Chapter: Multiplication and Division of Decimals **Lesson Module**
Name of Teacher: **Class: 7**

Lesson Objectives	Curricular Goals	Competency Codes and Descriptions
1. Multiply decimals	CG-1: Understands numbers and sets of numbers (whole numbers, fractions, integers, rational numbers, and real numbers), looks for patterns, and appreciates relationships between numbers CG-7: Engages with puzzles and mathematical problems and develops own creative methods and strategies to solve them	C-1.4: Explores and understands sets of numbers, such as whole numbers, fractions, integers, rational numbers, and real numbers, and their properties, and visualises them on the number line C-7.1: Demonstrates creativity in discovering one's own solutions to puzzles and other problems, and appreciates the work of others in finding their own, possibly different, solutions
2. Divide a decimal by a whole number and another decimal	CG-1 CG-7	C-1.4 C-7.1
3. Apply multiplication and division of decimals to solve real-life problems	CG-1 CG-7 CG-10: Knows about and appreciates the interaction of Mathematics with each of their other school subjects	C-1.4 C-7.1 C-10.1: Recognises interaction of Mathematics with multiple subjects across Science, Social Science, Visual Arts, Music, Vocational Education, and Sports

NCF/NEP FEATURES

21C Skills
21C: Collaboration, Critical Thinking

Sustainable Development Goals
SDG: Climate Action, Health and Well-being

Integration:
IL: Real-life, India Knowledge, STEM

Experiential Learning
Game-based Learning
Assessments

 Assessment for Learning

 Assessment as Learning

 Assessment of Learning

Resources

- Coursebook
- Smartbook (https://teachers.orientblackswandigital.com/)

Scope

- Pre-requisite Knowledge
- Differentiated Learning for Mixed Ability Classes
- In-situ Learning Reminders
- Interactive Activity, Animation, Photo Gallery, PowerPoint Presentations
- Assessments (AFL; AAL; AOL)

Prerequisite Knowledge

Before starting this chapter, students should ideally be able to:

- identify the place value of digits in decimals.
- compare decimals using >, < or =.
- add and subtract decimals.
- multiply and divide whole numbers.

Session Plans (9 sessions)

Session 1: Decimals (Introductory Story) **LO-1**

NCF/NEP Features: IL: Real-life connect *Key Concepts:* Introduction to basic operations (addition, subtraction, multiplication) involving decimals, decimals in daily life (length, weight, capacity, prices, temperature)	
Teaching Methodology: • Read and discuss the story of Riya, Rohan, and Dadi' preparing samosas. Talk about how they solved two problems using decimals: subtracting weights and finding the total cost. • Explain that decimals help us be exact in measurements and calculations. 	
Skill Focus	Discuss the questions given after the introductory story.
Assessment (Formative) 	Ask students to identify instances of decimals in the story. Ask students to think of one new example of decimals in daily life and share with a partner, then with the class.
Differentiated Learning for Mixed Ability Classes	*Challenge level 1:* Provide sentence starters or a list of categories (for example, 'In the kitchen...', 'At the shop...') to help students brainstorm real-life decimal examples.
	Challenge level 2: Encourage students to consider why decimals are necessary in certain contexts where fractions might also apply.
In-situ Learning Reminder	Ask students to discuss why the prices of slippers and shoes are in decimal numbers (xx.99).
Bloom's Taxonomy	Remembering, Understanding
Activity 	Ask students to find and list three to five items or situations in the classroom or at home where decimals are used.
End-of-session test 	Why are decimals important when calculating prices? *Answer:* Decimals help in accurate price calculations.

Session 2: Multiplication of Decimals by 10, 100, and 1000 **LO-1**

Key Concepts: Decimal place value, powers of 10, shifting decimal point to the right.
Teaching Methodology: • Introduce multiplication by 10, 100, 1000 using real-life examples from the coursebook (for example, cost of 10 sticker sheets, newspaper price in paise). • Explain the rule that decimal point shifts right by the number of zeros in the multiplier.

