{3}\right)^3 = (-1)^{3x}$	(c) 3
(iv) $\frac{1}{3125}$ can be written in standard form as	(d) -3
(v) $\left[ \left\{ \left( \frac{1}{2} \right)^3 \right\}^{-2} \right]^{-1}$	(e) $\frac{13}{6}$
(vi) $4.235 \times 10^{-2}$	(f) 2
(vii) $(1^2 \times 2^2 + 3^2) \times \left(\frac{2}{3}\right)^3 \div \left(\frac{4}{3}\right)^2$	(g) $3.2 \times 10^{-4}$
(viii) If $16^{x+1} = 2^{16}$ , then the value of $x$ is	(h) 8
(ix) If $100 \times (100)^{3-a} = (10000)^2$ , then the value of $a$ is	(i) $(6)^{18}$
(x) $\left(\frac{3}{2}\right)^3 \times 2^6 \times \left(\frac{1}{3}\right)^3 =$	(j) $\frac{847}{20000}$

**A : Choose the correct alternatives in each of the following :**

- Which is greater:  $3^2$ ,  $2^3$ ,  $3^3$ ,  $2 \times 3^2$ ?  
 (a)  $3^3$       (b)  $2^3$       (c)  $3^2$       (d)  $2 \times 3^2$
  - 512 as a power of 2 can be expressed as  
 (a)  $2^6$       (b)  $2^7$       (c)  $2^8$       (d)  $2^9$
  - $\frac{-64}{343}$  in the exponential form is  
 (a)  $\left(\frac{-3}{4}\right)^3$       (b)  $\left(\frac{-4}{7}\right)^3$       (c)  $\left(\frac{-7}{4}\right)^3$       (d)  $\left(\frac{-2}{7}\right)^3$
  - In the expression  $2^3 \times y^3 = 64$ , the value of  $y$  is  
 (a) 0      (b) 1      (c) 2      (d) 3
  - The distance between two planets is 38,40,00,000 m, we can express this distance as  
 (a)  $38.4 \times 10^6$  m      (b)  $384 \times 10^7$  m      (c)  $3.84 \times 10^8$  m      (d)  $3.84 \times 10^9$  m

**B : Solve the following :**

1. Simplify :  $\frac{3^5 \times 10^5 \times 25}{5^7 \times 6^5}$
  2. Find the reciprocal of  $\left(\frac{-6}{7}\right)^8 + \left(\frac{-6}{7}\right)^{15}$ .
  3. Evaluate :  $\frac{(81)^3 \times (25)^5 \times (14)^7 \times 4^7}{(80)^3 \times (12)^5 \times 7^7 \times (15)^7}$
  4. By what number should  $(-15)^2$  be divided so that the quotient is equal to  $(-5)$ ?
  5. Express the number appearing in the statement in standard form :

"The population of India was about 1,027,000,000 in march 2001."

# Algebraic Expressions

## OVERVIEW

The chapter deals with algebraic expressions and various aspects associated with it.

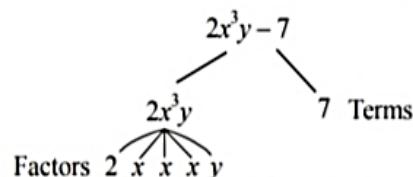
## LEARNING OUTCOMES

After instructions, the students will be able to :

- (a) define a constant and a variable.
- (b) define an algebraic expression.
- (c) identify with terms of an algebraic expression.
- (d) identify with factors of a term of an algebraic expression.
- (e) identify with the coefficient of a term of an algebraic expression.
- (f) differentiate between like and unlike terms.
- (g) identify and differentiate between various types of algebraic expressions.
- (h) define degree of a polynomial.
- (i) classify polynomials according to their degrees.
- (j) compute the value of an algebraic expression by replacing the variables by their numerical values.
- (k) compute the sum of two or more algebraic expressions accurately.
- (l) compute the difference of two algebraic expressions accurately.

The teacher uses the students' previous knowledge to introduce algebraic expressions.

Using examples, the teacher discusses terms and factors of an algebraic expression by tree diagram.



The teacher here emphasises that a term is a product of its factors (both numerical and variable).

