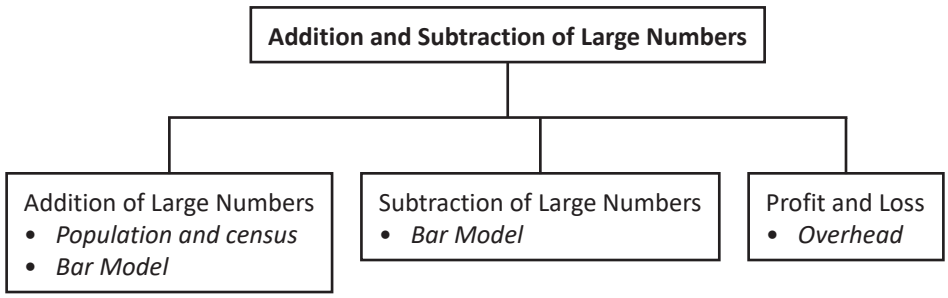
Addition and Subtraction of Large Numbers

LESSON OUTCOMES

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

- Add and subtract 6-digit numbers.
- Solve word problems based on addition and subtraction.
- Solve simple profit and loss problems which may include overhead costs.



PREREQUISITE KNOWLEDGE

- Addition and subtraction up to 6-digit numbers

LESSON PLAN

Number of Sessions: 9

Session Plan

Session 1: Introduction [IL: SDG – Education]; Addition of Large Numbers; Quick Drill; Be Alert! Remember! Digital/Animation – Addition and Subtraction of 5 -digit Numbers; Digital/IA – Addition of 6-digit Numbers

Session 2: *Population and Census* [IL: Civics]—Explanation with examples; *Bar Model*; Examples; Practice 1 [IL: SDG – Clean Energy]; TRM/Add-on Activity 1- To apply addition and subtraction of large numbers in real life [Discovery-based Learning, MI]

Session 3: Practice 1

Session 4: Subtraction of Large Numbers: Examples; Quick Drill; Digital/IA - Identifying the key word of subtraction; Digital/IA - Subtraction of 6-digit Numbers; *Bar Model*; Examples 1 and 2; Practice 2 [IL: SDG -Sustainable Communities]

Session 5: Explore! [21C: Communication, Collaboration; Game-based Learning; MI]; Digital/PG - Real Life Application of 6 -digit Numbers

Session 6: Profit and Loss [IL: Values; Financial Literacy]; Examples; Thinking cap! [21C: Critical Thinking]; Digital/Animation - Profit and Loss; Digital/IA - Profit and Loss; TRM/Add-on Activity 2- To find the profit or loss of an item [Discovery-based Learning; MI]

Session 7: *Overhead*; Explore! [MI]

Session 8: Practice 3; Thinking Cap! [Game-Based Learning]

Session 9: Worksheet 1 [IL: SDG – Clean Water for All; IL: Civics]; Worksheet 2 [21C: Critical Thinking, IL: SDG – Sustainable Communities]

Introduction

[IL: SDG – Education]

- Highlight the importance of teamwork, emphasising how Riyaz and Raghav worked together to solve the puzzle. Ask the students to present their own real-life connections to the class, just as Riyaz and Raghav did.
- Reinforce the connection between mathematics and real life, demonstrating how the SDG of education empowers students with the skills they need to succeed.

Addition of Large Numbers

- Demonstrate the addition of two 6-digit numbers using the examples.
- Discuss how adding large numbers can be useful in real life, such as calculating large quantities or finances.

Population and Census

[IL: Civics]

- Present the population data of two hypothetical towns, Suryapur and Chandrapur.
- Ask students to analyse the data and discuss how the population size might influence the allocation of resources like water, schools and healthcare facilities.
- Ask students work in groups to create a simple plan for a town, considering factors like water supply, schools and healthcare based on a hypothetical population data and present them to the class.

Bar Model

[IL: SDG - Clean Energy]

- Demonstrate how to use bar models to solve word problems in addition.
- Provide more sums for students to solve using bar models.
- While working on the sum related to solar panels, explain how solar power helps in reducing carbon emissions and achieving the SDG of clean energy.

