



THE PRESIDENT'S
RECOVERY
PRIORITIES

Education

Ministry of
Education,
Science and
Technology

Lesson plans for
PRIMARY
Mathematics

5
CLASS

3
TERM

Foreword

Our country's future lies in the education of our children. The Government of Sierra Leone is committed to doing whatever it takes to secure this future.

As Minister of Education, Science and Technology since 2007, I have worked every day to improve our country's education. We have faced challenges, not least the Ebola epidemic which as we all know hit our sector hard. The Government's response to this crisis – led by our President – showed first-hand how we acted decisively in the face of those challenges, to make things better than they were in the first place.

One great success in our response was the publication of the Accelerated Teaching Syllabi in August 2015. This gave teachers the tools they needed to make up for lost time whilst ensuring pupils received an adequate level of knowledge across each part of the curriculum. The Accelerated Teaching syllabi also provided the pedagogical resource and impetus for the successful national radio and TV teaching programs during the Ebola epidemic.

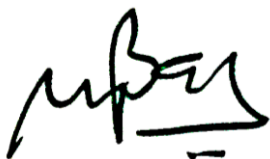
It is now time to build on this success. I am pleased to issue new lesson plans across all primary and JSS school grades in Language Arts and Mathematics. These plans give teachers the support they need to cover each element of the national curriculum. In total, we are producing 2,700 lesson plans – one for each lesson, in each term, in each year for each class. This is a remarkable achievement in a matter of months.

These plans have been written by experienced Sierra Leonean educators together with international experts. They have been reviewed by officials of my Ministry to ensure they meet the specific needs of the Sierra Leonean population. They provide step-by-step guidance for each learning outcome, using a range of recognised techniques to deliver the best teaching.

I call on all teachers and heads of schools across the country to make best use of these materials. We are supporting our teachers through a detailed training programme designed specifically for these new plans. It is really important that these Lesson Plans are used, together with any other materials you may have.

This is just the start of education transformation in Sierra Leone. I am committed to continue to strive for the changes that will make our country stronger.

I want to thank our partners for their continued support. Finally, I also want to thank you – the teachers of our country – for your hard work in securing our future.



Dr. Minkailu Bah

Minister of Education, Science and Technology












Table of Contents


Lesson 121: Compare Equivalent Fractions and Fractions Greater Than One	2
Lesson 122: Mixed Numbers and Improper Fractions	5
Lesson 123: Multiplication of Fractions	8
Lesson 124: Division of Fractions	10
Lesson 125: Operations on Fractions	12
Lesson 126: Decimal Fractions up to 100ths	14
Lesson 127: Decimals on the Number Line	18
Lesson 128: Decimals on the Number Line	21
Lesson 129: Comparing and Ordering Decimals Using the Number Line	24
Lesson 130: Adding Decimal Numbers up to 100ths	27
Lesson 131: Subtracting Decimal Numbers up to 100ths	29
Lesson 132: Multiplication of Decimal Numbers	31
Lesson 133: Division of Decimal Numbers	33
Lesson 134: Multiplication and Division by 10 and 100	35
Lesson 135: Word Problems Involving Decimals and the 4 Operations	37
Lesson 136: Conversion of Fractions to Decimals	39
Lesson 137: Conversion of Decimals to Fractions	41
Lesson 138: Conversion of Fractions to Percentages and from Percentages to Fractions	43
Lesson 139: Conversion of Percentages to Decimals	45
Lesson 140: Conversion of Decimals to Percentages	47
Lesson 141: Percentage of a Quantity – Simple Problems	49
Lesson 142: Percentage of a Quantity – More Problems	52
Lesson 143: Change as a Percentage	54
Lesson 144: Word Problems Involving Money and Percentages	56
Lesson 145: Word Problems Involving Percentages of Quantities	58


Lesson 146: Fractions and Ratio	60
Lesson 147: Ratio and Fractions	62
Lesson 148: Writing a Ratio in its Lowest Form	64
Lesson 149: Sharing Quantities Using Ratios	66
Lesson 150: Word Problems with Ratios	68

Introduction to the Lesson Plan Manual




These lesson plans are based on the National Curriculum and meet the requirements established by the Ministry of Education, Science and Technology.

- 1  The lesson plans will not take the whole term, so use spare time to review material or prepare for exams.
 - 2  Teachers can use other textbooks alongside or instead of these lesson plans.
 - 3  Read the lesson plan before you start the lesson. Look ahead to the next lesson, and see if you need to tell pupils to bring materials for next time.
 - 4  Make sure you understand the learning outcomes, and have teaching aids and other preparation ready – each lesson plan shows these using the symbols on the right.
 - 5  Quickly review what you taught last time before starting each lesson.
 - 6  Follow the suggested time allocations for each part of the lesson. If time permits, extend practice with additional work.
 - 7  Lesson plans have a mix of activities for the whole class and for individuals or in pairs.
 - 8  Use the board and other visual aids as you teach.
 - 9  Interact with all pupils in the class – including the quiet ones.
 - 10  Congratulate pupils when they get questions right! Offer solutions when they don't, and thank them for trying.
-  Learning outcomes

 Teaching aids

 Preparation

Lesson Title: Compare Equivalent Fractions and Fractions Greater Than One	Theme: Numbers and Numeration	
Lesson Number: M-05-121	Class/Level: Class 5	Time: 35 minutes

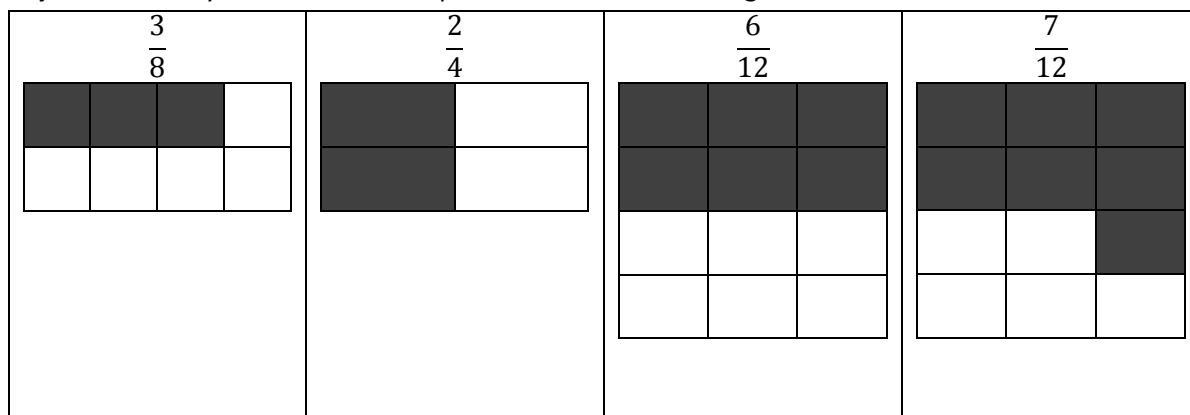
	Learning Outcomes By the end of the lesson, pupils will be able to compare equivalent fractions and fractions greater than one.		Teaching Aids None		Preparation Draw the models from the introduction on the board.
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Opening (4 minutes)

- Say:** Order the following fractions from the smallest to the highest: $\frac{2}{12}$ $\frac{4}{12}$ $\frac{7}{12}$ $\frac{1}{12}$. Raise your hand to answer. (Answer: $\frac{1}{12}$ $\frac{2}{12}$ $\frac{4}{12}$ $\frac{7}{12}$)
- Say:** Today you will learn how to compare equivalent fractions and fractions greater than one.

Introduction to the New Material (8 minutes)

- Write on the board: $\frac{3}{8}$ $\frac{2}{4}$ $\frac{6}{12}$ $\frac{7}{12}$
- Say:** Which of these fractions are equivalent to $\frac{1}{2}$?
- Say:** To find out if any of these fractions are equivalent to $\frac{1}{2}$ we can think of many ways. One way to begin is to list some fractions we know are equivalent to $\frac{1}{2}$
- Write on the board: $\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10} = \frac{6}{12}$
- Say:** To find equivalent fractions, we multiply the numerator and the denominator by the same number. This does not change the value of the fraction because it is like multiplying by 1 and we know that multiplying anything by 1 results in that number.
- Say** and write on the board: So $\frac{1}{2} = \frac{1 \times 2}{2 \times 2} = \frac{2}{4}$ $\frac{1}{2} = \frac{1 \times 3}{2 \times 3} = \frac{3}{6}$ $\frac{1}{2} = \frac{1 \times 4}{2 \times 4} = \frac{2}{4}$
- Ask:** From this list, which fractions are equivalent to $\frac{1}{2}$? Raise your hand to answer.
(Answer: $\frac{1}{2} = \frac{2}{4} = \frac{6}{12}$)
- Say:** Another way to find out is to represent the fractions using models:



9. **Ask:** Which of the following rectangles show that $\frac{1}{2}$ is shaded? Raise your hand to answer.

(Answer: $\frac{2}{4}$ and $\frac{6}{12}$)

10. **Say:** Now let us compare the following fractions. Complete the following by inserting $<$, $>$ or $=$

(Answer: $<$)

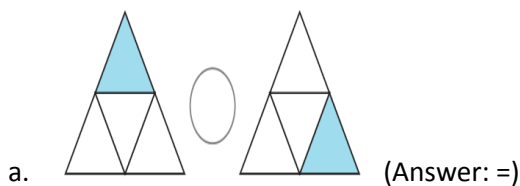
$$\frac{2}{3} \text{ — } \frac{5}{4}$$

11. **Say:** The fraction $\frac{5}{4}$ is greater than 1 and $\frac{2}{3}$ is less than 1 so $\frac{2}{3} < \frac{5}{4}$

Guided Practice (8 minutes)

1. **Say:** Work with your partner. Complete the following by inserting $<$, $>$ or $=$

2. Write the following problems on the board:



b. $\frac{2}{3}$ — $\frac{4}{6}$ (Answer: =)

c. $\frac{2}{3}$ — $\frac{5}{4}$ (Answer: $<$)

d. $\frac{10}{3}$ — $\frac{10}{7}$ (Answer: $>$)

Independent Practice (10 minutes)

1. **Say:** Complete the following by inserting $<$, $>$ or $=$

2. Write the following problems on the board.

a. $\frac{11}{12}$ — $\frac{13}{12}$ (Answer: $<$)

b. $\frac{5}{3}$ — $\frac{4}{10}$ (Answer: $>$)

c. $\frac{8}{10}$ — $\frac{3}{2}$ (Answer: $<$)

d. $\frac{3}{4}$ — $\frac{9}{12}$ (Answer: =)

Closing (5 minutes)

1. Write the following problems on the board:

a. $\frac{11}{12}$ or $\frac{12}{12}$ (Answer: $\frac{12}{12}$)

b. $\frac{4}{3}$ or $\frac{99}{100}$ (Answer: $\frac{4}{3}$)

2. **Ask:** Which is greater? Raise your hand to answer.




3. Call pupils to the board to work out the problems.

4. **Ask:** Why is $\frac{4}{3}$ greater when 99 and 100 are all bigger than 4 and 3? Raise your hand to answer.

(Answer: Because $\frac{4}{3}$ is greater than one and $\frac{99}{100}$ is less than one. In $\frac{4}{3}$ each whole has been divided

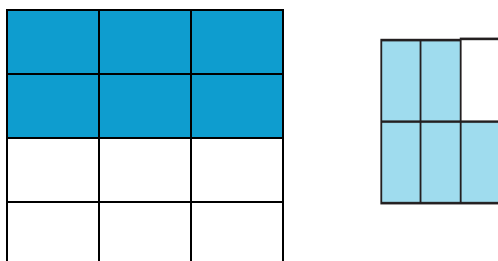
into 3 equal parts and we are considering 4 of the parts. In $\frac{99}{100}$ the whole has been divided into 100 equal parts and we are considering 99 of the 100 parts which is less than the whole.)

Lesson Title: Mixed Numbers and Improper Fractions	Theme: Numbers and Numeration	
Lesson Number: M-05-122	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to convert mixed number fractions into improper fractions and vice versa using a number line.	 Teaching Aids None	 Preparation None
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Opening (3 minutes)

- Write the following fractions on the board: $\frac{1}{12}$ $\frac{5}{6}$
- Say:** Draw the fractions. (Answers: See below)



- Say:** Today you will learn how to convert between mixed numbers and improper fractions.

Introduction to the New Material (9 minutes)

- Write the following fractions on the board: $1\frac{1}{2}$, $5\frac{1}{3}$, $4\frac{11}{12}$
- Say:** A mixed fraction is a fraction that is written as a whole number and a fraction. Examples of mixed fractions are $1\frac{1}{2}$ $5\frac{1}{3}$ $4\frac{11}{12}$
- Ask:** Who can give us another example of a mixed fraction?
- Invite 1-2 pupils to give examples.
- Ask:** A fraction where the numerator is greater than the denominator is called an improper fraction. If you see a fraction $\frac{a}{b}$, and $a > b$, then the number is called an improper fraction.
- Ask:** Who can give us an example of an improper fraction? Raise your hand to answer. (Example answers: $\frac{5}{4}$, $\frac{12}{3}$, $\frac{14}{11}$.)
- Say:** We will now convert improper fractions to mixed fractions.
- Write the following fractions on the board: $\frac{6}{4}$, $\frac{3}{2}$
- Say:** Convert the following fractions to mixed fractions: $\frac{6}{4}$, $\frac{3}{2}$. As you can see, these are improper fractions because the numerator is greater than the denominator.
- Say:** To convert $\frac{6}{4}$ to a mixed fraction, we have to first see $\frac{6}{4}$ as division that is 6 divided by 4. 6 is the dividend and 4 is the divisor. This gives us a quotient of 1 remainder 2. So, we write $\frac{6}{4} = 1\frac{2}{4}$ Where the 1 represents the quotient, we write the remainder 2 becomes the numerator and 4 is the denominator.

11. Point to $1\frac{2}{4}$ Point to each part of the fraction as you explain.
12. **Say:** To convert the mixed fraction back to an improper fraction, you take the denominator (4) and multiply it by the whole number (1) which gives us 4, and add the numerator (2). This gives us 6. The 6 is the numerator for the improper fraction, and the denominator remains 4.
13. **Say:** So we can say that $1\frac{2}{4} = \frac{6}{4}$
14. **Say:** Let's convert $\frac{3}{2}$ to a mixed fraction.
15. Write on the board: $\frac{3}{2}$ as 3 divided by 2 where 3 is the dividend and 2 is the divisor.
16. **Ask:** What is 3 divided by 2 as a mixed fraction. Raise your hand to answer. (Answer: 1 remainder 1)
17. **Say:** This gives us a quotient of 1 remainder 1. So we write $\frac{3}{2} = 1\frac{1}{2}$ where the 1 represents the quotient. We write the remainder 1 becomes the numerator and 2 is the denominator.
18. **Say:** So we can say that $\frac{3}{2} = 1\frac{1}{2}$
19. **Say:** To convert the mixed fraction back to an improper fraction ($1\frac{1}{2}$), you take the denominator (2) and multiply it by the whole number (1), which gives us 2, and add the numerator (1) which gives us 3. The 3 is the numerator for the improper fraction and the denominator remains 2.
20. **Say:** So $1\frac{1}{2} = \frac{3}{2}$

Guided Practice (8 minutes)

1. **Say:** In your exercise books, work with your partner on the following.
2. Write on the board: Convert the following improper fractions to mixed fractions:
 - a. $\frac{13}{12}$ (Answer: $13 \div 12 = 1\frac{1}{12}$)
 - b. $\frac{10}{4}$ (Answer: $10 \div 4 = 2\frac{2}{4}$)
 - c. $\frac{32}{10}$ (Answer: $32 \div 10 = 3\frac{2}{10}$)
3. Write on the board: Convert the following mixed fractions to improper fractions:
 - a. $4\frac{2}{5}$ (Answer: $4 \times 5 + 2 = 22 \rightarrow \frac{22}{5}$)
 - b. $5\frac{1}{9}$ (Answer: $5 \times 9 + 1 = 46 \rightarrow \frac{46}{9}$)
 - c. $11\frac{3}{6}$ (Answer: $11 \times 6 + 3 = 69 \rightarrow \frac{69}{6}$)

Independent Practice (10 minutes)

1. **Say:** In your exercise books, do the following problems.
2. Write on the board: Convert the following improper fractions to mixed fractions:
 - a. $\frac{103}{10}$ (Answer: $10\frac{3}{10}$)
 - b. $\frac{19}{4}$ (Answer: $4\frac{3}{4}$)
 - c. $\frac{28}{20}$ (Answer: $1\frac{2}{5}$)
3. Write on the board: Convert the following mixed fractions to improper fractions:
 - a. $4\frac{2}{5}$ (Answer: $\frac{22}{5}$)




b. $5\frac{1}{9}$ (Answer: $\frac{46}{9}$)

c. $11\frac{3}{6}$ (Answer: $\frac{69}{6}$)

Closing (5 minutes)

1. **Say:** Work with a partner. Convert the following improper fraction to a mixed fraction and explain your steps.
2. Write on the board:
 - a. $\frac{100}{99}$ (Answer: $100 \div 99 = 1 \text{ R}1 = 1\frac{1}{99}$)
3. **Say:** Good job today pupils! You learned how to convert between improper fractions and mixed fractions.