Further, the concept of coefficient which is a numerical or variable factor or both of a term is explained using examples.

Based on the variable factors, like and unlike terms are introduced.

The teacher writes down a few examples on the blackboard.

$$3xy, 7x^2, -9yx, 8y, \frac{11}{2}x^2, 13xyz$$

The students observe the terms and write down terms with same variable factors.

$$\begin{array}{c} 3xy \\ -9yx \end{array}$$

$$\begin{array}{c} 7x^2 \\ \frac{11}{2}x^2 \end{array}$$

The teacher here explains the concept of **like terms**. The emphasis here is only on variable factors and not numerical factors.

## LESSON

The teacher now takes up types of algebraic expressions based on number of terms.

Monomial	-	mono ↓ one term	$3x^2, -11xy, 4xy^2$
Binomial	-	bi ↓ two terms	$2x - y, 3x^2 + y, 7yz - xy$
Trinomial	-	tri ↓ three terms	$x^3 - y^3 - 2xy, a^2 + 2ab + b^2$
Quadrinomial	-	quadri ↓ four terms	$x + y + z + a, x^2 - y^2 - z^2 - 3ab$

**The important thing is that the terms are separated only by + or - sign.**

The teacher now introduces **polynomial** (poly –many) as an expression containing one or more terms. The teacher here **emphasises** that monomial, binomial, trinomial are all polynomials. The teacher also reinforces that the denominator of each term in a polynomial can **only have numerical factors**.

*Example :*  $2x^2 - \frac{7}{2}xy + y^2$  is a polynomial.

$2x^2 - \frac{7}{x} + y^2$  is not a polynomial as the  $\frac{-7}{x}$  has  $x$  in the denominator.

### Types of Polynomials based on Degrees

The degree is introduced as the highest power of the variables involved in a polynomial.

The teacher here takes examples to explain degree in one variable expressions and more than one variable expressions.

*Example :*

(a) Degree of  $7x^2 - 3x + x^3$  is 3 as the highest power is 3.

(b) Degree of  $8x^3 - 3x^2y^2 + y^2$  is 4 as the highest sum of the powers of the variables involved is 4 ( $x^2y^2 \rightarrow 2 + 2$ )

Linear	Quadratic	Cubic	Bi-quadratic
↓ degree 1	↓ degree 2	↓ degree 3	↓ degree 4

The teacher now discusses finding the value of an algebraic expression by replacing the variables with given numerical values.

*Example :* If  $a = 1, b = 0, c = -2$ , find the value of  $a^2 - 2abc + c^2$ .

Substituting the values, we get

$$\begin{aligned}a^2 - 2abc + c^2 &= 1^2 - 2 \times 1 \times 0 \times (-2) + (-2)^2 \\&= 1 - 0 + 4 = 5\end{aligned}$$

## Addition of Algebraic Expressions

Addition of algebraic expressions is to be explained using students' previous knowledge of integers and whole numbers. The **emphasis** here needs to be that only like terms can be added together.

*Example :*

- (a) Add  $4x^2y$ ,  $6x^2y$ ,  $-2x^2y$ .

$$\begin{aligned}4x^2y + 6x^2y + (-2x^2y) &= [4 + 6 + (-2)] x^2y \\&= 8x^2y\end{aligned}$$

- (b) Add  $4x^2y + 6xy - 3xy^2$  and  $7x^2y - 4xy + 9xy^2$ .

The teacher here explaining the need is to group different like terms together to find the sum.

### Horizontal Method

$$\begin{aligned}4x^2y + 6xy - 3xy^2 + 7x^2y - 4xy + 9xy^2 \\= (4x^2y + 7x^2y) + (6xy - 4xy) + (-3xy^2 + 9xy^2) \\= 11x^2y + 2xy + 6xy^2\end{aligned}$$

### Vertical Method

$$\begin{array}{r}4x^2y + 6xy - 3xy^2 \\+ 7x^2y - 4xy + 9xy^2 \\ \hline 11x^2y + 2xy + 6xy^2\end{array}$$

## Subtraction of Algebraic Expressions

Subtraction is to be taken up the same way and emphasis has to be on grouping of like terms only.

