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The Essential Series

Math Understood
TEACHING GUIDE

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Plan Your Work and Work Your Plan

Before creating a lesson plan, it's essential to understand the art of teaching. Effective teaching involves connecting with students' daily lives and revisiting previously learned material. A well-structured lesson plan is crucial to engaging every student in the classroom. There are three key components to lesson planning:

A.   Curriculum:

A curriculum should be tailored to meet students' needs and school objectives, avoiding overambition and haphazard planning, particularly in math education.

B.   Instruction:

Teachers can use various methods, such as verbal explanations, visual aids, and inquiry-based learning, to deliver instruction. The best teachers adapt their approach to suit their students' needs, continuously updating their skills and methodology.

C.   Evaluation:

Evaluation is a tool to assess not only students' understanding but also the effectiveness of the teacher's instruction. It helps teachers refine their approach and ensure students achieve their full potential. By considering these three facets, teachers can create comprehensive lesson plans that promote meaningful learning and student engagement.

D.   Long-term Lesson Plan

A long-term lesson plan covers the entire term and typically involves school coordinators outlining the core syllabus and unit studies. When planning, two crucial factors to consider are:
- **Time frame:** Allocating sufficient time for each topic to ensure comprehensive coverage.
- **Prior knowledge:** Assessing students' existing knowledge of the topic to inform the planning process.

An experienced coordinator will consider the topic's complexity and the students' ability to grasp it within the given time frame. Assigning the optimal number of lessons for each topic is essential to avoid overspending time on easier topics, which could impact the time needed for more challenging topics later.

E.   Suggested Unit Study Format

Weeks	Dates	Month	Number of Days	Remarks

Short-term Lesson Planning

The responsibility of the course teacher. The term "lesson" originates from the Latin word "lectio," meaning the action of reading, but in this context, it refers to the action of teaching a topic in the classroom. To plan a topic effectively, consider the following suggested format, while also being open to adapting and improving your approach based on your school's and colleagues' methods.

When planning a lesson, consider the following steps:
1. Topic: Identify the topic title.
2. Overview: Assessing students' prior knowledge of a topic is a crucial step in the learning process, involving the evaluation of what students already know, understand, and can do related to the topic before instruction begins.
To assess prior knowledge, teachers can use various methods, including:

- **Pre-assessment quizzes** or tests to gauge students' understanding of the topic.
- **Class discussions** to explore students' thoughts, ideas, and experiences related to the topic.

By assessing prior knowledge, teachers can create a more effective and engaging learning environment, ultimately leading to better student outcomes.

3. Objectives: Clearly defining the learning objectives for a topic is a crucial step in the lesson planning process. Learning objectives specify what students are expected to know, understand, and be able to do by the end of the lesson or topic.

By clearly defining learning goals, teachers can create a roadmap for instruction, guide assessment, and promote student understanding, ultimately leading to more effective teaching and learning.

4. Time Frame: Accurately estimating the time required for each topic is vital to ensure a successful lesson plan. However, class dynamics can be unpredictable, and flexibility is essential to adapt to the unique needs and responses of each class. Note that introductory sessions often require more time, but as the topic progresses, students may learn faster, allowing for potential reductions in the allocated timeframe.

To effectively manage classroom time, teachers should:
- establish a general time frame for each topic,
- be prepared to adjust as needed,
- monitor student progress,
- prioritize essential tasks,
and leave buffer time for unexpected events or questions, ensuring a flexible and adaptive lesson plan.

5. Methodology: This refers to how you will demonstrate, discuss, and explain the topic to your students. Effective methodology involves using a range of teaching methods to cater to different learning styles, incorporating technology, providing opportunities for questions and feedback, and encouraging active learning through group work and problem-solving activities. By using varied methodologies, teachers can create an engaging, interactive, and student-centred learning environment that promotes deeper understanding and application of the topic.

6. Resources Used: Refers to the materials and tools needed to support teaching and learning.

- **Tangible materials:** Everyday objects that will help students to visualize and understand complex concepts.
- **Printed materials:** Exercise books, worksheets, and test worksheets to provide students with hands-on practice and assessment opportunities.
- **Assignments and projects:** Longer-term tasks that require students to apply their knowledge and skills.
- **Digital resources:** Online tools, software, and multimedia resources, such as educational apps, videos, and interactive simulations, to enhance engagement and understanding.

By identifying and listing the resources needed, teachers can ensure that they have everything required to deliver effective instruction and support student learning.

7. Continuity: Continuity refers to reinforcing learning throughout a topic to ensure students retain and build upon previously acquired knowledge. To achieve continuity, teachers can alternate between class work and homework, gradually increase task difficulty, use varied teaching methods and resources, and provide regular feedback and assessment. By planning for continuity, teachers help students develop a strong foundation of knowledge and skills, making connections between lessons and topics, and promoting deeper understanding and application of the subject matter.

8. Supplementary Work: To further enhance student learning, teachers can consider additional activities to complement their instruction.

- **Group projects or individual research:** Encourage students to work collaboratively or independently on projects that delve deeper into the topic, promoting critical thinking, problem-solving, and creativity.
- **Presentations or assignments:** Provide opportunities for students to demonstrate their understanding through presentations, reports, or other assignments, helping to develop their communication and critical thinking skills.

9. Evaluation: Ongoing assessment is essential to monitor student progress, identify areas of improvement, and inform teaching adjustments. Strategies include:

- **Regular quizzes and self/peer correction:** Administer quizzes to check students' understanding and provide opportunities for self-reflection and peer feedback.
- **Formal tests at the end of the topic:** Conduct comprehensive tests to assess students' mastery of the topic and identify areas where they may need additional support.
- **Continuous monitoring of student progress:** Regularly review student work, observe their participation, and engage in one-on-one discussions to inform teaching adjustments and ensure students are on track to meet learning objectives.

By incorporating supplementary work and ongoing evaluation, teachers can create a comprehensive and supportive learning environment that fosters student growth and achievement.

Introduction to the Teaching Guide

Features of the Guide

This teaching guide serves as a comprehensive resource to support educators in designing and delivering structured, effective, and engaging lessons. Organized into carefully curated sections, it aims to equip teachers with the tools and strategies necessary to enhance both their instructional approach and student learning outcomes.

Concept Builder Notes

The Concept Builder Notes provide an in-depth exploration of key topics, offering a clear and concise framework of essential ideas and concepts. This section is designed to ensure educators possess a thorough understanding of the subject matter, forming a strong foundation for effective teaching.

Scheme of Work

The Scheme of Work outlines a meticulously planned roadmap for each lesson, incorporating well-defined learning objectives, interactive activities, and meaningful assessments. This structured approach enables educators to deliver lessons with clarity, coherence, and purpose.

Step-by-Step Guide

The Step-by-Step Guide offers a detailed sequence of instructional steps, facilitating seamless lesson delivery. By breaking down the teaching process into manageable stages, this section provides educators with a clear framework to ensure lesson objectives are met effectively.

Review Exercises

The Review Exercises section presents a variety of thoughtfully designed activities to consolidate student learning and assess progress. These exercises assist in identifying areas for improvement and reinforcing critical concepts, fostering a deeper understanding of the material.

This teaching guide is designed to be a reliable and practical tool, empowering educators to achieve excellence in teaching and learning. By integrating these resources into your practice, you can create a meaningful and impactful educational experience for your students.

To enhance accessibility, all resources are also available via QR codes provided at the end of each unit.

Scheme of Work

Unit: _____   **Estimated number of Lessons:** _____

Specific Learning Outcomes

It is the change/improvement that is expected in the Knowledge/attitude/skills of students by the end of a lesson. The teachers are expected to list the SLO of the lesson in the precise format. There can be more than one SLO for a lesson, but they should be SMART.

Prior Knowledge Assessment

Here the teacher will list small and clear questions, which will be asked during the lesson to assess the awareness of the students to teach new concepts and skills. These questions may be asked randomly or in the form of quiz but should not take too much time. This drill not only demonstrates the readiness of students to learn as well as creates stimulus for learning.

Teachers are not required to put in black and white, but they must have clear concept of the possible answers, which are expected from the students, of the listed questions.

Resources

Devise a very short activity or strategy of a few minutes to get the attention of the students and detach them from the previous lesson. Instead of directly starting with the content of the lesson, this activity should contain something of interest to children. It could be a small discussion about scientific exploration, some interesting facts about the current topic or its application in real-life situations. Even something humorous may be a quality joke (if you can handle the response of students after that).

Next outline the activities and the steps of teaching in a sequence with clear specifications and their impact upon learning of the students.

Class Assignment:

Here the teacher will specify the written work, which will be done by students in notebooks during the lesson in the class.

Home Assignment

Here the teacher will specify the work which will be done by students at home.

Home assignments should be neither the repetition of the same work done in the class nor something very new in the topic. It should be based on what students have learnt in the class and either should reinforce the concepts or be the extension of them.

Evaluation

Evaluation should be done within the lesson on any activity which is the part of lesson or teacher will devise a tool with a clear criterion to assess the learning of students. It should be directly derived from the learning objectives of the lesson confirming the change/ improvement, which was expected

in the knowledge/attitude/skills of the students.

Remember that home assignments cannot be used as an evaluation tool.

Teachers should evaluate pupils during and after learning to identify what they have learned and how well they have learned it. Assessments help teachers understand their pupils' knowledge and adjust their approach to help them achieve learning goals.

Assessment is an ongoing process. Pupils can be assessed through formative and summative assessment. Ways to evaluate teaching and students learning.

Oral assessment: By asking concept check questions.

Written assessment: Through quizzes, games, classwork, homework, test at the completion of the topic.

Teacher's assessment: Simplest way to assess pupils' performance is through conversation that is engaging them in discussions. To save time just call a pupil and talk about a specific idea, while the others are working. An other way is observation, while they're doing activities that are assigned in the classroom. Pupils' can also be easily observed by watching them solve one or two questions.

Peer assessment: Pupils provide feedback on their classmates' work. This helps students understand their own work and the work of their peers.

Personal assessment: Pupils can evaluate themselves, which will help them think about their own performance.

Contents

Whole Numbers

Bilingual Concept Builder Notes

Competency 1

Identify the place value of digits in the given number up to hundred thousand. Write the names of the numbers up to the place value hundred thousand as well as in expanded and standard form.

Stimulus: The pupils are already familiar with counting in four digits. A little recap of reading and writing the names of four digit numbers will provide a stimulus to start five-digit numbers. Use the following example on board to elaborate place value of a specific digit up to hundred thousand in expanded form as well as in words.

Hundred Thousand	Ten Thousand	Thousand	Hundred	Ten	One
8	6	5	7	4	2
865,742					
800,000 + 60,000 + 5,000 + 700 + 40 + 2					
Eight hundred sixty-five thousand, seven hundred forty-two					

Classwork: Let your pupils complete Exercise A under your supervision.

Competency 2

Identify the smaller and the larger number by comparing the number of digits and the digits at the same place value. Furthermore to this, they will apply the same skill to write given numbers in 'ascending' or 'descending' order.

Rationale: By now, pupils are well aware of comparison of numbers. Now focus on left-hand side number. Explain to them how to insert less than greater than, and equal to symbols between the two given numbers. Elaborate to pupils that while comparing two numbers remember, the number with more digits is bigger. In the case of the same number of digits, the number with the larger digit at the place value 'hundred thousand' is bigger. If the digits at the place value 'hundred thousand' are the same, the number with the larger digit at the place value 'ten thousand' is bigger. In case the digits at the place value 'ten thousand' are also the same, the number with the larger digit at the place value

قابلیت ۱

طلبہ اس قابل ہوسکیں کہ سو ہزار تک دیے گئے اعداد میں ہندسوں کی مقامی قیمت کو شناخت کرسکیں۔ انھیں الفاظ میں لکھ سکیں اور اعداد کو expanded form میں بھی لکھ سکیں۔

محرک: طلبہ چار ہندسوں میں گنتی لکھنے پڑھنے سے پہلے ہی واقف ہیں۔ لہذا چار ہندسی اعداد کے نام پڑھنے اور لکھنے کا معمولی سا اعادہ انھیں پانچ ہندسوں والے اعداد کو سیکھنے کے لیے بطور محرک کام کرے گا۔ ہر مخصوص ہندسے کی مقامی قیمت کو سو ہزار تک Decimal mark کے ساتھ expanded form لکھنے کا طریقہ اور انھیں الفاظ میں لکھنے کا طریقہ طلبہ کو سکھانے کے لیے درج ذیل مثال کو بورڈ پر وضاحت سے سمجھائیے۔

Hundred Thousand	Ten Thousand	Thousand	Hundred	Ten	One
8	6	5	7	4	2
865,742					
800,000 + 60,000 + 5,000 + 700 + 40 + 2					
Eight hundred sixty-five thousand, seven hundred forty-two					

کلاس ورک: طلبہ کو اپنی نگرانی میں مشق 1A مکمل کرنے دیجیے۔

قابلیت ۲

طلبہ ہندسوں کی تعداد اور ہندسوں کی مقامی قیمت کا موازنہ کرتے ہوئے چھوٹے سے چھوٹے اور بڑے سے بڑا عدد شناخت کرسکیں گے اس کے ساتھ ہی وہ دیے گئے اعداد کو صعودی (ascending) یا نزولی (descending) ترتیب میں لکھنے کے لیے اسی مہارت کو استعمال کریں گے۔ ترتیب میں لکھنے کے لیے اسی مہارت کو استعمال کریں گے۔

استدلال: طلبہ نے اب تک اعداد کا موازنہ کرنا بخوبی سیکھ لیا ہے۔ لہذا اب بائیں طرف (left-hand side) کے نمبر پر توجہ مرکوز کرتے ہوئے انھیں بتائیے۔ دیے گئے دو اعداد کے درمیان مساوی (equality) اور غیر مساوی (inequality) علامت کیسے لگائی جاتی ہے۔ طلبہ کو وضاحت کے ساتھ سمجھائیے کہ دو اعداد کا موازنہ کرتے یہ بات یاد رکھیے کہ ان میں زیادہ ہندسوں والا عدد بڑا ہندسوں کی یکساں ہونے کی صورت میں، ہم ہندسوں کا موازنہ ان کی مقامی قیمت کی بنیاد پر کرتے ہیں۔ جیسے لاکھ (hundred thousand) کے مقام پر جس عدد کا ہندسہ بڑا ہے وہ عدد بھی بڑا ہو گا۔ اگر اس مقام پر موجود ہندسہ ایک سے ہوں تو پھر دس ہزار (ten thousand) کی مقامی قیمت پر جس عدد کا ہندسہ بڑا ہو گا وہ عدد بھی بڑا ہو گا۔ اگر اس مقام پر موجود ہندسہ ایک سے ہوں تو پھر ہزار (thousand) کی مقامی قیمت پر بڑے ہندسے والا عدد بڑا ہو گا اسی طرح ضرورت پڑے تو ہم چھوٹے ہندسوں کا موازنہ بھی کریں گے۔

'thousand' is bigger. In the same way, compare smaller digits if needed.

is equal to	=
smaller / less than	<
bigger / greater than	>

If the left-hand side number is smaller than the other number, then insert the less than symbol. For example, 34,543 < 34,553.

If the left-hand side number is bigger than the other number, then insert the greater than symbol. For example, 12,553 > 12,552.

If the left-hand side number is equal to the other number, then insert the less than symbol. For example, 294,541 = 294,541.

Classwork: Let your pupils complete Exercise B.

provide them with the opportunity to learn how to write given numbers in ascending and descending order.

is equal to	=
smaller / less than	<
bigger / greater than	>

اگر دیے گئے دو اعداد میں بائیں طرف کا عدد چھوٹا ہے تو ان کے درمیان یہ علامت (>) لگائی جاتی ہے۔ جیسے 34,553 > 34,543

اگر دیے گئے دو اعداد میں بائیں طرف کا عدد بڑا ہے تو ان کے درمیان یہ علامت (<) لگائی جاتی ہے۔ جیسے 12,552 < 12,553

اگر دیے گئے دو اعداد میں بائیں طرف کا عدد دائیں طرف کے عدد د مساوی یا برابر ہے تو یہ علامت (=) لگائی جاتی ہے۔ جیسے 294,541 = 294,541

کلاس ورک : طلبہ کو اپنی نگرانی میں مشق B مکمل کرنے کا موقع دیجیے۔

طلبہ کو دیے گئے اعداد کو صعودی اور نزولی ترتیب میں لکھنے کا طریقہ سیکھنے کا موقع دیجیے۔

Scheme of Work

Unit 1: Whole Numbers
Estimated Number of Periods: 20

Specific Learning Outcomes	Number of Periods
Identify place values of digits up to one hundred thousand (100,000).	4 Periods
Read numbers up to one hundred thousand (100,000).	2 Periods
Write numbers up to one hundred thousand (100,000).	3 Periods
Write numbers in words up to one hundred thousand (100,000).	4 Periods
Compare and order numbers up to 5 digits.	4 Periods
Revision	3 Periods

Prior Knowledge Assessment

- Pupils have already learnt to identify the place value of numbers up to 5-digits.
- Pupils are aware of comparing two numbers using symbols and ordering of a set of numbers in ascending and descending order.
- They are familiar with the idea of greater and lesser, so it shouldn't be too difficult for them.

Resources

Suggested manipulatives that can be used to create interest and create a link to the topic.
- Hundred thousand place value mat
- Hundred thousand place value grid display poster
- Activity Cards having numerals on one side and their names on the other side.

Front   Black

1	2	ONE	TWO
3	4	THREE	FOUR
5	6	FIVE	SIX

Written Assignments

Exercises	Class Assignment	Home Assignment
Exercise A	Q1 (a - f) Q2 (a, b, c, f, g, h) Q3 (d, f, g, h, i) Q4 (a, d, e, f, g, h) Q5 (a, b, e, f, g, h)	Q1 (g - h) Q2 (d, e) Q3 (a, b, c) Q4 (b, c) Q5 (c, d)
Exercise B	Q1 (a, b, c, d, e) Q2 (a, b, c, d, e) Q3 (c - h) Q4	Q1 (f, g, h) Q2 (f, g, h) Q3 (a, b)

Evaluation

Ways to evaluate teaching and students learning.