Lesson Title: Multiplication of Fractions	Theme: Number and Numeration: Everyday Arithmetic	
Lesson Number: M-05-123	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to multiply fractions with denominators up to 12.	 Teaching Aids None	 Preparation None
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Opening (3 minutes)

- Write the following mixed fractions on the board:
 - $4\frac{1}{6}$ (Answer: $\frac{25}{6}$)
 - $5\frac{1}{3}$ (Answer: $\frac{16}{3}$)
- Say:** Write the mixed fractions in your exercise books. Then, change the mixed fractions into improper fractions.
- Say:** Today you will learn how to multiply fractions.

Introduction to the New Material (9 minutes)

- Write the following problem on the board: Find $\frac{1}{2} \times \frac{2}{3}$
- Say:** When we multiply fractions, we multiply the numerators and divide it by the product of the denominators.
- Say** and write: so $\frac{1}{2} \times \frac{2}{3} = \frac{1 \times 2}{2 \times 3} = \frac{2}{6}$
- Say:** Now let's find $\frac{1}{8} \times \frac{3}{5}$.
- Say** and write: so $\frac{1}{8} \times \frac{3}{5} = \frac{1 \times 3}{8 \times 5} = \frac{3}{40}$
- Say:** Now let's try $2 \times \frac{2}{3}$.
- Say:** We know that any whole number divided by 1 is that number, so what is $\frac{2}{1}$? Raise your hand to answer. (Answer: 2)
- Say:** So $2 \times \frac{2}{3} = \frac{2}{1} \times \frac{2}{3} = \frac{2 \times 2}{1 \times 3} = \frac{4}{3}$
- Say:** Can we rewrite $\frac{4}{3}$ as a mixed fraction? What is the mixed fraction? Raise your hand to answer. (Answer: Yes. We can write it as $1\frac{1}{3}$)
- Write the following problem on the board: Find $\frac{4}{7} \times \frac{1}{5}$
- Say:** To find $\frac{4}{7} \times \frac{1}{5} = \frac{4 \times 1}{7 \times 5} = \frac{4}{35}$
- Write the following problem on the board: Find $\frac{1}{3}$ of 15
- Say:** To find $\frac{1}{3}$ of 15 = $\frac{1}{3} \times 15 = \frac{1}{3} \times \frac{15}{1} = \frac{1 \times 15}{3 \times 1} = \frac{15}{3} = 5$

Guided Practice (8 minutes)

- Put pupils in pairs.
- Write the following problems on the board:

- a. $\frac{6}{7} \times \frac{4}{12}$ (Answer: $\frac{24}{84}$ or $\frac{2}{7}$)
- b. $\frac{5}{9} \times \frac{7}{11}$ (Answer: $\frac{35}{99}$)
- c. $\frac{2}{5}$ of 40 (Answer: 16)

3. **Say:** In your exercise books, work with your partner on the following problems.
4. Walk around the room, check pupils' work and assist where necessary.

Independent Practice (10 minutes)

1. Write the following problems on the board:

- a. $\frac{7}{8} \times \frac{2}{5}$ (Answer: $\frac{7}{20}$)
- b. $\frac{9}{11}$ of 99 (Answer: 81)
- c. $\frac{6}{7} \times \frac{10}{12}$ (Answer: $\frac{5}{7}$)
- d. $\frac{2}{9} \times \frac{10}{11}$ (Answer: $\frac{20}{99}$)

2. **Say:** Do these problems in your exercise books individually.
3. Have pupils to exchange their exercise books and check their work while you read the answers aloud.




Closing (5 minutes)

1. Write on the board:

- a. $\frac{4}{7}$ of 63 (Answer: 36)
- b. $\frac{5}{8}$ of 0 (Answer: 0)

2. **Say:** Do these problems in your exercise books and explain your steps.
3. **Ask:** Do we multiply the numerators or the denominators? Raise your hand to answer. (Answer: We multiply them both. Multiply the numerators and find the product, which is the new numerator. Then multiply the denominators and find the product, which is the new denominator.)
4. **Ask:** How do you make 5 or any other whole number into a fraction? Raise your hand to answer. (Answer: Write the whole number over 1. For example, $\frac{5}{1}$.)

Lesson Title: Division of Fractions	Theme: Number and Numeration: Everyday Arithmetic	
Lesson Number: M-05-124	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to divide fractions with denominators up to 12.	 Teaching Aids None	 Preparation None
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Opening (3 minutes)

- Write the following problem on the board: Ali has a bag of 20 toffees he wants to share among his 4 friends. He wants to share the toffee equally among his friends. How many toffees will each friend get? Raise your hand to answer. (Answer: $20 \div 4 = 5$)
- Say:** Each of his friends will get 5 toffees.
- Say:** Today you will learn how to divide fractions.

Introduction to the New Material (9 minutes)

- Write the following problem on the board:
 - Find $\frac{1}{2} \div \frac{2}{3}$
- Say:** When we divide fractions, we multiply the first fraction by the inverse of the second fraction. Let's remember what the inverse is. When you have a fraction and you want the inverse, reverse the numerator with the denominator. For example, the inverse of $\frac{2}{3}$ becomes $\frac{3}{2}$.
- Say** and write: So $\frac{1}{2} \div \frac{2}{3} = \frac{1}{2} \times \frac{3}{2} = \frac{1 \times 3}{2 \times 2} = \frac{3}{4}$
- Say:** Now let's find $\frac{5}{8} \div \frac{3}{4}$
- Say** and write: So $\frac{5}{8} \div \frac{3}{4} = \frac{5}{8} \times \frac{4}{3} = \frac{5 \times 4}{8 \times 3} = \frac{20}{24} = \frac{5}{6}$
- Say:** Now let's try $2 \div \frac{4}{5}$ Remember that you put 2 over 1 to represent it as a fraction.
- Say:** So $2 \div \frac{4}{5} = \frac{2}{1} \times \frac{5}{4} = \frac{2 \times 5}{1 \times 4} = \frac{10}{4} = \frac{5}{2}$
- Say:** Can we rewrite $\frac{5}{2}$ as a mixed fraction? What is the mixed fraction? Raise your hand to answer. (Answer: Yes. We can write it as $2\frac{1}{2}$)

Guided Practice (8 minutes)

- Say:** In your exercise books, work with your partner on the following problems.
- Write the following problems on the board:
 - $\frac{2}{7} \div \frac{1}{3}$ (Answer: $\frac{6}{7}$)
 - $\frac{5}{9} \div \frac{4}{12}$ (Answer: $\frac{5}{3}$ or $2\frac{2}{3}$)
 - $\frac{2}{5} \div \frac{3}{5}$ (Answer: $\frac{2}{3}$)
- Walk around the room, check pupils' work and assist where necessary.




Independent Practice (10 minutes)

1. **Say:** In your exercise books, do the following problems individually.
2. Write the following problems on the board:
 - a. $\frac{5}{7} \div \frac{3}{8}$ (Answer: $\frac{40}{21}$ or $1\frac{19}{21}$)
 - b. $\frac{2}{5} \div \frac{3}{10}$ (Answer: $\frac{4}{3}$ or $1\frac{1}{3}$)
 - c. $\frac{11}{12} \div \frac{1}{5}$ (Answer: $\frac{55}{12}$ or $4\frac{7}{12}$)
 - d. $3 \div \frac{1}{3}$ (Answer: 9)
3. Have pupils to exchange their exercise books and check their work while you read the answers aloud.

Closing (5 minutes)

1. **Say:** Do this problem in your exercise books and explain your steps.
2. Write the following problem on the board: $6 \div \frac{1}{2}$. (Answer: 12; $\frac{6}{1} \div \frac{1}{2} = \frac{6}{1} \times \frac{2}{1} = \frac{12}{1} = 12$)

Lesson Title: Operations on Fractions	Theme: Number and Numeration: Everyday Arithmetic	
Lesson Number: M-05-125	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to solve fraction problems using the 4 operations for denominators up to 12.	 Teaching Aids None	 Preparation None
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Opening (3 minutes)

- Write the following problem on the board:
 What is $\frac{1}{2}$ of $\frac{2}{5}$? Raise your hand to answer. (Answer: $\frac{1}{2} \times \frac{2}{5} = \frac{2}{10} = \frac{1}{5}$)
- Say:** Today you will learn how to solve fraction problems using all four operations.

Introduction to the New Material (9 minutes)

- Write the following problem on the board:
 - Nina walks $\frac{1}{2}$ a mile to school each day. She walks for 4 days. How many miles will she walk in all?
- Ask:** What is the problem asking for? Raise your hand to answer.
 (Answer: We need to find how many miles Nina walks if she walks for 4 days.)
- Ask:** How far does Nina walk each day? Raise your hand to answer. (Answer: $\frac{1}{2}$ a mile each day.)
- Ask:** We want to get the number of miles for 4 days. Do we add, subtract, multiply or divide? Raise your hand to answer. (Example answer: We can add the number of miles over the 4 days.
 Day 1 + Day 2 + Day 3 + Day 4 = $\frac{1}{2}$ a mile + $\frac{1}{2}$ a mile + $\frac{1}{2}$ a mile + $\frac{1}{2}$ a mile = 2 miles)
- Say:** We can also solve this by multiplication. We can multiply the distance travelled in one day by 4 to get the distance travelled in 4 days. Write: $\frac{1}{2}$ a mile \times 4 = $\frac{1}{2} \times 4 = 2$ miles.

Guided Practice (8 minutes)

- Say:** In your exercise books, work with your partner on the following:
- Write the following problems on the board:
 - Alhaji Fuseini gave his 3 children Le 6000. If each child receives $\frac{1}{3}$ of the money, how much will each child receive? (Answer: $\frac{1}{3}$ of Le 6000 = $\frac{1}{3} \times \text{Le}6000 = \text{Le} 2000$. Each child will receive Le 2000.)
 - Farmer Abdul plans to sow $\frac{2}{3}$ of a bag of maize this planting season. If $\frac{1}{2}$ of the maize is rotten, how much maize does Farmer Abdul have to plant?
 (Answer: $\frac{1}{2}$ of $\frac{2}{3} = \frac{1}{2} \times \frac{2}{3} = \frac{2}{6}$ or $\frac{1}{3}$)
 - Each month, Mr. Joseph Allen spends $\frac{1}{2}$ of his wages on rent, $\frac{1}{5}$ on fuel and $\frac{1}{10}$ on his family. He then saves what is left. What fraction of Mr. Allen's wages does he save at the end of the month?

(Answer: $1 - \left(\frac{1}{2} + \frac{1}{5} + \frac{1}{10}\right) = 1 - \frac{8}{10} = \frac{2}{10} = \frac{1}{5}$. Mr. Joseph Allen saves $\frac{1}{5}$ of his wages each month.)

3. Walk around the room, check pupils' work and assist where necessary.




Independent Practice (10 minutes)

1. **Say:** In your exercise books, solve the following problems.
2. Write the following problems on the board:
 - a. Foday has 4 metres of string. He needs $\frac{1}{3}$ of a metre to create a bracelet. If he uses all the string, how many bracelets will he make? (Answer: $4 \div \frac{1}{3} = 4 \times \frac{3}{1} = 12$ So Foday will make 12 bracelets)
 - b. Favor takes $\frac{1}{3}$ of a cake to school. At school, she gives her friend Olivette $\frac{1}{4}$ of her melon. How much did Olivette eat? (Answer: $\frac{1}{4}$ of $\frac{1}{3} = \frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$)
3. Have pupils to exchange their exercise books and check their work while you read the answers aloud.

Closing (5 minutes)

1. **Say:** Do this problem in your exercise books.
2. Write the following problem on the board: Gabriel is $\frac{1}{5}$ as old as his father. His father is 40 years old. How old is Gabriel? (Answer: $\frac{1}{5}$ of 40 = $\frac{1}{5} \times 40 = 8$ Gabriel is 8 years old.)

Lesson Title: Decimal Fractions Up to 100ths	Theme: Number and Numeration: Everyday Arithmetic, Decimals	
Lesson Number: M-05-126	Class/Level: Class 5	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson, pupils will be able to:</p> <ol style="list-style-type: none"> 1. Recognise decimal fractions up to hundredths. 2. Use decimal notation for tenths and hundredths. 	 <p>Teaching Aids Place value chart</p>	 <p>Preparation</p> <ol style="list-style-type: none"> 1. Create a 10 x 10 grid. 2. Create a 1 x 10 grid.
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Opening (3 minutes)

1. Write the following numbers on a place value chart:

107,823 203,899 19,808

Do not erase the chart. (Answers: See below.)

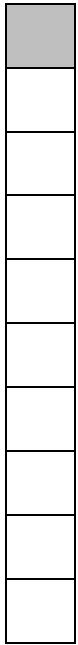
THOUSANDS			UNITS		
Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
1	0	7	8	2	3
2	0	3	8	9	9
	1	9	8	0	8

2. **Say:** Today you will learn how to recognise decimal fractions and use decimal notation for tenths and hundredths.

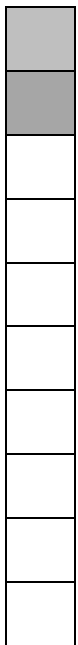
Introduction to the New Material (12 minutes)

1. Point to the 1 x 10 grid.
2. **Say:** If we have 1 whole divided into 10 equal parts, it looks like this.
3. Shade 1 part.
4. **Say:** Now let's shade one of the 10 parts. We call the shaded part $\frac{1}{10}$ which is written as a decimal 0.1. For decimals that are less than 1, we place 0 in the ones place, so we say 0.1 is 'zero point one'.

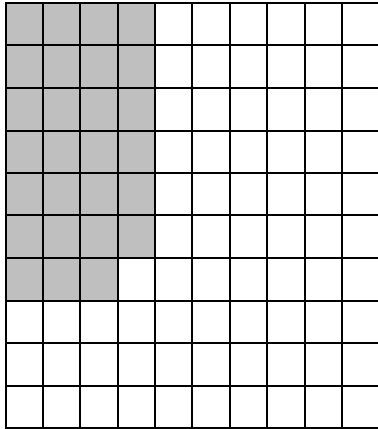
5. Draw and shade 1 part:



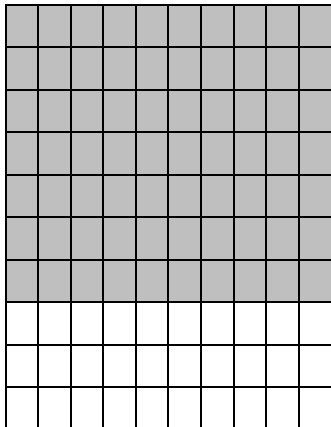
Draw and shade 2 parts:



6. **Say:** If we shade 2 of the parts, we call the shaded part $\frac{2}{10}$. This is written as a decimal 0.2. We say 'zero point two'.
7. **Ask:** If we shade 3 parts, what will we call the shaded part? Raise your hand to answer.
(Answer: $\frac{3}{10}$; this is written as decimal 0.3; we say 'zero point three')
8. Point to the 10 x 10 grid.
9. **Say:** If we have 1 whole divided into 100 equal parts, it looks like this.
10. **Say:** Now let's shade 27 parts. We call it $\frac{27}{100} = 0.27$. We read 0.27 as 'zero point two seven'.



