LESSON PLAN 7

CLASS : 8 **TEACHER'S NAME :**

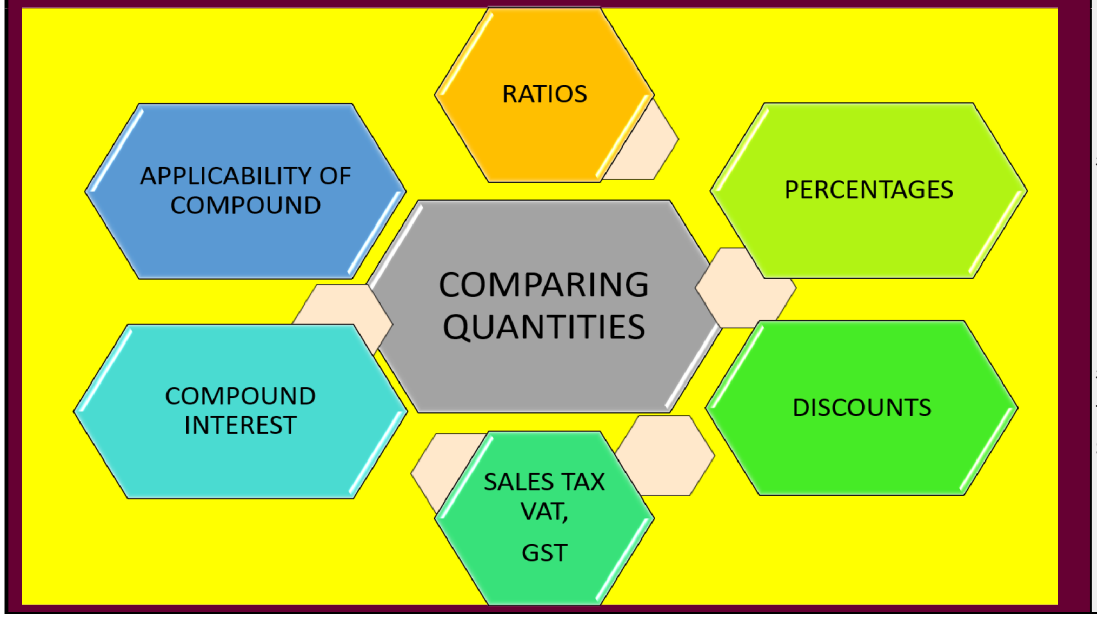
NAME OF THE UNIT	SUB-TOPICS	NO OF PERIODS REQUIRED			Time line for teaching	
		Teaching	Practice	TOTAL	From	To
COMPARING QUANTITIES	7.1 RECALLING RATIOS AND PERCENTAGES 7.2 FINDING DISCOUNTS 7.2.1 ESTIMATION IN PERCENTAGES	3	6	9		
	7.3 SALES TAX/VALUE ADDED TAX/GOODS AND SERVICES TAX	1	2	3		
	7.4 COMPOUND INTEREST 7.5 DEDUCING A FORMULA FOR COMPOUND INTEREST 7.6 APPLICATIONS OF COMPOUND INTEREST FORMULA	4	8	12		
	TOTAL	8	16	24		
PRE-REQUISITES	KEY CONEPTS	KEY VOCABULARY				
	Every Pupil is expected to have basic knowledge in # fractions and decimals and their basic operations like +, -, x, ÷ # Ratios and percentages and their usage (learnt in previous class) # converting decimals into fractions and vice versa # comparision of two quantities and deciding which one is higher and which one is lower basing on calculation of percentage # calculating simple interest and interest for multiple years # estimation of profit and loss in their day to day transaction activities	# Ratio, percentage # comparision # Unitary Method # Discount # Marked Price # Sale Price # Sales Tax/Value added Tax/ Goods and Services Tax			# Borrowing, Sum # Principal, Interest # simple Interest # Amount, annum # Interpretation # Compound Interest # Compounding Annually, Half yearly	

LEARNING OUTCOMES

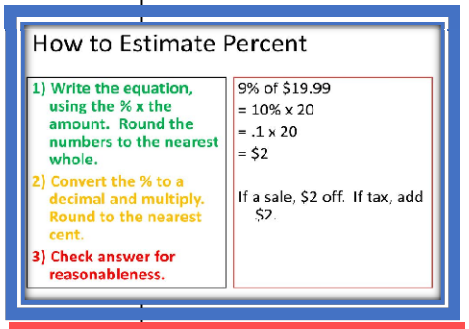
After Completion of this lesson every student will be able to