Subtraction of Large Numbers

[IL: SDG -Sustainable Communities] [21C: Communication, Collaboration; Game-based Learning] [MI]

- Demonstrate the process of subtracting one 6-digit number from another and verifying the result. Provide additional sums for students to work out.
- While working on a sum related to donations received for disaster relief, emphasise the importance of timely and sufficient funding in recovery and resilience-building efforts to foster sustainable communities.
- During the activity, engage students as a team and ask them to add and subtract by forming 6-digit numbers using the given conditions or clues.

Add-on Activity 1

[Discovery-based Learning] [MI]

To apply addition and subtraction of large numbers in real life

- Ask students to find the population of their district from the internet.
- Ask them to find the population of any one of their neighbouring districts.
- Ask them to add the numbers and find the total population of the two districts and the difference between the population of the two districts.
- Ask them to give any one reason for the difference in the population.

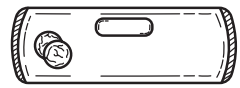
Profit and Loss

[IL: Values; Financial Literacy]

- Discuss how money is used daily to buy and sell goods, introducing terms like Cost Price (CP), Selling Price (SP), Profit and Loss.
- Share the story of Raj and Priya's lemonade stand, highlighting their excitement about making money and the value of using profit for a thoughtful purpose.
- Ask students to track a home purchase, assign a selling price and find the profit or loss.
- Ask students to analyse Silvia's and Samir's solutions, focus on the logic, and present and justify their conclusions. This process promotes critical thinking and understanding.

Add-on Activity 2 [Discovery-based Learning] [MI]

To find the profit or loss of an item



- Ask each student to bring any empty packet, carton or plastic bottle with the price of the item on it.
- Ask the students to consider that price as the cost price of the product.
- Assign a selling price for each product.
- Ask the students to calculate the profit or the loss of the product.

Overhead [MI]

- Using a vendor fitting a light on a cycle as an example, discuss how additional expenses like transportation or repairs are added to the cost price.
- Explain how understanding these concepts applies to real-life scenarios, such as running a small business or managing finances.
- Introduce the concept of letters representing digits in puzzles from Thinking Cap, discuss different solutions and strategies, and explain how this game-based approach makes arithmetic practice more engaging.

WORKSHEETS 1 AND 2

- Worksheet 1 has questions under Mental Maths, MCQs and Mixed Bag that test the understanding of concepts on addition and subtraction of large numbers with sums based on IL: SDG – Clean Water for all; IL: Civics. They have a few HOTS questions too.
- Worksheet 2 has Higher Order Thinking Skills (HOTS) questions on addition and subtraction of large numbers, with sums based on 21C: Critical Thinking, IL: SDG - Sustainable Communities.
- Guide students to complete the worksheets.
- You can give these worksheets as home assignments or discuss them in the classroom.

QUESTION BANK

A. MCQs

1. The sum of 1,11,111 and 2,22,222 is:
   a) 3,33,333 b) 3,44,444 c) 3,21,321 d) 3,55,555
2. The difference between 6,54,000 and 1,23,000 is:
   a) 5,21,000 b) 5,31,000 c) 5,41,000 d) 5,31,000
3. The sum of the largest 5-digit number and the smallest 6-digit number is:
   a) 1,00,000 b) 1,10,000 c) 1,99,999 d) 1,11,000
4. 8,00,000 – 4,00,000 is:
   a) 3,00,000 b) 4,00,000 c) 4,50,000 d) 3,50,000
5. 1,50,000 + 2,50,000 is:
   a) 4,50,000 b) 4,00,000 c) 5,00,000 d) 3,50,000

B. Add.

1.	2.	3.	4.	5.
441457	245978	456989	546484	789785
+ 445569	+ 565468	+ 987156	+ 397456	+ 312314

C. Subtract

1.	2.	3.	4.	5.
645947	564892	859138	194756	947214
− 25674	− 124858	− 654712	− 99991	−322145

D. Solve using the bar models.

1. By how much is the population of City A (8,50,000) greater than City B (6,45,789)?
2. By how much is the production of Factory X, which produces 3,21,765 units, less than the production of Factory Y, which produces 5,00,000 units?
3. The total number of books in two libraries is 8,76,543. One library has 5,43,210 books. How many books does the other library have?
4. The difference in height between two mountains is 2,95,300 feet. If the height of one mountain is 1,23,456 feet, what is the height of the other mountain?
5. There are currently 78,123 birds in a sanctuary. Five years ago, there were only 45,678 birds. What is the increase in the number of birds over the 5 years?
6. A shop buys an equipment for ₹ 9000 and sells it for ₹ 10,000. What is the profit?