Example	Example 1
Skill Focus	Practice 1—sum 1
Assessment (Formative)	Quick Drill
Differentiated Learning for Mixed Ability Classes	*Challenge level 1:* Help students observe that numbers become bigger when the decimal point moves to the right as they are multiplied by 10, 100, or 1000.
	Challenge level 2: What do you think will happen if we multiply decimals such as 0.06, 0.006, 0.0006 by 100?
In-situ Learning Reminder	Give the cost of 1 pen in decimals and ask students to find the cost of 10, 100, and 1000 pens. Ask them to note if the cost increases or decreases.
Bloom's Taxonomy	Remembering, Understanding, Applying
Activity	Ask students to write the products of decimal numbers multiplied by powers of 10 (such as 10, 100, 1000). Then, using GeoGebra or Desmos, have them plot the original number and the product on a number line to visually observe how the value of the number increases.
Digital	IA – Multiplication of a Decimal by 10, 100 and 1000
End-of-session test	1. Multiply a) 7.324 by 100 b) 0.045×1000 2. A pen costs ₹15.60. What is the cost of 100 such pens? *Answers:* 1. a) 732.4 b) 45 2. ₹1560

Session 3: Multiplication of a Decimal by a Whole Number **LO-1**

NCF/NEP Features: IL: India Knowledge *Key Concepts:* Decimal multiplication algorithm, placing the decimal point in the product, estimation
Teaching Methodology: • Introduce multiplication of a decimal by a whole number using the ribbon example.
• Explain the process: Ignore the decimal, multiply as whole numbers, then place the decimal point in the product based on the number of decimal places in the original decimal. • Highlight to students that Bhadohi in Uttar Pradesh is called the Carpet City of India due to its long history and unique, high-quality carpets.

Example	Example 2
Skill Focus	Practice 1—sums 2, 4, 8, 9 [Refer Fact Corner for sum 9]
Assessment (Formative)	Give the product of two whole numbers. Then, place the decimal point at different positions in one of the numbers, one at a time, and ask students to place the decimal point correctly in the product.
Differentiated Learning for Mixed Ability Classes	*Challenge level 1:* Help align digits of decimal numbers while multiplying.
	Challenge level 2: Introduce problems that require rounding the product to a specific number of decimal places.

In-situ Learning Reminder	Give the weight of 1 tomato in decimals. Ask students to find the weight of 6 tomatoes and find if they exceed 1 kilogram or not.
Bloom's Taxonomy	Applying
Activity	'Cost Calculator': Students calculate the total cost of multiple items with decimal prices and whole number quantities.
End-of-session test	1. Multiply a) 78.45 by 6 b) 0.0675 by 5 c) 643.2×3 2. A notebook weighs 2.3 kg. What is the total weight of 12 such notebooks? *Answers:* 1. a) 470.7 b) 0.3375 c) 1929.6 2. 27.6 kg

Session 4: Multiplication of a Decimal by Another Decimal (Part 1) **LO-1**

NCF/NEP Features: 21C: Collaboration; EL *Key Concepts:* Multiplication of two decimals, placing decimal point in product.	
Teaching Methodology: • Introduce multiplication of a decimal by another decimal using the picture area example. • Explain the process: multiply as whole numbers, then add the decimal places in *both* factors to determine the decimal places in the product.	
Example	Example 3
Skill Focus	Practice 1, sum 3
Assessment (Formative)	Give two decimal numbers and ask students to multiply them, explain the process, and correctly place the decimal point in the product.
Differentiated Learning for Mixed Ability Classes	*Challenge level 1:* Use coloured markers to highlight and count decimal places in factors. Start with decimals having one decimal place each.
	Challenge level 2: Ask student to form their own decimal multiplication problems and solve them.
In-situ Learning Reminder	Distribute old newspaper sheets. Ask students to measure the dimensions and calculate the area in square centimetres.
Bloom's Taxonomy	Applying
Activity	Extend the 'Explore!' activity to multiply 0.75×0.44 using the Desmos or the GeoGebra application. *NEP Compliance: This activity encourages experiential learning and 21st-century collaboration by allowing students to visualise decimal multiplication using hands-on grid work and peer discussion.*
Digital	IA – Multiplication of Decimal Numbers
End-of-session test	1. Multiply a) 183.5 by 6.2. b) 42.08×13.5. 2. Find the product of 19.63 and 4.1. *Answers:* 1. a) 1137.7 b) 568.08 2. 80.483

Session 5: Multiplication of a Decimal by Another Decimal (Part 2); Properties of Multiplication **LO-3**