11. **Say:** Now if we shade 70 parts, we call it $\frac{70}{100} = 0.70$



12. Now look at the grid again. It can be divided into 10 equal parts with 7 shaded. So you can see that $\frac{70}{100}$ is the same as $\frac{7}{10}$ because you can cancel a zero from the numerator and denominator. We read 0.7 as 'zero point seven'. So we can say that $\frac{70}{100} = \frac{7}{10} = 0.7$.

Guided Practice (9 minutes)

1. **Say:** In your exercise books, complete the table. Work with a partner.

2. Write the following table on the board. (Answers: a. 0.23 b. $\frac{70}{100}$ c. 0.98 d. $\frac{51}{100}$)

Decimal	Decimal Fraction
a. _____	$\frac{23}{100}$
0.07	b. _____
c. _____	$\frac{98}{100}$
0.51	d. _____

3. Walk around the room, check pupils' work and assist where necessary.

Independent Practice (10 minutes)

1. **Say:** In your exercise books, complete the table.

2. Write the following table on the board. (Answers: a. $\frac{3}{100}$ b. 0.19 c. $\frac{78}{100}$ d. $\frac{5}{10}$ or $\frac{50}{100}$)




Decimal	Decimal Fraction
0.03	a. _____
b. _____	$\frac{19}{100}$
0.78	c. _____
0.50	d. _____

3. Have pupils to exchange their exercise books and check their work while you read the answers aloud.

Closing (1 minute)

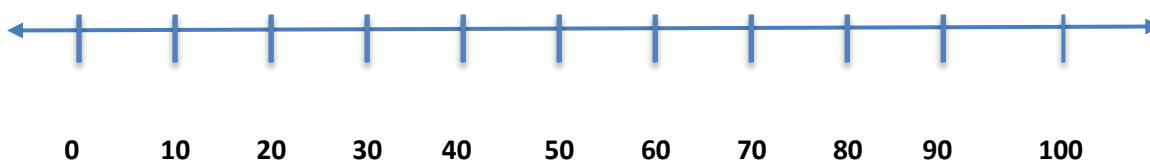
1. **Say:** Our work today helped us to recognise decimal fractions up to the hundredths place and to use the decimal notation for tenths and hundredths. Our next lesson will focus on reading and writing decimal numbers.

Lesson Title: Decimals on the Number Line	Theme: Number and Numeration: Everyday Arithmetic, Decimals	
Lesson Number: M-05-128	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to locate decimals up to hundredths on the number line.	 Teaching Aids None	 Preparation Draw the number lines for each part of the lesson on the board.
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Opening (5 minutes)

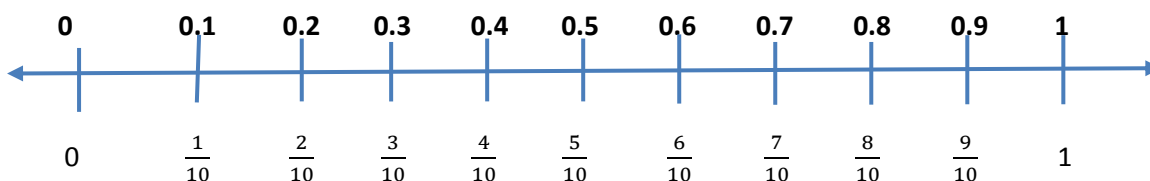
1. Point to a number line on the board.
2. **Say:** Let us place the following numbers on the number line: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100.
3. Work with pupils to locate the numbers on the line.



4. **Say:** Today's lesson is about locating decimals on the number line.

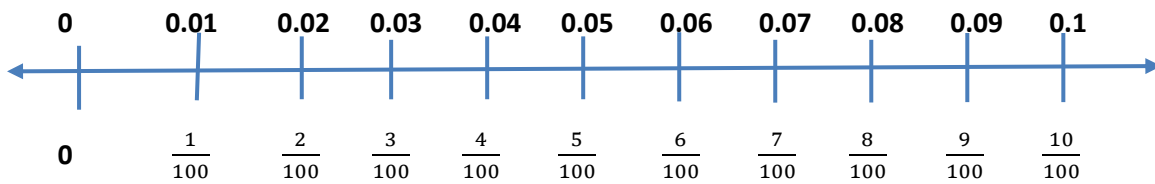
Introduction to the New Material (10 minutes)

1. Use the number lines drawn on the board for this section.
2. **Say:** We will now label a number line from 0 to 1. We will do this by dividing the line into 10 equal parts. So each part is $\frac{1}{10}$.
3. Write each part as you count up the ten tick marks you made from 0 to 1.
4. **Say:** Copy the number line in your exercise books. We will also write the decimal equivalent to each fraction above.
5. Write the decimals above each tick mark and point to each one to show how it corresponds to the fraction.



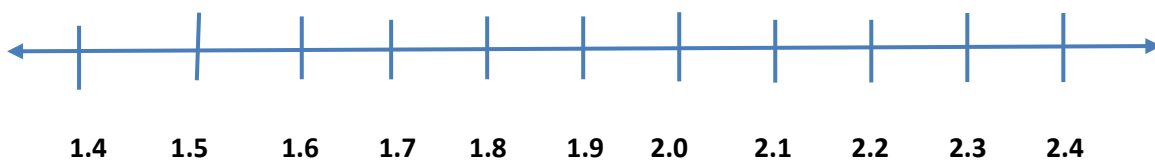
6. **Say:** Let us draw the number line between 0 and 1 again but this time we will make 100 tick mark divisions. On this number line, we will draw the first 10 divisions. Here, we still divide the number line into 10 equal parts. This means that the parts between 0 and 0.1 are now divided into 10 equal parts. There are now 100 equal parts between 0 and 1.

7. Draw on the board:

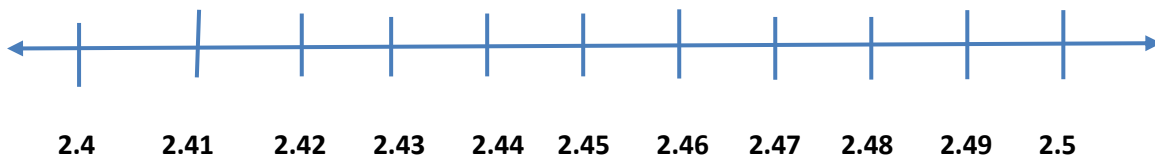


Guided Practice (5 minutes)

1. **Say:** Work with your partner to label the following number lines in your exercise books.
2. **Say:** Draw and label a number line between 1.4 and 2.4 (Answer: See below.)



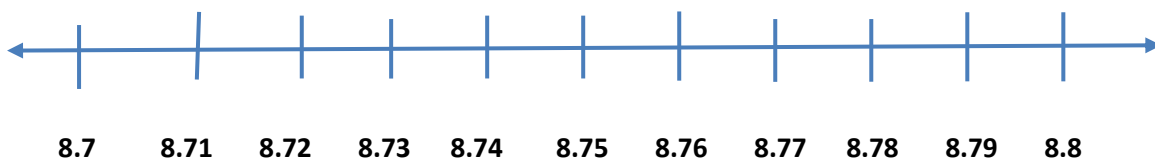
3. **Say:** Draw and label a number line between 2.4 and 2.5 (Answer: See below.)



4. Visit each group. Check on their work. Talk with them and help where needed.
5. Ask a member from a group to come to the board and write their answer on the board.

Independent Practice (10 minutes)

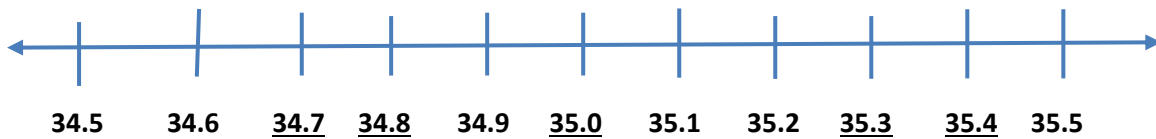
1. **Say:** Now try these in your exercise books by yourselves.
2. Write the following problems on the board.
 - a. Copy the number line. Fill in the blank spots with the correct decimal. (Answers: Underlined below.)



- b. Locate the following numbers on the number line: 23.44, 23.49, 23.53, 23.54. (Answers: See below.)



- c. Copy the number line. Fill in the blank spots with the correct decimal.
 (Answers: Underlined below.)






3. Visit each pupil. Check on their work. Talk with them and help where needed.

Closing (5 minutes)

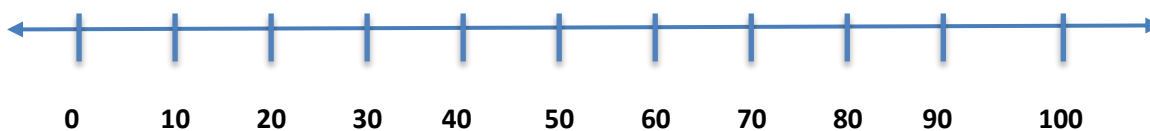
1. Invite 1-2 pupils to share their number line for c.
2. **Say:** Good job today pupils. You learned how to locate and order decimals on a number line.

Lesson Title: Decimals on the Number Line	Theme: Number and Numeration: Everyday Arithmetic, Decimals	
Lesson Number: M-05-128	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to locate decimals up to hundredths on the number line.	 Teaching Aids None	 Preparation Draw the number lines for each part of the lesson on the board.
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Opening (5 minutes)

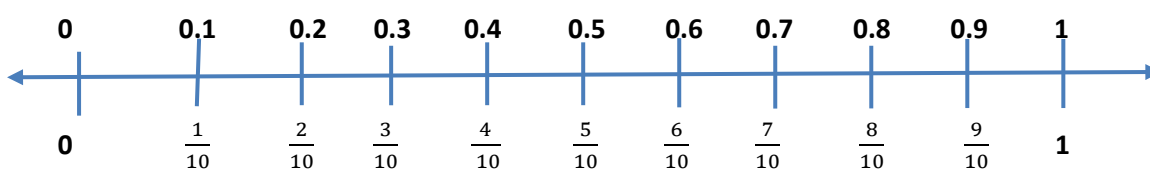
1. Point to a number line on the board.
2. **Say:** Let us place the following numbers on the number line: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100.
3. Work with pupils to locate the numbers on the line.



4. **Say:** Today's lesson is about locating decimals on the number line.

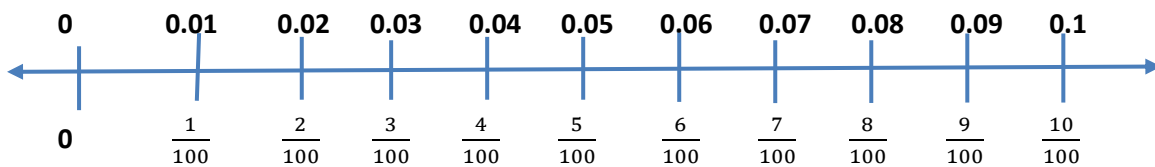
Introduction to the New Material (10 minutes)

1. Use the number lines drawn on the board for this section.
2. **Say:** We will now label a number line from 0 to 1. We will do this by dividing the line into 10 equal parts. So each part is $\frac{1}{10}$
3. Write each part as you count up the ten tick marks you made from 0 to 1.
4. **Say:** Copy the number line in your exercise books. We will also write the decimal equivalent to each fraction above.
5. Write the decimals above each tick mark and point to each one to show how it corresponds to the fraction.



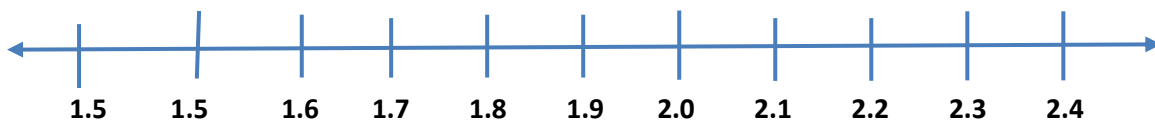
6. **Say:** Let us draw the number line between 0 and 1 again but this time we will make 100 tick mark divisions. On this number line, we will draw the first 10 divisions. Here, we still divide the number line into 10 equal parts. This means that the parts between 0 and 0.1 are now divided into 10 equal parts. There are now 100 equal parts between 0 and 1

7. Draw on the board:

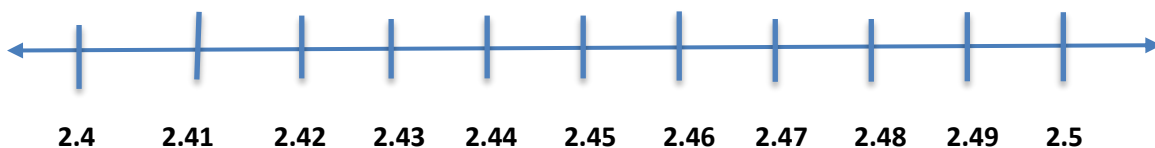


Guided Practice (5 minutes)

1. **Say:** Work with your partner to label the following number lines in your exercise books.
2. **Say:** Draw and label a number line between 1.4 and 2.4 (Answer: See below.)



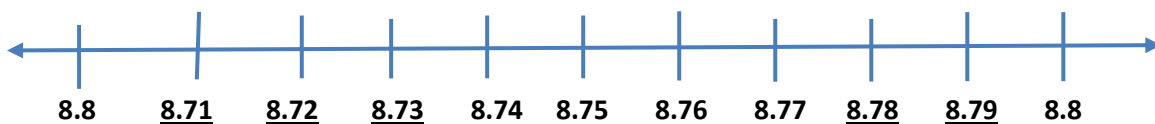
3. **Say:** Draw and label a number line between 2.4 and 2.5 (Answer: See below.)



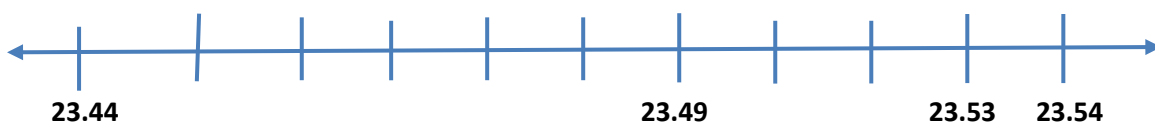
4. Visit each group. Check on their work. Talk with them and help where needed.
5. Ask a member from a group to come to the board and write their answer on the board.

Independent Practice (10 minutes)

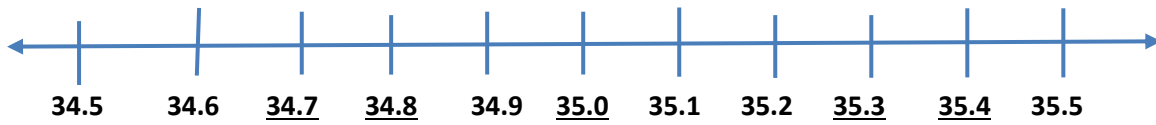
1. **Say:** Now try these in your exercise books by yourselves.
2. Write the following problems on the board.
 - a. Copy the number line. Fill in the blank spots with the correct decimal. (Answers: Underlined below.)



- b. Locate the following numbers on the number line: 23.44, 23.49, 23.53, 23.54 (Answers: See below.)



- c. Copy the number line. Fill in the blank spots with the correct decimal. (Answers: Underlined below.)






3. Visit each pupil. Check on their work. Talk with them and help where needed.

Closing (5 minutes)

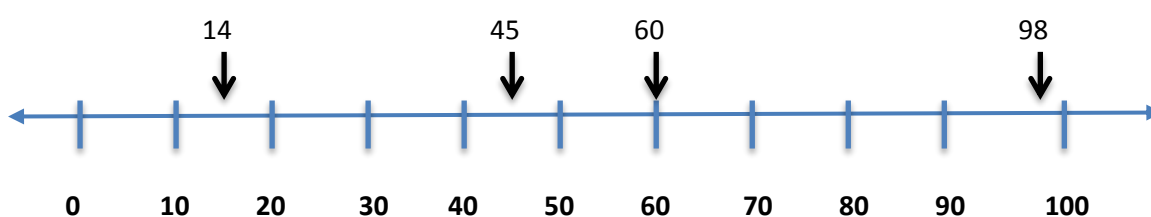
1. Invite 1-2 pupils to share their number line for c.
2. **Say:** Good job today pupils. You learned how to locate and order decimals on a number line.