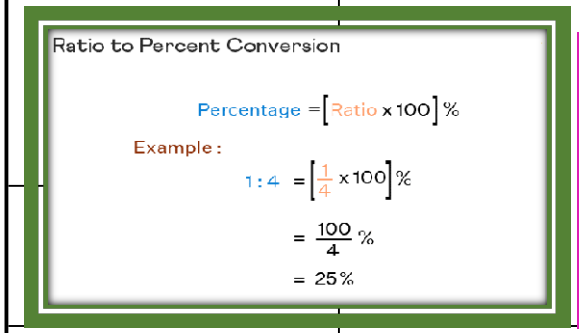
 # apprehend what comparing quantities really mean
 # convert ratio into percentages and vice versa
 # compare two quantites with the help of finding percentage.
 # estimate the percentage of a quantity upto an approximate extent
 # perform sums related to percentages in real life situations
 # calculate the Sale Tax/Value added tax / Goods and Service Tax
 # Find simple interest and compound interest of the money borrowed and calculate the amount and apply the concept in real life situations
 # recognize the significance and appreciate the importance of Comparing quantities in real life situations.

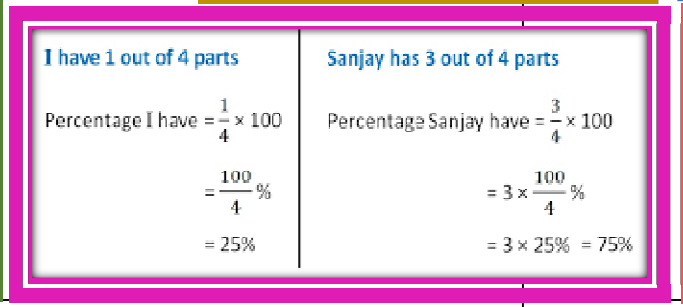
Teaching Learning Process

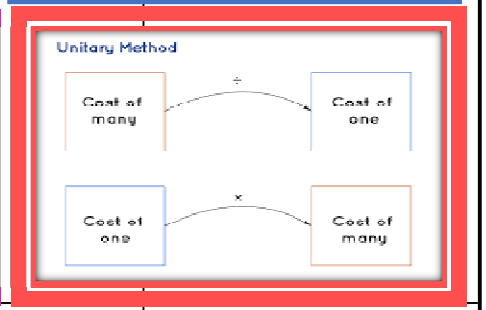
MIND MAPPING	Experience & Reflection
	# Pupils will recollect their knowledge on ratios & percentages, calculating simple interest and their implications and utilize that knowledge in learning the new concepts in comparing quantities # Students will experience the applications of various techniques adopted in comparing quantities in real life situations.

TEACHING PERIOD : 1,2,3	RECALLING RATIOS AND PERCENTAGES, FINDING DISCOUNTS, ESTIMATION IN PERCENTAGES		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS & PRE REQUISITES	Brain storming session invoving children with pre-requisites vocabulary and concepts related to previous knowledge. Introduction of new vocabulary and key words associated with the concept # Ratio # Percentage # comparision # Fraction # Unitary Method # Estimation # Discount	* Students read the pre-requisites and answer the questions to the teacher (whole class activity)	Every Pupil will read and write the key words in their note books
MIND MAPPING	Teacher writes the key word "COMPARING QUANTITIES " on the black board and will elict its other related words through questioning and will draw pupils' attention towards key concepts in the lesson	Hetrogeneous groups are created. One group will read the words and other will explain the meaning	Pupils individually read the keywords associated with the chapter
CONCEPTUAL UNDERSTANDING & LEARNING ACITIVITY	Teacher recalls the knowledge of children on ratios and percentages that they have acquired in their previous class. Teacher checks whether every child is well acquainted with convertion of ratios into percentages and vice versa by posing some questions related to ratios and percentages and engaging children in group/individual activities like doing work sheets etc., and ascertains the learning. Later teacher moves on to the next concept of finding discounts and explains the way how discount is being calculated by citing some real life examples like discount given in shopping malls etc., and asks to estimate the value of % of discount given to an approximate extent.	Hetrogeneous groups are formed to participate in the activities	Each student in the group participates in the activities and learns the concepts of converting ratiios into percentages and vice versa along with finding discounts
SUMMARY	Teacher writes the summary of the concept in a step wise procedure and asks children to note and read	pupils will note down and read the summary in groups	every individual reads the summary and notes it down
ASSESSMENT	Teacher asks children to solve the sums of try these section, Think Discuss & Write along with example sums and exercise sums of 7.1	every group will do the sums by discussion among each other	every individual solves the sums on their own