*Example :*  $(4x - 5y) - (2x - 3y)$

### Horizontal Method

$$\begin{aligned}4x - 5y - (2x - 3y) \\= 4x - 5y - 2x + 3y \\= (4x - 2x) + (3y - 5y) \\= 2x - 2y\end{aligned}$$

### Vertical Method

$$\begin{array}{r}4x - 5y \\2x - 3y \\-\quad + \quad \leftarrow \text{It is important to explain the change in sign while subtracting.} \\ \hline 2x - 2y\end{array}$$

## Worksheet

### 1. Fill in the blanks :

- (i) Degree of a constant term is .....
- (ii) Subtracting  $x$  from zero results .....
- (iii) The coefficient of  $x$  in  $-3xy^2$  is .....
- (iv) On adding  $1 - x$  to  $x - 1$ , we get .....
- (v) The value  $x^2 - 3$  for  $x = 0$  is .....
- (vi) Sum of  $x^2 + y^2$  and  $-x - y^2$  is .....
- (vii) The sum of two like terms is another ..... term.
- (viii) In the expression,  $3m^2 - 9$ , the term which is not constant is .....
- (ix)  $4x^2y + 6x^2y - 2xy^2 + 3x^2y$  = .....
- (x)  $x^2 + y^2 + z^2 - 7$  is a polynomial of degree .....

### 2. State whether the following statements are 'true' or 'false' :

- (i) The value  $2x^2$  is equal to  $(2x)^2$ .
- (ii) A symbol having a fixed numerical value is called a constant.
- (iii) Terms having same variable are called like terms.
- (iv) Addition and subtraction operation also can be performed on unlike terms.
- (v) The coefficient of  $a$  in  $4a^4bc$  is  $4a^3bc$ .
- (vi) An expression having one term is called polynomial.
- (vii) If  $x = -1, y = 2$ , then the value of  $x^2 - 2y^2$  is 7.
- (viii) The degree of the polynomial  $15x^3 - 2xy + 7x^2$  is 2.
- (ix) A latter used to represent a number is called literals.
- (x) The difference between  $7x^2 + x^2 - xy + 9$  and  $5x^3 - 2x^2 + 6xy + 4$  is  $10x^2 + 3xy + 4y^2$ .

**A : Choose the correct alternatives in each of the following:**



**B : Solve the following:**

1. Ravi spends ₹ $(3a + 4b)$  for a shirt and ₹ $(7a - 5b)$  for a pent. How much does he spend in all?
  2. From the sum of  $4x^2 - 6x + 3$  and  $-4x^2 - 7x + 5$ , subtracted  $3x^2 - 8x + 6$ .
  3. The side of a square  $(7x + 5)$  metres. Find its perimeter.
  4. If  $A = -5x^2 - 8x + 1$ ,  $B = 3x^2 + 7x + 8$ ,  $C = 2x^2 + x - 9$ , Then show that  $A + B + C = 0$
  5. The length and breadth of a rectangular piece of paper are  $(2x + 5)$  cm and  $(x + 2)$  cm respectively. Find its perimeter, if  $x = 2$ , then also find the perimeter in numerals.

# Simple Equations

## OVERVIEW

The chapter introduces the concept of simple equations and the methods to solve them.

## LEARNING OUTCOMES

After instructions, the students will be able to :

- (a) define and identify with an equation in one or more variables.
- (b) define and identify with linear equations in one variable.
- (c) solve a given linear equation using trial-and-error method.
- (d) solve a given linear equation using systematic method.
- (e) solve a given linear equation by transposition method.
- (f) apply the concept of simple equations in solving real life problems.

The teacher writes down a few statements on the blackboard.

$$3 + 5 = 8; \quad 2 \times 3 = 6; \quad 15 \div 5 = 3$$

The teacher introduces these statements as **statement of equality** as statements containing '=' sign.

The teacher now writes down some more statements on the board.

$$x - 3 = 2; \quad \frac{y}{3} + 1 = 4x; \quad 2y^2 = 98$$

These statements of equality involving one or more variables are introduced as **equations**.