Lesson Title: Comparing and Ordering Decimals Using the Number Line	Theme: Number and Numeration: Everyday Arithmetic, Decimals	
Lesson Number: M-05-129	Class/Level: Class 5	Time: 35 minutes

	Learning Outcomes By the end of the lesson, pupils will be able to compare and order decimals up to hundredths using the number line.		Teaching Aids None		Preparation Draw the number lines for the lesson on the board.
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Opening (5 minutes)

1. Choose one number line on the board.
2. **Say:** Let us place the numbers 45, 14, 60 and 98 on the number line. (Answers: See below.)



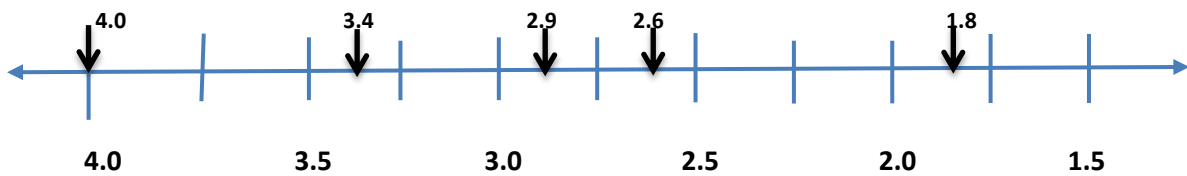
3. **Say:** Today you will learn how to compare and order decimals up to one hundredths on the number line.

Introduction to the New Material (8 minutes)

1. Use the number lines drawn on the board.
2. Write the following numbers on the board: 4.0, 2.6, 1.8, 3.4, 2.9
3. **Say:** Write the decimals in order from the greatest to the least.
4. **Say:** To list these decimals in order, how do we determine the largest number? Let's take a look at the process.
5. **Say:** To list these decimals in order, we first have to find the largest place value. This will help us find the largest number.
6. **Ask:** What is the largest place value? Raise your hand to answer. (Answer: The largest place value is ones.)
7. **Ask:** So what is the largest ones digit we have? Raise your hand to answer. (Answer: 4.0)
8. **Say:** So we can write the first possible number as 4.0
9. **Ask:** Which number has the next largest ones digit? Raise your hand to answer. (Answer: 3.4)
10. **Say:** So the next number after 4.0 is 3.4
11. **Ask:** What is the next largest ones digit? Raise your hand to answer. (Answer: 2)
12. **Ask:** So what number comes next? Raise your hand to answer. (Answers: 2.9, 2.6)
13. **Say:** Now that we have 2 numbers with the same ones digit, we move to the next digit on the right. This is the tenths digit. We use this to determine the next digit. So which decimal is next? Raise your hand to answer. (Answer: 2.9, then 2.6)
14. **Say:** So the smallest digit is 1.8. Writing the digits in order from greatest to least is 4.0, 3.4, 2.9, 2.6, 1.8.
15. Write on the board: 4.0, 3.4, 2.9, 2.6, 1.8

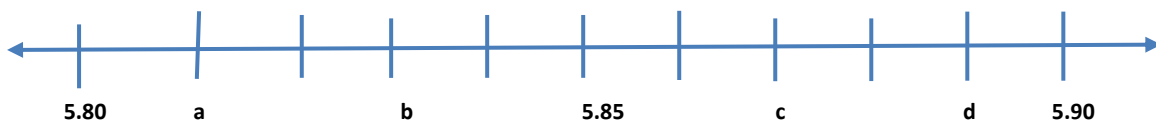
16. **Say:** Now let's use the number line to show the order of the numbers.

17. **Say:** Mark the numbers on the number line. (Answers: See below.)



Guided Practice (8 minutes)

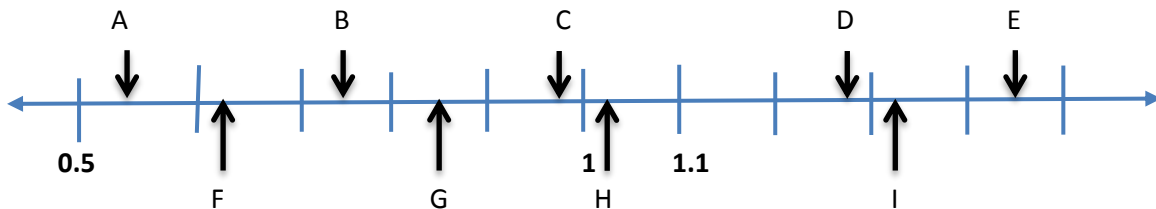
1. Write the following number line on the board:



2. **Say:** Work with your partner to write the correct decimal next to the letter. Explain to your partner how you got your answer. (Answers: a. 5.81 b. 5.83 c. 5.87 d. 5.89)

Independent Practice (10 minutes)

1. Write the following number line on the board.



2. Write the following decimals on the board: 0.98, 0.75, 1.24, 0.62, 0.54, 1.03, 1.32, 1.45, 0.85.

3. **Say:** Now try these in your exercise books by yourselves. Write the correct letter next to the decimal.

4. Visit each group. Check on their work. Talk with them and help where needed.

Closing (4 minutes)

1. Call on 1-2 pupils to explain their solutions.

0.98 ____ (Answer: C)

0.75 ____ (Answer: B)

1.24 ____ (Answer: D)

0.62 ____ (Answer: F)

0.54 ____ (Answer: A)

1.03 ____ (Answer: H)




1.32 ____ (Answer: I)

1.45 ____ (Answer: E)

0.85 ____ (Answer: G)

2. **Say:** Good job today pupils. You learned how to order and compare decimals on the number line.

Lesson Title: Adding Decimal Numbers up to 100ths	Theme: Number and Numeration; Everyday Arithmetic	
Lesson Number: M-05-130	Class/Level: Class 5	Time: 35 minutes

	Learning Outcomes By the end of the lesson, pupils will be able to add decimal numbers up to hundredths.		Teaching Aids None		Preparation None
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Opening (3 minutes)

- Say:** Arrange the following decimals from least to greatest:
 - 2.56, 4.25, 2.55, 3.56, 4.20 (Answer: 2.55, 2.56, 3.56, 4.20, 4.25)
 - 0.31, 1.20, 1.45, 0.33, 1.01 (Answer: 0.31, 0.33, 1.01, 1.20, 1.45)
- Say:** Arrange the following decimals from greatest to least.
 - 3.56, 3.50, 4.51, 4.05, 3.05 (Answer: 4.51, 4.05, 3.56, 3.50, 3.05)
 - 8.01, 8.10, 8.00, 8.11, 8.60 (Answer: 8.00, 8.01, 8.10, 8.11, 8.60)
- Say:** Today you will learn how to add decimal numbers up to one hundredths.

Introduction to the New Material (8 minutes)

- Say:** To add decimals, we use the same principle of adding two or more whole numbers. Let's remember how to add whole numbers, remembering to carry over extra place value.
- Say:** Add the following numbers. (Answers: See below.)

a.
$$\begin{array}{r} 1234 \\ +2452 \\ \hline 3686 \end{array}$$

b.
$$\begin{array}{r} 6536 \\ +1564 \\ \hline 8100 \end{array}$$

- Say:** Let's add the following. Remember to put the number with the most place values on top and line up the decimals.

$0.6 + 1.89$

a.
$$\begin{array}{r} 1.89 \\ +0.60 \\ \hline 2.49 \end{array}$$

(Answer: 2.49)

$0.66 + 0.08$ (Answer: 0.74)

b.
$$\begin{array}{r} 0.66 \\ +0.08 \\ \hline 0.74 \end{array}$$

$1.52 + 1.24$ (Answer: 2.76)

c.
$$\begin{array}{r} 1.52 \\ +1.24 \\ \hline 2.76 \end{array}$$

Guided Practice (8 minutes)

- Put pupils in pairs.

2. **Say:** Add the following decimals. Remember to set the problems up vertically and line up the decimal places.
 - a) $60.48 + 8.85$ (Answer: 69.33)
 - b) $35.38 + 59.94$ (Answer: 95.32)
 - c) $81.88 + 81.66$ (Answer: 163.54)
 - d) $31.01 + 46.60$ (Answer: 77.61)
 - e) $32.91 + 34.08$ (Answer: 66.99)
3. Walk around the room, check pupils' work and assist where necessary.




Independent Practice (12 minutes)

1. **Say:** Find the sum of the following decimals.
2. Write the following decimals on the board:
 - a) $234.54 + 124.36$ (Answer: 358.90)
 - b) $154.23 + 32.56$ (Answer: 168.79)
 - c) $76.34 + 56.01$ (Answer: 132.39)
 - d) $873.43 + 33.19$ (Answer: 906.62)
 - e) $25.67 + 2.87$ (Answer: 28.54)
 - f) $56.66 + 634.78$ (Answer: 691.44)
 - g) $23.22 + 567.21 + 0.22$ (Answer: 590.65)
3. Have pupils to exchange their exercise books and check their work while you read the answers aloud.

Closing (4 minutes)

1. **Say:** Find the sum of the decimals.
2. Write the following problems on the board:
 - a) $2.9 + 46.66$ (Answer: 49.56)
 - b) $7.52 + 62.3$ (Answer: 69.82)
3. **Ask:** What do you need to remember to do when you add decimals with different place values? Raise your hand to answer. (Answer: Line the decimals up by place value. Use the decimal point to help.)
4. **Say:** Good job today pupils! You learnt how to add decimals up to hundredths.

Lesson Title: Subtracting Decimal Numbers up to 100ths	Theme: Everyday Arithmetic	
Lesson Number: M-05-131	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to subtract decimal numbers up to hundredths.	 Teaching Aids None	 Preparation None
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Opening (2 minutes)

- Write the following problem on the board: $580 - 345$ (Answer: 235)
- Say:** Today's lesson will subtract decimal fractions.

Introduction to the New Material (12 minutes)

- Write $4.75 - 2.33$ on the board.
- Say:** Write 2.33 under the 4.75 and line up the decimal places. Use the decimal point to help.
- Say:** Place the minus in front of the 2.33
- Say:** Check that the decimal points are arranged. Underline it, and subtract the two numbers.
- Write the following problem on the board:

$$\begin{array}{r} 4.75 \\ - 2.33 \\ \hline 2.42 \end{array}$$

- Write $75.38 - 0.26$ on the board.
- Say:** Write 0.26 under 5.38 of 75.38
- Say:** Place the minus sign in front of the 0.26
- Write the following on the board:

$$\begin{array}{r} 75.38 \\ - 0.26 \\ \hline 75.12 \end{array}$$

- Write $326.07 - 3.2$ on the board.
- Say:** Write 3.2 under the 6.0 of 326.07
- Say:** Place the minus sign in front of 3.2
- Write the following on the board:

$$\begin{array}{r} 326.07 \\ - 3.2 \\ \hline 322.87 \end{array}$$

- Say:** Borrow 1 from the 6 and add it to the 0. This gives 10. Then subtract the 2 from the 10.

Guided Practice (10 minutes)

- Ask pupils to work in pairs.
- Write the following on the board: Solve the following subtraction problems with decimals:
 - Subtract 3.33 from 70.59 (Answer: 67.26)
 - Subtract $452.24 - 3.7$ (Answer: 448.54)
- Walk around the room and check pupils' work. Talk with them and help where needed.




Independent Practice (8 minutes)

1. Write the following on the board: Solve the following subtraction problems with decimals.
 - a. $0.45 - 0.22$ (Answer: 0.23)
 - b. $354.77 - 2.8$ (Answer: 351.97)
 - c. $14.09 - 0.26$ (Answer: 13.83)
2. Walk around the room. Check answers and do needed corrections.

Closing (3 minutes)

1. Ask some of the pupils to write their answers on the board.
2. **Say:** Good job today pupils! You solved subtraction problems with decimals.

Lesson Title: Multiplication of Decimal Numbers	Theme: Everyday Arithmetic	
Lesson Number: M-05-132	Class/Level: Class 5	Time: 35 minutes

	Learning Outcomes By the end of the lesson, pupils will be able to multiply decimal numbers up to hundredths with 2-digit whole numbers.		Teaching Aids None		Preparation None
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Opening (2 minutes)

- Write the following on the board: Multiply 462 by 52. Raise your hand to answer.
(Answer: 24,042)
- Say:** In today's lesson, we will multiply decimal numbers by whole numbers.

Introduction to the New Material (12 minutes)

- Write 4.2×12 on the board.
- Ask:** How many decimal places are there? Raise your hand to answer. (Answer: 1 decimal place)
- Say:** Remove the decimal point. Rewrite the number as a whole number. This makes 42.
- Say:** Multiply the 42 by the 12. This makes 504.
- Say:** Count from the right 1 place. Put the decimal point back again. This makes 50.4
- Write 83.56×17 on the board.
- Ask:** How many decimal places are there? Raise your hand to answer. (Answer: 2 decimal places)
- Say:** Remove the decimal points. Rewrite the number as a whole number. This makes 8,356
- Say:** Multiply the 8,356 by the 17. This makes 142,052.
- Say:** Count from the right 2 places. Put the decimal point back again. This gives us the answer, 1420.52

Guided Practice (10 minutes)

- Ask pupils to work in pairs.
- Write the following on the board: Solve the following multiplication problems:
 - 28.28×24 (Answer: 678.72)
 - 32.54×72 (Answer: 2342.88)
- Walk around the room and check pupils' work. Talk with them and help where needed.




Independent Practice (8 minutes)

- Write the following on the board: Solve the following multiplication problems:
 - 7.99×22 (Answer: 175.78)
 - 32.85×80 (Answer: 2628)
 - 14.09×26 (Answer: 366.34)
- Walk around the room and check pupils' work. Talk with them and help where needed.

Closing (3 minutes)

1. Ask some of the pupils to write their answers on the board and explain their results.
2. **Say:** Good job today pupils! You multiplied decimals with whole numbers.

Lesson Title: Division of Decimal Numbers	Theme: Everyday Arithmetic	
Lesson Number: M-05-133	Class/Level: Class 5	Time: 35 minutes

	Learning Outcomes By the end of the lesson, pupils will be able to divide decimal numbers up to hundredths with 1-digit whole numbers.		Teaching Aids None		Preparation None
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Opening (2 minutes)

- Write $462 \div 2$ on the board.
- Ask:** What is the answer? Raise your hand to answer. (Answer: 231)
- Say:** In today's lesson, we will divide decimal fractions by whole numbers.

Introduction to the New Material (12 minutes)

- Write 4.2×2 on the board.
- Ask:** How many decimal places does 4.2 have? Raise your hand to answer. (Answer: 1 decimal place)
- Say:** Remove the decimal point. Rewrite the number as a whole number. This makes 42.
- Say:** Divide the 42 by the 2. This makes 21.
- Say:** Count from the right 1 place. Put the decimal point in that place. This makes the answer 2.1.
- Write $81.66 \div 3$ on the board.
- Ask:** How many decimal places are there in 81.66? Raise your hand to answer. (Answer: 2 decimal places)
- Say:** Remove the decimal point. Rewrite the number as a whole number. This makes 8166.
- Say:** Divide the 8166 by the 3. This makes 2722.
- Say:** Count from the right 2 places. Put the decimal point in that place. This makes the answer, 27.22
- Write $125.68 \div 5$ on the board.
- Ask:** How many decimal places are these in 125.68? Raise your hand to answer. (Answer: 2 decimal places)
- Say:** Remove the decimal point. Rewrite the number as a whole number. This makes 12568.
- Say:** Divide 12568 by 5. This makes 2513.6.
- Say:** Count from the decimal point 2 places to the left. This makes 25.136.