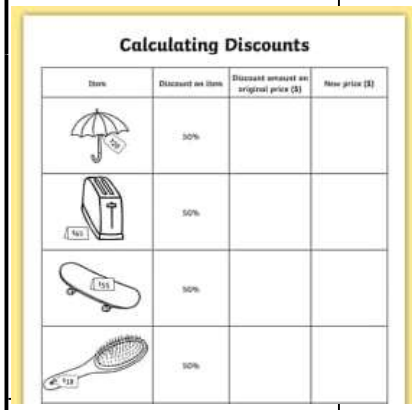


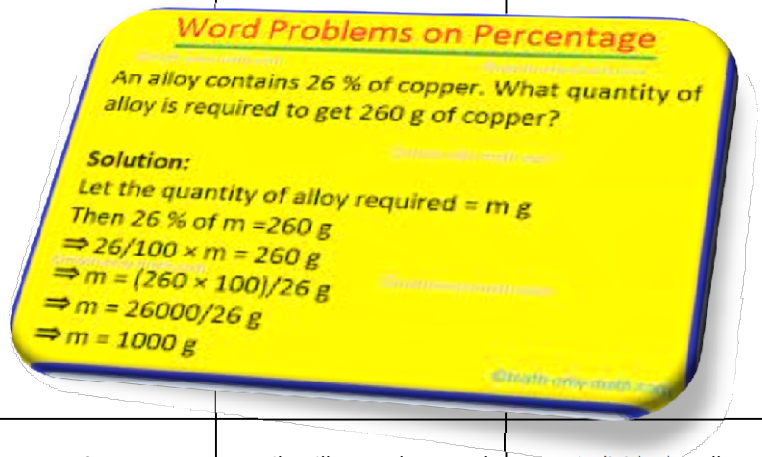




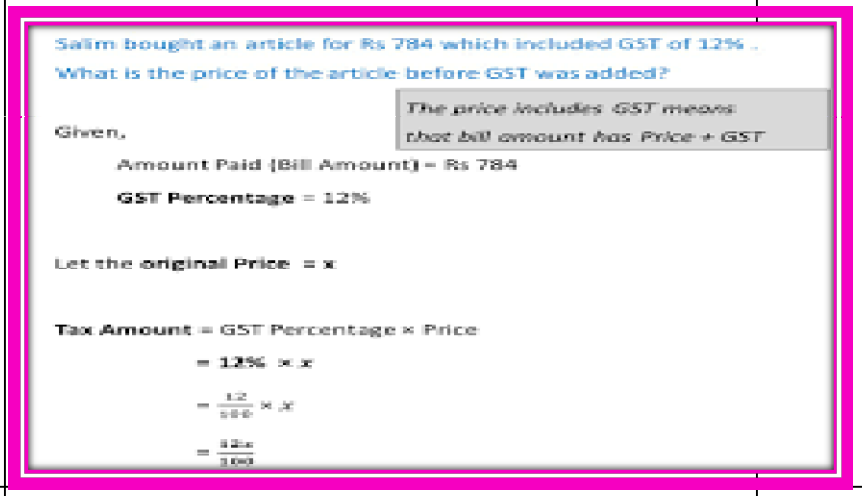


PRACTICE PERIOD: 1 to 6	RECALLING RATIOS AND PERCENTAGES, FINDING DISCOUNTS, ESTIMATION IN PERCENTAGES		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS READING	Teacher writes the key words from previous class's teaching period and asks children to read and write them in note books # Ratio # Percentage # comparision # Fraction # Unitary Method # Estimation # Discount	Whole class activity : one child comes to the board and reads the key words loudly and the remaining class follows.	Every child comes to the board and reads the key words and notes them down in their note books
SIMILAR LINES READING	Teacher converts some ratios into percentages and vice versa, solves some problems related with finding discounts along with sums related to estimating percentages and asks children to solve sums of the given worksheets by watching similar lines.	Each group will read the similar lines and will frame some more by discussion	Every Individual prepares their own similar lines using the lines prepared by the teacher
SUMMARY/ SYNOPSIS	Teacher once again writes important key words and summary of the concept and asks children to read,note down and practice.	pupils will note down and read the summary in groups	every individual spells and reads the summary and notes it down
WRITING/ EDITING	Teacher guides children in doing sums of exercise 7.1 on their own and checks their writings	One group will check the writings of the other and vice versa	Slow learners are focused and teacher will ascertain that every individual learns the concept in the forth coming practice sessions