Further, the teacher takes up examples to explain **linear equations** in one variable.

$$5x + 1 = 6; \quad 3y = 9; \quad 9z - 1 = 26$$

Here, the teacher emphasises on the degree of the variables involved.

## LESSON

The teacher now takes up solution of the linear equation by different methods with the help of examples

- (a) Trial-and-error method.
- (b) Systematic method.

Further, examples to be taken to explain the method.

*Example :*  $\frac{x}{5} + 3 = 7$

$$\Rightarrow \frac{x}{5} + 3 - 3 = 7 - 3 \quad (1^{\text{st}} \text{ step - subtract 3 from both sides})$$

$$\Rightarrow \frac{x}{5} = 4$$

$$\Rightarrow \frac{x}{5} \times 5 = 4 \times 5 \quad (2^{\text{nd}} \text{ step - multiplying by 5 both sides})$$

$\Rightarrow x = 20$  is the solution.

The teacher also introduces checking the solution by substituting the value in the given equation.

$$\frac{x}{5} + 3 = 7$$

$$\text{L.H.S.} = \frac{x}{5} + 3 = \frac{20}{5} + 3 = 4 + 3 = 7 = \text{R.H.S.}$$

### Solving Linear Equations by Transposition Method

The teacher introduces the word 'transposition' by using the dictionary game.

The students list out words that begin with 'trans' such as :

- |                   |                 |
|-------------------|-----------------|
| (a) 'transport'   | (e) 'transmit'  |
| (b) 'transfer'    | (f) 'translate' |
| (c) 'transparent' | (g) 'transit'   |
| (d) 'transplant'  | (h) 'transform' |

The students use the dictionary to find the meanings of these words. Using the meanings, the teacher introduces the word 'transposition' – change of place of two or more things.

Using this definition, the teacher introduces the transposition method of solving linear equations.

The teacher discusses the basic rules of transposition:

- (a) (+) sign changes to (-)
- (b) (-) sign changes to (+)

The teacher here emphasises that a positive number when transposed changes its sign to become a negative number and vice-versa.

Using examples, the teacher explains the method.

*Example :*  $4x + 20 = 12$

$$\Rightarrow 4x = 12 - 20 \quad \rightarrow \text{transposing } + 20 \text{ as } (- 20) \text{ in R.H.S.}$$

$$\Rightarrow 4x = - 8$$

$$\Rightarrow \frac{4x}{4} = \frac{-8}{4} \quad \rightarrow \text{dividing both sides by 4}$$

$$\Rightarrow x = - 2$$

## Worksheet

Fill in the blanks :

1. L.H.S. of the equation  $1-2x=5x$  is ..... .
2. A variable can take ..... numerical values.
3. In an equation, there always exists an ..... sign.
4. The value of a variable which satisfies an equation is called its ..... .
5. If  $7x+42=91$ , then  $x=$  .....
6.  $\frac{x}{3} + \frac{x}{2} = 5$ , then the value of  $x$  is .....
7. The solution of  $\frac{-x}{3} = 4$  is .....
8. An equation has two sides, ..... and .....
9. In  $5x - 3 = 27$ , adding 3 on both sides, is same as changing the side of .....
10.  $\left(\frac{2}{5}\right)$  of a number 50 is .....
11. The equation for "the number 18 is added to  $x$  to get 42" is .....
12. If  $\frac{2x-1}{3} = 7$ , then the value of  $x$  is .....
13. The equation in which the highest power of the variable is 1 is known as .....
14. We can write  $a-3=b+4$  as .....  $= 4+3$ .
15. The value of  $k$  to make the statement  $13-k=k-13$  true is .....