- Oral assessment
- Written assessment.
- Teacher's assessment
- Peer assessment
- Personal assessment

Review Exercise

1. Write the place value of coloured digits.
   a. 23,**5**01
   b. **3**61,789
   c. 104,3**6**5
   d. 92,73**4**
   e. 6**9**,021
   f. 7**4**3,000

2. Write the expanded form of the following numbers.
   a. 4378 = _____
   b. 92371 = _____
   c. 192656 = _____
   d. 534877 = _____

3. Write the following numbers in words.
   a. 43927
   b. 420551
   c. 573005
   d. 100297
   e. 989898
   f. 674150

4. Write the following in numerals.
   a. Sixty-four thousand, nine hundred forty-one

   _____

   b. Five hundred forty-nine thousand, seven hundred sixty-three

   _____

   c. Seven hundred thirty-six thousand, two hundred forty-eight

   _____

   d. Three hundred twenty-nine thousand, one hundred thirty-two

   _____

   e. Nine hundred ninety-nine thousand, nine hundred and ninety-nine

   _____

5. Compare the following numbers using symbols <, >, =.

    a. 182 _____ 8276

    b. 26,734 _____ 26,834

    c. 90,003 _____ 89,990

    d. 432,561 _____ 425,734

    e. 123,742 _____ 124,742

    f. 520,331 _____ 520,331

6. Write the following numbers in ascending order.

    a. 93,215; 97,563; 90,563

    b. 32,674; 23,789; 55,489

    c. 12,698; 10,258; 13,698

    d. 52,340; 54,569; 42,365

7. Write the following numbers in descending order.

    a. 13,450; 14,534 10,369

    b. 77,129; 17,720; 21,717

    c. 56,003; 52,009; 59,000

    d. 35,952; 39, 457; 63, 458

Answer Key

1. **a.** tens   **b.** hundreds   **c.** ones   **d.** ones   **e.** tens   **f.** thousands

2. **a.** 4378 = 4000 + 300 + 70 + 8

   b. 92371 = 90000 + 2000 + 300 + 70 + 1

   c. 192656 = 100000 + 90000 + 2000 + 600 + 50 + 6

   d. 534877 = 500000 + 30000 + 4000 + 800 + 70 + 7

3. **a.** Forty-three thousand nine hundred twenty-seven

   b. Four hundred twenty thousand five hundred fifty-one

   c. Five hundred seventy-three thousand five

   d. One hundred thousand two hundred ninety-seven

   e. Nine hundred eighty-nine thousand eight hundred ninety-eight

   f. Six hundred seventy-four thousand one hundred fifty

4. **a.** 64,941   **b.** 549,763   **c.** 736,248   **d.** 329,132   **e.** 999,999

5. **a.** <   **b.** <   **c.** >   **d.** >   **e.** <   **f.** =

6. **a.** 90,563; 93,215; 97,563   **b.** 23,789; 32,674; 55,489

   c. 10,258; 12,698; 13,698   **d.** 42,365; 52,340; 54,569

7. **a.** 14,534; 13,450; 10,369   **b.** 77,129; 21,717; 17,720

   c. 59,000; 56,003; 52,009   **d.** 63,458; 39,457; 35,952

Bilingual Concept Builder Notes

Competency 1

Pupils will learn to add five-digit and six-digit numbers with carrying and apply the same skill to real-life problems.

Rationale: Pupils have already developed the skills to add four to five-digit numbers with and without carrying. They are acquainted with numbers having digits at 'ones', 'tens', 'hundreds' and 'thousand', and 'ten thousand' Just introduce them with the place value of 'hundred thousand' and recap the addition process with some simple examples from five-digit to six-digit numbers.

Classwork: Carry out questions given in Exercise A.

Competency 2

Pupils will learn to subtract the five-digit numbers with borrowing and apply the same skill to real-life problems.

Stimulus: Pupils have learnt subtraction in previous classes. Elaborate to them that first the digits of the same place value are written under each other and then subtracted. Ask them small questions like:

- How will you read 978,45 – 899,56?

(899,56 is subtracted from 978,45) or (Subtract 899,56 from 978,45)

- What is being subtracted?

$$899,56$$

- From which number subtraction is being carried out?

$$978,45$$

$$
\begin{array}{r}
9\ 7\ 8,\ 4\ 5 \\
-\ 8\ 9\ 9.\ 5\ 6 \\
\hline
7\ 8\ \ 8\ 9 \\
\hline
\end{array}
$$

Classwork: Complete Exercise B.

قابلیت ۱

طلبہ ۵ ہندسی اور ۶ ہندسی اعداد کو حاصل (carry) کے ساتھ جمع کرنا سیکھیں گے اور حقیقی زندگی میں اس مہارت کا اطلاق کریں گے۔

محرک: طلبہ نے ۴ سے ۵ ہندسی اعداد کو حاصل (with carry) کے ساتھ اور بغیر حاصل (without carry) کے جمع کرنا سیکھ لیا ہے۔ وہ اکائی، دہائی، سیکڑہ، ہزار اور دس ہزار والے ہندسی اعداد سے بھی واقف ہیں لہذا الاکھ (hundred thousand) کی مقامی قیمت کو متعارف کروانے سے پہلے انھیں جمع کے عمل کا اعادہ کرائیں۔ ۵ اور ۶ ہندسی اعداد کو جمع کرنے کی منفرد مثالوں کے ذریعے کروائیے۔

کلاس ورک: مشق A کے سوالات کروائیے۔

قابلیت ۲

طلبہ پانچ ہندسی اعداد کو ایک ادھار لیے بغیر/بغیر حاصل لیے تفریق کرنا سیکھیں گے اور زندگی میں سے جڑے عبارتی سوالات کو حل کرتے ہوئے اس مہارت کا اطلاق کریں گے۔

محرک: طلبہ پچھلی جماعتوں میں تفریق کا عمل سیکھ چکے ہیں۔ انھیں وضاحت سے سمجھائیے کہ پہلے ایک ہی مقامی قیمت کے ہندسے ایک سے ایک دوسرے کے نیچے لکھے جاتے ہیں اور پھر انھیں تفریق کیا جاتا ہے۔ اس ضمن میں طلبہ سے مختصر سوالات کیجیے جیسے کہ

• 899,56 – 978,45؟ کو کیسے پڑھیں گے؟

(978,45 میں سے 899,56 کو تفریق کرنا ہے) یا (978,45 میں سے 899,56 کو گھٹانا)

• کیا تفریق کیا جا رہا ہے؟

<div align="center">899,56</div>

• کسی عدد میں سے تفریق کیا جا رہا ہے؟

<div align="center">978,45</div>

<div align="center">

9 7 8, 4 5

– 8 9 9. 5 6

_____

</div>

•

کلاس ورک: مشق 2B کو مکمل کیجیے۔

Scheme of Work

Unit 2: Number Operations: Addition and Subtraction
Estimated Number of Periods: 20

Specific Learning Outcomes	Number of Periods
Add numbers up to 5 digits.	4 Periods
Solve real-life number stories involving addition of numbers up to 5 digits	4 Periods
Subtract numbers up to 5 digits	4 Periods
Solve real-life situations involving subtraction of numbers up to 5 digits	4 Periods
Revision	4 Periods

Prior Knowledge Assessment

- Pupils have already learnt the addition of 4 digits numbers with and without carrying.
- They can add numbers up to 100 using mental calculations.
- They can subtract 4-digit numbers with and without borrowing.
- They can add numbers up to 100 using mental calculations.

Resources

Suggested manipulatives that can be used to create interest and create a link to the topic.

- Counters
- White board
- Number cards with digits
- Chart Papers
- Paper chits
- Addition and subtraction number cards.

$$23 + 23 \qquad 50 - 32$$

Written Assignments

Exercises	Class Assignment	Home Assignment
Exercise A	Q1 (a, b, c, d, e) Q2 (e - h) Q4 Q5 Q 6 Q7	Q1 (f, g, h) Q2 (a - d) Q3
Exercise B	Q1 (a, b, c, d, e) Q2 (e - h) Q4 Q 6 Q7	Q1 (f, g, h) Q2 (a - d) Q3 Q5

Evaluation

Ways to evaluate teaching and students learning.

- Oral assessment
- Written assessment.
- Teacher's assessment
- Peer assessment
- Personal assessment

Step by Step Solution Guide

Exercise A   Unit 2   Pg 8

1a) 38,109 + 12,575   b) 60,912 + 67,043

$$
\begin{array}{r}
^{1}3\,8\,1\,^{1}0\,9 \\
+\;1\,2\,5\,7\,5 \\
\hline
5\,0\,6\,8\,4
\end{array}
\qquad
\begin{array}{r}
6\,0\,9\,1\,2 \\
+6\,7\,0\,4\,3 \\
\hline
1\,2\,7\,9\,5\,5
\end{array}
$$

c) 82,110 + 55,167   d) 20,403 + 12,351

$$
\begin{array}{r}
8\,2\,1\,1\,0 \\
+5\,5\,1\,6\,7 \\
\hline
1\,3\,7\,2\,7\,7
\end{array}
\qquad
\begin{array}{r}
2\,0\,4\,0\,3 \\
+1\,2\,3\,5\,1 \\
\hline
3\,2\,7\,5\,4
\end{array}
$$

e) 14,299 + 71,054   f) 44,444 + 55,555

$$
\begin{array}{r}
1\,4\,2\,^{1}9\,^{1}9 \\
+7\,1\,0\,5\,4 \\
\hline
8\,5\,3\,5\,3
\end{array}
\qquad
\begin{array}{r}
4\,4\,4\,4\,4 \\
+5\,5\,5\,5\,5 \\
\hline
9\,9\,9\,9\,9
\end{array}
$$

g) 59,237 + 34,766   h) 74,999 + 10,009

$$
\begin{array}{r}
^{1}5\,^{1}9\,^{1}2\,3\,7 \\
+3\,4\,7\,6\,6 \\
\hline
9\,4\,0\,0\,3
\end{array}
\qquad
\begin{array}{r}
7\,^{1}4\,^{1}9\,^{1}9\,9 \\
+1\,0\,0\,0\,9 \\
\hline
8\,5\,0\,0\,8
\end{array}
$$

Pg 8

2a) 35000 more than 43620

$$
\begin{array}{r}
4\ 3\ 6\ 2\ 0 \\
+\ 3\ 5\ 0\ 0\ 0 \\
\hline
7\ 8\ 6\ 2\ 0
\end{array}
$$

b) 58,233 more than 39,299

$$
\begin{array}{r}
^13\ 9\ ^12\ ^19\ 9 \\
+\ 5\ 8\ 2\ 3\ 3 \\
\hline
9\ 7\ 5\ 3\ 2
\end{array}
$$

c) 11,289 more than 70,521

$$
\begin{array}{r}
7\ 0\ ^15\ ^12\ 1 \\
+\ 1\ 1\ 2\ 8\ 9 \\
\hline
8\ 1\ 8\ 1\ 0
\end{array}
$$

d) 72,005 more than 20,115

$$
\begin{array}{r}
2\ 0\ 1\ ^11\ 5 \\
+\ 7\ 2\ 0\ 0\ 5 \\
\hline
9\ 2\ 1\ 2\ 0
\end{array}
$$

e) 95,633 more than 69,058

$$
\begin{array}{r}
^16\ 9\ 0\ ^15\ 8 \\
+\ 9\ 5\ 6\ 3\ 3 \\
\hline
1\ 6\ 4\ 6\ 9\ 1
\end{array}
$$

f) 12000 more than 94,440

$$
\begin{array}{r}
9\ 4\ 4\ 4\ 0 \\
+\ 1\ 2\ 0\ 0\ 0 \\
\hline
1\ 0\ 6\ 4\ 4\ 0
\end{array}
$$

g) 82,816 more than 52,006

$$
\begin{array}{r}
5\ 2\ 0\ ^10\ 6 \\
+\ 8\ 2\ 8\ 1\ 6 \\
\hline
1\ 3\ 4\ 8\ 2\ 2
\end{array}
$$

h) 10,898 more than 99,999

$$
\begin{array}{r}
^19\ ^19\ ^19\ ^19\ 9 \\
+\ 1\ 0\ 8\ 9\ 8 \\
\hline
1\ 1\ 0\ 8\ 9\ 7
\end{array}
$$

REAL LIFE NUMBER STORIES   Pg 9

3) Marbles in 1st bag ^{1}39871
   Marbles in 2nd bag   + 42100
   Total marbles   81971

4) School library has   42181
   School bought   + 10500
Total number of books in the library 52681

5) Distance covered in January   1^{2}2^{1}555
   Distance covered in February   + 10883
                       23438

6) Amount available in account   Rs   21030
   Amount deposited   Rs + 50000
Total amount in Sobias account   Rs 71030

7) Cost of laptop   Rs ^{1}7^{1}8520
   Cost of watch   + Rs 12700
Total amount needed to buy both   Rs 91220

Pg 10-11

2a) 2000 less than 31,921

²3²1 9 2 1
− 2 0 0 0
2 9 9 2 1

b) 39,299 less than 58,233

4⁵8 ¹⁷1⁸ ¹¹2⁷ ¹²1³3
− 3 9 2 9 9
1 8 9 3 4

c) 11,289 less than 32,006

²3 ¹¹2⁷ ⁹1⁰0 ⁹1⁰0 ¹6
− 1 1 2 8 9
2 0 7 1 7

d) 10,989 less than 91,949

⁸9²1 ¹⁰0 ¹⁸9 4 9
− 1 0 9 8 9
8 0 9 6 0

e) 61828 less than 97,636

9 7 ⁶6 ¹⁵2³ ¹²1⁶6
− 6 1 8 2 8
3 5 8 0 8

f) 25,633 less than 44,157

³4⁴1 ²³3⁴4 1 5 7
− 2 5 6 3 3
1 8 5 2 4

g) 72,016 less than 75,016

7 5 0 1 6
− 7 2 0 1 6
0 3 0 0 0

h) 69,058 less than 99,999

9 9 9 9 9
− 6 9 0 5 8
3 0 9 4 1

Exercise B   Pg 10

1a) $94,308 - 45,334$

$$\overset{8}{9}\overset{13}{4}\,\overset{11}{2}\overset{}{3}\,^{1}0\;8$$
$$-\;\;4\;5\;3\;3\;4$$
$$\underline{\quad 4\;8\;9\;7\;4\quad}$$

b) $21,960 - 13972$

$$1\,\overset{10}{2}\overset{18}{1}\overset{15}{9}\overset{}{6}\,0$$
$$-\;1\;3\;9\;7\;2$$
$$\underline{\quad 0\;7\;9\;8\;8\quad}$$

c) $86,822 - 57,567$

$$7\overset{15}{8}\overset{17}{6}\overset{11}{8}\,\overset{}{2}\,2$$
$$-5\;7\;5\;6\;7$$
$$\underline{\quad 2\;9\;2\;5\;5\quad}$$

d) $62,040 - 35,112$

$$5\overset{11}{6}\,\overset{9}{2}\,\overset{13}{0}\,4\,^{1}0$$
$$-3\;5\;1\;1\;2$$
$$\underline{\quad 2\;6\;9\;2\;8\quad}$$

e) $71,054 - 14,299$

$$6\overset{}{7}\overset{10}{1}\,\overset{9}{0}\,\overset{14}{5}\,4$$
$$-\;1\;4\;2\;9\;9$$
$$\underline{\quad 5\;6\;7\;5\;5\quad}$$

f) $18,009 - 14,351$

$$1\,^{7}8\,\overset{9}{0}\,^{1}0\;9$$
$$-\;1\;4\;3\;5\;1$$
$$\underline{\quad 3\;6\;5\;8\quad}$$

g) $32,375 - 29,221$

$$^{2}8\,^{1}2\;3\;7\;5$$
$$-\;2\;9\;2\;2\;1$$
$$\underline{\quad 3\;1\;5\;4\quad}$$

h) $54,172 - 45288$

$$45\overset{13}{4}\overset{10}{1}\overset{16}{7}\,2$$
$$-4\;5\;2\;8\;8$$
$$\underline{\quad 0\;8\;8\;8\;4\quad}$$

Pg 11

3) Families in the village $5\overset{1}{2}\overset{7}{0}\overset{7}{8}\overset{12}{2}$

Families moved to the city -10655

Families that left the village 41427

4) Cost of bicycle $\overset{2}{8}\overset{9}{0}\overset{14}{5}\overset{9}{0}\overset{}{0}$

Moin savings -24875

     05625

5) Sahil earns   Rs $5\overset{}{6}\overset{14}{5}\overset{9}{0}\overset{}{0}0$

Spending every month   Rs -56800

Total amount Sahil has   Rs 08200

6) Money available in bank   Rs $7\overset{}{8}\overset{18}{9}\overset{}{8}67$

Money withdrawn   Rs 39950

Amount left in the account   Rs 49917

7) Bano gives   Rs $1\overset{4}{5}\overset{9}{0}\overset{9}{0}0$

Cost of grocery   Rs $-$ 13285

Amount Bano gets in return   Rs 01715

Review Exercise

I. Add the following.

a.   7 8 3 9 2
      + 1 2 6 3 5
      _____

b.   9 0 2 4 3
      + 8 7 3 5
      _____

c.   1 0 5 5 6
      + 8 0 3 5 7
      _____

d.   4 4 3 2 1
      + 6 7 4 8
      _____

e.   8 1 7 5 3
      + 1 7 8 4 2
      _____

f.   3 1 4 6 2
      + 6 9 8 4 5
      _____

2. Arrange the numbers vertically and solve.

a. 42352 + 67543

b. 24568 + 35312

c. 98756 + 50744

d. 72239 + 8245

e. 68534 + 531

f. 12236 + 8705

3. Subtract the following.

a.   4 3 5 9 8
      – 2 6 7 3 8
      _____

b.   6 2 6 0 7
      – 9 0 5 8
      _____

c.   5 3 1 2 9
      – 4 5 3 9 1
      _____

d.   9 9 0 1 2
      – 5 3 8 4 9
      _____

e.   7 9 2 4 0
      – 5 8 5 2 6
      _____

f.   1 0 0 0 0
      – 5 3 2 1
      _____

4. Arrange the numbers vertically and solve.

a. 74638 – 33545

b. 85964 – 74544

c. 99754 – 68245

d. 64583 – 8245

e. 59004 – 57838

f. 11526 – 8705

5. Solve the following real-life number stories.

a. There were 36,284 tourists who visited the safari in the months of May and 47,876 tourist who visited in June. How many tourists visited the safari in both the months?

b. Saad has a bag of 67,388 buttons. If she sells 29,985 of them, how many are left?

c. Haider donated Rs 56,780 to an orphanage for their education and Rs 46,980 for their food. How much did he donate altogether?

d. Javeria needs Rs 67,500 to buy a new air conditioner. If she has Rs 58,450, how much more money does she need to buy the air conditioner?

e. Kanwal travelled 72,367 km in one month. The next month, she travelled 31,716 km. How much did she travel in the two months?

f. A farm has 62,648 sheep. If 46,271 sheep are sold, how many sheep are left?

g. A school library has 83,764 books in Urdu and 41,932 books in other languages. How many books are there in the library altogether?

h. In a reading competition, Danish reads 73,682 words and Ali reads 93,637 words. How many more words does Ali read than Danish?