TEACHING PERIOD : 4	SALES TAX/VALUE ADDED TAX/GOODS AND SERVICES TAX		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS	Brain storming session invoving children with key words # Marked Price # Sale Price # Sales Tax # Value added tax (VAT) # Goods and Service Tax (GST)	* Students read the keywords answer the questions to the teacher	Every Pupil will read and write the key words in their note books
CONCEPTUAL UNDERSTANDING	Teacher grabs the attention of the children by focusing them towards various taxes imposed in day to day purchasings. Teacher conducts an activity by displaying some exemplary bills to the children and asks them to identify what type of taxes were imposed on the goods purchased. Teacher here brings and displays different types of old bills where Sales tax and VAT were imposed earlier and now explains the difference between them and GST and also explains how the imposition of tax transformed from Sales tax to GST. After this activity, teacher illustrates the way how these types of taxes are being calculated and ascertains the learning of the concept by every individual.	pupils are divided into hetrogeneous groups and engaged in the activity	Each student in the group participates in the activity and learns the concept
LEARNING ACTIVITY	Price before tax = 950 ₹ Value added tax = 5 % on the price = 5 % on 950 ₹ = $\frac{5}{100} \times 950$ = 47.5 ₹		Sales Tax (Trade Tax) : 1. Sales Tax is calculated on the Sale Price. 2. $\text{Sales Tax} = \frac{\text{Rate of Sales Tax} \times \text{Sale Price}}{100}$ 3. $\text{Rate of Sales Tax} = \frac{\text{Sales Tax}}{\text{Sale Price}} \times 100\%$
SUMMARY	Teacher once again writes important key words and summary of the concept and asks children to note down and adopt.	Pupils will note down and read the summary in groups	Every individual reads the summary and notes it down and adopts the procedure
ASSESSMENT	Teacher gives some questions from Try These sections as well as sums from exercise 7.2 and examples as well and asks children to do those sums	Every group will do the sums by discussion among each other	Every individual solves the sums on their own

PRACTICE PERIODS: 7,8	SALES TAX/VALUE ADDED TAX/GOODS AND SERVICES TAX		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS READING	Teacher writes the key words from previous class's teaching period and asks children to read and write them in note books # Marked Price # Sale Price # Sales Tax # Value added tax (VAT) # Goods and Service Tax (GST)	Whole class activity : one child comes to the board and reads the key words loudly and the remaining class	Every child comes to the board and reads the key words and notes them down in their note books
SIMILAR LINES READING	Teacher solves some problems on calculating sales tax/VAT/GST and asks children to solve some more by watching similar lines 	Each group will read the similar lines and will frame some more by watching them	Every individual will watch the similar lines and will frame some more
SUMMARY/ SYNOPSIS	Teacher once again writes important key words and summary of the concepts covered and asks children to note down and adopt.	Pupil groups will read and adopt the procedure	Teacher focuses on every individual so that each one learns the concept in successive upcoming practice sessions
WRITING/ EDITING	Teacher gives some questions from Try These sections and guides them in doing some sums of examples and exercise 7.2 and teacher checks the writings of children	One group will check the writings of the other and vice versa	