NCF/NEP Features: 21C: Critical Thinking, Collaboration; Game-based Learning *Key Concepts:* Application of decimal multiplication in real-life, properties of multiplication (by 0, by 1, commutative).	
Teaching Methodology: • Explain the sums that focus on real-life application and rounding. • Discuss the 'Be Alert!' box regarding trailing zeros. • Introduce the properties of multiplication (by zero, by one, commutative property).	
Example	Examples 4, 5
Skill Focus	Practice 1—sums 5, 6, 7, 9
Assessment (Formative) 	Quick Drill; Thinking Cap! Encourage students to compare and convert units to find who walked more.
Differentiated Learning for Mixed Ability Classes	*Challenge level 1:* Provide a checklist for solving word problems. Use simpler numbers for initial problems involving properties.
	Challenge level 2: Ask students to create their own word problems requiring decimal multiplication.
Bloom's Taxonomy	Applying, Analysing
Activity 	'A Game on Decimal Multiplication' to practice decimal multiplication. (Explore!) *NEP Compliance: This activity fosters game-based learning and 21st-century collaboration as students work in teams to multiply decimals through an interactive dice game.*
End-of-session test 	1. Multiply: a) 87.92×1 b) Multiply: 49.36×0 2. If $5.2 \times 3 = 15.6$, what is 3×5.2? Which property does this show? *Answers:* 1. a) 87.92 b) 0 2. 15.6; Commutative property

Session 6: Division of Decimals by 10, 100, and 1000 **LO-2**

Key Concepts: Division, powers of 10, shifting decimal point to the left.	
Teaching Methodology: • Introduce division of decimals by 10, 100, 1000 using examples from the coursebook. • Explain the rule: Decimal point shifts left by the number of zeros in the divisor.	
Example	Example 6
Skill Focus	Practice 2—sum 1
Assessment (Formative) 	Quick Drill
Differentiated Learning for Mixed Ability Classes	*Challenge level 1:* Use decimal place value charts to visualise the shift.
	Challenge level 2: Introduce dividing by 10,000 and ask students to formulate the rule for even larger powers of 10.

In-situ Learning Reminder	Ask students: If 0.5 L of milk is poured equally into 10 glasses, how many litres will each glass contain? If each student drinks one glass, how much milk will be needed for the class?
Bloom's Taxonomy	Remembering, Understanding, Applying
Activity	'Decimal Slide Game': Students quickly write quotients of decimals divided by powers of 10.
End-of-session test	1. Divide a) 837.5 by 10 b) 72.48 ÷ 100 c) 456.3 ÷ 10 2. A 63.5-litre can of oil is shared equally among 100 people. How much oil does each person get? *Answers:* 1. a) 83.75 b) 0.7248 c) 45.63 2. 0.635 litre

Session 7: Division of a Decimal by a Whole Number **LO-2, LO-3**

NCF/NEP Features: IL: STEM; SDG: Health and Well-being *Key Concepts:* Decimal division algorithm, placing the decimal point in the quotient, adding zeros to dividend.	
Teaching Methodology: • Introduce division of a decimal by a whole number using the rice example. • Explain the process: Divide as whole numbers, place the decimal point in the quotient directly above the decimal point in the dividend. Discuss adding zeros to continue division if there is a remainder. • Discuss snacks healthier than biscuits in India, such as roasted channa, fresh fruits, sprouts, nuts, and seeds, and explain how decimals are used in technology to calculate the digital storage requirements of mobile phones.	
Example	Example 7, 8
Skill Focus	Practice 2—sum 2, 4, 5, 8
Assessment	Quick Drill
Differentiated Learning for Mixed Ability Classes	*Challenge level 1:* Provide partially completed long division setups. Use problems with exact quotients initially. *Challenge level 2:* Introduce problems where the quotient needs to be rounded to a specific number of decimal places.
In-situ Learning Reminder	Measure the lengths of two, three, or four adjacent classrooms of equal length. Express the total length in decimals, and ask students to calculate the length of each classroom and verify them.
Bloom's Taxonomy	Applying
Activity	'Division Detective': Students work in pairs to solve division problems, focusing on decimal placement.
End-of-session test	1. Divide a) 8.4 by 4 b) 6.25 ÷ 5 c) 3.696 ÷ 6 2. A pack of 10 pencils costs ₹145.50. What is the cost of one pencil? *Answers:* 1. a) 2.1 b) 1.25 c) 0.616 2. ₹14.55

NCF/NEP Features: 21C: Critical Thinking; IL: Real-life connect, India Knowledge, STEM

Key Concepts: Division of decimals by decimals, converting divisor to whole number, multiplying dividend by same power of 10.

