

Grade: 7	Subject: Math	Topic: Comparing Quantities
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SUMMARY SHEET

Learner Previous Knowledge	Interpret percent as a part of a hundred; find decimal and percent equivalents for common fractions and explain why they represent the same value; compute a given percent of a whole number; Convert fractions to decimals to percent and use these representations in estimations, computations and applications. Simple problems- cost of many from one and cost of one from many;
Target Knowledge for this Topic	Calculate given percentages of quantities and solve problems involving discounts at sales, interest earned, and tips. Understand what percent of increase or decrease means Calculate the percentage of increases and decreases of a quantity. Calculating Profit or Loss as a Percent. Formulae related to Profit and Loss What is Simple interest(S.I.) and its applicability; Finding S.I, P, R, T using the formula $S.I. = (P \times R \times T)/100$ and also finding the amount (when time is given in days, months and years); Solve word problems relating to S.I.

Learning Goals

More Complex Learning Goal- Students will be able to analyze errors and rectify them with logical explanations, able to identify and explain logical or factual errors in knowledge.

Target Learning Goal- Students will be able to calculate percentages of increasing and decreasing of a quantity and solve problems involving discount at sales, interest earned and compute problems related to simple interest, to solve the problems related to profit and loss, unitary Method .

Simpler Learning Goal- Students will be able to describe the meaning of percentage, Simple interest and components related to it, to describe what profit and loss is with examples along with the concept of unitary method

Period No.	Lesson Objectives	Teaching Learning Materials Required
1	- Compare two quantities - Learn about equivalent ratios - Solve problems by using proportion & unitary method	Worksheet-1 (1 per student); Projector (1 per class)
2	Recapitulate what fractions are and conversion of percent into decimals, fractions and vice versa	Pre assessment: Worksheet-2 (1 per student)

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3	• Converting Ratios to Percents	
4 & 5	• Understand Increase or Decrease percent • Calculate Profit or Loss as a percent.	
6 & 7	• Recapitulate the information related to interest and simple interest • Solve word problems related to S.I	

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Period 1

Lesson Objectives

At the end of this lesson students will be able to:

- Compare two quantities
- Learn about equivalent ratios
- Solve problems by using proportion & unitary method

Teaching Learning Materials required

- **Worksheets: Worksheet 1** (1 per student);

Details of Teaching Learning Experience

Seating Arrangement: In groups of 4 to 6

Lesson Beginning <u>Time:</u> 15 mins <u>Purpose:</u> Activate prior knowledge Generate interest in the topic	<u>Pre Assessment Sheet/ Groups</u> • Form groups of students such that each group will have 4 to 6 students. • Tell students today they are going to compare two quantities. • Distribute a Worksheet-1 to each student of the group. • Instruct them to solve while discussing within their group members. <i>Note: The students can discuss with their group members but work in their individual sheets. The intent here is to help students to try and compare quantities by availing prior knowledge that they have built in previous classes.</i> • Give them 15 minutes to complete the task.
Lesson Middle <u>Time:</u> 15 mins <u>Purpose:</u> Recapitulation Develop the conceptual understanding	<u>Discussion/ Whole Class</u> • Project Worksheet-1. • Ask different groups to share their responses. • Build a class consensus on all the answers of the questions given in the sheet. • Clear the doubts, if any. <i>Note: Students may come up with incorrect answers. In this case, ask other students who may have the correct answers to explain and justify. It is important to build consensus on all answers – this will help eradicate any errors.</i>

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Lesson End <u>Time:</u> 10 mins. <u>Purpose:</u> Consolidate students learning Home Assignment allocation	<u>Blackboard learning/Whole Class</u> - Share the following problems on board: Compare the two quantities: 160 minutes and 1 hour 12 m and 100 cm - Ask any student randomly, to come in front and show the solution on board. - Make sure that students are able to understand that to compare two quantities they should be in same unit <u>Home Assignment:</u> - Ask the students to practice questions on Pg 157-Exercise 8.1 of NCERT Textbook and share their doubts, if any.
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Worksheet-1

Topic- Comparing Quantities

Skill: Problem Solving

Directions: Solve the comparison problems

Q1. Sheena runs 5 km whereas Amit runs 500 m daily. Compare and find who runs more.

How can you compare two different quantities like 5 km and 500 m?

Who runs faster?

Q2. Compare the two ratios 1:3 and 2:5. How did you compare the two ratios?

Are the two ratios equivalent? Justify

Q3. What do you understand by proportion?

Q4. Give a real life example, where proportion can be used to solve the problem.