TEACHING PERIOD : 5 to 8	COMPOUND INTEREST, DEDUCING A FORMULA FOR COMPOUND INTEREST, APPLICATIONS OF COMPOUND INTEREST FORMULA		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS	Brain storming session invoving children with key words # Borrowing # Simple Interest # Principal # Amount # Interest for multiple years # Compound Interest # Amount # Annum # compounding Annually # compounding Half yearly	* Students read the key words and answer the questions to the teacher (whole class activity)	Every Pupil will read and write the key words in their note books
CONCEPTUAL UNDERSTANDING	Teacher draws pupils' attention towards the interests paid or received by banks towards the deposits taken or loans given. Teacher recalls the pupils' knowledge on Calculating simple Interest and using that, teacher develops the pattern of finding compound interest and the way it being calculated with some illustrations. Finally teacher conducts an activity with children to deduce a formula for calculating compound interest by providing them various perameters like Principal, Interest, time etc., In the later sessions after successful implantation of the concept of finding compound interest in the minds of children, teacher raises an enthusiasm by questioning the way how they calculate compound interest in case of fractional years like 1/2 an year, 3/4 of an year or1 1/2 an year. Teacher explains that calculationof C.I in case of fractional years,the interestrate has to be proportionately be fractioned along with the time.Later teacher illustrates some applicative problems related with compound interest	Hetrogeneous groups are created and are engaged in activities	Every child participates in the activity and understands the concept
LEARNING ACTIVITY			
SUMMARY	Teacher writes the summary of the concept discussed and asks children to read, note down and adopt	pupils will note down and read the summary in groups	every individual reads the summary and notes it down and adopts the procedure
ASSESSMENT	Teacher gives some questions from Try These section and exercise sums of 7.3 and asks children to solve those sums	every group will do the sums by discussion among each other	every individual solves the sums on their own

$$A = P\left(1 + \frac{R}{100}\right)^t$$

(b) Compound interest (CI) = A – P

$$= P\left[\left(1 + \frac{R}{100}\right)^t - 1\right]$$

Calculate the amount and compound interest on
(b) Rs 18,000 for $2\frac{1}{2}$ years at 10% per annum compounded annually.

Given,
Principal = 18,000
Time (n) = $2\frac{1}{2}$ years
Rate (R) = 10 % per Annum.

Since n is in fraction, we use the formula.
Compound interest for $2\frac{1}{2}$ years
= Compound interest for 2 years
+ Simple interest for $\frac{1}{2}$ year.

∴ Value of machine after 2 years $= P\left(1 - \frac{r}{100}\right)^n$

$= 97,200\left(1 - \frac{10}{100}\right)^2$

$= 97,200\left(\frac{9}{10}\right)^2$

= Rs. 78732.

(iii) Present value of machine(A) = Rs.97,200
Depreciation rate = 10% and time = 2 years
To calculate the cost 2 years ago

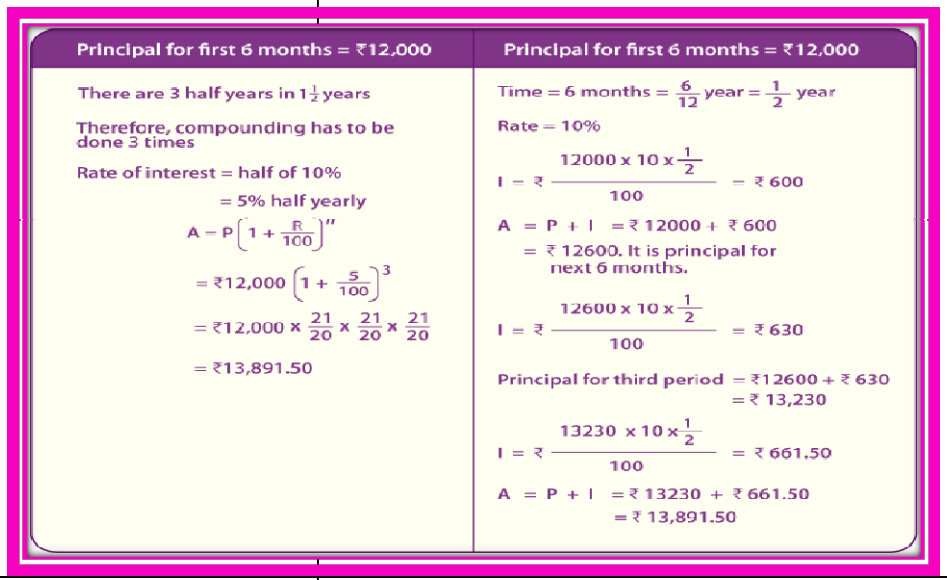
$\therefore A = P\left(1 - \frac{r}{100}\right)^n$

$\Rightarrow 97,200 = P\left(1 - \frac{10}{100}\right)^2$

$\Rightarrow 97,200 = P\left(\frac{9}{10}\right)^2$

$\Rightarrow P = \text{Rs. } 97,200 \times \left(\frac{10}{9}\right)^2 = 1,20,000$