Teaching Methodology:

- Introduce division of a decimal by another decimal using the cake example. Discuss other examples such as dividing 1.5 kg of dough into portions of 0.25 kg each, or sharing 0.9 L of soup into bowls of 0.3 L each.
- Explain the key step: multiply both the divisor and dividend by the same power of 10 to make the divisor a whole number.
- Discuss the 'Be Alert!' section to clarify the insertion of zero in the quotient.
- Discuss properties of division of decimals.

Example	Example 9, 10
Skill Focus	Practice 2—sums 3, 6, 7
Assessment (Formative)	Quick Drill; Thinking Cap; Case Study; Worksheets 1 and 2 *Pen and Paper FA*
Differentiated Learning for Mixed Ability Classes	*Challenge level 1:* Help students to shift points correctly. *Challenge level 2:* Introduce problems that result in repeating decimals or require more complex transformations.
In-situ Learning Reminder	If the total length of a classroom is 6.4 metres and each desk occupies 0.8 metres, ask students to calculate how many desks can fit in the classroom.
Bloom's Taxonomy	Applying, Analysing
Activity	'Division Transformation Race': Students compete to quickly convert decimal division problems into equivalent whole number division problems.
Digital	Animation – Division of a decimal by a decimal IA – Division of a Decimal by 10, 100 and 1000, Properties of Multiplication and Division of Decimals
End-of-session test	1. Divide: a) $98.67 \div 3.3$ b) $245.422 \div 4.43$. 2. A barrel contains 108.9 litres of oil. If each container holds 9.9 litres, how many full containers can be filled? *Answers:* 1. a) 29.9 b) 55.4 2. 11

QUESTION BANK

A. Choose the correct answer.

1. An LED bulb uses 0.06 units of electricity per hour. How many units will it use in 10 hours?
   a) 0.6 units b) 0.8 units c) 0.5 units d) 0.75 units
2. A litre of petrol costs ₹101.20. What is the cost of 0.5 litres?
   a) ₹50.60 b) ₹55.10 c) ₹51.00 d) ₹60.12
3. A bottle holds 0.75 litres of oil. How many bottles are needed to fill 6 litres?
   a) 7 b) 8 c) 9 d) 10
4. A farmer harvested 3.6 tonnes of wheat. If he packs it into 0.9-tonne sacks, how many sacks will he fill?
   a) 3 b) 4 c) 5 d) 6
5. A packet of salt weighs 1.5 kg. How many such packets can be filled from 9 kg?
   a) 7 b) 8 c) 6 d) 9

B. Multiply.

1. 4.2×3	2. 1.5×0.4	3. 0.6×0.9	4. 6.25×2	5. 0.75×100
6. 3.2×1.1	7. 0.08×5	8. $12.5 \div 5$	9. $36 \div 1.2$	10. $5.6 \div 0.7$
11. $0.9 \div 3$	12. $1.44 \div 0.6$	13. 3.5×0.25	14. 0.4×0.4	15. $9 \div 0.3$
16. $2.25 \div 0.5$	17. 0.6×1000	18. $7.2 \div 1.2$	19. 8.4×0.5	20. $0.36 \div 0.6$

C. Answer the following.

1. A shop sells cloth for ₹45.50 per metre. If a customer buys 6.5 metres of cloth, how much will it cost?
2. A bottle contains 1.25 litres of juice. How much juice is contained in 24 such bottles?
3. A farmer sells 18 bags of potatoes, each weighing 25.6 kg. What is the total weight of the potatoes sold?
4. A company produces 11.5 litres of paint per hour. How many litres of paint will they produce in 8.25 hours?
5. A fruit vendor sells mangoes for ₹75.50 per kilogram. If a customer buys 2.5 kilograms of mangoes, how much will it cost?
6. A car travels 45.8 km in one hour. How far will it travel in 2.5 hours?
7. The weight of one textbook is 0.85 kg. What is the total weight of 12 such textbooks?
8. A baker uses 0.35 kg of flour for one loaf of bread. How much flour is needed for 20 loaves of bread?
9. A shopkeeper buys 7 boxes of apples, each weighing 2.25 kg. What is the total weight of the apples?
10. Each side of a square garden is 8.2 metres long. What is the area of the garden?
11. A rectangular piece of cloth is 5.4 metres long and 1.75 metres wide. What is the area of the cloth?
12. A construction worker carries 4 metal rods. Each rod weighs 3.8 kg. What is the total weight of the rods?