Guided Practice (10 minutes)

- Ask pupils to work in pairs to solve the problems.
- Write the following problems on the board:
 - $28.28 \div 4$ (Answer: 7.07)
 - $32.54 \div 8$ (Answer: 4.0675)
- Walk around the room and check pupils' work. Talk with them and help where needed.

Independent Practice (8 minutes)




- Write the following problems on the board:
 - $7.99 \div 2$ (Answer: 3.995)
 - $92.85 \div 8$ (Answer: 11.60625)

- c) $14.09 \div 6$ (Answer: 2.3483)
2. Walk around the room and check pupils' work. Talk with them and help where needed.

Closing (3 minutes)

1. **Ask:** What is the first step in solving a division problem involving decimals? Raise your hand to answer. (Answer: You can remove the decimal and divide normally. Then you put the decimal place back in by moving the decimal to the left from where it is.)
2. **Say:** Yes, good job! Today you learnt how to divide decimals numbers by 1-digit whole numbers!

Lesson Title: Multiplication and Division by 10 and 100	Theme: Everyday Arithmetic	
Lesson Number: M-05-134	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to multiply and divide whole numbers up to 6 digits and decimals up to hundredths by 10 and 100.	 Teaching Aids None	 Preparation None
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Opening (2 minutes)

1. Write 7.2×2 on the board. Raise your hand to answer. (Answer: 14.4)
2. **Say:** In today's lesson, we will multiply and divide whole numbers up to 6 digits and decimals up to hundredths by 10 and 100.
3. Write the topic and learning outcome on the board. Ask pupils to read it out loud.

Introduction to the New Material (12 minutes)

1. Write 346521.75×10 on the board.
2. **Say:** Anytime a given number is being multiplied by 10, 100, 1000, 10,000, move the decimal point from the left position to the right by the number of 0s in the number.
3. **Say:** Since the number is being multiplied by 10, move the decimal point from the left to the right once. This gives you 3456217.5
4. Write 895431.78×100 on the board.
5. **Say:** Since the number is multiplying by 100, move the decimal point from the left to the right twice. This gives you 89543178.
6. Write $768,570.54 \div 10$ on the board.
7. **Say:** Anytime a given number is being divided by 10, 100, 1000, 10,000, move the decimal point from the right position to the left by the number of 0s in the number.
8. **Say:** Since the number is being divided by 10, move the decimal point from the right to the left once. This gives you 76857.054
9. Write $456585.72 \div 100$ on the board.
10. **Say:** Since the number is being divided by 100, move the decimal point from the right to the left twice. This gives you 4565.8572.

Guided Practice (10 minutes)

1. Ask pupils to work in pairs.
2. Write the following problems on the board:
 - a. 765489.09×10 (Answer: 7654890.9)
 - b. 459823.77×100 (Answer: 45982377)
 - c. $875432.83 \div 10$ (Answer: 87543.283)
 - d. $123246.81 \div 100$ (Answer: 1232.4681)

3. Walk around the room and check pupils' work. Talk with them and help where needed.




Independent Practice (8 minutes)

1. Write the following problems on the board:
 - d. 856483.17×10 (Answer: 8564831.7)
 - e. 543200.08×100 (Answer: 54320008)
 - f. $756783.59 \div 10$ (Answer: 75678.359)
 - g. $159285 \div 100$ (Answer: 1592.85)
2. Walk around the room and check pupils' work. Talk with them and help where needed.

Closing (3 minutes)

1. **Ask:** is the rule the same for dividing and multiplying a decimal by 10 or 100? Raise your hand to answer. (Answer: No, when you multiply by a multiple of 10, you move the decimal point to the right because the number is getting bigger. When you divide by a multiple of 10, you move the decimal point to the left because the number is getting smaller.)
2. **Ask:** How many decimal places do you move? Raise your hand to answer. (Answer: You move the decimal by the amount of zeroes in the multiple of 10.)
3. **Say:** Good job today pupils! You multiplied and divided decimals by multiples of 10.

Lesson Title: Word Problems Involving Decimals and the 4 Operations	Theme: Everyday Arithmetic	
Lesson Number: M-05-135	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to solve word problems involving decimals and the four operations.	 Teaching Aids None	 Preparation Write the word problems for the lesson on the board.
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Opening (2 minutes)

1. Write the following problem on the board: Multiply Le 42.45 x 3. Raise your hand to answer. (Answer: Le127.35)
2. **Say:** In today's lesson, you will solve word problems involving decimals and the 4 operations.

Introduction to the New Material (12 minutes)

1. Write the following problem on the board: Donald has 995.06 pounds of grain, 145.53 pounds of sugar and 49.99 pounds of flour. How many pounds of goods does Donald have altogether?
2. **Say:** Add all the figures together. Remember to line up the decimal point and add normally.

$$\begin{array}{r}
 995.06 \\
 145.53 \\
 + 49.99 \\
 \hline
 1190.58
 \end{array}$$

3. Write the following problem on the board: James boarded a taxi from his village to the district market centre and paid Le185.65. If he paid the same amount on his return to the village, how much did he spend?
4. **Say:** Multiply the amount by two to give the total amount spent. Remember to multiply normally and then add the total amount of decimal places back into the solution.

$$\begin{array}{r}
 Le185.65 \\
 \times 2 \\
 \hline
 Le371.30
 \end{array}$$

5. Write the following problem on the board: 3 pupils shared Le5895.96 equally. How much did each student get?
6. **Say:** Divide the amount shared by 3. Remember, divide normally after removing the decimal places. Once you have the solution, we will replace the decimal places by moving the decimal place to the left with the same amount of decimals you removed. (Answer: Le1965.32)
7. Write the following problem on the board: Moses bought a mobile phone top up for Le6500.50 and paid Le7000. How much change should he receive?
8. **Say:** Subtract Le6500.50 from Le7000. Remember to line up the decimal point and subtract normally.

$$\begin{array}{r}
 699910 \\
 Le7000.00 \\
 + Le6500.50 \\
 \hline
 Le499.50
 \end{array}$$

Guided Practice (10 minutes)

1. Ask pupils to work in pairs.
2. Write the following problems on the board:
 - a. 5 pupils were given an amount of Le19500.50 to share equally. Find how much each pupil got. (Answer: $19,500.50 \div 5 = \text{Le } 3,900.10$)
 - b. Selina sells sea shells at the sea shore. If each sea shell is sold at Le345.80, how much will she get from selling 100 pieces of the sea shells? (Answer: $345.80 \times 100 = \text{Le } 34,580$)
3. Walk around the room and check pupils' work. Talk with them and help where needed.


Independent Practice (8 minutes)

1. Write the following problem on the board: Aaron spends the following amount each day for 4 days. Day 1: Le1232.43, Day 2: Le5463.54, Day 3: Le1120.4, and Day 4: Le6542.45. Find how much he spent at the end of the fourth day. If he was given Le50000 for the week, find how much will be left. (Answers: $1232.43 + 5463.54 + 1120.40 + 6542.45 = \text{Le } 14,358.82$ total; $50000 - 14,358.82 = \text{Le } 35,641.18$ remaining)
2. Walk around the room and check pupils' work. Talk with them and help where needed.

Closing (3 minutes)

1. Ask some of the pupils to write their answers on the board and explain their answers.
2. **Say:** Good job today pupils! You solved word problems involving decimals and all four operations!

Lesson Title: Conversion of Fractions to Decimals	Theme: Everyday Arithmetic	
Lesson Number: M-05-136	Class/Level: 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to convert fractions to decimals.	 Teaching Aids None	 Preparation None
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Opening (2 minutes)

- Write the following problem on the board: Divide 50 by 25. Raise your hand to answer.
(Answer: 2)
- Say:** In today's lesson, we will convert fractions to decimals.

Introduction to the New Material (12 minutes)

- Write the following problem on the board: Convert $\frac{2}{4}$ to a decimal.
- Say:** Divide the 2 by the 4 using the long division method.

$$\begin{array}{r} 0.5 \\ 4 \overline{)20} \\ \underline{20} \\ 0 \end{array}$$

- Write the following problem on the board: Convert $\frac{4}{5}$ to decimals.
- Say:** Divide the 4 by 5 using long division method. Raise your hand to answer (Answer: 0.8)
- Write the following problem on the board: Convert $\frac{8}{25}$ to decimals.
- Say:** Divide the 8 by 25 using long division. Raise your hand to answer. (Answer: 0.32)
- Write the following problem on the board: Convert $\frac{1}{9}$ to decimals.
- Say:** Divide the 1 by 9 using long division. This one is a special case because the result will look different.

- Write:**

$$\begin{array}{r} 0.111 \\ 9 \overline{)1.000} \\ \underline{-9} \\ 10 \\ \underline{-9} \\ 10 \end{array}$$

- Say:** As you can see, this decimal will repeat the same number on and on forever. This is called a 'repeating' decimal. We can draw a line over the 1 to show that this is repeating.
- Write: $\frac{1}{9} = 1 \div 9 = 0.\overline{1}$

Guided Practice (10 minutes)

- Ask pupils to work in pairs.
- Say:** Convert the following fractions to decimals using long division.
- Write the following fractions on the board:

- a. $\frac{3}{6}$ (Answer: $3 \div 6 = 0.5$)
- b. $\frac{10}{25}$ (Answer: $10 \div 25 = 0.4$)
- c. $\frac{1}{8}$ (Answer: $1 \div 8 = 0.125$)
- d. $\frac{2}{9}$ (Answer: $2 \div 9 = 0.\overline{2}$)

4. Walk around the room and check pupils' work. Talk with them and help where needed.

Independent Practice (8 minutes)

1. **Say:** Work alone. Convert the following to decimals using long division.

2. Write the following fractions on the board:

h. $\frac{14}{25}$ (Answer: $14 \div 25 = 0.56$)

i. $\frac{2}{5}$ (Answer: $2 \div 5 = 0.4$)

j. $\frac{7}{8}$ (Answer: $7 \div 8 = 0.875$)

k. $\frac{4}{9}$ (Answer: $4 \div 9 = 0.\overline{4}$)

3. Walk around the room and check pupils' work. Talk with them and help where needed.

Closing (3 minutes)

1. Ask some of the pupils to write their answers on the board while others check their work.

2. **Ask:** What does the line above a decimal mean? Raise your hand to answer. (Answer: It means 'repeating'; the digit will repeat on and on forever)

3. **Say:** Good job today pupils! You converted fractions to decimals using long division.

Lesson Title: Conversion of Decimals to Fractions	Theme: Everyday Arithmetic	
Lesson Number: M-05-137	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to convert decimals to fractions.	 Teaching Aids None	 Preparation None
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Opening (4 minutes)

- Write the following problem on the board: 'Convert the fraction to a decimal: $\frac{2}{5}$. Raise your hand to answer. (Answer: $\frac{2}{5} = 2 \div 5 = 0.4$)
- Say:** In today's lesson, we will convert decimals to fractions.

Introduction to the New Material (10 minutes)

- Write the following problem on the board: Convert 0.5 to a fraction.
- Ask:** How many decimal places are there from the right? Raise your hand to answer. (Answer: 1 decimal place)
- Ask:** What place value is the 5 in? Raise your hand to answer. (Answer: tenths place)
- Say:** Yes, the 5 is in the tenths place so to convert it to a fraction, we put the 5 over 10. This makes $\frac{5}{10}$
- Say:** Reduce the given fraction to the lowest term. In other words, rename it. This makes $\frac{1}{2}$ because we can divide the numerator and the denominator by 5. Let's review this:
- Write: $\frac{5}{10} = \frac{5 \div 5}{10 \div 5} = \frac{1}{2}$
- Write the following problem on the board: Convert 0.25 to a fraction.
- Ask:** How many decimal places are there from the right? Raise your hand to answer. (Answer: 2 decimal places)
- Say:** That place value is the last digit in? Raise your hand to answer. (Answer: hundredths place)
- Say:** There are 2 decimal places and the last one is in the hundredths place. So we divide the whole number by 100. This makes $\frac{25}{100}$
- Say:** Now, reduce the given fraction to the lowest term. In other words, rename it. This makes $\frac{1}{4}$
- Write: $\frac{25}{100} = \frac{25 \div 5}{100 \div 5} = \frac{5}{20} = \frac{5 \div 5}{20 \div 5} = \frac{1}{4}$

Guided Practice (10 minutes)

- Say:** Work in pairs. Convert the following decimals to fractions.
- Write the following decimals on the board:
 - 0.75 (Answer: $0.75 = \frac{75}{100} = \frac{75 \div 25}{100 \div 25} = \frac{3}{4}$)
 - 0.9 (Answer: $0.9 = \frac{9}{10}$)
 - 0.45 (Answer: $0.45 = \frac{45}{100} = \frac{45 \div 5}{100 \div 5} = \frac{9}{20}$)
- Walk around the room and check pupils' work. Talk with them and help where necessary.




Independent Practice (8 minutes)

1. **Say:** Work individually. Convert the following decimals to fractions.
2. Write the following to decimals on the board:
 - l. 0.11 (Answer: $0.11 = \frac{11}{100}$)
 - m. 0.6 (Answer: $0.6 = \frac{6}{10} = \frac{6 \div 2}{10 \div 2} = \frac{3}{5}$)
 - n. 0.55 (Answer: $0.55 = \frac{55}{100} = \frac{55 \div 5}{100 \div 5} = \frac{11}{20}$)
3. Walk around the room and check pupils' work. Talk with them and help where necessary.

Closing (3 minutes)

1. Ask some of the pupils to write their answers on the board.
2. **Ask:** What is the first step to converting a decimal to a fraction? Raise your hand to answer. (Answer: Determine the place value of the last digit of the decimal.)
3. **Ask:** How do we know what number to put in the denominator? Raise your hand to answer. (Answer: You look at the place value, tenths means a denominator of 10, hundredths means a denominator of 100.)
4. **Say:** Good job today pupils! You learned how to convert decimals into fractions and rename them!

Lesson Title: Conversion of Fractions to Percentages and From Percentages to Fractions	Theme: Everyday Arithmetic	
Lesson Number: M-05-138	Class/Level: Class 5	Time: 35 minutes

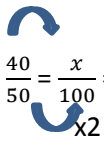
 <p>Learning Outcomes By the end of the lesson, pupils will be able to:</p> <ol style="list-style-type: none"> 1. Convert fractions to percentages. 2. Convert percentages to fractions. 	 <p>Teaching Aids None</p>	 <p>Preparation None</p>
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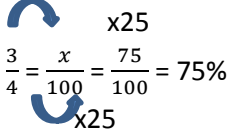
Opening (2 minutes)

1. Write the following problem on the board: Rename the fraction $\frac{40}{50}$. Raise your hand to answer.
(Answer: $\frac{4}{5}$)
2. **Say:** In today's lesson, we will convert fractions to percentages and percentages to fractions.

Introduction to the New Material (12 minutes)

1. Write the following problem on the board: Convert $\frac{40}{50}$ to a percentage.
2. **Say:** To change a fraction to a percentage, the denominator must be out of 100. This is because a percentage is always out of 100
3. **Say:** Write the fraction as it was given and set it equal to $\frac{x}{100}$
4. Write:

$$\frac{40}{50} = \frac{x}{100} = \frac{80}{100} = 80\%$$

5. **Say:** Now we must determine what number multiplies 50 to give us 100. This is the number that we will also multiply on top.
6. **Say:** Once you find out the missing x value over 100, this becomes our percentage. So $\frac{40}{50} = 80\%$
7. Write the following problem on the board: Convert $\frac{3}{4}$ to a percentage.
8. Write:

$$\frac{3}{4} = \frac{x}{100} = \frac{75}{100} = 75\%$$

9. **Say:** Now we must determine what number multiplies 4 to give us 100. This is the number that we will also multiply on top. In this case, that number is 25 because $4 \times 25 = 100$. Now multiply 3 x 25 to get 75
10. **Say:** Once you find out the missing x value over 100, this becomes our percentage. So $\frac{3}{4} = 75\%$
11. Write the following problem on the board: Convert 45% to a fraction.