**A : Choose the correct alternatives in each of the following:**

- The root of the equation  $\frac{x-5}{3} - 4 = -2$  is
    - (a) 1
    - (b) 6
    - (c) 11
    - (d) 12
  - Two supplementary angles differ by  $60^\circ$ . The larger angle is
    - (a)  $60^\circ$
    - (b)  $70^\circ$
    - (c)  $80^\circ$
    - (d)  $120^\circ$
  - If  $x + 3 = 7$ , then the value of  $4x - 12$  is
    - (a) 4
    - (b) 16
    - (c) 25
    - (d) 28
  - The sum of two consecutive numbers is 69, one of the numbers may be
    - (a) 34
    - (b) 33
    - (c) 36
    - (d) none of these
  - One-fourth of  $m$  is 3 more than 7 can be represented as
    - (a)  $\frac{m}{4} + 7 = 3$
    - (b)  $\frac{m}{4} - 7 = 3$
    - (c)  $\frac{m}{4} + 3 = 7$
    - (d) none of these

**B : Solve the following :**

- The cost of a book is ₹ 25 more than the cost of a geometry box. Find the cost of the book if the total cost of the book and geometry box is ₹ 130.
  - Solve for  $x$  :
$$\frac{(x - 7) + 2}{x} = \frac{(x - 6) + 3}{x + 7}$$
  - The length of a rectangular field is twice its breadth. If the perimeter of the field be 96 m, find the dimensions of the field.
  - Mohan thinks of a number. If he takes away 7 from  $\frac{5}{6}$  of that number, the result is 28. Find the number.
  - A number has two digits whose sum is 9. If 27 is added to the number, its digits are reversed. Find the number.

## Ratio and Proportion

### OVERVIEW

The chapter deals with ratio, proportion and variation (direct and indirect).

### LEARNING OUTCOMES

After instructions, the students will be able to :

- (a) identify with ratio as comparison of two numbers by division in the simplest form.
- (b) identify with the terms of a ratio – antecedent and consequent.
- (c) compare two given ratios.
- (d) compute equivalent ratios.
- (e) apply the concept of ratio in daily life problems.
- (f) define and identify with proportion as equality of two ratios.
- (g) identify with the terms of the proportion – the extremes and the means.
- (h) identify with product of extremes = product of means.
- (i) define continued proportion.
- (j) apply the concept of proportion in daily life problems.
- (k) identify with unitary method as the method of finding the value of a unit first to find the value of any required quantity.
- (l) identify with direct variation.
- (m) apply the concept of direct variation in solving real life problems.
- (n) identify with inverse variation.
- (o) apply the concept of inverse variation in solving real life problems.

The teacher introduces the concept of ratio by taking an example.



The teacher asks the students to compare the numbers of two objects – Pencils and Erasers.

- (a) By subtraction – which is more – pencils or erasers?

- (b) By division –  $\frac{\text{Pencils}}{\text{Erasers}}$

The teacher now introduces the concept of ratio as comparison by division of the form  $a : b$  or  $\frac{a}{b}$ .

The teacher here **emphasises** that the objects to be compared should be in the same unit.

**Example :**

- (a) Find the ratio of ₹3 and 40 paise.

Here, the teacher explains that since the unit should be same, we need to convert the bigger unit into smaller unit

$$₹3 = 3 \times 100 \text{ paise} = 300 \text{ paise}$$

$$300 : 40 = \frac{300}{40} = \frac{30}{4} = \frac{15}{2} = 15 : 2$$

The **emphasis** here has to be on two things:

- (i) ratio has no unit.
- (ii) ratio is always in the simplest form.

Further, the concept of equivalent ratios is discussed.

(b)  $\frac{7}{8} = \frac{\boxed{\quad}}{24}$

$$\frac{7}{8} = \frac{7 \times 3}{8 \times 3} = \frac{\boxed{21}}{24}$$

Using this concept of equivalent ratios, the teacher takes up the concept of comparison of ratios.

- (c) Which is greater  $7 : 6$  or  $3 : 2$ ?

The teacher uses the students' previous knowledge of fractions to explain the concept of comparison.

L.C.M. of 6 and 2 = 6

$$\frac{7}{6}, \frac{3}{2} = \frac{3 \times 3}{2 \times 3} = \frac{9}{6}$$

As  $\frac{9}{6} > \frac{7}{6}$ , so  $3 : 2 > 7 : 6$

## LESSON

The teacher now discusses proportion with the help of examples from real life situations.

**Example :** Cost of 4 notebooks is ₹80 whereas the cost of 15 notebooks is ₹300.

Ratio of number of notebooks =  $4 : 15$

$$\text{Ratio of costs of notebooks} = ₹80 : ₹300 = \frac{₹80}{₹300} = \frac{80}{300} = \frac{4}{15} = 4 : 15$$

The students observe that the ratio in each case is same.