Answer Key

1. **a.** 91,574   **b.** 989,770   **c.** 99,595

    d. 111,769   **e.** 185,913   **f.** 101,307

2. **a.** 109895   **b.** 59880   **c.** 149500

    d. 80484   **e.** 69065   **f.** 20941

3. **a.** 169,060   **b.** -33,851   **c.** 77,638

    d. 451,663   **e.** 206,814   **f.** 44,679

4. **a.** 41093   **b.** 11420   **c.** 31509

    d. 56338   **e.** 1166   **f.** 2821

5. **a.** 84,160 tourists   **b.** 37,403 buttons   **c.** Rs 103,760

    d. Rs 9,050   **e.** 104,083 km   **f.** 16,377 sheep

    g. 125,696 books   **h.** 19,955 words

Bilingual Concept Builder Notes

Competency 1

Pupils will learn to multiply a number up to five digits with a number up to three-digits. They will apply multiplication to real-life problems to find an appropriate solution.

Rationale: Elaborate multiplication with simpler examples and then gradually move to difficult ones. To teach word problems effectively, a teacher is required to overcome the linguistic barriers of their pupils. Word problems are always a difficult area of learning. First write the problem on the board clearly and with the help of small questions, gather all the information given about the problem. Use them according to the given situation to find the solution to the problem.

Classwork: Complete Exercise A

Competency 2

Pupils will learn to divide given four-digit numbers by two-digit numbers exactly and with leaving a remainder as well. They will apply the knowledge of division to find the solution to the given real-life problems.

Stimulus: Pupils have learnt 'division' as 'successive subtraction'. Before initiating the process of division, explain to them the terminology and language related to division i.e.,

$$588 \div 21 = 28$$

5888 divided by 21 is equal to 28.

$$588 \div 21 = 28$$

Divident the number being dividing	**Quotient** the result of division

Divisor the number dividing
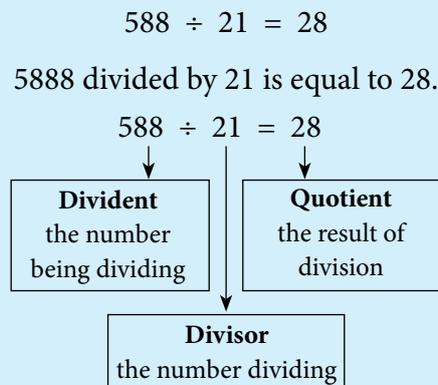
To elaborate the process of division, use the example given on pages 14, 15, 16, and 17.

Classwork: Let your pupils complete all the problems in Exercise B with your consistent support.

Competency 3

Pupils will apply their ability to add, subtract, multiply, and divide to solve the given word problem. After comprehending the problem, they will decide which process is required to apply to get an appropriate solution to the problem.

قابلیت ۱

طلبہ جانیں گے کہ اگر ضرب دیے جانے والے اعداد کی ترتیب کو تبدیل کر دیا جائے تو نتائج میں کوئی تبدیلی نہیں واقع ہوتی وہ دیے گئے دو ہندسی اعداد کو ایک عد د سے ضرب کرنا سیکھیں گے۔

استدلال: ضرب کے عمل کو آسان مثالوں کے ذریعے سکھاتے ہوئے بتدریج مشکل پڑھیں اور حل کیجیے۔ عبارتی سوالات کو موئثر طریقے سے حل کروانے کے لیے ضروری ہے کہ استاد اپنے طلبہ کے لیے زبان کو سمجھنے میں درپیش رکاوٹوں کو دور کریں۔ عبارتی سوالات کو حل کرنا طلبہ کے لیے ہمیشہ سے مشکل رہا ہے۔ لہذا ضروری ہے کہ پہلے انھیں بورڈ پر لکھ کر طلبہ سے مختصر سوالات کر کے مطلوبہ معلومات کو اکٹھا کر کے لیجیے پھر عبارتی سوالوں کو حل کرنے کے لیے انھیں دی گئی عبارت کے مطابق استعمال کیجیے۔

کلاس ورک: مشق A کو مکمل کیجیے۔

قابلیت ۲

طلبہ دیے گئے چار ہندسی اعداد کو دو ہندسی عد د سے مکمل طور اور باقی (remainder) کے ساتھ بھی تقسیم کرنا سیکھیں گے اور تقسیم کی مہارت کو سیکھ کر اس کا اطلاق عبارتی سوالوں کو حل کرنے کے لیے کریں گے۔

محرک: طلبہ نے تقسیم کا عمل بطور مسلسل تفریق کے سیکھ لیا ہے۔ اب تقسیم کے عمل کو سکھاتے ہوئے آگے بڑھنے سے پہلے آپ تقسیم سے متعلق اہم اصطلاحات اور زبان کی وضاحت کیجیے۔ جیسے

$$588 \div 21 = 28$$

5888 کو 21 سے تقسیم کرنے پر 28 ملتا ہے۔

$$588 \div 21 = 28$$

| تقسیم کا نتیجہ | ← | حاصل قسمت | | مقسوم | ← | تقسیم کیا جانے والا عد د |

| تقسیم کرنے والا عد د | ← | مقسوم علیہ |
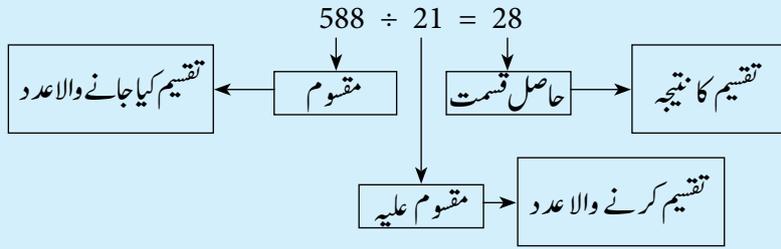
تقسیم کے عمل کی وضاحت کے لیے صفحہ ۱۴، ۱۵، ۱۶ اور ۱۷ پر دی گئی مثال کو استعمال کیجیے۔

کلاس ورک: طلبہ کو مشق B میں دیے گئے عبارتی سوالات کو حل کرنے میں آپ کی مد د کی ضرورت ہے۔

قابلیت ۳

طلبہ دیے گئے عبارتی سوالوں کو حل کرنے کے لیے ضرب، تقسیم، جمع اور تفریق کی مہارتوں کا استعمال کریں گے۔ عبارتی سوالوں کو سمجھنے کے بعد وہ فیصلہ کر سکیں گے کہ اس سوال کو حل کرنے کے لیے کون سے عمل کا اطلاق کرنا ہو گا۔

Rationale: To teach word problems effectively, a teacher is required to overcome the linguistic barriers of his pupils. Word problems have always remained a difficult area of learning at all age levels. First write the problem on the board clearly and with the help of small questions, gather all the information given about the problem. Provide mathematical equivalents of the given words and phrases in the problem. Use them according to the given situation to find the solution to the problem.

Classwork: Complete all the problems in Exercise C one by one with thorough explanation of mathematical equivalents of each phrase and word given in the problem.

Competency 4

Pupils will learn to identify the rule in the given pattern of numbers (which will be based on addition or subtraction of a fixed number) and use it to list more terms in the pattern of numbers.

Stimulus: Introduce your pupils with the idea of 'increasing' and 'decreasing' patterns first. Then elaborate that increasing patterns are formed by adding a fixed number to a term to obtain the next term. In a decreasing pattern, a fixed number is subtracted every time to get the next term.

2, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, …

This is an increasing pattern of numbers as terms are increasing from 2 to 35 and onward.

100, 96, 92, 88, 84, 80, 76, 72, 68, 64, 60, …

This is a decreasing pattern of numbers as terms are decreasing from 100 to 62 and onward.

Now show elaborate to your pupils, examples given on page 20 and 21.

Classwork: Complete some problems in Exercise D one by one under your supervision and then leave remaining problems to be done by your pupils independently.

استدلال : عبارتی سوالوں کو موثر طریقے سے حل کروانے کے لیے ایک بحیثیت ایک استاد کے طلبہ کو درپیش لسانی مسائل جن کی وجہ سے عبارت کو سمجھنے میں طلبہ مشکل محسوس کرتے ہیں حل کرنے ہوں گے۔ لہٰذا پہلے بورڈ پر عبارتی سوالوں کو بورڈ پر لکھیے اور طلبہ سے پوچھتے ہوئے مطلوبہ معلومات اکٹھی کیجیے اور ہر لفظ اور فقرے کو سمجھتے ہوئے ان کے ریاضیاتی متبادل لکھیے اور عبارتی سوالوں کو حل کیجیے۔

کلاس ورک : مشق C میں دیے گئے تمام عبارتی سوالوں کو حل کرنے کے لیے ان میں دیے گئے الفاظ اور فقروں کے ریاضی کے متبادل بھی لکھیے۔

قابلیت ۴

طلبہ اعداد کے دیے گئے نمونوں کار فرما میں اصول (جس کی بنیاد ایک مقررہ عدد کے گھٹانے یا بڑھانے پر ہے) کی شناخت کر سکیں گے۔ اور اعداد کے نمونوں کے لیے اگلا عدد لکھ سکیں گے۔

محرک : طلبہ کو پہلے بڑھنے 'increasing' اور گھٹنے 'decreasing' کے نمونے دکھائیے۔ پھر وضاحت کیجیے کہ increasing pattern کے لیے ہمیں ایک مقررہ عدد کو اگلے عدد میں جمع کرنا پڑتا ہے۔ حاصل ہونے اگلے اعداد میں یہ تدریج اضافہ ہونے سے یہ نمونہ آگے بڑھتا ہے۔ اس طرح گھٹنے decreasing pattern کے نمونے میں ایک مقررہ عدد کو بار بار تفریق یا گھٹانے پر ہمیں نئے اعداد ملتے ہیں اور یہ نمونہ پیچھے کی طرف بڑھتا ہے۔

2, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, …

اوپر کا نمونہ ۴ اعداد کا ایک increasing pattern ہے جو ۲ سے شروع ہو کر ۳۵ اور مزید آگے تک بڑھایا جا سکتا ہے۔

100, 96, 92, 88, 84, 80, 76, 72, 68, 64, 62, …

اعداد کا یہ ایک decreasing pattern ہے جو گھٹتے ہوئے ۱۰۰ سے ۶۲ اور مزید پیچھے کی طرف بڑھایا جا سکتا ہے۔ اب مزید وضاحت کے لیے طلبہ کو صفحہ ۲۰ اور ۲۱ کی مثالوں کے ذریعے سمجھائیے۔

کلاس ورک : مشق D میں دیے گئے عبارتی سوالوں کو ایک ایک کرکے اپنی نگرانی میں حل کروائیے اور بقیہ مشق طلبہ کو خود کرنے دیجیے۔

Scheme of Work

Unit 3: Number Operations: Multiplication and Division
Estimated Number of Periods: 24

Specific Learning Outcomes	Number of periods
• Multiply numbers up to 4 digits by numbers up to 2 digits.	4 Periods
• Solve real-life situations involving multiplication of numbers up to 4 digits by 2 digits.	4 Periods
• Divide numbers up to 4 digits by numbers up to 2 digits.	4 Periods
• Solve real-life situations using appropriate operations of addition, subtraction, multiplication and division of numbers up to 2 digits.	4 Periods
• Recognise a given increasing and decreasing pattern by stating a pattern rule.	4 Periods
• Describe the pattern found in a given table or chart.	2 Periods
• Complete the given increasing and decreasing number sequence.	2 Periods

Prior Knowledge Assessment

- Students are familiar with multiplication and division (2-digit number by a 1-digit number)
- They will be able to apply this knowledge to solve daily life problems involving four operations

Resources

Suggested manipulatives that can be used to create interest and create a link to the topic.
- Array cards
- Multiplication and division cards

$$1 \times 9 \qquad 2 \times 9 \qquad 36 \div 6 \qquad 30 \div 6$$

Written Assignments

Exercises	Class Assignment	Home Assignment
Exercise A	Q1 (c - i) Q2 (c - i) Q5 Q6 Q7 Q8	Q1(a, b) Q2 (a, b) Q3 Q4
Exercise B	Q1 (d - i) Q2 (d - i) Q3 (d – o) Q5 Q6 Q7 Q8	Q1(a, b, c) Q2 (a, b, c) Q3 (a, b, c) Q4

Evaluation

Ways to evaluate teaching and students learning.

- Oral assessment
- Written assessment.
- Teacher's assessment
- Peer assessment
- Personal assessment

Step by Step Solution Guide

EXERCISE A   UNIT 3   Pg 13

1a) 613 × 3

     613   • Multiply 3 by 3 (3×3=9)

     × 3   • Multiply 3 by 1 (3×1=3)

     1839   • Multiply 3 by 6 (3×6=18)

b) 425 × 9

     $^2 4 ^4 2 5$ • Multiply 9 by all three numbers

     × 9   • 9 × 5 = 45

     3825   • If the answer is in double digits, apply rule

          of addition with carrying

c) 572 × 34

       $^2 572$

       × 34

       2288 → Multiply by 4 = 572×4 = 2288

    + 17160 → Add a 0 and multiply by 3 = 572×3 = 1716

     19448 → Add both the numbers

d) 406 × 82

     $4 ^1 ^4 06$

     × 82

     812 → Multiply by 2 = 406×2 = 812

   + 32480 → Add a 0 and multiply by 8 = 3248

    33292 → Add both the numbers

e) 3496 × 28   Pg 1.3

$^{3}3^{\overset{7}{4}}\overset{4}{9}6$

  × 28

2 7968 → Multiply by 8

+69920 → Add 0 and multiply by 2

  97888

$^{3}\overset{7}{3}4^{4}96$
  × 8
27968

$3^{1}4^{1}96$
  × 2
6992

f) 5623 × 95 $^{3}5\overset{1}{6}\overset{1}{2}3$ $^{5}5\overset{2}{6}\overset{2}{2}3$

  5623   × 5   × 9

  × 95   28115   50607

  28115 → Multiply by 5

+506070 → Add a 0 and multiply by 9

  534185 → Add both numbers

g) 4372 × 8   h) 5486 × 71   i) 1620 × 55

$^{2}4\overset{5}{3}\overset{1}{7}2$ 5486   1620

  × 8   × 71   × 55

34976   5486   8100

                    +384020   +81000

                    389506   89100

REAL LIFE NUMBER STORIES   Pg 14

2) Number of employees on each floor   124
   Number of floors   × 24
                                                 496
                                                2480
   Number of employees on 24 floors   2976

3) Number of juice packets   5372
   Cost of one packet   Rs × 45
                                     ²₁₆₁860
                                   + 214880
   Amount Sarim needs   Rs 24,1740

4) Amount saved every month   Rs   2628
   Number of months   × 26
                                    15768
                                  + 52560
                                    68328

5) Number of books on each shelf   5260
   Number of shelves   × 36
                                         3¹1560
                                      + 157800
   Number of books on 36 shelves   189360

6) Number of boxes   8500

   Number of oranges in a box $\times$ 65

                                         42500

                              + 510000

Number of oranges in 8500 boxes   552500

7) Balls produced in one day   2590

   Number of days $\times$ 35

                            $^{2}1^{3}2950$

                           + 77700

Balls produced in 35 days   90650

Pg 18

Step 1: Look at the first digit of the two digit number.

• Use the divisor's times table to find how many times it goes into that number without exceeding it.

Example:

$$2\overline{)84}$$

with 42 above, 8 then $\times 4$, 4, $\times$

$2 \times 4 = 8$
$2 \times 2 = 4$

Step 2: Write the first part of the quotient above the dividend and subtract it from the first digit

Step 3: Bring down the next digit and combine it with the remainder to form a new number

Step 4: Use the times table again to see how many times the divisor goes into the new number

Step 5: If the divisor doesn't divide evenly, the leftover number becomes the remainder

EXERCISE B   Pg 18

1a) $495 \div 6$

$$
\begin{array}{r}
82 \longrightarrow \text{Quotient} \\
6\overline{)495} \\
-48\downarrow \\
\hline
015 \\
-12 \\
\hline
03 \longrightarrow \text{Remainder}
\end{array}
$$

b) $425 \div 7$

$$
\begin{array}{r}
60 \longrightarrow \text{Quotient} \\
7\overline{)425} \\
-42\downarrow \\
\hline
005 \\
-0 \\
\hline
005 \longrightarrow \text{Remainder}
\end{array}
$$

c) $582 \div 7$

$$
\begin{array}{r}
83 \longrightarrow \text{Quotient} \\
7\overline{)582} \\
-56\downarrow \\
\hline
022 \\
-21 \\
\hline
01 \longrightarrow \text{Remainder}
\end{array}
$$

d) $427 \div 8$

$$
\begin{array}{r}
53 \longrightarrow \text{Quotient} \\
8\overline{)427} \\
-40\downarrow \\
\hline
027 \\
-24 \\
\hline
03 \longrightarrow \text{Remainder}
\end{array}
$$

e) $201 \div 8$

$$
\begin{array}{r}
25 \longrightarrow \text{Quotient} \\
8\overline{)201} \\
-16\downarrow \\
\hline
041 \\
-40 \\
\hline
001 \longrightarrow \text{Remainder}
\end{array}
$$

f) $377 \div 9$

$$
\begin{array}{r}
41 \longrightarrow \text{Quotient} \\
9\overline{)377} \\
36 \\
\hline
017 \\
-9 \\
\hline
008 \longrightarrow \text{Remainder}
\end{array}
$$

g) 2667 ÷ 9

```
        296 → Quotient
   9 )2667
     -18↓
      086
      -81
       057
       -54
      003 → Remainder
```

h) 1965 ÷ 6

```
        327 → Quotient
   6 )1965
     -18↓
      016
      -12↓
      0045
       42
      0003 → Remainder
```

i) 6262 ÷ 5

```
        1252
   5 )6262
     -5↓
      12
     -10↓
      026
      025↓
      0012
      0010
       002
```