12. **Say:** To change the percentage to a fraction, divide by 100. This gives $\frac{45}{100}$. Then reduce to the lowest terms. This gives $\frac{9}{20}$.
13. Write: $45\% = \frac{45}{100} = \frac{45 \div 5}{100 \div 5} = \frac{9}{20}$
14. Write the following problem on the board: Convert 75% to fraction.
15. **Say:** To change the percentage to fraction, divide by 100. This gives $\frac{75}{100}$. Then reduce this fraction to the lowest term. This gives $\frac{3}{4}$.
16. Write: $75\% = \frac{75}{100} = \frac{75 \div 25}{100 \div 25} = \frac{3}{4}$

Guided Practice (10 minutes)

- Say:** Work in pairs. Convert the following fractions to percentages.
- Write the following fractions on the board:
 - $\frac{2}{5}$ (Answer: $\frac{2}{5} = \frac{x}{100} = \frac{40}{100} = 40\%$)
 - $\frac{9}{10}$ (Answer: $\frac{9}{10} = \frac{x}{100} = \frac{90}{100} = 90\%$)
- Say:** Work in pairs. Convert the following percentages to fractions.
- Write the following percentages on the board:
 - 60% (Answer: $60\% = \frac{65}{100} = \frac{60 \div 20}{100 \div 20} = \frac{3}{5}$)
 - 80% (Answer: $80\% = \frac{80}{100} = \frac{80 \div 20}{100 \div 20} = \frac{4}{5}$)
- Walk around the room and check pupils' work. Talk with them and help where needed.




Independent Practice (8 minutes)

- Say:** Work individually. Convert the following fractions to percentages.
- Write the following fractions on the board:
 - $\frac{3}{5}$ (Answer: $\frac{3}{5} = \frac{x}{100} = \frac{60}{100} = 60\%$)
 - $\frac{6}{10}$ (Answer: $\frac{6}{10} = \frac{x}{100} = \frac{60}{100} = 60\%$)
- Say:** Work individually. Convert the following percentages to fractions.
- Write the following percentages on the board:
 - 25% (Answer: $25\% = \frac{25}{100} = \frac{25 \div 25}{100 \div 25} = \frac{1}{4}$)
 - 90% (Answer: $90\% = \frac{90}{100} = \frac{90 \div 10}{100 \div 10} = \frac{9}{10}$)
- Walk around the room and check pupils' work. Talk with them and help where needed.

Closing (3 minutes)

- Ask some of the pupils to write their answers on the board and have the others check their work.
- Say:** Good job today pupils! You now know how to convert between fractions, decimals and percentages.

Lesson Title: Conversion of Percentages to Decimals	Theme: Everyday Arithmetic	
Lesson Number: M-05-139	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to convert percentages to decimals.	 Teaching Aids None	 Preparation None
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Opening (2 minutes)

1. Write on the board: Convert 50% to a fraction. Raise your hand to answer.

(Answer: $50\% = \frac{50}{100} = \frac{50 \div 50}{100 \div 50} = \frac{1}{2}$)

2. **Say:** In today's lesson, we will convert percentages to decimals.

Introduction to the New Material (12 minutes)

1. Write on the board: Convert 90% to a decimal.
2. **Say:** Divide the 90 percentage by 100. This makes $\frac{90}{100}$
3. **Say:** Since the 9 is being divided by 100, move two decimal places from right of 90 and put a decimal point. This makes 0.90
4. Write: $90 = 0.90 = 0.9$

5. Write on the board: Convert 15% to a decimal.
6. **Say:** Divide the 15 by 100. This makes $\frac{15}{100}$
7. **Say:** Since 15 is being divided by 100, move two decimal places from the right of 15 and put a decimal point. This makes 0.15
8. Write: $15 = 0.15$

9. Write on the board: Convert 8% to a decimal.
10. **Say:** Divide the 8 by 100. This makes $\frac{8}{100}$
11. **Say:** Since 8 is being divided by 100, move two decimal places from the right of 8 and put a decimal point. This makes 0.08. You can see here that we need to add a zero before the 8 because there are no other digits. We can read this as 8 hundredths.
12. Write: $08 = 0.08$

13. Write on the board: Convert 210% to a decimal.
14. **Say:** You will notice that this percentage is over 100 so when we convert it to a decimal, it will have a whole number to the left of the decimal place. Let's see this.
15. Write: $210 = 2.10 = 2.1$


Guided Practice (10 minutes)

1. **Say:** Work in pairs. Convert the following percentages to decimals.
2. Write the following on the board: Convert the percentages to decimals.
 - a. 70% (Answer: $0.70 = 0.7$)
 - b. 95% (Answer: 0.95)
 - c. 1% (Answer: 0.01)
 - d. 150% (Answer: $1.50 = 1.5$)
3. Walk around the room and check pupils' work. Talk with them and help where needed.




Independent Practice (8 minutes)

1. **Say:** Work individually. Convert the following percentages to decimals.
2. Write the following on the board: Convert the percentages to decimals.
 - s. 125% (Answer: 1.25)
 - t. 450% (Answer: $4.50 = 4.5$)
 - u. 30% (Answer: $0.30 = 0.3$)
 - v. 7% (Answer: 0.07)
 - w. 0.5% (Answer: 0.005)
3. Walk around the room and check pupils' work. Talk with them and help where needed.
4. Have pupils to exchange exercise books and check each other's work while you read the answers aloud.

Closing (4 minutes)

1. **Ask:** How many decimal places do you move to the left? Raise your hand to answer.
(Answer: 2 places to the left)
2. **Ask:** Why do you move by 2 places? Raise your hand to answer.
(Answer: Because there are two zeroes in 100 so we move 2 place to the left.)
3. **Say:** Good job today pupils! You learned how to convert percentages to decimals.

Lesson Title: Conversion of Decimals to Percentages	Theme: Everyday Arithmetic	
Lesson Number: M-05-140	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to convert decimals to percentages.	 Teaching Aids None	 Preparation None
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Opening (2 minutes)

1. Write on the board: Convert 50% to a decimal. Raise your hand to answer. (Answer: $0.50 = 0.5$)
2. **Say:** In today's lesson, we will convert decimals to percentages.

Introduction to the New Material (12 minutes)

1. Write on the board: Convert 0.85 to a percentage.
2. **Say:** Multiply the 0.85 by 100
3. Write on the board: 0.85×100
4. **Say:** Since the 0.85 is being multiplied by 100, move the decimal point 2 decimal places from the left to the right. Then attach the percentage sign. This makes 85%
5. Write 85% on the board.
6. Write on the board: Convert 0.09 to a percentage.
7. **Say:** Multiply the 0.09 by 100
8. Write 0.09×100 on the board.
9. **Say:** Since 0.09 is being multiplied by 100, move the decimal point 2 decimal places from the left to the right. Then attach the percentage sign. This makes 9%
10. Write 9% on the board.
11. Write on the board: Convert 1.25 to a percentage.
12. **Say:** Multiply 1.25 by 100
13. Write on the board: 1.25×100
14. **Say:** Since 1.25 is being multiplied by 100, move the decimal point to two decimal places from the left to the right. Attach the percentage sign. This makes 125%
15. Write 125% on the board.

Guided Practice (10 minutes)

1. **Say:** Work in pairs.
2. Write the following on the board: Convert the decimals to percentages:
 - a. 0.58 (Answer: $0.58 \times 100 = 58\%$)
 - b. 0.79 (Answer: $0.79 \times 100 = 79\%$)
 - c. 2.2 (Answer: $2.2 \times 100 = 220\%$)
 - d. 0.06 (Answer: $0.06 \times 100 = 6\%$)
3. Walk around the room and check pupils' work. Talk with them and help where needed.




Independent Practice (8 minutes)

1. Say: Work alone.
2. Write the following on the board: Convert the following decimals to percentages
 - x. 0.01 (Answer: $0.01 \times 100 = 1\%$)
 - y. 0.25 (Answer: $0.25 \times 100 = 25\%$)
 - z. 4.55 (Answer: $4.55 \times 100 = 455\%$)
 - aa. 0.007 (Answer: $0.007 \times 100 = 0.7\%$)
3. Walk around the room and check pupils' work. Talk with them and help where needed.

Closing (3 minutes)

1. **Ask** some of the pupils to write their answers on the board and have others check their work.
2. **Ask**: What do you multiply by to convert a decimal to a percentage? Raise your hand to answer.
(Answer: Multiply by 100)
3. **Ask**: What do you do to convert a percentage to a decimal? Raise your hand to answer.
(Answer: Divide by 100)
4. **Say**: Good job! Now you can see that you do the opposite or the inverse operation here when converting back and forth between decimals and percentages.

Lesson Title: Percentage of a Quantity – Simple Problems	Theme: Everyday Arithmetic (Including Financial Literacy)	
Lesson Number: M-05-141	Class/Level: Class 5	Time: 35 minutes

	Learning Outcomes By the end of the lesson, pupils will be able to solve 1-step problems to find the percentage of a given quantity.		Teaching Aids 10x10 grid		Preparation 1. Post or copy a 10x10 grid on the board.
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Opening (5 minutes)

- Say:** Sit in groups of 3
- Say:** Write the following fractions in words.
- Write the following fractions on the board:
 - $\frac{2}{3}$ (Answer: two-thirds)
 - $\frac{5}{8}$ (Answer: five-eighths)
 - $\frac{2}{7}$ (Answer: two-sevenths)
- Write the word 'percentage' on the board.
- Say:** Work in your groups. Explain the word percentage to your group.
- Give the groups 1-2 minutes to work. Then, invite pupils to share their answers. Write down some of the answers from the pupils on the board.
- Say:** A percentage is a fraction with a denominator of 100
- Ask pupils to write this definition into their exercise books.
- Say:** Today you will solve 1-step problems to find the percentage of a given quantity.

Introduction to the New Material (5 minutes)

- Say:** 'Percentage' means out of one hundred.
- Point to the 10x10 grid.

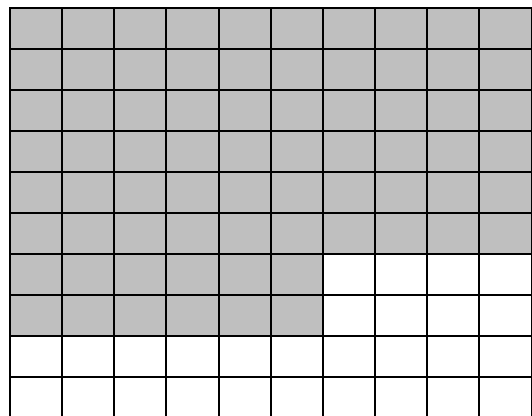
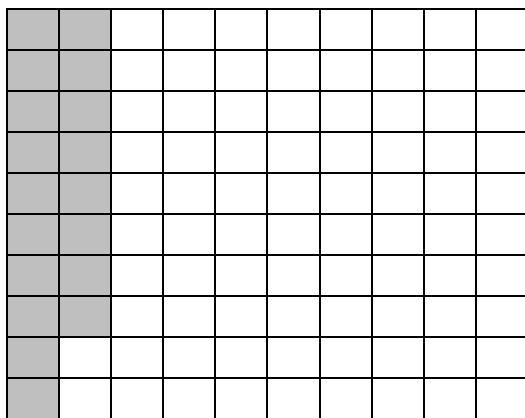
A	A	A	A	A	B	B	B	D	D
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A	A	A	A	A	B	B	B	D	D
A	A	A	A	A	B	B	B	D	D
A	A	A	A	A	B	B	B	D	D
A	A	A	A	A	B	B	B	D	D
A	A	A	A	A	C	C	C	D	D
A	A	A	A	A	C	C	C	D	D
A	A	A	A	A	C	C	C	D	D

- Ask:** What percent of the figure is marked A? (Answers: $\frac{50}{100}$, 50%, fifty percent)
- Ask:** What percent of the figure is marked B? (Answers: $\frac{21}{100}$, 21%, twenty-one percent)
- Ask:** What percent of the figure is marked C? (Answers: $\frac{9}{10}$, 19%, nineteen percent)

6. **Ask:** What percent of the figure is marked D? (Answer: $20/100$, 20%, twenty percent)
7. **Say:** We also need find the percentage of a given quantity as well. For example, I might ask you what is 50% of 80. This can also be interpreted as half of 80, which is equal to 40. When we are asked to find what the percentage of a quantity is, we must first convert the percentage into a decimal and then multiply.
8. **Write:** 50% of 80 = $0.50 \times 80 = 40$

Guided Practice (10 minutes)

1. Hand out worksheet to pupils.
2. **Say:** Work in pairs. Find the percentages of the shaded portions in the figures on the worksheet.
 - a. (Answer: 18%)
 - b. (Answer: 72%)



3. **Say:** Solve the following problems.
4. Write the following problems on the board:
 - a. 15% of 70 (Answer: 10% of 70 = 7, therefore 5% = 3.5. Therefore 15% of 70 = $7+3.5 = 10.5$)
 - b. 80% of 60 (Answer: 10% of 60 = 6. Therefore 80% = $6 \times 8 = 48$)
 - c. 55% of 150 (Answer: 10% of 150 = 15, therefore 5% = 7.5. $55\% = 15 \times 5 + 7.5 = 82.5$)
 - d. 25% of 90 (Answer: 10% of 90 = 9, therefore 5% = 4.5. Therefore 25% = $9 \times 2 + 4.5 = 22.5$)

Independent Practice (10 minutes)

1. **Say:** Work alone. Solve the following questions.
2. Write the following questions on the board:
 - a. 10% of 30 (Answer: $0.10 \times 30 = 3$)
 - b. 10% of 75 (Answer: $0.10 \times 75 = 7.5$)
 - c. 90% of 100 (Answer: $0.90 \times 100 = 90$)
 - d. 15% of 20 (Answer: $0.15 \times 20 = 3$)




Closing (5 minutes)

1. Call pupils to the board to solve to the following problems.

- a. 5% of 20 (Answer: $0.05 \times 20 = 1$)
- b. 15% of 30 (Answer: $0.15 \times 30 = 4.5$)
- c. 20% of 70 (Answer: $0.20 \times 70 = 14$)
- d. 10% of 20 (Answer: $0.10 \times 20 = 2$)

2. **Say:** Good job today pupils. You found the percentage of a quantity today using multiple methods.

Lesson Title: Percentage of a Quantity – More Problems	Theme: Everyday Arithmetic (Including Financial Literacy)	
Lesson Number: M-05-142	Class/Level: Class 5	Time: 35 minutes

	Learning Outcomes By the end of the lesson, pupils will be able to solve more one step problems to find the percentage of a given quantity.		Teaching Aids None		Preparation 1. Draw the table for the opening on the board. 2. Draw the pie chart for the independent practice on the board.
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Opening (5 minutes)

- Say:** Sit in groups of 3.
- Say:** Copy the table and complete it with your small group. Fill in the boxes with the value of the quantities. (Answers: See below.)

	50%	25%	20%	10%
10	(Answer: 5)	(Answer: 2.5)	(Answer: 2)	(Answer: 1)
50	(Answer: 25)	(Answer: 12.5)	(Answer: 10)	(Answer: 5)
90	(Answer: 45)	(Answer: 22.5)	(Answer: 18)	(Answer: 9)
100	(Answer: 50)	(Answer: 25)	(Answer: 20)	(Answer: 10)

- Say:** Today you will continue working to find percentages of given quantities.