The teacher discusses the term 'proportion' as equality of two ratios in general form as  $a : b = c : d$ .

The teacher further discusses the four terms  $a, b, c$  and  $d$  and their relationship.

## **Unitary Method**

The teacher uses students' previous knowledge of unitary method (finding the value of one) to explain

(a) **Direct Variation:** The teacher here **emphasises** on the fact that the two quantities vary directly.

Increase in 1<sup>st</sup> → Increase in 2<sup>nd</sup>

Decrease in 1<sup>st</sup> → Decrease in 2<sup>nd</sup>

Examples are taken from real life situations to explain the concept clearly.

(b) **Indirect Variation:** The concept of indirect variation to be explained using real life problems.

Increase in 1<sup>st</sup> → Decrease in 2<sup>nd</sup>

Decrease in 1<sup>st</sup> → Increase in 2<sup>nd</sup>

*Example :* If 10 men can construct a house in 156 days, how many men are required to construct it in 120 days?

Number of men	Number of days
↓ 10 x	↑ 156 120

The teacher needs to explain that to complete a work in lesser number of days would mean that more men will be required.

Thus, it becomes a case of indirect variation.

$$10 \times 156 = x \times 120$$

$$\Rightarrow x = \frac{10 \times 156}{120} = \frac{156}{12} = 13$$

Thus, 13 men would be required to complete the work in 120 days.

## Worksheet

### 1. Fill in the blanks :

- (i) The simplest form of the ratio 495 : 275 is .....
- (ii) The ratio of 1.5 m to 10 cm is .....
- (iii) The first term of a ratio is called ..... while the second term is called .....
- (iv) An equality of two ratios is called a .....
- (v) If  $a : b :: c : d$ , then  $d$  is called ..... proportional to  $a, b$  and  $c$ .
- (vi) In a proportion, product of extremes = .....
- (vii) The mean proportional between 2 and 8 is .....
- (viii) If  $a, b, c$  are in continued proportion, then  $c$  is called ..... proportional to  $a$  and  $b$ .
- (ix) If 18 apples cost ₹ 108, then the cost of 11 apples is .....
- (x) The third proportional to 8 and 12 is .....

2. Mr. Gupta and his wife are both school teachers and get ₹ 14,000 and ₹ 8,750 respectively per month. Find the ratio of

- (i) Mr. Gupta's income to that of his wife.
- (ii) Mrs. Gupta's income to that of her husband.
- (iii) Mr. Gupta's income to the total income of the two.

### A : Choose the correct alternatives in each of the following :

- 1. If  $x : 8 :: 5 : 4$ , then the value of  $x$  is
  - (a) 10
  - (b) 12
  - (c) 20
  - (d) 24
- 2. The least number that should be added to each term of the ratio 7 : 13 to make it 2 : 3 is
  - (a) 1
  - (b) 2
  - (c) 3
  - (d) 5
- 3. If  $\frac{A}{3} = \frac{B}{4} = \frac{C}{5}$ , then  $A : B : C =$ 
  - (a) 4 : 3 : 5
  - (b) 3 : 4 : 5
  - (c) 5 : 4 : 3
  - (d) 20 : 15 : 12
- 4. If 21 cows eat as much as 15 buffaloes, how many cows will eat as many as 35 buffaloes?
  - (a) 45
  - (b) 49
  - (c) 50
  - (d) 56
- 5.  $15 : x :: 10x : 96$ , then the value of  $x$  is
  - (a) 10
  - (b) 12
  - (c) 20
  - (d) 64

### B : Solve the following :

- 1. It takes a gardener 45 minutes to dig a flower bed of area  $7.5 \text{ m}^2$ . If he digs at the same rate, how long does he take to dig flower bed of area  $9 \text{ m}^2$ ?
- 2. Two numbers are in the ratio 2 : 7. If their sum is 54, find the numbers.
- 3. A book "Mathematics in Everyday Life" has 400 pages. 120 words are printed on a page. How many pages will be required to print the same book with 150 words on a page?
- 4. In 3 hours, a train covers 183 km. Travelling at the same speed what distance would the train cover in  $2\frac{1}{2}$  hrs?
- 5. If 18 boys consume 6 kg of rice in a day, how much rice will be consumed by 54 boys in a day?