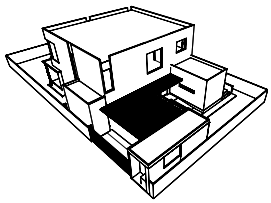
E. Make your own story sums.

1. 2,64,543 + 6,78,522
2. 4,56,484 + 31,564
3. 7,45,989 + 1,52,656
4. 4,98,965 – 1,89,682
5. 9,00,000 – 4,78,241
6. 7,65,989 – 1,48,989

F. Answer the following questions.

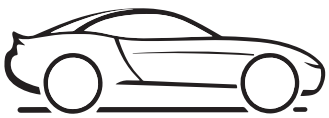
1. A company manufactures 6,45,372 gadgets in January and 5,47,618 gadgets in February. How many gadgets does the company manufacture in total?

2. A new library receives 8,75,432 new books in the first half of the year and 3,21,564 new books in the second half of the year. How many new books does the library receive in the entire year?



3. A construction company completes 8,32,175 square feet of construction work last year and 6,45,632 square feet this year. What is the total area of construction work completed over the two years?
4. The revenue of a tech startup is ₹ 12,45,678 last year and ₹ 10,34,567 this year. What is the total revenue over the two years?

5. Raj buys a laptop for ₹ 45,750. He spends an additional ₹ 1500 on a mouse. How much does he spend in total that day?



6. A wholesale envelope store sells 2,46,159 envelopes in the first year and 4,23,212 envelopes in the second year. How many envelopes does it sell in the two years?
7. Priya purchases a new car for ₹ 7,65,000. She spends ₹ 1,04,320 on accessories. How much money does she spend in total?

8. A warehouse receives 45,600 cartons of milk on Thursday and 1,78,340 cartons on Friday. How many cartons are there in the warehouse now?
9. The residents of a community collect and donate ₹ 3,45,700 to a charity to help flood victims. If the total amount required is ₹ 5,00,000, how much more money needs to be collected?

10. A music concert is attended by 5,42,345 people in the first week. If 75,423 more people attend in the second week, how many people attend it in the second week?

11. Maharashtra has an area of 3,07,713 sq. km. Madhya Pradesh has an area of 3,08,252 sq. km. By how much larger is Madhya Pradesh than Maharashtra?
12. There are 5,45,321 voters in City X. If this is 47,890 more than the number of voters in City Y, how many voters are there in City Y? Explain the importance of elections.

13. The cost price of a painting is ₹ 7980. If the seller wants to make a profit of ₹ 2150, at what price should he sell the painting?

WORKSHEET 1

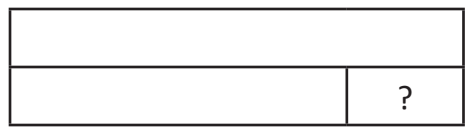
A. MCQs

1. Distance from City A to City B is 4,00,000 metres, and from City B to City C is 3,00,000 metres. What is the total distance travelled?
   a) 6,00,000 metres b) 7,00,000 metres
   c) 6,50,000 metres d) 7,50,000 metres
2. Town X has a population of 7,89,456 and Town Y has a population of 2,10,544. How many more people are there in Town X than in Town Y?
   a) 5,68,912 b) 4,78,912 c) 5,68,912 d) 5,78,912
3. Project A received a budget of ₹ 5,00,000 and Project B received a budget of ₹ 2,00,000. What is the difference in budget allocation?
   a) ₹ 2,00,000 b) ₹ 3,00,000 c) ₹ 3,50,000 d) ₹ 4,00,000
4. John saved 3,00,000 in one account and 2,00,000 in another. What is his total savings?
   a) 4,00,000 b) 5,00,000 c) 4,50,000 d) 6,00,000
5. Library A has 2,12,345 books, and Library B has 1,23,456 books. How many books do they have in total?
   a) 2,35,801 b) 3,35,701 c) 2,35,801 d) 3,35,801

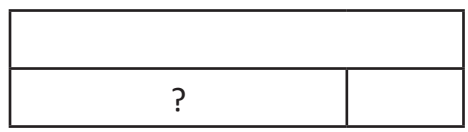
B. Add or subtract as required.