Introduction to the New Material (5 minutes)

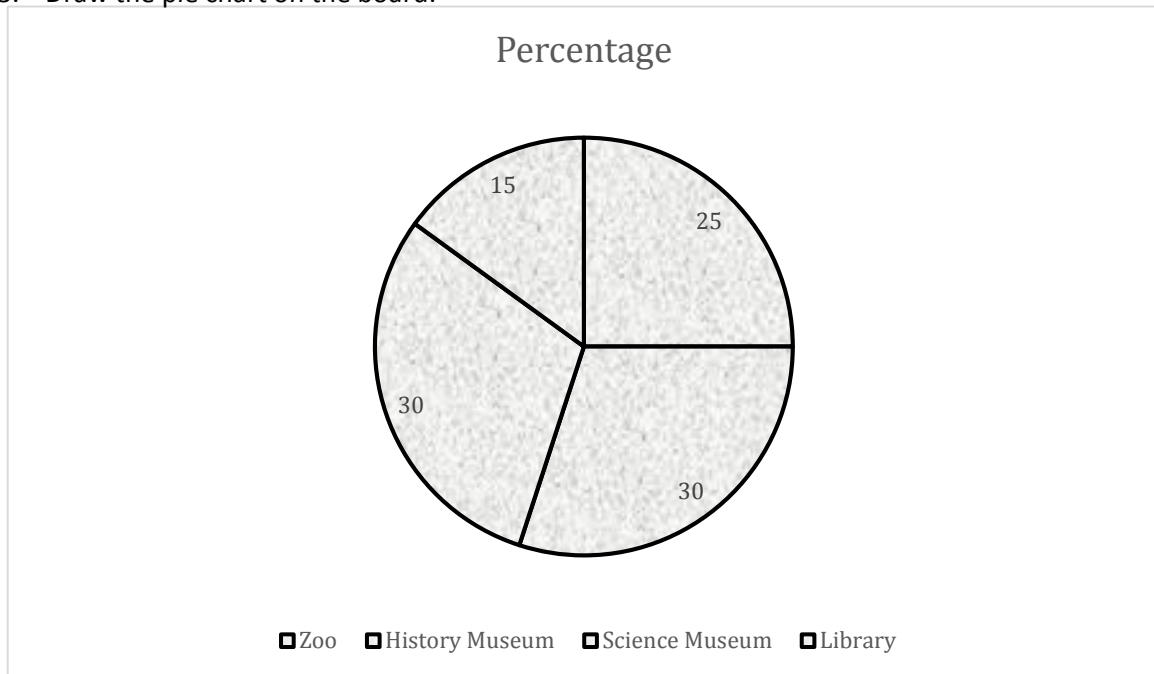
- Say:** Let's work out the following together so we can review.
- Write the following problems on the board:
 - 20% of 500 (Answer: 100)
 - 85% of 1500 (Answer: 1275)
 - 25% of 700 (Answer: 175)
 - 30% of 1000 (Answer: 300)

Guided Practice (10 minutes)

- Put pupils in pairs.
- Say:** Find the following quantities.
- Write the following problems on the board:
 - 80% of 6,000 (Answer: 4800)
 - 20% of SL10,000 (Answer: SL2000)
 - 30% of SL15,000 (Answer: SL4500)
 - 70% of 8500 (Answer: 5950)

Independent Practice (10 minutes)

1. **Say:** Solve the following questions individually in your exercise books.
2. Write the following problems on the board:
 - e. 10% of 30,000 (Answer: 3000)
 - f. 5% of 100,000 (Answer: 5000)
 - g.
3. Draw the pie chart on the board:






4. **Say:** The pie chart shows the percentage of pupils who visited various places during the holiday. There are 60 pupils in the class.
5. **Ask:** How many of them went to the zoo? (Answer: 25% of 60 = $0.25 \times 60 = 15$)
6. **Ask:** How many of them went to the History Museum? (Answer: 30% of 60 = $0.30 \times 60 = 18$)

Closing (5 minutes)

1. **Ask:** Can we find out how pupils visited the library and the zoo? Raise your hand to answer. (Answer: Yes, we can add the percentages and find out.)
2. **Ask:** How many percent went to the zoo and the library together? Raise your hand to answer. (Answer: $25\% + 15\% = 40\%$)
3. **Ask:** How do you now find the amount of pupils who went to the zoo and library and what's the answer? Raise your hand to answer. (Answer: $40\% \text{ of } 60 = 0.40 \times 60 = 24$ pupils went to the zoo or the library)
4. **Say:** Good job today pupils! You solved many problems to find the percentage of a given quantity.

Lesson Title: Change as a Percentage	Theme: Everyday Arithmetic (include Financial literacy)	
Lesson Number: M-05-143	Class/Level: Class 5	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson, pupils will be able to solve problems involving expressing change of a quantity as a percentage.</p>	 <p>Teaching Aids None</p>	 <p>Preparation None</p>
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Opening (5 minutes)

- Say:** Find the missing addend in the following questions.
- Write on the board:
 - $300 + \underline{\quad} = 650$ (Answer: 350)
 - $187 + \underline{\quad} = 530$ (Answer: 343)
 - $SL30,000 + \underline{\quad} = SL45,000$ (Answer: SL15,000)
 - $SL54,000 - \underline{\quad} = SL50,000$ (Answer: SL4000)
- Say:** Sit in pairs. Explain the word 'change' to your partner.
- Give pupils 1-2 minutes to talk. Then ask 1-2 pupils to share.
- Say:** Change is an increase or a decrease in something. When something changes, it can increase. Increase means to go up. Or it can decrease. Decrease means to go down.
- Say:** Today we will use this to solve problems that involve expressing change in a quantity as a percentage.

Introduction to the New Material (5 minutes)

- Say:** What kind of change is represented in the following questions?
 - From 340 to 374 (Answer: increase by 34)
 - From SL 15,000 to SL 12,000 (Answer: decrease by SL 3,000)
 - From SL 18,500 to SL 19,000 (Answer: increase by 500)
 - From 1486 to 1578 (Answer: increase by 92)
- Say:** To calculate the percentage of the amount of change, we must use many skills we have learned over the last lessons.
- Say:** Let's look at a. From 340 to 374
 - Let's first determine the amount of change: $374 - 340 =$ increase of 34
 - Now we take the amount of change and divide it by the original amount of 340
 - Multiply the answer by 100 to change it to a percentage.
- Write:**

$$\frac{34}{340} = 0.1 \times 100 = 10\% \text{ increase}$$
- Say:** Let's try another problem. Write b. From SL 15,000 to SL 12,000 in your exercise books.
 - First we determine the amount of change: $15,000 - 12,000 =$ decrease of 3000.
 - Now we take the amount of change and divide it by the original amount of 15,000.

c. Multiply the answer by 100 to change it to a percentage.

6. Write:

$$\frac{3,000}{15,000} = 0.2 \times 100 = 20\% \text{ decrease}$$

Guided Practice (10 minutes)

1. **Say:** Find the new quantities in the following questions.

- a. From 50 to 85 (Answer: $\frac{35}{80} = 0.7 \times 100 = 70\%$ increase)
- b. From 400 to 460 (Answer: $\frac{60}{400} = 0.15 \times 100 = 15\%$ increase)

2. **Say:** Find the new quantities in the following questions.

- a. From 24,000 to 12,000. (Answer: $\frac{12,000}{24,000} = 0.5 \times 100 = 50\%$ decrease)
- b. From 60 to 42 (Answer: $\frac{18}{60} = 0.3 \times 100 = 30\%$ decrease)

Independent Practice (10 minutes)

1. **Say:** Find the new quantities in the following questions.




- a. From 70km to 77km (Answer: $\frac{7}{70} = 0.1 \times 100 = 10\%$ increase)
- b. From SL90,000 to SL135,000. (Answer: $\frac{45,000}{90,000} = 0.5 \times 100 = 50\%$ increase)
- c. From 700cm to 910cm (Answer: $\frac{210}{700} = 0.3 \times 100 = 30\%$ increase)
- d. From SL60,000 to SL24,000 (Answer: $\frac{36,000}{60,000} = 0.6 \times 100 = 60\%$ decrease)
- e. From 18,000 to 9900 (Answer: $\frac{8,100}{18,000} = 0.45 \times 100 = 45\%$ decrease)
- f. From 120 to 96. (Answer: $\frac{24}{120} = 0.2 \times 100 = 20\%$ decrease)

2. Have pupils to exchange exercise books and check each other's work while you read the answer aloud.

Closing (5 minutes)

1. **Ask:** What is the first step to finding a percentage of change? Raise your hand to answer. (Answer: First we determine the amount of change.)
2. **Ask:** What do we do after we found the amount of change? Raise your hand to answer. (Answer: We divide it by the original amount.)
3. **Ask:** What is the last step to find the percentage? Raise your hand to answer. (Answer: We multiply it by 100 to find the percentage.)
4. **Say:** Good job today pupils. You solved problems to find the percentage of change.

Lesson Title: Word Problems Involving Money and Percentages	Theme: Everyday Arithmetic (Including Financial Literacy)	
Lesson Number: M-05-144	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to solve simple word problems involving money and percentages.	 Teaching Aids None	 Preparation Write or copy the word problems from the lesson on the board.
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Opening (5 minutes)

- Say:** Work with a partner. Convert the following to percentages.
- Write the following problems on the board:
 - $\frac{3}{4}$ (Answer: $\frac{3}{4} = \frac{x}{100} =$ multiply by 25 = $\frac{75}{100} = 75\%$)
 - $\frac{2}{5}$ (Answer: $\frac{2}{5} = \frac{x}{100} = \frac{40}{100} = 40\%$)
- Say:** We can write all of the questions we just solved as word problems.
- Say:** Today you will learn how to solve simple word problems involving money and percentages.

Introduction to the New Material (5 minutes)

- Say:** What kind of change is represented in the following questions?
- Write:** A large bottle of water this month was SL 12,000, as compared to SL 10,000 for last month. (Answer: increase by SL 2,000)
- Say:** Let's find the percentage of change for the cost of the bottle of water.
- Write:**

$$\frac{2,000}{10,000} = 0.2 \times 100 = 20\% \text{ increase}$$
- Say:** Now let's try another example. Write the following on the board:
The average amount for a meal in Freetown is SL23000 this year. Last year the average cost for a meal was SL 26,000. What is the change and was it an increase or decrease? (Answer: Decrease by 3,000)
- Say:** Let's find the percentage of change for how much the meal changed.
- Write:

$$\frac{3,000}{26,000} = 0.12 \times 100 = 12\% \text{ decrease}$$

Guided Practice (10 minutes)

- Put pupils in pairs.
- Write the following problems on the board:
 - The cost of bananas in bunches increased by 10% this year. If the cost of bananas was SL 2,000 for a bunch this year, what is the new price? (Answer: 10% of 2,000 = 200. New amount = old amount + change. New amount = 2000 + 200 = SL 2,200)

- b. If the cost for a week of top up is SL 4000 and 45% goes to internet data, how much goes to phone calls and text messages? (Answer: $4000 \times 0.45 = 1800$, therefore $SL4000 - SL1800 = SL2200$ for phone calls and texts.)
- c. If there is SL 64,000 to spend on party expenses. 80% will be spent on food, how much goes to the music and decorations? (Answer: 80% of 64000 = 51,200, therefore $64,000 - 51,200 = SL12,800$ on music and decorations)

Independent Practice (10 minutes)




1. Write the problems in your exercise books and solve them individually.
2. **Say:** Find the quantities in the following questions.
 - a. An ice cream shop sold at the park sold SL 40,000 in ice cream. 45% of the people had chocolate ice cream. How much money was used to purchase ice cream that was **not** chocolate? (Answer: $40,000 \times 45\% = 40,000 \times 0.45 = 18,000$, therefore $40,000 - 18,000 = SL22,000$ in sales came from other ice cream flavours.)
 - b. Students spend approximately SL10,000 on school supplies for the year. If SL2,000 is spent on pencils, what percentage is spent on exercise books? (Answer: $10,000 - 2000 = 8000$. 8000 divided by $10,000 = 0.8 \times 100 = 80\%$ are spent on exercise books)
 - c. A tourist group spends SL50,000 on admission to a park. The children's' tickets cost SL1000 and the adults' tickets cost SL2000. If there are 20 adults, what percentage did the tourist group spend on children? (Answer: $2000 \times 20 = 40,000$; $50,000 - 40,000 = 10,000$, $10,000$ divided by $50,000 = 0.2 \times 100 = 20\%$ spent on children's tickets)

Closing (5 minutes)

1. **Say:** Let's solve that last problem together on the board. What is the first step? Raise your hand to answer. (Answer: We find out how much money was spent on adult tickets. We multiply $SL2000 \times 20$ adults to get 40,000 for adult tickets.)
2. **Ask:** What is the next step after we find the amount spent on adult tickets? Raise your hand to answer. (Answer: Subtract this from the total amount spent. $50,000 - 40,000 = SL 10,000$)
3. **Ask:** What does the SL10,000 represent? Raise your hand to answer. (Answer: The amount of money spent on children's tickets.)
4. **Write:**

$$\frac{10,000}{50,000} = 0.2 \times 100 = 20\%$$
5. **Say:** Good job today pupils. You solved many problems involving percentages and money!

Lesson Title: Word Problems Involving Percentages of Quantities	Theme: Everyday Arithmetic (Including Financial Literacy)	
Lesson Number: M-05-145	Class/Level: Class 5	Time: 35 minutes

	Learning Outcomes By the end of the lesson, pupils will be able to solve problems involving percentages of quantities.		Teaching Aids None		Preparation Write or copy the word problems from the lesson on the board.
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Opening (5 minutes)

- Say:** Work with a partner. Answer the questions on the board.
- Write on the board: There are 340 pupils in a school. If the number has increased by 10% this year, how many pupils are in the school now? (Answer: 10% of 340 = 34. New amount = old amount + change. New amount = 340 + 34 = 374 pupils)
- Write on the board: There are 500 cars in a garage. 5% of these cars are on sale. How many cars in the garage are on sale? (Answer: 5% of 500 = 500 x 0.05 = 25 Therefore the number of cars on sale is 25.)
- Say:** Today you will be able to solve problems involving percentages of a quantity.

Introduction to the New Material (5 minutes)

- Write** the following question on the board: 25% of pupils at a school use public transport. If 800 total pupils come to school, how many walk to school?
- Say:** Let's solve this problem together to find the percentage of the quantity of pupils who use public transportation.
- Write:** 25% of 800 = 0.25 x 800 = 200 pupils use public transport
- Say:** Now we subtract this from the total: 800 – 200 = 600 walk to school.
Write the following question on the board: 1500 pupils took a test. If 1250 of them passed the exam, what percentage of the pupils did not pass the exam?
(Answer: 1500 – 1250 = 250; $\frac{250}{1500} \times 100 = 17\%$)

Guided Practice (10 minutes)

- Put pupils in pairs.
- Say:** Copy the following word problems and solve them with your partner.
- Write on the board:
 - 30 people signed up for a swimming competition, but only 15 turned up. What percentage of the people who signed up came on the day?
(Answer: 15/30 of 100 = 50%)
 - Daniel has taken 20 penalty kicks over the course of a season. He has scored 15 of these. What percentage of his penalty kicks has he **not** scored from?
(Answer: 15/20 x 100 = 75%, 100% - 75% = 25% on kicks he has not scored from)
 - A test has 20 questions. If Peter gets 80% correct, how many questions did Peter miss? (Answer: 80% of 20 = 80% x 20 = 0.80 x 20 = 16, 20 – 16 = 4 questions missed)




Independent Practice (10 minutes)

1. **Say:** Find the quantities in the following questions.
 - a. In a school, 25% of the teachers teach basic math. If there are 50 basic math teachers, how many teachers are there in the school? (Answer: 200 teachers total)
 - b. 24 pupils in a class took a mathematics test. If 18 pupils passed the test, what percent did not pass? (Answer: 25%)
 - c. A shop is offering a 20% discount on shirts. If the regular price is SL 15000, what is the discounted price? (Answer: SL 12,000)
 - d. There are 40 carpenters in a crew. On a certain day, 30 were present. What percent showed up for work? (Answer: 75%)

Closing (5 minutes)

1. Call pupils to the board to solve for the new quantities in the following questions:
 - a. A woman put SL58,000 into a savings account for one year. The rate of interest on the account was 5%. How much was the interest for the year? (Answer: SL2900)
 - b. Ben earns SL120,000 a year. About 15% is taken out for taxes. How much does he take home in the year? (Answer: SL102,000)
2. **Say:** Good job today pupils! You solved many problems to find the percentage of a quantity.

Lesson Title: Fractions and Ratio	Theme: Numbers and Numeration	
Lesson Number: M-05-146	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to convert fractions into ratios.	 Teaching Aids None	 Preparation None
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Opening (5 minutes)

1. Drill pupils on factors of numbers. For example, the factors of 20 are 1, 2, 4, 5, 10, 20.
2. Ask pupils to do simple division questions. For example, $35 \div 5 = 7$. Ask pupils to explain how they arrived at their answers.
3. **Say:** Today you will learn how to convert fractions into ratios.