## Percentage and its Application

### OVERVIEW

The chapter discusses about percentage, profit and loss and simple interest.

### LEARNING OUTCOMES

After instructions, the students will be able to :

- (a) define percentage.
- (b) convert a given fraction into a percentage.
- (c) convert a given decimal into a percentage.
- (d) convert a given percentage into a fraction and a decimal.
- (e) express percentage as a ratio.
- (f) apply the concept of percentage in real life problems.
- (g) identify with the terms – cost price (C.P.), selling price (S.P.), gain, loss and overhead charges.
- (h) compute the gain and gain percent if C.P. and S.P. are given.
- (i) compute the loss and loss percent if C.P. and S.P. are given.
- (j) compute S.P. when C.P. and gain/loss percent are given.
- (k) compute C.P. when S.P. and gain/loss percent are given.
- (l) identify with terms associated with simple interest – principal (P), time (T), rate (R) and amount (A).
- (m) compute simple interest and amount for a given principal, rate and time.
- (n) compute principal for a given time, rate and simple interest.
- (o) compute rate for a given time, principal and simple interest.
- (p) compute time for a given rate, principal and simple interest.

The teacher introduces the concept of 'percent' with examples.

Percent – per hundred

*Example : 70 out of 100 means  $\frac{70}{100} = 70\%$*

The teacher now takes up representing fractions and decimals into percentages using examples.

$$(a) \frac{34}{100} = \left( \frac{34}{100} \times 100 \right)\% = 34\%$$

$$(b) 0.4 = (0.4 \times 100)\% = 40\%$$

The teacher also discusses conversion of percentage into fraction, decimal and ratio using examples.

The teacher emphasises that the fraction and ratio has to be in lowest terms.

The teacher now introduces the concept of 'profit' and 'loss' which is an application of percentages.

The teacher introduces terms – cost price and selling price with examples.

$$\text{Profit or Gain} = \text{Selling Price (S.P.)} - \text{Cost Price (C.P.)}$$

$$\text{Loss} = \text{Cost Price (C.P.)} - \text{Selling Price (S.P.)}$$

Further, profit % or loss % are introduced. The teacher emphasises that profit % or loss % is always calculated on cost price.

The teacher now takes up computation of selling price when cost price and profit % or loss % are given.

**Example :** Find S.P. when C.P. = ₹50, profit % = 12%.

Let the C.P. be ₹100.

$$\text{S.P.} = ₹(100 + 12) = ₹112$$

If C.P. is ₹100, then S.P. = ₹112

$$\text{If C.P. is ₹1, then } \text{S.P.} = ₹\frac{112}{100}$$

$$\text{If C.P. is ₹50, then } \text{S.P.} = ₹\left(\frac{112}{100} \times 50\right) = ₹56$$

Alternately, the teacher introduces the method

$$\text{S.P.} = \frac{\text{C.P.} \times (100 + \text{profit \%})}{100} = ₹\frac{50 \times (100 + 12)}{100}$$

$$= ₹\frac{50 \times 112}{100} = ₹56$$

Similarly, the teacher discusses computation of cost price (C.P.) when selling price (S.P.) and profit % or loss % are given.

$$\text{C.P.} = \frac{\text{S.P.} \times 100}{100 + \text{profit \%}} \quad \text{or} \quad \text{C.P.} = \frac{\text{S.P.} \times 100}{100 - \text{loss \%}}$$

### Simple Interest

The teacher now takes up another application of percentages.

$$\text{Simple Interest} = \frac{\text{Principal} \times \text{Rate} \times \text{Time}}{100} = \frac{P \times R \times T}{100}$$

The teacher introduces simple interest as interest on a principal which remains same for the total time period.

The teacher here emphasises that rate is always in percent while time is always in years.

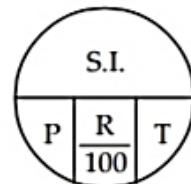
Further, Amount = P + S.I. is taken up.