1. 5,42,160 + 3,45,780 = _____
2. 56,346 + 2,45,801 = _____
3. 7,56,989 + 1,41,213 = _____
4. 2,95,742 − 1,48,794 = _____
5. 5,71,291 − 67,023 = _____
6. 8,26,487 − 28,856 = _____

C. A company earned ₹ 8,32,000 in revenue in March. After paying operational expenses, an amount of ₹ 6,15,500 was left. How much was paid for operational expenses?



D. Rohan has ₹ 2,34,567 in his savings account. On a particular month, he receives a bonus of ₹ 78,910. How much money does Rohan have in his savings account in that month?

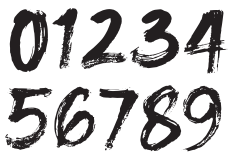


WORKSHEET 2

A. Answer the following questions.

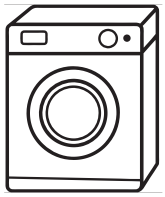
1. Aman needs ₹ 8,00,000 to buy raw material for his factory. If he has ₹ 7,85,000 in his bank account, how much more money does he require to buy the factory?

2. Consider the 6-digit number 4,27,615. Form another number by arranging the digits in the ascending order. Add the two numbers. Subtract the sum from 9,28,615.

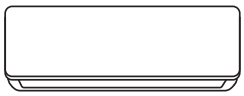


3. In a city mayoral election, the winning candidate receives 3,78,456 votes. If the second-place candidate gets 1,89,123 votes, by how many votes does the winning candidate win the election?

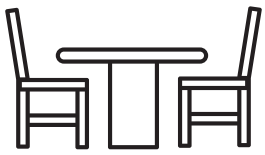
4. A shopkeeper sells a washing machine at ₹ 28,000 to the buyer. The shopkeeper says that the buyer must bear the cost of delivery. If the cost price of the washing machine is ₹ 25,000 and the cost of delivery is ₹ 1000, what is the profit or loss for the shopkeeper?



5. The cost price of an air conditioner is ₹ 15,000. The shopkeeper adds one-tenth of it to get the selling price. What is his profit?



6. The cost price of a dining table is ₹ 5999. The cost price of a set of chairs is ₹ 3999. A shopkeeper offers both together at a selling price of ₹ 8500. What is her profit or loss?



ANSWER KEY TO THE QUESTION BANK

A. 1. a 2. b 3. c 4. b 5. b **B.** 1. 8,87,026 2. 8,11,446 3. 14,44,145
4. 9,43,940 5. 11,02,099 **C.** 1. 6,20,273 2. 4,40,034 3. 2,04,426 4. 94,765
5. 6,25,069 **D.** 1. 2,04,211 2. 1,78,235 units 3. 3,33,333 books 4. 4,18,756 feet
5. 32,445 birds 6. ₹ 1000 **E.** 1. 9,43,065 2. 4,88,048 3. 8,98,645 4. 3,09,283
5. 4,21,759 6. 6,17,000 **F.** 1. 11,92,990 gadgets 2. 11,96,996 books
3. 14,77,807 square feet 4. ₹ 22,80,245 5. ₹ 47,250 6. 6,69,371 envelopes
7. ₹ 8,69,320 8. 2,23,940 cartons 9. ₹ 1,54,300 10. 6,17,768 people
11. 539 sq. km 12. 4,97,431 voters 13. ₹ 10,130

ANSWER KEY TO THE WORKSHEET 1

A. 1. b) 2. d) 3. b) 4. b) 5. d) **B.** 1. 8,87,940 2. 3,02,147 3. 8,98,202
4. 1,46,948 5. 5,04,268 6. 7,97,631 **C.** 2,16,500 **D.** ₹ 3,13,477

ANSWER KEY TO THE WORKSHEET 2

A. 1. ₹ 15,000 2. 5,52,182; 3,76,433 3. 1,89,333 votes 4. ₹ 3000 5. ₹ 1500
6. Loss of ₹ 1498