Pg 18

2a) $506 \div 22$

$$
\begin{array}{r}
23 \\
22\overline{)5^4 0 6} \\
-44\downarrow \\
\hline
0\,66 \\
-0\,66 \\
\hline
0\,0\,0
\end{array}
$$

b) $850 \div 34$

$$
\begin{array}{r}
25 \\
34\overline{)8^7 5 0} \\
-68 \\
\hline
170 \\
-170 \\
\hline
0\,0\,0
\end{array}
$$

c) $728 \div 28$

$$
\begin{array}{r}
26 \\
28\overline{)4^6{}^1 2\,8} \\
-56 \\
\hline
168 \\
-168 \\
\hline
0\,0\,0
\end{array}
$$

d) $900 \div 36$

$$
\begin{array}{r}
25 \\
36\overline{)9^8{}^3 0\,0} \\
-72\downarrow \\
\hline
180 \\
-180 \\
\hline
0\,0\,0
\end{array}
$$

e) $1440 \div 45$

$$
\begin{array}{r}
3\,2 \\
45\overline{)1\,4^3{}^4 0} \\
-135\downarrow \\
\hline
0090 \\
-90 \\
\hline
0000
\end{array}
$$

f) $1302 \div 62$

$$
\begin{array}{r}
2\,1 \\
62\overline{)1\,5^2{}^3 0\,2} \\
-1\,24\downarrow \\
\hline
0062 \\
-0062 \\
\hline
0000
\end{array}
$$

g) $3834 \div 71$

$$
\begin{array}{r}
54 \\
71\overline{)38^{7}8^{2}34} \\
-355\downarrow \\
\hline
0284 \\
-0284 \\
\hline
00\ 00
\end{array}
$$

h) $1066 \div 41$

$$
\begin{array}{r}
26 \\
41\overline{)1^{0}1^{2}066} \\
-82\downarrow \\
\hline
246 \\
-246 \\
\hline
000
\end{array}
$$

i) $1196 \div 52$

$$
\begin{array}{r}
23 \\
52\overline{)1196} \\
-104\downarrow \\
\hline
156 \\
-156 \\
\hline
000
\end{array}
$$

Pg 18

3a) $723 \div 28$

$$\begin{array}{r} 25 \rightarrow \text{Quotient} \\ 28\overline{\smash{)}7^6 1^{12}3} \\ -56\downarrow \\ \hline 163 \\ -140 \\ \hline 23 \rightarrow \text{Remainder} \end{array}$$

b) $490 \div 32$

$$\begin{array}{r} 15 \rightarrow \text{Quotient} \\ 32\overline{\smash{)}490} \\ -32\downarrow \\ \hline 170 \\ -160 \\ \hline 010 \text{ Remainder} \end{array}$$

c) $644 \div 72$

$$\begin{array}{r} 8 \rightarrow \text{Quotient} \\ 72\overline{\smash{)}6^5 4^{13} 4} \\ -576 \\ \hline 068 \rightarrow \text{Remainder} \end{array}$$

d) $795 \div 61$

$$\begin{array}{r} 13 \text{ Quotient} \\ 61\overline{\smash{)}795} \\ -61\downarrow \\ \hline 185 \\ -183 \\ \hline 002 \text{ Remainder} \end{array}$$

e) $267 \div 38$

$$\begin{array}{r} 7 \rightarrow \text{Quotient} \\ 38\overline{\smash{)}267} \\ -266 \\ \hline 001 \rightarrow \text{Remainder} \end{array}$$

f) $117 \div 23$

$$\begin{array}{r} 5 \rightarrow \text{Quotient} \\ 23\overline{\smash{)}117} \\ -115 \\ \hline 002 \text{ Remainder} \end{array}$$

g) $285 \div 29$

$$\begin{array}{r} 9 \text{ Quotient} \\ 29\overline{\smash{)}285} \\ -261 \\ \hline 024 \text{ Remainder} \end{array}$$

h) $269 \div 45$

$$\begin{array}{r} 5 \text{ Quotient} \\ 45\overline{\smash{)}269} \\ -225 \\ \hline 44 \text{ Remainder} \end{array}$$

Pg 28

4) Eggs sold in a month   4260

   Eggs sold in a day $4260 \div 30 = 142$ eggs

$$
\begin{array}{r}
142 \\
30\overline{)4260} \\
-30\downarrow \\
\hline
126 \\
-120\downarrow \\
\hline
0060 \\
-0060 \\
\hline
0000
\end{array}
$$

5) Maheen walks   364 metres

   Number of weeks   64

Number of metres walked in a week = $364 \div 64 = 5.69$ m

$$
\begin{array}{r}
5.687 \\
64\overline{)364} \\
-320 \\
\hline
0^3 4^2 4^3 0 \\
-0384 \\
\hline
005^5 8^7 0 \\
-512 \\
\hline
04^7 8^3 0 \\
448 \\
\hline
0032
\end{array}
$$

$5.687 \approx 5.69$

Pg 18

6) Number of carrots   3104

  Number of bags   95

$$
\begin{array}{r}
32 \\
95\overline{)3104} \\
-285\downarrow \\
0254 \\
-190 \\
0064
\end{array}
$$

• 32 carrots can be packed in each bag
• 64 carrots are left

7) Number of tickets   1482

  Number of students   33

$$
\begin{array}{r}
44 \\
33\overline{)1482} \\
-132\downarrow \\
0162 \\
-132 \\
0030
\end{array}
$$

• Each student will get 44 tickets
• 30 tickets will be left

8) Number of people   8394

Number of seats in a row   9

$$
\begin{array}{r}
932 \\
9\overline{)8394} \\
-81 \\
029 \\
27 \\
0024 \\
0018 \\
0006
\end{array}
$$

• 932 rows
• 8388 seats (932×9=8388)
• 6 people will be left without seats

Exercise C   Pg 29

1) Donation for hospital   Rs $5\overset{1}{5}\overset{1}{6}\overset{1}{6}780$

   Donation for food   + Rs 4 6 9 8 0

   Total amount donated   Rs 103 760

2) Total marbles $6\overset{15}{1}\overset{2}{6}\overset{1}{6}3\ 7\ 8$

   Marbles lost   − 3 9 9 6 4

   Marbles left   3 6 4 1 4

3) Amount needed for refrigerator Rs $\overset{5}{6}\overset{16}{2}\overset{7}{7}\overset{1}{7}500$

   Amount Lubna has   Rs − 5 8 4 5 0

   Amount needed   Rs 0 9 0 5 0

4) T-shirts produced in a day   2 1 3 7

   Production in 24 days   2137×24 = 51288 T-shirts

$$
\begin{array}{r}
2\ 1\ 3\ 7 \\
\times\ 2\ 4 \\
\hline
\overset{1}{8}\ 5\ 4\ 8 \\
+\ \overset{1}{4}\ 2\ 7\ 4\ 0 \\
\hline
5\ 1\ 2\ 8\ 8
\end{array}
$$

5) Total children that visited the park $7\ 8\ \overset{15}{6}\overset{2}{6}\overset{1}{2}\ \overset{7}{8}\overset{1}{4}$

   Children that visited in August   − 4 7 8 7 6

   Children that visited in September   3 8 4 0 8

6) Material Khursheed has   1 9 9 8 metres

   Number of tailors   54

   Material each tailor receives   1998÷54 = 37 metres

$$
\begin{array}{r}
37 \\
54\overline{)1998} \\
-162\downarrow \\
\hline
0378 \\
-0378 \\
\hline
0000
\end{array}
$$

Pg 19

7) Number of boxes of erasers   32150

Erasers in each box   250

Erasers in the boxes altogether   32150 × 250 = 8037500 erasers

$$
\begin{array}{r}
3 2 1 5 0 \\
\times 2 5 0 \\
\hline
0 0 0 0 0 \\
^1 1 6 0 7 5 0 0 \\
+ 6 4 3 0 0 0 0 \\
\hline
8 0 3 7 5 0 0 \\
\end{array}
$$

8) Cost of 32 doll   Rs 9920

Number of dolls   32

Cost of one doll   9920 ÷ 32 = Rs 310

$$
\begin{array}{r}
310 \\
32 \overline{)9920} \\
-96\downarrow \\
\hline
032 \\
032 \\
\hline
0000 \\
\end{array}
$$

9) 1350 kg rice packed in 30 packets

a) Rice in one packet   1350 ÷ 30 = 45 kg

b) Kg of rice in 39 packets   39 × 45 = 1755 kg

$$
\begin{array}{r}
45 \\
30 \overline{)1350} \\
120 \\
\hline
0150 \\
-0 150 \\
\hline
0000 \\
\end{array}
$$

$$
\begin{array}{r}
39 \\
\times 45 \\
\hline
^1 1 9 5 \\
+ 1 5 6 0 \\
\hline
1 7 5 5 \\
\end{array}
$$

10) Rs 25650 divided among 10 students

a) Amount each student gets

   25650 ÷ 10 = Rs 2565

b) Amount needed for 12 students = 2565 × 12

                        = Rs 30780

EXERCISE D   Pg 21

1a) 1, 3, 5, 7, 9, 11, 13, 15
    +2 +2 +2 +2
                    Rule of the pattern = Add 2

b) 5, 10, 15, 20, 25, 30, 35, 40
   +5 +5 +5 +5 +5
                    Rule of the pattern = Add 5

c) 10, 9, 8, 7, 6, 5, 4, 3
   -1 -1 -1 -1 -1
                    Rule of the pattern = Subtract 1

d) 4, 14, 24, 34, 44, 54, 64, 74
                    Rule of the pattern = Add 10

e) 90, 80, 70, 60, 50, 40, 30, 20
                    Rule of the pattern = Subtract 10

f) 130, 128, 126, 124, 122, 120, 118, 116
                    Rule of the pattern = Subtract 2

g) 550, 500, 450, 400, 350, 300, 250, 200
                    Rule of the pattern = Subtract 50

h) 220, 226, 232, 238, 244, 250, 256, 262
                    Rule of the pattern = Add 6

Review Exercise

1. Multiply the following.

a.   5 9 8
      × 2 6
   _____

b.   6 4 3 7
      × 8 8
   _____

c.   1 1 0 9
      × 7 3
   _____

d.   9 5 7 2
      × 3 4
   _____

e.   7 3 4 6
      × 5 1
   _____

f.   2 0 0 4
      × 9 0
   _____

2. Arrange the numbers vertically and solve.

a. 6048 × 53

b. 7973 × 67

c. 9020 × 50

d. 5390 × 68

e. 6086 × 80

f. 5941 × 99

3. Divide the following.

a. 42)6972

b. 88)1848

c. 35)1470

d. 79)9559

e. 64)1600

f. 27)4563

4. Solve the following.

a. 6125 ÷ 10

b. 7392 ÷ 32

c. 1200 ÷ 75

d. 9641 ÷ 31

e. 2788 ÷ 68

f. 3465 ÷ 55

5. Solve the following real-life number stories.

a. Aliya walks 22,000 steps a day. How many steps will she walk in 25 days?

b. A tailor has 3198 m roll of fabric. He has to stitch 39 long curtains. What would be the length of each curtain?

c. A bakery bakes 1738 cupcakes a day. How many cupcakes will it bake in 24 days?

d. Khursheed has 1998 chocolates. He packs them equally 54 boxes. How many chocolates are packed in each box?

e. A school collects Rs 25 from each of its students for charity. If there are 1820 students in the school, how much total amount is collected?

f. A farmer has 7550 oranges seeds to sow on his farm. If he sows 25 seeds in one row, how many rows will be made?

g. Zubair earns Rs 28,900 salary per month. How much money does he earn in a year?

h. Miss Farah has 1560 pages of scrap paper. She wants to make scrap paper packets for her 26 students. How many pages does each packet have?

6. Choose the appropriate number operation to solve the following real-life number stories.

a. A doughnut shop makes 2160 doughnuts a day. If they pack the doughnuts in equal boxes of 12, how many boxes will be packed?

b. There are 20,755 people in town. If 9800 of them are girls, how many boys are there?

c. An NGO plants 21,345 trees in one month and 30,993 in the next month. How many total trees does it plant in both the months?

d. A factory makes 2456 toys a day. How many toys will it make in two weeks?

e. Zaib buys 4 cupcakes, and Nuzhat buys 7 pancakes from a bakery. The cost of one cupcake is Rs 120 and the cost of one pancake is Rs 110. How much do Zaib and Nuzhat spend altogether?

7. Write rules for each increasing and decreasing pattern.

Pattern	Rule
a. 0, 2, 4, 6, 8, …	
b. 100, 95, 90, 85, …	
c. 111, 115, 119, 123 …	
d. 150, 200, 250, 300, ….	
e. 9000, 8000, 7000, 6000, …	

8. Follow the rule and write down the first three terms of the pattern.

Rule	Pattern
a. Start with 10 and add 12.	
b. Start with 12 and add 2.	
c. Start with 50 and subtract 6.	
d. Start with 93 and subtract 3.	
e. Start with 130 and subtract 10.	

9. Make your own rule and write down the first three terms using your rule.

My Rule is: _____

Pattern is: _____ , _____ , _____ .

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Answer Key

1. **a.** 15548   **b.** 566456   **c.** 80957   **d.** 325448   **e.** 374646   **f.** 180360

2. **a.** 320544   **b.** 534191   **c.** 451000   **d.** 366520   **e.** 486880   **f.** 588159

3. **a.** 166   **b.** 21   **c.** 42   **d.** 121   **e.** 25   **f.** 169

4. **a.** 612.5   **b.** 231   **c.** 16   **d.** 311   **e.** 41   **f.** 63

5. **a.** 82 metres   **b.** 550000 steps   **c.** 41712 cupcakes

   d. 37 chocolates   **e.** Rs 45,500   **f.** 302 rows

   g. Rs 346,800   **h.** 60 pages

6. **a.** 180 boxes   **b.** 10,955 boys   **c.** 52,338 trees

   d. 34,384 toys   **e.** Rs 1,250

7. **a.** **Rule:** Start at 0 and add 2 each time.

   b. **Rule:** Start at 100 and subtract 5 each time.

   c. **Rule:** Start at 111 and add 4 each time.

   d. **Rule:** Start at 150 and add 50 each time.

   e. **Rule:** Start at 9000 and subtract 1000 each time.

8. **a.** 10, 22, 34   **b.** 12, 14, 16   **c.** 50, 44, 38

   d. 93, 90, 87   **e.** 130, 120, 110

Factors and Multiples

Bilingual Concept Builder Notes

Competency 1

Pupils will learn to identify whether a number is completely divisible by 10, 5, 2, or 3 using the test of divisibility for each divisor.

Stimulus: Begin your lesson with simple multiplication, like

$$3 \times 5 = 15$$

15 is the product of 3 and 5. We also say 15 is a multiple of 3 and 15 is a multiple of 5. A multiple is exactly divisible by the given numbers, like

$$15 \div 5 = 3 \quad \text{and} \quad 15 \div 3 = 5$$

'All multiples of 5 are exactly divisible by 5' and 'all multiples of 3 are exactly divisible by 3'.

Multiples of 10 = 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, …

All the multiples of 10 are exactly divisible by 10. What is common to all the multiple of 10? Give your pupils time to answer this question. Never discourage your students from asking a 'simple question' or giving a 'wrong answer'. Take the discussion to the conclusion that in each multiple of 10, the last digit on the right is always zero.

Multiples of 10 = 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, …

Here is the test of divisibility of 10.

Test of divisibility of 10: 'A number will be completely divided by 10, if its last digit on the right (place value: one) is zero.'

Which of the following numbers are divisible by 10?

123, 250, 557, 500, 7002, 650, 1009, 8200, 1110, 980, 10101, 1000

Test of divisibility of 5: Let us look carefully at the last digit on right (place value: one) of multiples of 5 and find what is common to all of them.

Multiples of 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, …

'A number will be completely divided by 5, if its last digit on the right (place value: one) is zero or 5.'

Which of the following numbers are divisible by 5?

123, 250, 557, 505, 7002, 650, 1005, 8200, 1110, 980, 10101, 1035

Test of divisibility of 2: Let us look carefully at the last digit on right (place value: one) of multiples of 2 and find what is common to all of them.

قابلیت ۱

طلبہ یہ شناخت کرنا سیکھیں گے کہ آیا کوئی عدد مکمل طور پر ۲، ۱۵، ۱۰ یا ۳ سے تقسیم کیا جا سکتا ہے۔ اس کے لیے وہ ہر تقسیم کرنے والے عدد (divisor) تقسیم کے ذریعے کو جانچیں گے۔

محرک: سبق کا آغاز آسان ضرب کے ساتھ کیجیے جیسے

$$3 \times 5 = 15$$

۳ اور ۵ کا حاصل ضرب (product) ۱۵ ہے۔ ہم یوں بھی کہہ سکتے ہیں کہ ۱۵ اضعاف (multiple) ہے ۳ کا اور ۱۵ اضعاف ہے ۵ کا، اضعاف دیے گئے اعداد سے مکمل طور پر تقسیم ہو جاتا ہے جیسے

$$15 \div 5 = 3 \quad \text{and} \quad 15 \div 3 = 5$$

۵ کے تمام اضعاف ۵ پر قابلِ تقسیم ہیں اور ۳ کے تمام اضعاف ۳ پر مکمل طور تقسیم ہو جاتے ہیں۔

۱۰ کے اضعاف = ... ، 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120

۱۰ کے تمام اضعاف ۱۰ پر قابلِ تقسیم ہیں۔ ۱۰ کے اضعاف میں مشترک کیا ہے۔ طلبہ کو جواب سوچنے کے لیے وقت دیجیے۔ کوئی احمقانہ سوال کرنے یا جواب دینے پر طلبہ کی حوصلہ شکنی نہ کیجیے۔ بلکہ تبادلۂ خیال کرتے ہوئے نتیجے پر پہنچیں کہ ۱۰ کے ہر اضعاف میں، دائیں طرف کا آخری ہندسہ ہمیشہ صفر (zero) ہوتا ہے۔

۱۰ کے اضعاف = ... ، 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120

یہ ۱۰ کی تقسیم کا Test ہے۔

۱۰ کی تقسیم کی جانچ (test): اگر کسی عدد کا دائیں طرف کا ہندسہ (مقامی قیمت: اکائی) صفر (zero) ہو تو دو عدد دس ۱۰ سے مکمل طور پر تقسیم ہو جائے گا۔

مندرجہ ذیل میں سے کون سے اعداد ۱۰ سے قابلِ تقسیم ہیں؟

123, 250, 557, 500, 7002, 650, 1009, 8200, 1110, 980, 10101, 1000

۵ کی تقسیم کی جانچ (test): آیئے! ۵ کے اضعاف کے دائیں طرف کے آخری ہندسے (مقامی قیمت: اکائی) کا غور سے دیکھیے ان میں کیا بات مشترک ہے۔

۵ کے اضعاف = ... ، 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70

ان میں سے اگر کسی عدد کے دائیں طرف کا ہندسہ (مقامی قیمت: اکائی) صفر ہو تو وہ عدد ۵ پر مکمل تقسیم ہو جائے گا۔

مندرجہ ذیل میں سے کون سے اعداد ۵ سے قابلِ تقسیم ہیں؟

123, 250, 557, 505, 7002, 650, 1005, 8200, 1110, 980, 10101, 1035

۲ کی تقسیم کی جانچ (test): آیئے! ۲ کے اضعاف کے دائیں طرف کے آخری ہندسے (مقامی قیمت: اکائی) غور سے دیکھیے ان میں کیا مشترک ہے؟

۲ کے اضعاف = 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, ...