13. A grocery store sells rice at ₹52.50 per kg. If a family buys 3.75 kg of rice, how much do they pay?
14. A painter uses 2.4 litres of paint to cover one wall. How much paint will he use to cover 6 walls?
15. A rope is 25.5 metres long. It is cut into 5 equal pieces. What is the length of each piece?
16. If 12.75 kg of wheat is distributed equally among 5 people, how much wheat does each person get?
17. A car travels 92.4 km in 2.1 hours. What is its average speed?
18. A shopkeeper buys 7.5 kg of sugar. He wants to divide it into 6 equal packs. How much sugar will each pack contain?
19. A tailor has 20.7 metres of cloth. He needs 2.3 metres of cloth for each shirt. How many shirts can he stitch?
20. A farmer harvested 140.8 tonnes of wheat. He wants to transport it in trucks that can carry 12.8 tonnes each. How many trucks are needed?
21. A factory produces 150.75 litres of juice in 3 hours. How many litres of juice does it produce per hour?
22. A roll of wire is 51.6 metres long. It is cut into pieces that are 4.3 metres long. How many pieces are there?
23. A group of 5 students equally shared a prize of ₹582.50. How much did each student receive?
24. A baker uses 7.2 kg of flour to make 24 loaves of bread. How much flour is used per loaf?
25. A train travels 135.3 km in 1.5 hours. What is the average speed of the train?
26. A gardener has 18.9 kg of fertiliser. He uses 2.7 kg per plant. For how many plants can he use the fertiliser?
27. A company makes 225.25 litres of sanitiser in 5 hours. How many litres of sanitizer does it make per hour?
28. A worker earns ₹994.50 for working 9 hours. How much does the worker earn per hour?
29. A shopkeeper buys 8.4 kg of tea. He wants to repack it into 0.12 kg packs. How many packs can he make?
30. A marathon runner covers 42.195 km in 3 hours. What is the runner's average speed in km/hr?

D. For each question, two statement are given, one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct answer to these questions from the options 1), 2), 3) and 4) given below. Choose the correct option:

1. Both A and R are true and R is the correct explanation of A.
2. Both A and reason R are true and R is not the correct explanation of A.
3. A is true but reason R is false.
4. A is false but reason R is true.

a) A: When a decimal number is multiplied by 10, the decimal point moves one place to the right.

R: Multiplying by 10 increases the value of the number ten times.

b) A: $3.2 \div 0.4 = 0.8$

R: To divide decimals, we can convert the divisor to a whole number by multiplying both dividend and divisor by a power of 10.

ANSWER KEY TO THE QUESTION BANK

A. 1. a) 2. a) 3. b) 4. b) 5. c) **B.** 1. 12.6 2. 0.6 3. 0.54 4. 12.5 5. 75 6. 3.52 7. 0.4 8. 2.5 9. 30 10. 8 11. 0.3 12. 2.4 13. 0.875 14. 0.16 15. 30 16. 4.5 17. 600 18. 6 19. 4.2 20. 0.6 **C.** 1. ₹295.75 2. 30 litres 3. 460.8 kg 4. 94.875 litres 5. ₹188.75 6. 114.5 km 7. 10.2 kg 8. 7 kg 9. 15.75 kg 10. 67.24 m^2 11. 9.45 m^2 12. 15.2 kg 13. ₹196.875 14. 14.4 litres 15. 5.1 metres 16. 2.55 kg 17. 44 km/h 18. 1.25 kg per pack 19. 9 shirts 20. 11 trucks 21. 50.25 litres/hour 22. 12 pieces 23. ₹116.50 per student 24. 0.3 kg/loaf 25. 90.2 km/h 26. 7 plants 27. 45.05 litres/hour 28. ₹110.50/hour 29. 70 packs 30. 14.065 km/h **D.** a) 1 b) 4