The teacher also introduces computation of principal, rate and time.

A simple method of remembering the formula can be introduced.

$$\text{S.I.} = P \times \frac{R}{100} \times T$$

$$(a) P = \frac{\text{S.I.}}{\frac{R}{100} \times T} = \frac{\text{S.I.} \times 100}{R \times T}$$



$$(b) \frac{R}{100} = \frac{S.I.}{P \times T} \Rightarrow R = \frac{S.I. \times 100}{P \times T}$$

$$(c) \quad T = \frac{\text{S.I.}}{P \times \frac{R}{100}} = \frac{\text{S.I.} \times 100}{P \times R}$$

## Worksheet

**A : Choose the correct alternatives in each of the following :**

**1. Fill in the blanks :**

- (i) 0.25 expressed as a per cent = .....
- (ii) If 50% of a certain length is 50 cm, then the whole length is .....
- (iii) 1:4 expressed as a per cent = .....
- (iv) A profit of 10% means 10% out of .....
- (v) Loss per cent =  $\frac{\text{Loss}}{\text{.....}} \times 100$ .
- (vi) 300 marks out of 400 is .....%.
- (vii) Amount = ..... + .....
- (viii) If  $x\%$  of 1225 = 375, then  $x$  = .....
- (ix) In a transaction, if there is a loss of 20%, then S.P. = C.P. - 20% of .....

**2. Match the following :**

**Column A**

- (i) 25% of ₹ 50  
(ii) 10% of ₹ 50 is added to ₹ 35  
(iii) Fractional representation of 16.25%  
(iv)  $\frac{1}{2}$  expressed as a per cent  
(v) If  $x\%$  of 75 = 9, then  $x$  is equal to  
(vi) 100% of 100  
(vii) 62 marks out of 100, expressed as a per cent  
(viii) If an item is sold for ₹ 990 at a profit of 10%, then its C.P. is  
(ix) The interest on ₹ 200 at 5% per annum for 1 year
- (a) ₹ 10  
(b) ₹ 900  
(c) 62%  
(d) 100  
(e) 12  
(f) 50%  
(g)  $\frac{13}{80}$   
(h) ₹ 40  
(i) ₹ 12.50

**Column B**

C++ is a general-purpose programming language and widely used nowadays for competitive programming. It has imperative, object-oriented and generic programming features. C++ runs on lots of platform like Windows, Linux, Unix, Mac, etc.

### Turbo C++ Download & Installation

There are many compilers available for C++. You need to download any one. Here, we are going to use **Turbo C++**. It will work for both C and C++. To install the Turbo C++ software, you need to follow following steps.

1. Download Turbo C++
2. Create turboc directory inside c drive and extract the tc3.zip inside c:\turboc
3. Double click on install.exe file
4. Click on the tc application file located inside c:\TC\BIN to write the c program

### Using an IDE - Turbo C

**Turbo C++** IDE is freely available over the internet and is good for a beginner.

**Step 1:** Open turbo C IDE(Integrated Development Environment), click on **File** and then click on **New**

**Step 2:** Write a program

**Step 3:** Click on **Compile** menu and then on **Compile** option, or press the keys press **Alt + F9** to compile the code.

**Step 4:** Click on **Run** or press **Ctrl + F9** to run the code. Yes, C programs are first compiled to generate the object code and then that object code is Run.



## Assignment

1. Write a C++ program to calculate the volume of a sphere.
2. Write a program to compute the total marks and average for 5 subjects.
3. Write a program to compute the Fahrenheit value by accepting the Celsius value from the user .
4. Compile the following code and identify the errors.

a. #include<iostream>

```
void main()
```

```
{
```

```
int x;
```

```
cin>>x;
```

```
cout<<x;
```

```
}
```

b. #include<iostream.h>

```
void main()
```

```
{
```

```
cout<<"what's so great?"
```

```
}
```

c. #include<iostream.h>

```
void main()
```

```
{
```

```
float a=3.5;
```

```
int b,c;
```

```
cin>>b;
```

```
cin>>c;
```

```
b=b+c;
```

```
cout>>a<<b;
```

```
}
```