Multiples of 2: 2, 4, 6, 8, 10,12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, …

Give your pupils ample time to find the common element in the multiples of 2. Guide them to reach the common digits in the multiples of 2, as

Multiples of 2: 2, 4, 6, 8, 10,12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, …

Notice that the last digit on the right of each multiple of 2 is either 2, 4, 6, 8, or zero.

'A number will be completely divided by 2, if its last digit on the right (place value: one) is 2, 4, 6, 8, or zero.'

Which of the following numbers are divisible by 2?

123, 250, 556, 508, 7002, 655, 1008, 8200, 1110, 984, 10101, 1000

Test of divisibility of 3: Let us look carefully at the multiples of 3 below:

3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, …

There is no pattern in the last digits of the multiples of 3. Ramdomly we find 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 at the place value of 'one'. Now explain to your students a new term 'Ultimate Sum of Digits'. To find the ultimate sum of digits of a number, we keep on adding digits till we get a single digit. For example,

587,468

Sum of digits = 5 + 8 + 7 + 4 + 6 + 8 + 8 + 7 + 4 = 38

$$= 3 + 8 = 11$$

$$= 1 + 1 = 2$$

The ultimate sum of digits of 587,468 is 2. Now go back to multiples of 3 and find Sum of digits of each multiple of 3.

Multiples of 3			3	6	9	12	15	18	21	24	27	30	33
Ultimate Sum of Digits			3	6	9	3	6	9	3	6	9	3	6

36	39	42	45	48	51	54	57	60	63	66	69	72	75	78
9	3	6	9	3	6	9	3	6	9	3	6	9	3	6

This is evident from the table above that the ultimate sum of digits of the multiples of 3 is either 3, 6, or 9. So, the test divisibility of 3 can be stated as 'If the ultimate sum of digits of a number is either 3, 6, or 9, the number is divisible by 3.

Which of the following numbers are divisible by 3?
123, 250, 556, 508, 7002, 655, 1008, 8205, 1110, 984, 10101, 1000

Classwork: Complete Exercise A.

طلبہ کو کچھ وقت دیجیے تا کہ وہ ۲ کے اضعاف میں مشترک عنصر تلاش کر کے جواب دے سکیں۔ اس کام کو کرنے میں طلبہ کی رہنمائی کیجیے۔ جیسے

۲ کے اضعاف: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52,
54, 56, 58, 60, 62, 64, 66, 68, 70, …

آپ دیکھ سکتے ہیں کہ ۲ کے ہر اضعاف کے دائیں طرف آخری ہندسہ یا تو 2, 4, 6, 8, یا صفر ہے۔

اگر کسی عدد کے دائیں طرف کا ہندسہ (مقامی قیمت: اکائی) 2, 4, 6, 8, یا صفر ہے تو وہ ۲ پر مکمل تقسیم ہو جائے گا۔

مندرجہ ذیل اعداد میں سے کون سے ۲ پر قابل تقسیم ہیں؟

123, 250, 556, 508, 7002, 655, 1008, 8200, 1110, 984, 10101, 1000

۳ کی تقسیم کی جانچ:

درج ذیل میں ۳ کے اضعاف کو غور سے دیکھیے۔

3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, …

۳ کے ہر اضعاف کے آخری ہندسوں میں کوئی نمونہ نہیں ہے۔ ہم مقامی قیمت: اکائی کے مقام پر 0, 1, 2, 3, 4, 5, 6, 7, 8, اور 9 کے ہندسے تصادفی بے ترتیب ملتے ہیں۔ اب طلبہ کو ایک نئی اصطلاح ہندسوں کا حتمی مجموعہ کی وضاحت کیجیے کسی عدد کے ہندسوں کا حتمی مجموعہ تلاش کرنے کے لیے ہم ہندسوں کو اس وقت تک شامل کرتے رہتے ہیں جب تک کہ ہمیں ایک ہندسہ حاصل نہ ہو جائے۔ مثال کے طور پر
587,469,874

$$5+8+7+4+6+9+8+7+4 = 58 \text{ ہندسوں کا حتمی مجموعہ}$$
$$= 5+8 = 13$$
$$= 1+3 = 4$$

587,469,874 کے ہندسوں کا حتمی مجموعہ (Ultimate Sum of Digits) ۴ ہے۔ اب ۳ کے اضعاف پر واپس جائیں اور ۳ کے ہر اضعاف کے ہندسوں کا حتمی مجموعہ (Ultimate Sum of Digits) معلوم کیجیے۔

3 کے اضعاف		3	6	9	12	15	18	21	24	27	30	33
ہندسوں کا حتمی مجموعہ		3	6	9	3	6	9	3	6	9	3	6

36	39	42	45	48	51	54	57	60	63	66	69	72	75	78
9	3	6	9	3	6	9	3	6	9	3	6	9	3	6

اوپر دیے گئے جدول سے یہ ظاہر ہوتا ہے کہ ۳ کے اضعاف (multiples) ہندسوں کا حتمی مجموعہ ۶،۳ یا ۹ ہے لہٰذا ۳ کی تقسیم کی جانچ (test) کے بارے میں یہ کہا جا سکتا ہے کہ اگر کسی عدد کے ہندسوں کا حتمی مجموعہ (Ultimate Sum of Digits) ۶،۳ یا ۹ ہے تو وہ عدد ۳ پر تقسیم ہو جاتا ہے۔

درج ذیل میں سے کون سے اعداد ۳ سے تقسیم ہو جاتے ہیں؟

123, 250, 556, 508, 7002, 655, 1008, 8205, 1110, 984, 10101, 1000

کلاس ورک: مشق A مکمل کیجیے۔

Competency 2

Pupils will learn to identify prime and composite numbers from 1 – 99.

Stimulus: Pupils have already learnt basic terminology related division as 'Dividend', 'Divisor', and 'Quotient', introduce the concept of remainder

like

$$18 \div 3$$

```
        6
  3 ) 1 8
     −1 8
     _____
        0  ──────→  Remainder
```

$$18 \div 4$$

```
        4
  4 ) 1 8
     −1 6
     _____
        2  ──────→  Remainder
```

$$18 \div 5$$

```
        4
  5 ) 1 8
     −1 5
     _____
        3  ──────→  Remainder
```

$$18 \div 5$$

```
        3
  6 ) 1 8
     −1 8
     _____
        0  ──────→  Remainder
```

قابلیت ۲

طلبہ ۱ سے ۹۹ تک مفرد اعداد (prime number) اعداد اور مرکب اعداد (composite number) کی شناخت کرنا سیکھیں گے۔

محرک : طلبہ تقسیم کے عمل میں استعمال ہونے والی بنیادی اصطلاحوں مقسوم (Dividend) مقسوم علیہ (Divisor) اور حاصل قسمت (Quotient) سے واقف ہیں اب انھیں باقی (remainder) کا تصور متعارف کروائیے۔

جیسے

$$18 \div 3$$

$$\begin{array}{r} 6 \\ 3\overline{)18} \\ -18 \\ \hline 0 \end{array}$$ ⟶ Remainder

$$18 \div 4$$

$$\begin{array}{r} 4 \\ 4\overline{)18} \\ -16 \\ \hline 2 \end{array}$$ ⟶ Remainder

$$18 \div 5$$

$$\begin{array}{r} 3 \\ 5\overline{)18} \\ -15 \\ \hline 3 \end{array}$$ ⟶ Remainder

$$18 \div 5$$

$$\begin{array}{r} 3 \\ 6\overline{)18} \\ -18 \\ \hline 0 \end{array}$$ ⟶ Remainder

$$18 \div 7$$

$$
\begin{array}{r}
2 \\
7 \overline{) 18} \\
-14 \\
\hline
4
\end{array}
$$

4 ⟶ Remainder

$$18 \div 8$$

$$
\begin{array}{r}
2 \\
8 \overline{) 18} \\
-16 \\
\hline
2
\end{array}
$$

2 ⟶ Remainder

In given examples 18 is the dividend and 3, 4, 5, 6, 7, and 8 are divisors. Note that 3 and 6 divides exactly and leaves no remainder while other divisors cannot divide 18 exactly.

So, 3 and 6 are factors of 18.

Factor: A divisor that divides the dividend exactly is called a **factor**.

Now help the pupils to list the factors without doing actual multiplication and list of all factors of

➤ 1: 1	➤ 16: 1, 2, 4, 8, 16
➤ 2: 1, 2	➤ 17: 1, 17
➤ 3: 1, 3	➤ 18: 1, 2, 3, 6, 9, 18
➤ 4: 1, 2, 4	➤ 19: 1, 19
➤ 5: 1, 5	➤ 20: 1, 2, 4, 5, 10, 20
➤ 6: 1, 2, 3, 6	➤ 21: 1, 3, 7, 21
➤ 7: 1, 7	➤ 22: 1, 2, 11, 22
➤ 8: 1, 2, 4, 8	➤ 23: 1, 23
➤ 9: 1, 3, 9	➤ 24: 1, 2, 3, 4, 6, 8, 12, 24
➤ 10: 1, 2, 5, 10	➤ 25: 1, 5, 25
➤ 11: 1, 11	➤ 26: 1, 2, 13, 26
➤ 12: 1, 2, 3, 4, 6, 12	➤ 27: 1, 3, 9, 27
➤ 13: 1, 13	➤ 28: 1, 2, 4, 7, 14, 28
➤ 14: 1, 2, 7, 14	➤ 29: 1, 29
➤ 15: 1, 3, 5, 15	➤ 30: 1, 2, 3, 5, 6,10, 15, 30

$$18 \div 7$$

$$
\begin{array}{r}
2 \\
7 \overline{)\,1\ 8} \\
-1\ 4 \\
\hline
4
\end{array}
$$

4 ⟶ Remainder

$$18 \div 8$$

$$
\begin{array}{r}
2 \\
8 \overline{)\,1\ 8} \\
-1\ 6 \\
\hline
2
\end{array}
$$

2 ⟶ Remainder

درج بالا مثالوں میں ۱۸ مقسوم (Dividend) ہے اور ۳، ۴، ۵، ۶، ۷ اور ۸ مقسوم علیہ ہے غور کیجیے کہ ۳ اور ۶ مکمل طور پر تقسیم ہوتے ہیں اور کوئی بقیہ (remainder) نہیں بچتا۔ جبکہ دیگر مقسوم علیہ، ۱۸ کو مکمل طور پر تقسیم نہیں کر سکتے لہذا ۳ اور ۶ اجزائے ضربی (Factors) ہیں ۱۸ کے۔

اجزائے ضربی: ایک مقسوم علیہ جو مقسوم کو مکمل طور پر تقسیم کر دے اسے جزو ضربی کہتے ہیں۔

اب طلبہ سے کہیں کہ وہ ضرب کا عمل کیے بغیر اجزائے ضربی لکھیے اور تمام factors کو ترتیب وار لکھیے اس کام کو کرنے میں طلبہ کی مدد کیجیے۔

➤ 1: 1	➤ 16: 1, 2, 4, 8, 16
➤ 2: 1, 2	➤ 17: 1, 17
➤ 3: 1, 3	➤ 18: 1, 2, 3, 6, 9, 18
➤ 4: 1, 2, 4	➤ 19: 1, 19
➤ 5: 1, 5	➤ 20: 1, 2, 4, 5, 10, 20
➤ 6: 1, 2, 3, 6	➤ 21: 1, 3, 7, 21
➤ 7: 1, 7	➤ 22: 1, 2, 11, 22
➤ 8: 1, 2, 4, 8	➤ 23: 1, 23
➤ 9: 1, 3, 9	➤ 24: 1, 2, 3, 4, 6, 8, 12, 24
➤ 10: 1, 2, 5, 10	➤ 25: 1, 5, 25
➤ 11: 1, 11	➤ 26: 1, 2, 13, 26
➤ 12: 1, 2, 3, 4, 6, 12	➤ 27: 1, 3, 9, 27
➤ 13: 1, 13	➤ 28: 1, 2, 4, 7, 14, 28
➤ 14: 1, 2, 7, 14	➤ 29: 1, 29
➤ 15: 1, 3, 5, 15	➤ 30: 1, 2, 3, 5, 6, 10, 15, 30

All the numbers which have exactly 2 factors are prime numbers, like

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97,…

All numbers which have more than two factors are composite numbers.

4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, 24, 25, 26, 27, 28, 30, 32, 34, 35, 36, 39, 40, 42, 45, 46, 48, 50, 51, 52, 54, 56, 57, 58, 60, 62, 63, 64, 65, 68, 69, 70, 72, 75, 76, 78, 80, 81, 82, 84, 85, 86, 87, 90, 91, 93, 94, 95, 96, 98, 99,…

Note: 1 has only 1 factor i.e., 1 so, it is neither prime nor composite.

Classwork: Complete Exercise B.

Competency 3

Pupils will learn to identify common factors in the list of all the factors of given numbers.

Rationale: Use the example of common factors given on Page 29.

Classwork: Complete Q1, Q2, and Q3 of Exercise C.

Competency 4

Pupils will learn to write the given number as the product of its all Prime Factors.

Stimulus: Elaborate to your pupils that factorization is a process of successive division in which we choose a factor to divide every time till we get 1 as quotient, like

$$
\begin{array}{c|c}
4 & 120 \\
\hline
5 & 30 \\
\hline
6 & 6 \\
\hline
& 1
\end{array}
\qquad
\begin{array}{c|c}
6 & 72 \\
\hline
4 & 12 \\
\hline
3 & 3 \\
\hline
& 1
\end{array}
$$

$$4 \times 5 \times 6 = 120 \qquad\qquad 6 \times 4 \times 3 = 72$$

In the process of factorisation, if we only choose the factors to divide which are prime then this is called prime facorisation, like

$$
\begin{array}{c|c}
2 & 120 \\
\hline
2 & 60 \\
\hline
2 & 30 \\
\hline
3 & 15 \\
\hline
5 & 5 \\
\hline
& 1
\end{array}
\qquad
\begin{array}{c|c}
2 & 72 \\
\hline
2 & 36 \\
\hline
2 & 18 \\
\hline
3 & 9 \\
\hline
3 & 3 \\
\hline
& 1
\end{array}
$$

$$2 \times 2 \times 2 \times 3 \times 5 = 120 \qquad\qquad 2 \times 2 \times 2 \times 3 \times 3 = 72$$

Classwork: Complete Q4 of Exercise C.

وہ تمام اعداد جن میں دو اجزائے ضربی ہیں مفرد اعداد کہلاتے ہیں، جیسے

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97,...

وہ تمام اعداد جن میں دو سے زیادہ اجزائے ضربی ہیں مرکب اعداد کہلاتے ہیں، جیسے

4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, 24, 25, 26, 27, 28, 30, 32, 34, 35, 36, 39, 40, 42, 45, 46, 48, 50, 51, 52, 54, 56, 57, 58, 60, 62, 63, 64, 65, 68, 69, 70, 72, 75, 76, 78, 80, 81, 82, 84, 85, 86, 87, 90, 91, 93, 94, 95, 96, 98, 99,...

نوٹ: ۱ کا ایک جزو ضربی ہے جو کہ ۱ ہے۔ لہٰذا نہ تو یہ مفرد ہے اور نہ مرکب۔

کلاس ورک: مشق 4B سے مکمل کیجیے۔

قابلیت ۳

طلبہ دیے گئے اعداد کے تمام اجزائے ضربی میں سے مشترک اجزائے ضربی معلوم کرنا سیکھیں گے۔

استدلال: صفحہ ۲۹ پر دی گئی مشترک اجزائے ضربی کی مثالوں کو استعمال کیجیے۔

کلاس ورک: مشق C کے سوالات ۱، ۲ اور ۳ کو مکمل کیجیے۔

قابلیت ۴

طلبہ دیے گئے اعداد (Prime factors) کو اس کے تمام مفرد اجزائے ضربی کے حاصل ضرب (Product) کے طور پر لکھنا سیکھیں گے۔

محرک: طلبہ کو وضاحت سے بتائیے کہ اجزائے ضربی بنانا/عمل تجزی (factorization) لگاتار تقسیم کا ایک ایسا عمل ہے جس میں ہم ہر بار تقسیم کرنے کے لیے ایک جزو ضربی (factor) کا انتخاب کرتے ہیں یہاں تک کہ ہمیں ۱ حاصل نہ ہو جائے، جیسے:

4	120
5	30
6	6
	1

4 × 5 × 6 = 120

6	72
4	12
3	3
	1

6 × 4 × 3 = 72

عملی تجزی میں اگر ہم صرف ان اجزائے ضربی کو تقسیم کے لیے منتخب کریں جو مفرد ہوں تو یہ مفرد عمل تجزی کہلائے گا، جیسے:

2	120
2	60
2	30
3	15
5	5
	1

2 × 2 × 2 × 3 × 5 = 120

2	72
2	36
2	18
3	9
3	3
	1

2 × 2 × 2 × 3 × 3 = 72

کلاس ورک: مشق C کا سوال نمبر ۴ مکمل کیجیے۔

Competency 5

Pupils will learn to identify and list multiples and common multiples of the given numbers.

Rationale: Use the explanations of multiples and common multiples given on Pages 30 and 31. After completing the exercise, elaborate the comaraison of factors and multiples given on Page 31.

Classwork: Complete Exercise D.

قابلیت ۵

طلبہ دیے گئے اعداد میں سے اضعاف اور مشترک اضعاف کو شناخت کرسکیں گے۔

استدلال : کتاب کے صفحہ ۳ اور ۳۱ پر دی گئی اضعاف اور مشترک اضعاف کی وضاحتوں کو استعمال کریں مشق کو مکمل کرنے کے بعد صفحہ ۳۱ پر اجزائے ضربی اضعاف کے دیے گئے موازنے کی وضاحت کیجیے۔

کلاس ورک : مشق D کو مکمل کیجیے۔

Scheme of Work

Unit 4: Factors and Multiples

Estimated Number of Periods: 15

Specific Learning Outcomes	Number of periods
• Identify divisibility rules for 2, 3, 5, and 10.	3 Periods
• Use divisibility tests for 2, 3,5 and 10 on numbers up to 5 digits.	2 Periods
• Identify and differentiate 2-digit prime and composite numbers.	2 Periods
• Find factors of a number up to 50.	2 Periods
• List the first ten multiples of a 1-digit number.	2 Periods
• Differentiate between factors and multiples.	1 Periods
• Factorize a number by using prime factors.	2 Periods
• Determine common factors of two or more 2-digit numbers.	2 Periods
• Determine common multiples of two or more 2-digit numbers.	2 Periods

Prior Knowledge Assessment

• Pupils have already learnt the multiplication tables of 2 to 10.
• They can multiply 2-digit numbers with 1-digit numbers.
• They can divide 2-digit numbers with 1-digit numbers.