Q5. Cost of half a dozen bananas is 40 rupees. What would be the cost of two dozen bananas?

Q5. Give a real life example where unitary method can be used to solve the problem.

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Period 2

Lesson Objectives

At the end of this lesson students will be able to:

- Recapitulate what fractions are and conversion of percent into decimals, fractions and vice versa
- Learn how percentage can be used to compare quantities.

Teaching Learning Materials required

- **Worksheets: Worksheet-2** (1 per student)

Details of Teaching Learning Experience

Seating Arrangement: - In groups of 4 to 6

Lesson Beginning <u>Time:</u> 10 mins <u>Purpose:</u> Activate prior knowledge generate interest to the topic	<u>Recapitulation brainstorming/Whole class</u> • Form groups of students such that each group will have 4 to 6 students. • Tell students, today they are going to recall about percentages and learn how percentage can be used in comparing quantities. <i>Note: The students can discuss with their group members but work in their individual sheets.</i> • Give them 5 to 7 minutes to write the definition of percentage.
Lesson Middle <u>Time:</u> 10 mins <u>Purpose:</u> Recapitulation	<u>Pre-assessment/Groups</u> • Distribute Worksheet-2 to each student and ask them to attempt the questions related to percentages and conversion of percentages into decimals and fractions and vice versa. • Give them 10 minutes to discuss and attempt all the questions. <i>Note: The students can discuss with their group members but work in their individual sheets.</i>
Lesson End <u>Time:</u> 10 mins. <u>Purpose:</u>	<u>Whole Class – Discussion</u> • Project Worksheet-2. • Ask a few students at random to share all the answers of the questions. • Build a class consensus on all the answers of the questions given in the sheet.

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Develop the conceptual understanding Consolidate students learning	<i>Note: Students may come up with incorrect answers. In this case, ask other students who may have the correct answers to explain and justify. It is important to build consensus on all answers – this will help eradicate any errors.</i> <i>Make sure that the students are able to revise the following points</i> • Interpret percent as a part of a hundred. ○ Find decimal and percent equivalents for common fractions and explain why they represent the same value. ○ Compute a given percent of a whole number. ○ Convert fractions to decimals to percent and use these representations in estimations, computations, and applications. <u>Home Assignment:</u> Ask the students to practice questions on Pg 164-Exercise 8.2 of NCERT Textbook and share their doubts, if any.
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Worksheet-2

Topic- Percentages

Skill: Problem Solving

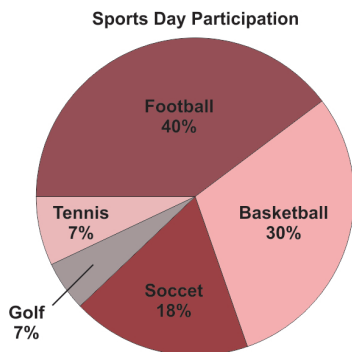
Directions: Attempt all the questions to recap percentages and conversion of it into decimals or fractions and vice versa.

1. Fill in the blanks:

- Percent compares a number to a _____.
- 10/100 is equal to _____%
- 25 over 100 in decimal form is equal to _____
- $\frac{1}{2}$ in percentage is equal to _____

2. Observe the pie chart and then answer the following questions:

Three thousand kids registered for sports day at the stadium. The circle graph shows the percent of kids who participated in each of the sport type.



1. How many more kids played football then tennis?

2. How many kids played soccer?

3. How many kids played both Basketball and Tennis?

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Period 3

Lesson Objectives

At the end of this lesson students will be able to:

- Converting Ratios to Percents.

Teaching Learning Materials required

- NCERT Textbook

Details of Teaching Learning Experience

Seating Arrangement: - In groups of 4 to 6

Lesson Beginning <u>Time:</u> 15 mins <u>Purpose:</u> Activate prior knowledge Generate interest to the topic Introduce the topic Develop conceptual understanding	<u>Figuring out quantities of a percent/Groups</u> • Teacher will write the following question on the board: “Reena’s mother said, to make idlis, you must take two parts of rice and one part urad dal. What percentage of such a mixture would be rice and what percentage would be urda dal?” • Ask the students to attempt the question. • Give them time to answer the given questions and also give reasons for their answer.
Lesson Middle <u>Time:</u> 10 mins <u>Purpose:</u> Activate prior knowledge Generate interest to the topic Introduce the topic	<u>Discussion/whole class:</u> • After discussing the answer of the question, now teacher will tell the students to attempt questions on Pg 166-Try These of NCERT Textbook. • Ask a few students at random to share the answers of all the questions and build consensus on all the answers. ○ What did you generalize with the answers you got? Give justification. • <i>Note: students may come up with different or incorrect answers. In this case, ask other students who may have the correct answers to explain and justify. It is important to build consensus on all answers – this will help eradicate any errors. The intent here is to make students understand the conversion of ratios to percents.</i>

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Lesson End <u>Time</u>: 15 mins. <u>Purpose</u>: Develop conceptual understanding Consolidate students learning	<u>Home Assignment</u> • Tell the students to practice relevant questions and share their doubts, if any.
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Period 4 & 5

Lesson Objectives

At the end of this lesson students will be able to:

- Understand increase or decrease as percent.
- Calculate profit or loss as a percent.