PRACTICE PERIODS: 9 to 16	COMPOUND INTEREST, DEDUCING A FORMULA FOR COMPOUND INTEREST, APPLICATIONS OF COMPOUND INTEREST FORMULA		
CONCEPTS/STEPS	**TEACHER ACTIVITY (I DO)**	**GROUP ACTIVITY (WE DO)**	**INDIVIDUAL ACTIVITY (YOU DO)**
KEY WORDS READING	Teacher writes the key words from previous class's teaching period and asks children to read and write them in note books # Borrowing # Simple Interest # Principal # Amount # Interest for multiple years # Compound Interest # Amount # Annum # compounding Annually # compounding Half yearly	Whole class activity : one child comes to the board and reads the key words loudly and the remaining class follows.	Every child comes to the board and reads the key words and notes them down in their note books
SIMILAR LINES READING	Teacher will solve some exemplary sums related to compound interest and asks children to solve some more by watching similar lines	Each group will read the similar lines and will solve some more by discussion	Every Individual prepares their own similar lines using the lines prepared by the teacher
SUMMARY/ SYNOPSIS	Teacher once again writes important key words and summary and asks children to read ,note down and adopt.	Pupil groups will read the summary and utilize	Teacher focuses on every individual so that each one knows and adopts the concept learnt in successive upcoming practice sessions
WRITING/ EDITING	Teacher asks children to solve the sums of exercise 7.3 on their own and teacher checks the writings of children	One group will check the writings of the other and vice versa	



Principal for first 6 months = ₹12,000

There are 3 half years in $1\frac{1}{2}$ years

Therefore, compounding has to be done 3 times

Rate of interest = half of 10%

= 5% half yearly

$A = P\left(1+\frac{R}{100}\right)^n$

$= ₹12{,}000\left(1+\frac{5}{100}\right)^3$

$= ₹12{,}000 \times \frac{21}{20} \times \frac{21}{20} \times \frac{21}{20}$

$= ₹13{,}891.50$

Principal for first 6 months = ₹12,000

Time = 6 months = $\frac{6}{12}$ year = $\frac{1}{2}$ year

Rate = 10%

$I = ₹\ \frac{12000 \times 10 \times \frac{1}{2}}{100} = ₹600$

A = P + I = ₹ 12000 + ₹ 600

= ₹ 12600. It is principal for next 6 months.

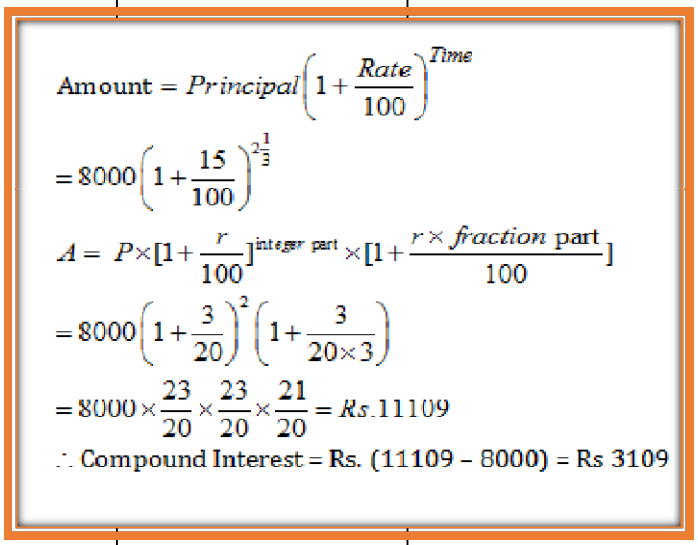
$I = ₹\ \frac{12600 \times 10 \times \frac{1}{2}}{100} = ₹630$

Principal for third period = ₹12600 + ₹ 630 = ₹ 13,230

$I = ₹\ \frac{13230 \times 10 \times \frac{1}{2}}{100} = ₹661.50$

A = P + I = ₹ 13230 + ₹ 661.50

= ₹ 13,891.50



$$\text{Amount} = Principal\left(1+\frac{Rate}{100}\right)^{Time}$$

$$=8000\left(1+\frac{15}{100}\right)^{2\frac{1}{3}}$$

$$A = P\times[1+\frac{r}{100}]^{\text{integer part}}\times[1+\frac{r\times fraction\ \text{part}}{100}]$$

$$=8000\left(1+\frac{3}{20}\right)^{2}\left(1+\frac{3}{20\times 3}\right)$$

$$=8000\times\frac{23}{20}\times\frac{23}{20}\times\frac{21}{20}=Rs.11109$$

$\therefore$ Compound Interest = Rs. (11109 – 8000) = Rs 3109