Resources

Suggested manipulatives that can be used to create interest and create a link to the topic.

• Array cards
• Counters
• Multiplication table charts/cards
• Worksheets
• Activity Cards

Number	Divisible by 2	Divisible by 3	Divisible by 5	Divisible by 10
18702	Yes	Yes	No	No
24900				
15672				
87534				
42207				
59345				

Written Assignments

Exercises	Class Assignment	Home Assignment
Exercise A	Q1 Q2 (a - h)	Q2 (I, j, k, l)
Exercise B	Q1 (a - h) Q2 (e - l)	Q1 (i – l) Q2 (a – d)
Exercise C	Q1 (f – t)	Q1 (a – e)
Exercise D	Q1 (c – h) Q2 (c - i)	Q1 (a, b) Q2 (a, b)

Evaluation

Ways to evaluate teaching and students learning.

- Oral assessment
- Written assessment.
- Teacher's assessment
- Peer assessment
- Personal assessment

Step by Step Solution Guide

EXERCISE C   Pg 30

A factor is a number that divides another number exactly without leaving a remainder

3a) 6 and 32

1 × 6 = 6	1 × 32 = 32
2 × 3 = 6	2 × 16 = 32
3 × 2 = 6	4 × 8 = 32
6 × 1 = 6	8 × 4 = 32

Common factors are 1 and 2

b) 8 and 12

1 × 8 = 8	1 × 12 = 12
2 × 4 = 8	2 × 6 = 12
4 × 2 = 8	3 × 4 = 12
	4 × 3 = 12
	6 × 2 = 12

Common factors are 1, 2, 4

c) 14 and 48

1 × 14 = 14	1 × 48 = 48
2 × 7 = 14	2 × 24 = 48
7 × 2 = 14	3 × 16 = 48
	4 × 12 = 48
	8 × 6 = 48

Common factors are 1, 2

d) 20 and 40

1 × 20 = 20	1 × 40 = 40
2 × 10 = 20	2 × 20 = 40
4 × 5 = 20	4 × 10 = 40
10 × 2 = 20	5 × 8 = 40
20 × 1 = 20	20 × 2 = 40
5 × 4 = 20	40 × 1 = 40
	10 × 4 = 40

Common factors are 1, 2, 4, 5, 10, 20

e) 15 and 30

1 × 15 = 15	1 × 30 = 30
3 × 5 = 15	2 × 15 = 30
5 × 3 = 15	3 × 10 = 30
15 × 1 = 15	5 × 6 = 30

6 × 5 = 30
10 × 3 = 30
15 × 2 = 30

Common factors are 1, 3, 5, 15

f) 15 and 20

1 × 15 = 15	1 × 20 = 20
3 × 5 = 15	2 × 10 = 20
5 × 3 = 15	4 × 5 = 20
	5 × 4 = 20

Common factors are 1, 5

Pg 19

g) 12, 36 and 42

1 × 12 = 12	1 × 36 = 36	1 × 42 = 42
2 × 6 = 12	2 × 18 = 36	2 × 21 = 42
3 × 4 = 12	3 × 12 = 36	3 × 14 = 42
4 × 3 = 12	4 × 9 = 36	6 × 7 = 42
6 × 2 = 12	6 × 6 = 36	

Common factors are 1, 2, 3, 6

h) 11, 22 and 55

1 × 11 = 11	1 × 22 = 22	1 × 55 = 55
11 × 1 = 11	2 × 11 = 22	5 × 11 = 55
	11 × 2 = 22	11 × 5 = 55

Common factors are 1, 11

i) 5, 10 and 40

1 × 5 = 5	1 × 10 = 10	1 × 40 = 40
5 × 1 = 5	2 × 5 = 10	2 × 20 = 40
	5 × 2 = 10	4 × 10 = 40
	10 × 1 = 10	5 × 8 = 40
		8 × 5 = 40
		10 × 4 = 40
		40 × 1 = 40

Common factors are
1, 5

Review Exercise

I. Which of the following numbers are not divisible by 3? Circle the numbers.

> 1832   134   417   6104   33210

2. Circle all the numbers that are divisible by 5?

> 552   6785   76480   1183   790   1389   70
>
> 6637   95   55556   3865

3. a. Underline the numbers which are divisible by 2, circle the numbers that are divisible by 10.

> 152   830   78   2225   214   647   777
>
> 76331   2676   2570   6003   13130   3876   888

b. From the above box, write all the numbers that are divisible by 2 and 10 both.

_____

4. Encircle all prime numbers and cross all composite numbers from the box below.

> 9   12   23   47   52   61   74   80
>
> 89   33   97   100

5. Write all the prime numbers between 25 and 40.

6. Write all composite numbers between 65 and 80.

7. List down all the factors of 88.

8. List down the factors of each number.

    a. 15   **b.** 21   **c.** 25   **d.** 35   **e.** 42   **f.** 50

9. Find common factors of the following.

    a. 6 and 32   **b.** 14 and 48   **c.** 16 and 24

    d. 36 and 42   **e.** 32, 48 and 56   **f.** 20, 30 and 40

10. Express the following numbers as a product of their prime numbers.

    a. 56   **b.** 36   **c.** 81   **d.** 90

11. List down first 3 multiples of 25.

_____

12. Write first four multiples of each number.

    a. 5   **b.** 12   **c.** 24   **d.** 33   **e.** 45   **f.** 50

13. Find first 3 common multiples of the following set of numbers.

    a. 4 and 10   **b.** 4 and 6   **c.** 10 and 15

    d. 30 and 60   **e.** 20 and 50   **f.** 12 and 15

Answer Key

1. 1832, 134, 6104

2. 6785, 76480, 790, 70, 95, 3865

3. a. Divisible by 2: 152, 830, 78, 214, 2676, 2570, 13130, 3876, 888

   b. Divisible by 10: 830, 2570, 13130

4. Prime Numbers: 23, 47, 61, 89, 97

   Composite Numbers: 9, 12, 52, 74, 80, 33, 100

5. Prime numbers between 25 and 40: 29, 31, 37

6. Composite numbers between 65 and 80: 65, 66, 68, 69, 70, 72, 74, 75, 76, 77, 78, 80

7. Factors of 88: 1, 2, 4, 8, 11, 22, 44, 88

8. a. **15:** 1, 3, 5, 15   b. **21:** 1, 3, 7, 21   c. **25:** 1, 5, 25

   d. **35:** 1, 5, 7, 35   e. **42:** 1, 2, 3, 6, 7, 14, 21, 42   f. **50:** 1, 2, 5, 10, 25, 50

9. a. **6 and 32:** 1, 2   b. **14 and 48:** 1, 2   c. **16 and 24:** 1, 2, 4, 8

   d. **36 and 42:** 1, 2, 3, 6   e. **32, 48 and 56:** 1, 2, 4, 8

   f. **20, 30 and 40:** 1, 2, 5, 10

10. a. $56 = 2 \times 2 \times 2 \times 7$ b. $36 = 2 \times 2 \times 3 \times 3$

    c. $81 = 3 \times 3 \times 3 \times 3$ d. $90 = 2 \times 3 \times 3 \times 5$

11. 25, 50, 75

12. a. 5, 10, 15, 20   b. 12, 24, 36, 48   c. 24, 48, 72, 96

    d. 33, 66, 99, 132   e. 45, 90, 135, 180   f. 50, 100, 150, 200

13. a. 20, 40, 60   b. 12, 24, 36   c. 30, 60, 90

    d. 60, 120, 180   e. 100, 200, 300   f. 60, 120, 180

Bilingual Concept Builder Notes

Competency 1

Pupils will learn to identify proper, improper, and unit fractions. They will also learn to read and write improper fraction as mixed fraction of whole number and a fraction.

Stimulus: Explain your pupils that a proper fraction is a part of whole thing so it is always less than one whole thing like

$$\frac{5}{8}$$
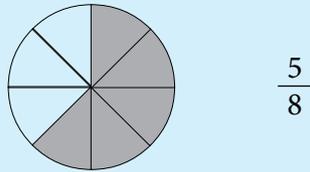
A proper fraction has smaller numerator than the denominator.

An imprper fraction contains whole objects as well as fraction. An improper a fraction is written as

$$\frac{\text{Total number of shaded parts}}{\text{Total number of equal parts in each object}} = \frac{5}{8}$$
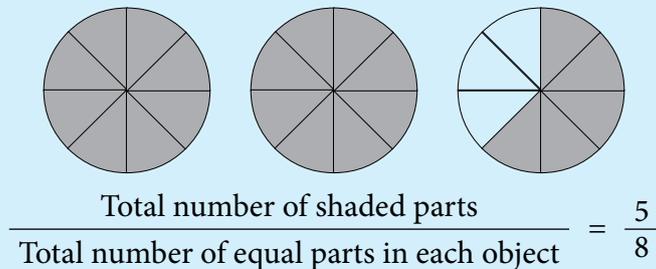
An improper fraction has larger numerator than the denominator.

A mixed number is basically an improper fraction, mentioned as a combination of the whole objects and the fraction.

$$\text{Whole Number} \quad \frac{\text{shaded parts in the incomplete object}}{\text{Total number of equal parts in each object}}$$

$$3 \text{ wholes and } \frac{5}{6} = 3\frac{5}{6}$$
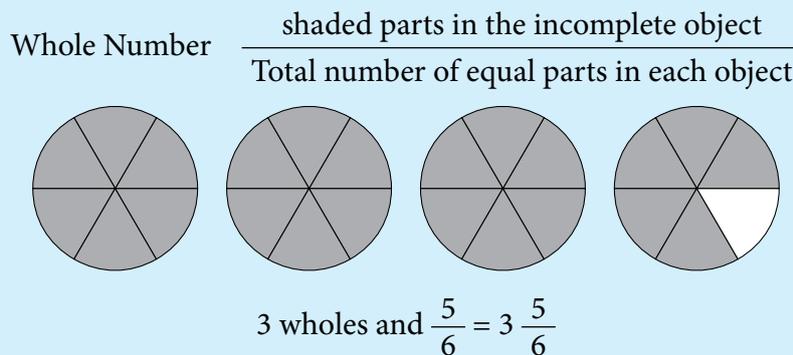
A unit fraction contains 1 as its numerator. For example, $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{7}, \frac{1}{12}$ and so on.

قابلیت ۱

طلبہ واجب، غیر واجب اور اکائی کسور کی شناخت کرنا سیکھیں گے۔ وہ ایک غیر واجب کسر کو ایک مکمل عدد کی کسر اور مخلوط کسر کے طور پر لکھنا اور پڑھنا سیکھیں گے۔

محرک: طلبہ کو وضاحت کے ساتھ بتائیے کہ ایک واجب کسر کسی پوری چیز کا حصّہ ہے لہٰذا یہ ہمیشہ پوری چیز کی بہ نسبت چھوٹی ہوتی ہے۔

$$\frac{5}{8}$$
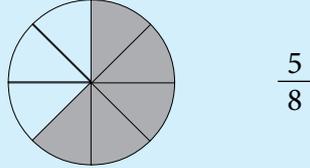
جیسے ایک غیر واجب کسر کا شمار کنندہ اپنے مخرج یا نسب نما سے چھوٹا ہوتا ہے۔

ایک غیر واجب کسر پوری چیز یا پورے کا حصّہ بھی ہوسکتی ہے ایک غیر واجب کسر کو لکھنے کا طریقہ دیکھیے۔
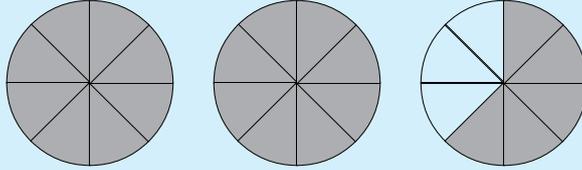
$$\frac{\text{رنگین حصوں کی کل تعداد}}{\text{ہر شکل میں مساوی حصوں کی کل تعداد}} = \frac{21}{8}$$

ایک غیر واجب کسر کا شمار کنندہ بڑا اور نسب نما چھوٹا ہوتا ہے۔

ایک مخلوط عدد (mixed number) ایک غیر واجب کسر ہے جس کا ذکر پوری چیز اور کسر کے امتزاج کے طور پر کیا جا چکا ہے۔

$$\frac{\text{نامکمل شکل کے رنگین حصوں کی کل تعداد}}{\text{ہر شکل کے مساوی حصوں کی کل تعداد}} \quad \text{مکمل عدد}$$
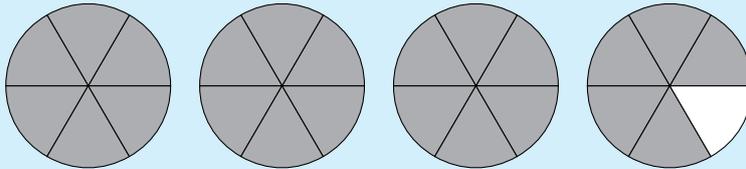
$$3 \text{ wholes and } \frac{5}{6} = 3\frac{5}{6}$$

ایک پوری شکل کا ایک بے رنگ حصّہ اکائی کسر یعنی ۱ کو ظاہر کر رہا ہے جو اس کا شمار کنندہ ہے۔ جیسے $\frac{1}{2}$، $\frac{1}{3}$، $\frac{1}{4}$، $\frac{1}{7}$، $\frac{1}{12}$ وغیرہ

کلاس ورک: مشق A کو مکمل کیجیے۔

Classwork: Complete Exercise A.

Competency 2

Pupils will learn to represent mixed numbers as improper fractions and vice versa.
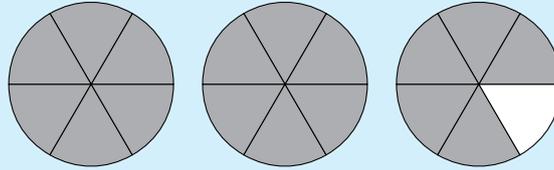
The above figures show two whole objects and a fraction 5 out of 6. As a mixed number, it can be written as

$$2 \text{ wholes and } \frac{5}{6} = 2\frac{5}{6}$$

As an improper fraction it can be written as

$$\frac{\textit{Total number of shaded parts}}{\textit{Total number of equal parts in each object}} = \frac{17}{6}$$

That shows $= 2\frac{5}{6} = \frac{17}{6}$

Note that denominator remains unchanged in both improper fraction and mixed number form.

To change the mixed number to improper fraction, we will use the values from mixed number in the following way:

$$\textit{Improper Fraction} = \frac{\textit{Denominator} \times \textit{Whole Number} + \textit{Numerator}}{\textit{Denominator}}$$

Improper Fraction $= 2\frac{6 \times 2 + 5}{6} = \frac{12 + 5}{6} = \frac{17}{6}$

To convert the improper fraction to the mixed number form, we will divide the numerator by the denominator to get the quotient and the remainder.

Classwork: Complete Exercise B.

Competency 3

Pupils will learn to reduce a given fraction to its lowest or simplest form.

قابلیت ۱

طلبہ مخلوط اعداد (mixed number) کو بطور غیر واجب کسر کے طور پر یا اس کے برعکس کے سیکھیں گے۔
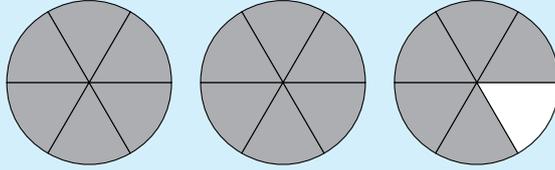
اوپر دی گئی اشکال ۲ پوری چیز اور ایک کسری حصے کو ۶ میں سے ۵ کے طور پر ظاہر کرتی ہے ایک مخلوط کسر یا مخلوط عدد کے طور پر اسے یوں بھی لکھ سکتے ہیں۔

$$2 \text{ wholes and } \frac{5}{6} = 2\frac{5}{6}$$

ایک غیر واجب کسر کے طور پر ایسے بھی لکھا جا سکتا ہے۔

$$\frac{\text{رنگین حصوں کی کل تعداد}}{\text{ہر شکل میں مساوی حصوں کی کل تعداد}} = \frac{17}{6}$$

جو ظاہر کرتا ہے کہ $= 2\frac{5}{6} = \frac{17}{6}$

غور کیجیے کہ غیر واجب کسر اور مخلوط عدد دونوں کے مخرج یا نسب نما (denominator) میں کوئی تبدیلی واقع نہیں ہوئی۔

متفرق عدد یا مخلوط عدد کو غیر واجب کسر میں تبدیل کرنے کے لیے، ہم متفرق یا مخلوط کی قدروں کو درج ذیل طریقے سے استعمال کریں گے۔

$$\text{غیر واجب کسر} = \frac{\text{Denominator} \times \text{مکمل عدد} + \text{شمار کنندہ}}{\text{Denominator یا نسب نما مخرج}}$$

$$\text{غیر واجب کسر Improper Fraction} = 2\frac{6 \times 2 + 5}{6} = \frac{12 + 5}{6} = \frac{17}{6}$$

غیر واجب کسر کو مخلوط عدد کی شکل میں تبدیل کرنے کے لیے، تاکہ ہمیں حاصل قسمت اور باقی حاصل عدد کو مخرج یا نسب نما سے تقسیم کریں گے۔

$$\frac{17}{6}$$

$$6\,)\overline{\,17\,} \quad 2 \longrightarrow \boxed{\text{حاصل قسمت}}$$
$$\underline{-12}$$
$$5 \longrightarrow \boxed{\text{باقی}}$$

کلاس ورک: مشق B کو مکمل کیجیے۔

قابلیت ۳

طلبہ کسی دی گئی کسر کو اس کی سب سے کم یا سادہ ترین شکل میں لکھنا سیکھیں گے۔

Stimulus: The simplest form of a fraction is an equivalent fraction with smallest possible numerator and denominator. We can get equivalent fractions of $\frac{1}{4}$ as

$$\frac{1 \times 3}{4 \times 3} = \frac{3}{12}$$

$$\frac{1 \times 5}{4 \times 5} = \frac{5}{20}$$

$$\frac{1 \times 6}{4 \times 6} = \frac{6}{24}$$

$$\frac{1 \times 8}{4 \times 8} = \frac{8}{32}$$

$\frac{3}{12}, \frac{5}{20}, \frac{6}{24}, \frac{8}{32},$ and $\frac{1}{4}$ are the equivalent fractions.