Teaching Learning Materials required

Math Textbook

Details of Teaching Learning Experience

Seating Arrangement: - In groups of 4 to 6

Lesson Beginning <u>Time:</u> 20 mins <u>Purpose:</u> Activate prior knowledge Generate interest to the topic Introduce the topic	<u>Increase in percentage/groups</u> • Teacher will write the following question on the board: “A school team won 6 games this year against 4 games won last year. What is the percent increase?” • Tell them to attempt the question and conclude what they have figured out. • Give them 10 minutes of time to complete the task. <u>Discussion/ Whole Class</u> • Randomly call few groups to share the answers of the question. • Take everyone’s view on the shared answer and generalizations. • Now tell the students to answer questions on Pg 167-“Try these” of NCERT Textbook. <i>Note: Students may come up with incorrect answers. In this case, ask other students who may have the correct answers to explain and justify. It is important to build consensus on all answers – this will help eradicate any errors.</i>
Lesson Middle <u>Time:</u> 35 mins <u>Purpose:</u> Introduce the topic Develop the conceptual understanding	<u>Decrease in percentage/groups</u> • Tell students that they have figured out the increase and decrease in percent of the quantity in the beginning of the plan. • Now she will discuss “Profit or Loss as a Percent” • She will explain the concept by giving various examples and formulae on Profit or Loss • She will discuss questions on Pg 169-“Try These” of NCERT Textbook.

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Consolidate students learning	• Give them 5 minutes to complete the questions and then take up a discussion. <u>Whole Class – Discussion</u> • Ask a few students at random, to share the answers. • Build a class consensus on the same by taking other views on the shared answers. <i>Note: Students may come up with incorrect situations and comparison with the In this case, ask other students who may have the correct answers to explain and justify. It is important to build consensus on all answers – this will help eradicate any errors.</i>
Lesson End <u>Time:</u> 15 mins <u>Purpose:</u> Finish up	Home Assignment: • Distribute home assignment to students and ask them to do Exercise 8.3- Q1 to 8 on Pg 171 of NCERT Textbook

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Period 6 & 7

Lesson Objectives

At the end of this lesson students will be able to:

- Recapitulate the information related to interest and simple interest
- Solve word problems related to S.I

Teaching Learning Materials required

Math textbook

Seating Arrangement: Individually

Lesson Beginning <u>Time:</u> 15 mins <u>Purpose:</u> Activate prior knowledge Recapitulation	<u>Discussion/ Whole Class</u> • Discuss the terms Principal, Sum, Rate of interest and Amount with the students • Develop knowledge about Simple Interest to the students. • Now discuss various examples related to simple interest • Build a class consensus on all the answers. <i>Note: Through discussion make sure to build the concept of simple interest and formula related to find the interest. Also, the meaning of the terms like principal, interest, rate, time and amount.</i>
Lesson Middle <u>Time:</u> 25 mins <u>Purpose:</u> Develop the conceptual understanding Consolidate students learning	<u>Worksheet/Individual</u> • Tell the students to attempt the questions on pg 171-“Try These” of NCERT Textbook. • Give them 15 minutes to attempt the questions. <i>Note: the intent here is to give an individual assessment sheet. They have already recapitulated the concept of simple interest in the lesson beginning. Now, they will solve the problems individually in their worksheets.</i>

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Lesson End <u>Time:</u> 20 mins <u>Purpose:</u> Consolidate students learning	<u>Whole Class – Discussion</u> • At random ask students to share the answers of the given questions in the worksheet. • Ask the following questions from the representative student or groups: ○ How did you figure out the answers? ○ Give explanation for your work done. • Build a class consensus on all the answers. <i>Note: Students may share incorrect answers. In this case, ask other students who may have the correct answers to explain and justify. It is important to build consensus on all answers – this will help eradicate any errors.</i> <u>Home Assignment:</u> • Ask the students to practice questions 9 to 11 on Pg 172-Exercise 8.3 of NCERT Textbook.
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