Introduction to the New Material (7 minutes)

1. Group the pupils into pairs.
2. Ask pupils to define the meaning of the following words:
 - a. Fraction (Answer: Fraction means a portion of a quantity of items, numbers, people, or things. Examples of fractions are $\frac{3}{7}$, $\frac{2}{5}$, $\frac{1}{6}$)
 - b. Ratio (Answer: A ratio compares two numbers. The symbol : means 'to'.)
 - c. Convert (Answer: 'Convert' means change from one quantity to another.)
3. **Ask:** Fractions can easily be converted into a ratio using the symbol : which means to.
4. **Say:** Let's convert the following fractions into ratio form:
 - a. $\frac{10}{15}$ (Answer: 10:15)
 - b. $\frac{8}{13}$ (Answer: 8:13)
 - c. $\frac{7}{25}$ (Answer: 7:25)
 - d. $\frac{5}{7}$ (Answer: 5:7)

Guided Practice (8 minutes)

1. Ask pupils to work in pairs. Write sample questions on the board. Guide the pupils to solve them. Check on the groups. Give help to pupils who need it.
2. Write the following fractions on the board:
 - a. $\frac{17}{25}$ (Answer: 17:25)
 - b. $\frac{9}{12}$ (Answer: 9:12)
 - c. $\frac{14}{30}$ (Answer: 14:30)
 - d. $\frac{19}{47}$ (Answer: 19:47)
 - e. $\frac{25}{72}$ (Answer: 25:72)

Independent Practice (8 minutes)

1. **Say:** Work individually. Convert the following fractions into ratio form.
2. Write the following fractions on the board:
 - a. $\frac{22}{53}$ (Answer: 22:53)
 - b. $\frac{23}{96}$ (Answer: 23:96)

- c. $120/320$ (Answer: 120: 320)
- d. $18/63$ (Answer: 18:63)
- e. $16/49$ (Answer: 16:49)
- f. $7/81$ (Answer: 7:81)

Closing (7 minutes)

1. Invite the pupils to convert sample fractions into ratios on the board.
2. **Say:** Convert the following into ratio form:
 - a. $6/29$ (Answer: 6:29)
 - b. $20/64$ (Answer: 20:64)
 - c. $4/33$ (Answer: 4:33)
 - d. $28/112$ (Answer: 28:112)
 - e. $92/150$ (Answer: 92:150)

Lesson Title: Ratio and Fractions	Theme: Numbers and Numeration	
Lesson Number: M-05-147	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to convert ratios into fractions.	 Teaching Aids None	 Preparation None
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Opening (5 minutes)

1. Ask pupils to list factors of numbers. For example, the factors of 30 are 1, 2, 3, 5, 6, 10, 15, 30
2. Ask pupils to share items among a specific number of pupils. For example, $42 \div 6 = 7$. Ask pupils to explain how they arrived at their answers.
3. Write the day's topic and outcome on the board. Ask pupils to copy them into their exercise books.

Introduction to the New Material (5 minutes)

1. Group the pupils into pairs. Ask the pupils to explain the words 'fraction', 'ratio' and 'convert' to each other.
2. Write the definitions on the board. For example, 'convert' means to change.
3. Write the ratios below on the board.
4. **Say:** Let's convert the ratios into fractions.
 - a. $12:35 = 12/35$
 - b. $17:105 = 17/105$
 - c. $26:41 = 26/41$
 - d. $119:210 = 119/210$
 - e. $27:69 = 27/69$
 - f. $21:86 = 21/86$
5. **Say:** The first ratio represents the numerator, 'n'. The second ratio represents the denominator, 'd'. So, $n:d = n/d$
6. Write $n:d = n/d$ on the board.

Guided Practice (8 minutes)

1. **Say:** Work in pairs. Convert the following ratios into fractions.
2. Write the following ratios on the board:
 - a. 16: 108 (Answer: 16/108)
 - b. 38: 58 (Answer: 38/58)
 - c. 34: 112 (Answer: 34/112)
 - d. 60:130 (Answer: 60/130)
 - e. 72:100 (Answer: 72/100)
 - f. 19:38 (Answer: 19/38)
3. Walk around and check pupils' work. Guide pupils to arrive at the expected answers.




Independent Practice (10 minutes)

1. **Say:** Work individually. Solve the questions on the board in your exercise books. Convert the ratios into fractions.
2. Write the following ratios on the board:
 - a. 27:65 (Answer: 27/65)
 - b. 9:17 (Answer: 9/17)
 - c. 40:145 (Answer: 40/145)
 - d. 13:75 (Answer: 13/75)
 - e. 92:108 (Answer: 92/108)
 - f. 120:150 (Answer: 120/150)

Closing (7 minutes)

1. Write the following ratios on the board. Call on pupils to convert the ratios into fractions on the board.
 - a. 8:15 (Answer: 8/15)
 - b. 16:55 (Answer: 16/55)
 - c. 67:100 (Answer: 67/100)
 - d. 28:48 (Answer: 28/48)
 - e. 36:48 (Answer: 36/48)
2. **Say:** Good job today pupils! You converted ratios into fractions.

Lesson Title: Writing a Ratio in its Lowest Form	Theme: Numbers and Numeration	
Lesson Number: M-05-148	Class/Level: Class 5	Time: 35 minutes

	Learning Outcomes By the end of the lesson, pupils will be able to write ratios in their simplest form/term.		Teaching Aids None		Preparation None
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Opening (5 minutes)

- Say:** Solve the following problems:
 - $6 \div 2$ (Answer: 3)
 - 10×3 (Answer: 30)
 - $24 \div 3$ (Answer: 8)
 - $45 \div 9$ (Answer: 5)
- Ask pupils to convert the following ratios in fractions:
 - $32 : 43$ (Answer: $\frac{32}{43}$)
 - $12 : 25$ (Answer: $\frac{12}{25}$)
 - $34 : 68$ (Answer: $\frac{34}{68}$)
- Say:** Today you will learn how to write ratios in their simplest form.

Introduction to the New Material (8 minutes)

- Say:** A ratio is in the 'simplest' or 'lowest' form or term when the 2 numbers have no common factor.
- Say:** First write the ratio into a fraction. Then divide through by the greatest common factor. Divide until the ratio has no common factor other than 1. Then re-write the solution fraction as a ratio.
- Say:** Express $18 : 42$ in its simplest form.
- Write on the board: $\frac{18 \div 6}{42 \div 6} = \frac{3}{7} = 3:7$
- Say:** Write each ratio in the simplest form.
 - $30g : 80g$ (Answer: $\frac{30 \div 10}{80 \div 10} = \frac{3g}{8g} = 3g : 8g$)
 - $45m : 30m$ (Answer: $\frac{45 \div 15}{30 \div 15} = \frac{3}{2} = 3m : 2m$)
 - $400 : 250$ (Answer: $\frac{400 \div 50}{250 \div 50} = \frac{8}{5} = 8 : 5$)
 - $2 \text{ hrs} : 60 \text{ minutes}$ (Answer: $\frac{120 \div 60}{60 \div 60} = \frac{2}{1} = 2 : 1$)

Guided Practice (10 minutes)

- Say:** Work in pairs. Express the following ratios in their lowest terms.
- Write the following questions on the board and guide the pupils to solve. Move around from group to group to assist them.
- Write on the board:
 - $20 : 35$ (Answer: $\frac{20 \div 5}{35 \div 5} = \frac{4}{7} = 4 : 7$)

- b. $45 : 105$ (Answer: $\frac{45 \div 15}{105 \div 15} = \frac{3}{7} = 3 : 7$)
- c. $90 : 45$ (Answer: $\frac{90 \div 45}{45 \div 45} = \frac{2}{1} = 2 : 1$)
- d. $170 : 50$ (Answer: $\frac{170 \div 10}{50 \div 10} = \frac{17}{5} = 17 : 5$)
- e. $420 : 60$ (Answer: $\frac{420 \div 60}{60 \div 60} = \frac{7}{1} = 7 : 1$)

Independent Practice (10 minutes)

1. **Say:** Work independently. Write the ratios in their simplest forms.

- a. $24 : 30$ (Answer: $\frac{24 \div 6}{30 \div 6} = \frac{4}{5} = 4 : 5$)
- b. $27 : 9$ (Answer: $\frac{27 \div 9}{9 \div 9} = \frac{3}{1} = 3 : 1$)
- c. $40 : 160$ (Answer: $\frac{40 \div 40}{160 \div 40} = \frac{1}{4} = 1 : 4$)
- d. $35 : 105$ (Answer: $\frac{35 \div 35}{105 \div 35} = \frac{1}{3} = 1 : 3$)
- e. $48 : 60$ (Answer: $\frac{48 \div 12}{60 \div 12} = \frac{4}{5} = 4 : 5$)




Closing (5 minutes)

1. Ask pupils to write come to the board and write the following ratios in their simplest forms:

- a. $96 : 40$ (Answer: $12 : 5$)
- b. $200 \div 25$ (Answer: $8 : 1$)
- c. $30 : 300$ (Answer: $1 : 10$)

2. **Say:** Good job today pupils! You expressed ratios in their simplest form.

Lesson Title: Sharing Quantities Using Ratios	Theme: Numbers and Numeration	
Lesson Number: M-05-149	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to share quantities using the ratio method.	 Teaching Aids None	 Preparation None
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Opening (5 minutes)

- Lead pupils in a mental drill. Ask pupils to change the ratios into their simplest forms.
 - 9 : 27 (Answer: 1:3)
 - 24 : 16 (Answer: 3 : 2)
 - 25 : 75 (Answer: 1 : 3)
 - 60 : 150 (Answer: 2 : 5)
- Ask pupils to write simple ratios into their lowest forms. For example: $12 : 34 = \frac{12 \div 2}{34 \div 2} = \frac{6}{17} = 6 : 17$
- Ask pupils to explain how they arrived at their answers.
- Say:** Today you will be able to share quantities using the ratio method.

Introduction to the New Material (5 minutes)

- Say:** Quantities are said to be shared in ratio by comparing what the individuals involved in the sharing received. The sharing ratio may be different or same. When using ratio to share:
 - Add the given ratios to get the total ratio.
 - Write the individual ratio out of the total ratio and then multiply the quantity of the items being shared.
 - Cancel by using a common factor.
 - Multiply the remainders to get the respective answers of what each received.
- Say:** Share the following items using the ratio given.
 - 36 oranges shared into ratio 4:5 (Answer: Ratio = 4:5. Total ratio = 9; therefore $\frac{4}{9} \times \frac{36}{1} = 16$ and $\frac{5}{9} \times \frac{36}{1} = 20$. 16 and 20 oranges so the ratio is 16:20)
 - 150 books shared into the ratio 9:6 (Answer: 90 books, 60 books or 90:60)
 - Share 135 mangoes into the ratio 3:6 (Answer: 45 mangoes, 90 mangoes or 45:90)
 - 1,440 pencils shared in the ratio 5:7 (Answers: 600 pencils, 840 pencils or 600:840)

Guided Practice (8 minutes)

- Say:** Work in pairs. Share the items into the given ratios.
- Write the questions on the board. Check pupils' work and guide the pupils to solve the questions.
 - Share 1320 items into the ratio 7:4 (Answer: 840, 480 or 840:480)
 - 275 drawing clips shared into the ratio 2:3 (Answer: 110 clips, 165 clips or 110:165)
 - Find the share if 1170 measuring cups were shared into the ratio 8:5. (Answer: 720 cups, 450 cups or 720:450)
 - Share 300 apples into the ratio 7:8 (Answer: 140 apples, 160 apples)




Independent Practice (10 minutes)

1. Write questions on the board and ask the pupils to solve. Ask pupils to divide the following items using the ratio concept. Ask pupils to work individually in their exercise books.
 - a. Share 350 wrist watches into the ratio 3:7 (Answer: 105 wrist watches, 245 wrist watches or 105:245)
 - b. Divide 7200 into the ratio 3:5 (Answer: 2700, 4500 or 2700:4500)
 - c. Share 160 balls into the ratio 7:13 (Answer: 56 balls, 104 balls or 56:104)
 - d. Divide 2700 Note books into the ratio 7:2 (Answers: 600 exercise books, 2100 exercise books or 600:2100)

Closing (7 minutes)

1. Call pupils to the board to share the following items using the ratio concept.
 - a. Share 2568 drawing boards into the ratio 5:7. (Answer: 1070, 1498 or 1070:1498)
 - b. Divide 96 bananas into the ratio 2:6. (Answer: 24, 72 or 24:72)
2. **Say:** Good job today pupils! You shared items using a specific ratio.

Lesson Title: Word Problems with Ratios	Theme: Numbers and Numeration	
Lesson Number: M-05-150	Class/Level: Class 5	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to solve word problems involving ratios.	 Teaching Aids None	 Preparation None
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Opening (5 minutes)

- Say:** Using the ratio concept, answer the following questions.
 - 150 eggs were shared into a ratio of 7:8 (Answer: 70 eggs and 80 eggs or 70:80)
 - Share 147 oranges into the ratio 3:4 (Answer: 63 oranges and 84 oranges or 63:84)
- Say:** Today you will solve word problems involving ratios.

Introduction to the New Material (5 minutes)

- Say:** Word problems involve persons and items (people who shared the items and the items being shared).
- Say:** Solve the following word problems:
 - A box contains 35 red books and 17 blue books. What is the ratio of red books to blue books? (Answer: Red books = 35. Blue books = 17 Red books to blue books = 35:17)
 - Mr. Robertson bought 168 exercise books. He gave them to his 2 sons, Noah and Peter, in the ratio 4:3. How many exercise books did Peter receive? (Answer: 84 exercise books)

Guided Practice (8 minutes)

- Say:** Work in pairs. Solve the following questions with a partner.
 - Mrs. French has a piece of land that measures 8,480 acres. She shared it among her 2 children, Beverly and Michelle, in the ratio 5:3. How much land do Beverly and Michelle each have? (Answer: Beverly's ratio = 5. Michelle's ratio = 3 Total ratio = 8. Beverley's share = $\frac{5}{8} \times 8480 = 5 \times 1060 = 5300$ acres. Michelle's share = $\frac{3}{8} \times 8480 = 3 \times 1060 = 3180$ acres)
 - A man divided his monthly wage of SL108000 into the ratio 5:7 on rent and food. Find the amount spent on rent. (Answer: SL45000)
 - A trader shared a rope of a length 260m into the ratio 6:7. Calculate the length of each piece of rope. (Answer: 120m and 140m)
 - 96,480 textbooks were shared between 2 Basic schools in Ghana in the ratio 8:4. How many books did each school receive? (Answer: 64320 and 32160 books)

Independent Practice (10 minutes)

- Ask pupils to work independently to solve the following word problems in their exercise books:

- a. A television station has 15,650 channels and has grouped them into entertainment and news in the ratio 6:4 respectively. How many channels will each segment have?
(Answer: 9390 channels for entertainment and 6360 channels for news)
- b. Madam Joyce baked 10500 loaves of bread and shared them between her customers Rita and Rose in the ratio 6:9. Calculate the loaves of bread received by each of the customer. (Answer: 4200 for Rita and 6300 for Rose)
- c. Mirna and Mina went to buy 24,000 cartons of fish and shared them into a ratio of 8:12
- d. Find the share of each of them. (Answer: 9600 for Mirna and 14400 for Mina)
- e. Joan shared 280 packets of crayons to Tracy and Trude in the ratio 3:4. How many packets of crayon will each receive? (Answer: 120 packets for Tracy and 160 packets for Trude)

Closing (7 minutes)

1. Call pupils to the board to solve the following problems.
 - a. Bernard distributed 10,000 boxes of toffees to his friends, John and Joshua, in the ratio 5: 3. How many boxes will John and Joshua each receive? (Answer: 6250 and 3750)
 - b. 18,600 books were packed into 2 shelves in the ratio 2: 4. Find the number of books each shelf contains. (Answer: 6200 and 12400)
 - c. A school has a pupil population of 17,800. The ratio of boys to girls is 6:4. Find the population of boys and of girls in the school. (Answer: 10,680 and 7120)
2. **Say:** Good job today pupils! You solved word problems involving ratio shares.

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