Out of all the above equivalent fractions, $\frac{1}{4}$ is the simplest or lowest form.

Equivalent fractions $\frac{30}{120}$ of can be made in the following way as well.

$$\frac{30 \div 2}{120 \div 2} = \frac{15}{60}$$

$$\frac{15 \div 3}{60 \div 3} = \frac{5}{20}$$

$$\frac{5 \div 5}{20 \div 5} = \frac{1}{4}$$

$\frac{30}{120}, \frac{15}{60}, \frac{5}{20},$ and $\frac{1}{4}$ are the equivalent fractions.

Out of all the above equivalent fractions, $\frac{1}{4}$ is the simplest or lowest form.

Classwork: Complete Exercise C.

Competency 4

Pupils will learn to identify like and unlike fractions. They will also learn to compare the given two fractions and decides left-hand side fraction is smaller or greater than the right-hand side fraction. Based on the same skill, they will write given fractions in ascending and descending order.

Rationale: Use the explanations given on pages 39 and 40 to get the desired outcomes.

Classwork: Complete Exercise D.

محرک : ایک کسر کی سب سے سادہ شکل ایک ایسی مترادف کسر ہے جس کا شمار کنندہ اور مخرج یا نسب نما دونوں ہی چھوٹے ہوں، ہم $\frac{1}{4}$ کی مترادف کسور کو حاصل کرنے کے لیے درج ذیل عمل کریں گے۔

$$\frac{1 \times 3}{4 \times 3} = \frac{3}{12}$$

$$\frac{1 \times 5}{4 \times 5} = \frac{5}{20}$$

$$\frac{1 \times 6}{4 \times 6} = \frac{6}{24}$$

$$\frac{1 \times 8}{4 \times 8} = \frac{8}{32}$$

$\frac{8}{32} , \frac{6}{24} , \frac{5}{20} , \frac{3}{12}$ اور $\frac{1}{4}$ مترادف کسور ہیں

اوپر دی گئی تمام مترادف کسور (equivalent fractions) ہیں، $\frac{1}{4}$ کی کسر سب سے سادہ اور قدر میں سب سے کم ہے

اسی طرح $\frac{30}{120}$ کی مترادف کسور کو ہم درج ذیل طریقے سے حاصل کر سکتے ہیں۔

$$\frac{30 \div 2}{120 \div 2} = \frac{15}{60}$$

$$\frac{15 \div 3}{60 \div 3} = \frac{5}{20}$$

$$\frac{5 \div 5}{20 \div 5} = \frac{1}{4}$$

مذکورہ بالا تمام مترادف کسور حصوں میں سے، $\frac{1}{4}$ سب سے آسان یا کم ترین شکل ہے۔

$\frac{5}{20} , \frac{15}{60} , \frac{30}{120}$ اور $\frac{1}{4}$ مترادف کسور ہیں

کلاس ورک : مشق C کو مکمل کیجیے۔

قابلیت ۴

طلبہ مماثل (like) اور غیر مماثل کسور (unlike fractions) کی شناخت کرنا سیکھیں گے۔ وہ دی گئی دو کسروں کا موازنہ کر کے جان سکیں گے کہ ان میں سے دائیں ہاتھ والی کسر اپنے بائیں ہاتھ والی کسر سے چھوٹی ہے یا بڑی۔ اس مہارت کی بنیاد پر وہ دی گئی کسور کو صعودی (ascending) اور نزولی (descending) ترتیب میں لکھیں گے۔

استدلال : مطلوبہ نتائج کے حصول کے لیے صفحہ ۳۹ اور ۴۰ پر دی گئی وضاحتوں کا استعمال کیجیے۔

کلاس ورک : مشق 5D کو مکمل کیجیے۔

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Scheme of Work

Unit 5: Fractions

Estimated Number of Periods: 15

| Specific Learning Outcomes	Number of periods
• Recognise like and unlike fractions.	2 Periods
• Compare two unlike fractions by converting them to equivalent fractions with the same denominator.	3 Periods
• Simplify fractions to the lowest form.	2 Periods
• Identify (unit, proper, improper) fractions and mixed numbers.	4 Periods
• Convert improper fractions to mixed numbers and vice versa.	2 Periods
• Arrange fractions in ascending and descending order.	2 Periods

Prior Knowledge Assessment

- Students understand that a fraction represents a portion of a whole.
- They are accustomed to using halves and quarters in everyday situations

Resources

Suggested manipulatives that can be used to create interest and create a link to the topic.

- Chits
- Blocks,
- Rubber bands,
- Fraction charts
- Fraction blocks
- Shape cutouts
- Worksheet

Written Assignments

Exercises	Class Assignment	Home Assignment
Exercise A	Q1 Q2 (a - h)	Q2 (I, j, k, l)
Exercise B	Q1 (a - h) Q2 (e - l)	Q1 (i – l) Q2 (a – d)
Exercise C	Q1 (f – t)	Q1 (a – e)
Exercise D	Q1 (c – h) Q2 (c - i)	Q1 (a, b) Q2 (a, b)

Evaluation

Ways to evaluate teaching and students learning.

- Oral assessment
- Written assessment.
- Teacher's assessment
- Peer assessment
- Personal assessment

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Review Exercise

1. Classify the following fractions as unit fractions, proper fractions, improper fractions, and mixed numbers.

a. $\dfrac{1}{3}$, $\dfrac{1}{26}$, $\dfrac{1}{100}$

b. $\dfrac{8}{3}$, $\dfrac{35}{6}$, $\dfrac{78}{10}$

c. $4\dfrac{1}{3}$, $2\dfrac{1}{26}$, $5\dfrac{1}{100}$

d. $\dfrac{5}{18}$, $\dfrac{2}{18}$, $\dfrac{7}{18}$

2. Label the mixed numbers below.

a.

b.

c.

_____   _____   _____

d.

e.

_____   _____
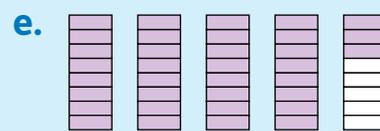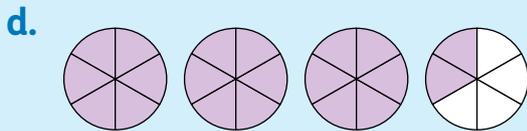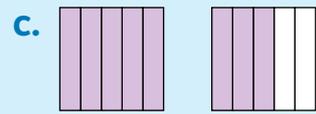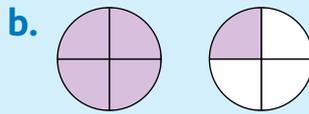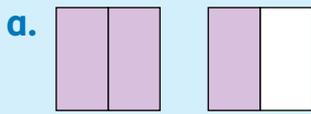
3. Write the following as improper fractions.

a. $6\dfrac{3}{5}$

b. $5\dfrac{2}{9}$

c. $5\dfrac{6}{8}$

d. $3\dfrac{4}{7}$

e. $9\dfrac{2}{6}$

f. $4\dfrac{8}{9}$

4. Write the following as mixed numbers.

a. $\dfrac{14}{3}$

b. $\dfrac{76}{12}$

c. $\dfrac{35}{4}$

d. $\dfrac{40}{6}$

e. $\dfrac{51}{9}$

f. $\dfrac{11}{5}$

5. Compare the given fractions and fill in the blanks with < or >.

a. $\dfrac{2}{5}$ _____ $\dfrac{3}{10}$

b. $\dfrac{3}{4}$ _____ $\dfrac{5}{6}$

c. $\dfrac{11}{12}$ _____ $\dfrac{9}{10}$

d. $\dfrac{7}{14}$ _____ $\dfrac{12}{28}$

e. $\dfrac{15}{24}$ ___ $\dfrac{7}{12}$ f. $\dfrac{1}{3}$ ___ $\dfrac{5}{9}$

6. State whether true or false.

a. $\dfrac{1}{2} < \dfrac{1}{4}$ _____

b. $\dfrac{1}{3} > \dfrac{1}{6}$ _____

c. $\dfrac{1}{4} = \dfrac{3}{8}$ _____

d. $\dfrac{1}{6} < \dfrac{3}{12}$ _____

e. $\dfrac{2}{5} > \dfrac{3}{10}$ _____

7. Arrange the following fractions in ascending order.

a. $\dfrac{7}{10}$, $\dfrac{2}{5}$, $\dfrac{1}{2}$ b. $\dfrac{2}{7}$, $\dfrac{3}{4}$, $\dfrac{8}{14}$

c. $\dfrac{3}{18}$, $\dfrac{1}{9}$, $\dfrac{5}{6}$ d. $\dfrac{3}{7}$, $\dfrac{9}{14}$, $\dfrac{1}{2}$

8. Arrange the following fractions in descending order.

a. $\dfrac{5}{18}$, $\dfrac{2}{3}$, $\dfrac{5}{9}$ b. $\dfrac{9}{16}$, $\dfrac{5}{8}$, $\dfrac{1}{4}$

c. $\dfrac{4}{10}$, $\dfrac{6}{20}$, $\dfrac{9}{5}$ d. $\dfrac{11}{16}$, $\dfrac{8}{8}$, $\dfrac{3}{4}$

Answer Key

1. Unit Fractions: $\dfrac{1}{3}$, $\dfrac{1}{26}$, $\dfrac{1}{100}$

Proper Fractions: $\dfrac{5}{18}$, $\dfrac{2}{18}$, $\dfrac{7}{18}$

Improper Fraction: $\dfrac{8}{3}$, $\dfrac{35}{6}$, $\dfrac{78}{10}$

Mixed Numbers: $4\dfrac{1}{13}$, $2\dfrac{1}{26}$, $5\dfrac{1}{100}$

3. a. $\dfrac{33}{5}$ **b.** $\dfrac{47}{9}$ **c.** $\dfrac{46}{8}$ **d.** $\dfrac{25}{7}$ **e.** $\dfrac{56}{6}$ **f.** $\dfrac{44}{9}$

4. a. $4\dfrac{2}{3}$ **b.** $6\dfrac{1}{3}$ **c.** $8\dfrac{3}{4}$ **d.** $6\dfrac{2}{3}$ **e.** $5\dfrac{2}{3}$ **f.** $2\dfrac{1}{5}$

5. a. > **b.** < **c.** > **d.** > **e.** > **f.** <

6. a. False **b.** True **c.** False **d.** True **e.** True

7. a. $\dfrac{1}{2}$, $\dfrac{2}{5}$, $\dfrac{7}{10}$ **b.** $\dfrac{2}{7}$, $\dfrac{8}{14}$, $\dfrac{3}{4}$

   c. $\dfrac{1}{9}$, $\dfrac{3}{18}$, $\dfrac{5}{6}$ **d.** $\dfrac{1}{2}$, $\dfrac{3}{7}$, $\dfrac{9}{14}$

8. a. $\dfrac{2}{3}$, $\dfrac{5}{9}$, $\dfrac{5}{18}$ **b.** $\dfrac{5}{8}$, $\dfrac{9}{16}$, $\dfrac{1}{4}$

   c. $\dfrac{9}{5}$, $\dfrac{4}{10}$, $\dfrac{6}{20}$ **d.** $\dfrac{8}{8}$, $\dfrac{11}{16}$, $\dfrac{3}{4}$

Bilingual Concept Builder Notes

Competency 1

Pupils will learn to add and subtract given like fractions.

Stimulus: Addition and subtraction of fractions is performed on numerators only provided they are mentioned with the same denominator i.e., like fractions.
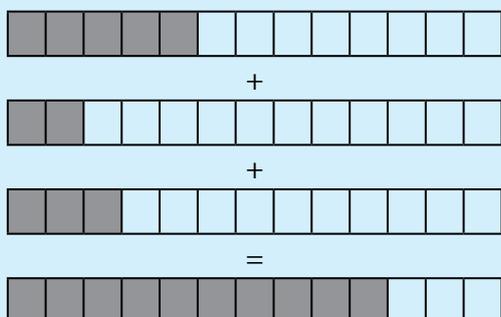
$$\frac{5}{13} + \frac{2}{13} + \frac{3}{13} = \frac{5 + 2 + 3}{13} = \frac{10}{13}$$
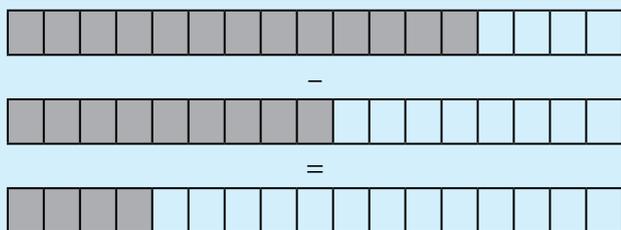
$$\frac{13}{17} - \frac{9}{17} = \frac{13 - 9}{17} = \frac{4}{17}$$

Classwork: Complete Exercise A.

Competency 2

Pupils will learn to multiply given fractions in different forms.

Rationale: There is only one rule for the multiplication of fractions i.e.,

$$Product\ of\ Fraction = \frac{Product\ of\ all\ numerators}{Product\ of\ all\ denominators}$$

$$\frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} = \frac{2 \times 3 \times 4}{3 \times 4 \times 5} = \frac{24}{60}$$

To multiply a fraction with a whole, explain to them that every whole number can be written as a fraction with denominator 1, e.g.,

قابلیت ۱

طلبہ مماثل کسور (like fractions) کو جمع اور تفریق کرنا سیکھیں گے۔

محرک: کسور کی جمع اور تفریق ان کے شمار کنندہ (nominator) کے ساتھ کیا جاتا ہے بشرطیکہ ان کا نسب نما (denominator) ایک ہو جیسے
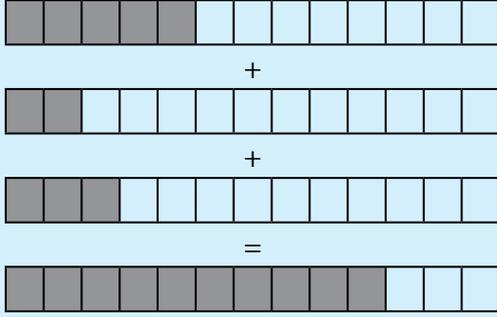
$$\frac{5}{13} + \frac{2}{13} + \frac{3}{13} = \frac{5+2+3}{13} = \frac{10}{13}$$
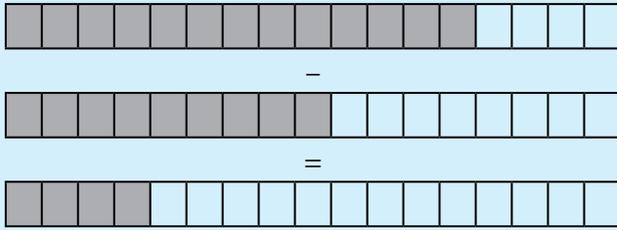
$$\frac{13}{17} - \frac{9}{17} = \frac{13-9}{17} = \frac{4}{17}$$

کلاس ورک: مشق A کو مکمل کیجیے۔

قابلیت ۲

طلبہ کسور کی مختلف شکلوں کو ضرب دینا سیکھیں گے۔

استدلال: طلبہ جانیں گے کہ کسور کو ضرب دینے کا صرف ایک اصول ہے۔

$$\frac{\text{تمام شمار کنندہ کی حاصل ضرب}}{\text{تمام نسب نما کی حاصل ضرب}} = \text{کسور کی حاصل ضرب}$$

$$\frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} = \frac{2 \times 3 \times 4}{3 \times 4 \times 5} = \frac{24}{60}$$

کسی کسر کو پورے یا مکمل عدد کے ساتھ ضرب دینے کے لیے ہر پورے یا مکمل عدد کو بطور کسر لکھنے کے لیے ۱ کو بطور نسب نما لکھا جاتا ہے جیسے

$$9 = \frac{9}{1}, \quad 71 = \frac{71}{1}, \quad 257 = \frac{257}{1}, \quad \text{and } 3254\frac{3254}{1} \text{ etc.}$$

مکمل اعداد کے ساتھ کسر کو ضرب کرنے کے لیے، صرف مکمل اعداد کو ۱ کے ساتھ کسر کے طور پر لکھیے اور ضرب اسی طرح کیجیے جیسے پہلے بتایا گیا ہے۔

$$9 = \frac{9}{1}, \quad 71 = \frac{71}{1}, \quad 257 = \frac{257}{1}, \quad \text{and } 3254 \frac{3254}{1} \text{ etc.}$$

To multiply fractions with whole numbers, just write whole numbers as fractions with denominator 1 and carry out multiplication in the same way as described before.

$$\frac{2}{13} \times 5 \frac{2}{13} \times \frac{5}{1} = \frac{2 \times 5}{13 \times 1} = \frac{10}{13}$$

To multiply fraction expressed as mixed numbers, first convert them to improper fractions as in the process of multiplying fractions, we need only numerators and denominators.

$$2 \frac{1}{3} \times 1 \frac{3}{4} = \frac{7}{3} \times \frac{7}{4} = \frac{7 \times 7}{3 \times 4} = \frac{49}{12} = 4 \frac{1}{12}$$

Classwork: Complete Exercise B.

Competency 3

Pupils will learn to divide given fractions.

Stimulus: Like multiplication, in division as well we need only numerator and denominator, no whole numbers. If you have a mixed number, first change it to improper fraction and then start division.

Reciprocal: At this level, we cannot explain in depth the concept of reciprocal to pupils. Just elaborate them that how to get the reciprocal of a given fraction. To get the reciprocal, we simply change the places of numerator and denominator, like

Reciprocal of $= \frac{3}{5} = \frac{5}{3}$

Reciprocal of $9 =$ Reciprocal of $\frac{9}{1} = \frac{1}{9}$

(Whole number is mentioned as fraction with denominator 1)

Reciprocal of $2 \frac{3}{5} =$ Reciprocal of $\frac{13}{5} = \frac{5}{13}$

(Mixed number as improper fraction)

There is no process of division in fractions. While dividing fractions, we change divisor to its reciprocal and as a result division sign is replaced by multiplication, like

$$\frac{5}{6} \div \frac{2}{3}$$

Dividend   Divisor
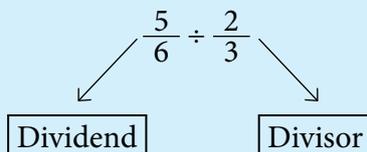
Changing the divisor to its reciprocal, will change division to multiplication, as

$$\frac{5}{6} \times \frac{3}{2} \quad \text{(Reciprocal of } \frac{2}{3} = \frac{3}{2}\text{)}$$

$$\frac{2}{13} \times 5 \quad \frac{2}{13} \times \frac{5}{1} = \frac{2 \times 5}{13 \times 1} = \frac{10}{13}$$

مخلوط اعداد (mixed number) والی کسور کو ضرب دینے کے لیے، پہلے اسے غیر واجب کسور میں تبدیل کیجیے کیونکہ کسور کو ضرب دینے کے لیے شمار کنندہ اور نسب نما درکار ہے جیسے

$$2\frac{1}{3} \times 1\frac{3}{4} = \frac{7}{3} \times \frac{7}{4} = \frac{7 \times 7}{3 \times 4} = \frac{49}{12} = 4\frac{1}{12}$$

کلاس ورک : مشق B کو مکمل کیجیے۔

قابلیت ۳

طلبہ دی گئی کسور کو تقسیم کرنا سیکھیں گے۔

محرک : ضرب کی طرح تقسیم کے لیے ہمیں صرف شمار کنندہ اور نسب نما کی ضرورت ہوتی ہے جب کہ مکمل عدد درکار نہیں ہوتا لہٰذا اگر کوئی مخلوط عدد ہے تو سب سے پہلے اسے غیر واجب کسر (improper fraction) میں تبدیل کیجیے اور پھر تقسیم کا عمل انجام دیجیے۔

ضربی معکوس (Reciprocal): اس مرحلے پر ہم طلبہ کو ضربی معکوس کا تصور زیادہ تفصیل سے نہیں بتا سکتے لہٰذا انھیں صرف یہ بتائیے کہ ہم دی گئی کسر کا ضربی معکوس کس طرح حاصل یا معلوم کر سکتے ہیں۔ کسی کسر کا ضربی معکوس حاصل کرنے کے لیے ہم شمار کنندہ اور نسب نما کی جگہ آپس میں الٹ کر لکھ دیتے ہیں جیسے

$$\frac{3}{5} = \frac{3}{5} \text{ کا ضربی معکوس}$$

$$\frac{1}{9} = \frac{9}{1} \text{ کا ضربی معکوس } = 9 \text{ کا ضربی معکوس}$$

مکمل عدد کو کسر کی شکل میں لکھنے کے لیے ۱ کو نسب نما کے طور پر لکھیے۔

$$\frac{5}{13} = \frac{13}{5} \text{ کا ضربی معکوس } = 2\frac{3}{5} \text{ کا ضربی معکوس}$$

(مخلوط عدد بطور غیر واجب کسر)

جب ہم کسور کو تقسیم کرتے ہیں تو کسور کے مابین تقسیم کا عمل نہیں ہوتا ہم صرف کسور کے تقسیم کنندہ کو اس کے ضربی معکوس میں تبدیل کر لیتے ہیں اور اس کے نتیجے میں تقسیم کی علامت ÷ خود بخود ضرب کی علامت (×) سے بدل جاتی ہے جیسے

$$\frac{5}{6} \div \frac{2}{3}$$

مقسوم علیہ (تقسیم کنندہ)	مقسوم

تقسیم کے عمل یا مقسوم علیہ کو اس کے ضربی معکوس میں تبدیل کرنے کی وجہ سے تقسیم کا عمل ضرب کے عمل میں بدل جائے گا جیسے

$$(\frac{2}{3} = \frac{3}{2} \text{ کا ضربی معکوس }) \quad \frac{5}{6} \times \frac{3}{2}$$

Now simply multiply, as

$$\frac{5}{6} \times \frac{3}{2} = \frac{5 \times 3}{6 \times 2} = \frac{15}{12}$$

So,

$$\frac{5}{6} \times \frac{2}{3} = \frac{15}{12}$$

Dividing a fraction by a whole number, like

$$\frac{12}{13} \div 5 = \frac{12}{13} \div \frac{5}{1} = \frac{12}{13} \times \frac{1}{5} = \frac{12 \times 1}{13 \times 5} = \frac{12}{65}$$

Classwork: Complete Exercise 6C.

Competency 4

Pupils will learn to apply the process of multiplication and division of fractions to real-life problems.

Rationale: Start this exercise only when your pupils have mastered the multiplication and division of fraction. Support your class to understand the story described in each problem. Do write each problem on board and highlight important words and phrases and mention their mathematical equivalents.

Classwork: Complete Exercise D.

اب صرف ضرب کا عمل کیجیے جیسے:

$$\frac{5}{6} \times \frac{3}{2} = \frac{5 \times 3}{6 \times 2} = \frac{15}{12}$$

لہٰذا

$$\frac{2}{3} \times \frac{5}{6} = \frac{15}{12}$$

کسر کو مکمل عدد سے تقسیم کرنا، جیسے
$$\frac{12}{13} \div 5 = \frac{12}{13} \div \frac{5}{1} = \frac{12}{13} \times \frac{1}{5} = \frac{12 \times 1}{13 \times 5} = \frac{12}{65}$$

کلاس ورک : مشق C کو مکمل کیجیے۔

قابلیت ۴

طلبہ کسور کی ضرب اور تقسیم کے عمل کا اطلاق کر کے حقیقی زندگی سے جڑے عبارتی سوالوں کو یہ آسانی حل کر سکیں گے۔

استدلال : مشق کا آغاز اس وقت کیجیے جب طلبہ کسر کی ضرب اور تقسیم میں مہارت حاصل کر لیں ہر عبارتی سوال میں بیان کر دہ مسئلے کو سمجھنے میں طلبہ کی مدد کیجیے۔ اس کے لیے ہر عبارتی سوال پہلے بورڈ پر لکھیے پھر ان میں بیان کر دہ اہم الفاظ اور فقروں کے ریاضیاتی متبادل لکھ دیجیے۔

کلاس ورک : مشق D کو مکمل کیجیے۔

Scheme of Work

Unit 6: Fractions: Four Operations
Estimated Number of Periods: 25

Specific Learning Outcomes	Number of periods
• Add fractions with like denominators.	2 Periods
• Subtract fractions with like denominators.	2 Periods
• Multiply a fraction (proper, improper) and mixed number by a whole number.	5 Periods
• Multiply two fractions (proper, improper) and mixed numbers.	5 Periods
• Divide a fraction (proper, improper) and mixed numbers by a whole number.	5 Periods
• Analyse real-life situations involving fractions by identifying appropriate number operations.	6 Periods

Prior Knowledge Assessment

- The students already know how to add and subtract 'like' fractions. They have learnt mixed fractions, equivalent fractions, ordering and comparing of like fractions.
- Pupils and are knowledgeable about performing number operations.

Resources

Suggested manipulatives that can be used to create interest and create a link to the topic.

- Fraction cards
- Shapes cutouts
- Chits

Written Assignments

Exercises	Class Assignment	Home Assignment
Exercise A	Q1 (a - f) Q2 (a - d) Q3(a - f)	Q1 (g, h, i) Q2 (e, f) Q3 (g, h, i)
Exercise B	Q1 (a - h) Q2 (e - o) Q3 (d – i)	Q1 (i – l) Q2 (a – d) Q3 (a, b, c)
Exercise C	Q1 (c - i)	Q1 (a, b)
Exercise D	Q2 Q4 Q5 Q6	Q1 Q3

Evaluation

Ways to evaluate teaching and students learning.

- Oral assessment
- Written assessment.
- Teacher's assessment
- Peer assessment
- Personal assessment

Step by Step Solution Guide

EXERCISE A   Pg 43

1a) $\dfrac{2}{5} + \dfrac{1}{5}$ b) $\dfrac{5}{7} + \dfrac{1}{7}$ c) $\dfrac{2}{7} + \dfrac{1}{7}$ d) $\dfrac{3}{5} + \dfrac{2}{5}$

$\dfrac{2+1}{5} = \dfrac{3}{5}$ $\dfrac{5+1}{7} = \dfrac{6}{7}$ $\dfrac{2+1}{7} = \dfrac{3}{7}$ $\dfrac{3+2}{5} = \dfrac{5}{5} = 1$

e) $\dfrac{5}{9} + \dfrac{2}{9}$ f) $\dfrac{3}{11} + \dfrac{5}{11}$ g) $\dfrac{7}{20} + \dfrac{11}{20}$ h) $\dfrac{8}{25} + \dfrac{15}{25}$

$\dfrac{5+2}{9} = \dfrac{7}{9}$ $\dfrac{3+5}{11} = \dfrac{8}{11}$ $\dfrac{7+11}{20} = \dfrac{18}{20}$ $\dfrac{8+15}{25} = \dfrac{23}{25}$

i) $\dfrac{19}{32} + \dfrac{23}{32}$

$\dfrac{19+23}{32} = \dfrac{42}{32}$

2a) $\dfrac{2}{6} + \dfrac{2}{6} + \dfrac{1}{6}$ b) $\dfrac{3}{7} + \dfrac{1}{7} + \dfrac{2}{7}$ c) $\dfrac{11}{26} + \dfrac{5}{26} + \dfrac{3}{26}$

$\dfrac{2+2+1}{6} = \dfrac{5}{6}$ $\dfrac{3+1+2}{7} = \dfrac{6}{7}$ $\dfrac{11+5+3}{26} = \dfrac{19}{36}$

d) $\dfrac{23}{15} + \dfrac{1}{15} + \dfrac{7}{15}$ e) $\dfrac{1}{9} + \dfrac{2}{9} + \dfrac{3}{9}$ f) $\dfrac{1}{18} + \dfrac{2}{18} + \dfrac{1}{18}$

$\dfrac{23+1+7}{15} = \dfrac{31}{15}$ $\dfrac{1+2+3}{9} = \dfrac{6}{9}$ $\dfrac{1+2+1}{18} = \dfrac{4}{18}$

3a) $\dfrac{3}{5} - \dfrac{1}{5}$ b) $\dfrac{7}{8} - \dfrac{5}{8}$ c) $\dfrac{6}{7} - \dfrac{5}{7}$ d) $\dfrac{10}{2} - \dfrac{5}{2}$

$\dfrac{3-1}{5} = \dfrac{2}{5}$ $\dfrac{7-5}{8} = \dfrac{2}{8}$ $\dfrac{6-5}{7} = \dfrac{1}{7}$ $\dfrac{10-5}{2} = \dfrac{5}{2}$

e) $\dfrac{5}{8} - \dfrac{3}{8}$

f) $\dfrac{8}{9} - \dfrac{7}{9}$

g) $\dfrac{17}{24} - \dfrac{15}{24}$

h) $\dfrac{29}{33} - \dfrac{18}{33}$

$\dfrac{5-3}{8} = \dfrac{2}{8}$

$\dfrac{8-7}{9} = \dfrac{1}{9}$

$\dfrac{17-15}{24} = \dfrac{2}{24}$

$\dfrac{29-18}{33} = \dfrac{11}{33}$

i) $\dfrac{28}{35} - \dfrac{12}{35}$

$\dfrac{28-12}{35} = \dfrac{16}{35}$

EXERCISE B   Pg 45

- Multiply both the numerators
- Multiply both the denominators
- Reduce the fraction to its simplest form

1a) $\dfrac{1}{4} \times \dfrac{2}{5} = \dfrac{2^1}{20_{10}} = \dfrac{1}{10}$ b) $\dfrac{3}{4} \times \dfrac{5}{6} = \dfrac{15^5}{24_8} = \dfrac{5}{8}$ c) $\dfrac{5}{7} \times \dfrac{3}{4} = \dfrac{15}{28}$

d) $\dfrac{4}{5} \times \dfrac{3}{4} = \dfrac{12^3}{20_5} = \dfrac{3}{5}$ e) $\dfrac{6}{7} \times \dfrac{3}{5} = \dfrac{18}{35}$ f) $\dfrac{4}{5} \times \dfrac{1}{4} = \dfrac{4^1}{20_5} = \dfrac{1}{5}$

g) $\dfrac{2}{3} \times \dfrac{4}{5} = \dfrac{8}{15}$ h) $\dfrac{3}{8} \times \dfrac{2}{3} = \dfrac{6^1}{24_4} = \dfrac{1}{4}$ i) $\dfrac{4}{9} \times \dfrac{3}{4} = \dfrac{12^1}{36_3} = \dfrac{1}{3}$

j) $\dfrac{3}{4} \times \dfrac{16}{3} = \dfrac{48^{12}}{12_3} = \dfrac{12^4}{3_1} = 4$ k) $\dfrac{8}{5} \times \dfrac{5}{6} = \dfrac{40}{30} = \dfrac{4}{3}$ l) $\dfrac{5}{7} \times \dfrac{1}{2} = \dfrac{5}{14}$

2) - Multiply whole number with the numerator only

2a) $\dfrac{3}{4} \times 5 = \dfrac{15}{4}$ b) $\dfrac{3}{8} \times 7 = \dfrac{21}{8}$ c) $\dfrac{5}{8} \times 4 = \dfrac{20^5}{8_2} = 5$ d) $\dfrac{2}{5} \times 3 = \dfrac{6}{5}$

e) $\dfrac{3}{4} \times 3 = \dfrac{9}{4}$ f) $\dfrac{2}{9} \times 7 = \dfrac{14}{9}$ g) $\dfrac{1}{4} \times 3 = \dfrac{3}{4}$ h) $\dfrac{8}{3} \times 4 = \dfrac{32}{3}$

i) $\dfrac{5}{3} \times 3 = \dfrac{15^5}{3_1} = 5$ j) $5 \times \dfrac{9}{20} = \dfrac{45^9}{20_4} = \dfrac{9}{4}$ k) $5 \times \dfrac{2}{9} = \dfrac{10}{9}$ l) $4 \times \dfrac{5}{12} = \dfrac{20^5}{12_3} = \dfrac{5}{3}$

m) $3 \times 1\frac{4}{9} = 3 \times \dfrac{13}{9} = \dfrac{36^4}{9} = 4$ n) $6 \times 2\frac{4}{7} = 6 \times \dfrac{18}{7} = \dfrac{108}{7}$ o) $2 \times 1\frac{5}{6} = 2 \times \dfrac{11}{6}$

$= \dfrac{22}{6} = 1\frac{1}{6}^6$

3a) $3\frac{1}{3} \times 2\frac{1}{8}$

$\frac{10}{3} \times \frac{17}{8} = \frac{170^{85}}{24_{12}} = \frac{85}{12} = 7\frac{1}{12}$

b) $\frac{2}{5} \times 3\frac{1}{2}$

$\frac{2}{5} \times \frac{7}{2} = \frac{14^7}{20_5} = \frac{7}{5} = 1\frac{2}{5}$

c) $4\frac{3}{5} \times 3\frac{1}{4}$

$\frac{23}{5} \times \frac{13}{4} = \frac{299}{20} = 14\frac{19}{20}$

d) $4\frac{2}{6} \times 3\frac{1}{5}$

$\frac{25}{6} \times \frac{16}{5} = \frac{400}{30} = \frac{40}{3} = 13\frac{1}{3}$

e) $3\frac{1}{2} \times \frac{5}{14}$

$\frac{7}{2} \times \frac{5}{14} = \frac{35^5}{28_4} = \frac{5}{4} = 1\frac{1}{4}$

f) $6\frac{3}{7} \times 4\frac{2}{3}$

$\frac{45}{7} \times \frac{14}{3} = \frac{630^{30\,90}}{21_8} = 30$

g) $3\frac{1}{5} \times \frac{9}{16}$

$\frac{16}{5} \times \frac{9}{16} = \frac{144^{26\,9}}{80_{16\,5}} = \frac{9}{5} = 1\frac{4}{5}$

h) $6\frac{3}{5} \times 3\frac{1}{2}$

$\frac{33}{5} \times \frac{7}{2} = \frac{231}{10} = 23\frac{1}{10}$

i) $5\frac{2}{9} \times 7\frac{1}{8}$

$\frac{47}{9} \times \frac{57}{8} = \frac{2679^{893}}{72_{24}} = \frac{893}{24} = 37\frac{5}{24}$

EXERCISE C   Pg 46

• While dividing fractions by whole numbers, express whole number as a
fraction with 1 as the denominator

1a) $\frac{4}{5} \div 2$ b) $3\frac{3}{7} \div 3$ c) $\frac{9}{7} \div 7$

$\frac{4}{5} \times \frac{1}{2} = \frac{4^2}{10_5} = \frac{2}{5}$ $\frac{24}{7} \times \frac{1}{3} = \frac{24^8}{21_7} = \frac{8}{7}$ $\frac{9}{7} \times \frac{1}{7} = \frac{9}{49}$

d) $\frac{7}{11} \div 3$ e) $\frac{4}{9} \div 4$ f) $2\frac{5}{8} \div 3$

$\frac{7}{11} \times \frac{1}{3} = \frac{7}{33}$ $\frac{4}{9} \times \frac{1}{4} = \frac{4^1}{36_9} = \frac{1}{9}$ $\frac{21}{8} \times \frac{1}{3} = \frac{21^7}{24_8} = \frac{7}{8}$

g) $\frac{8}{13} \div 4$ h) $\frac{64}{39} \div 8$ i) $\frac{35}{25} \div 7$

$\frac{8}{13} \times \frac{1}{4} = \frac{8^2}{52_{13}} = \frac{2}{13}$ $\frac{64}{39} \times \frac{1}{8} = \frac{64^8}{312} = \frac{8}{39}$ $\frac{35}{25} \times \frac{1}{7} = \frac{35^{7^1}}{175_{35_5}} = \frac{1}{5}$

EXERCISE D Pg 47

1) Original Price   Rs 40000

     Selling Price $\frac{2}{8} \times 40000 = $ Rs 10000

     $\frac{2}{8} \times 40000 = \frac{\overset{10000}{\cancel{80000}}}{\underset{1}{\cancel{8}}} = 10000$

2) Sahils time $\frac{2}{8}$ hours

     Manis time $\frac{7}{8}$ hours

Hours they both worked $\frac{2}{8} + \frac{7}{8} = \frac{2+7}{8} = \frac{9}{8}$ hours

3) Ribbon used for dress $\frac{4}{15}$ m

     Ribbon used for dupatta $\frac{7}{15}$ m

How much more used for dupatta $\frac{7}{15} - \frac{4}{15} = \frac{1}{5}$ m

     $\frac{7}{15} - \frac{4}{15} = \frac{7-4}{15} = \frac{\overset{1}{\cancel{3}}}{\underset{5}{\cancel{15}}} = \frac{1}{5}$ m

4) Weight of 1 packet of flour $3\frac{1}{3}$ kg

     Weight of 6 packets $3\frac{1}{3} \times 6 = \frac{10}{3} \times 6 = \frac{\overset{20}{\cancel{60}}}{\underset{1}{\cancel{3}}} = 20$ kg

5) Savings   Rs 14350

     Savings used $\frac{3}{5}$

     Money still saved $14350 \times \frac{3}{5} = \frac{\overset{8610}{\cancel{43050}}}{\underset{1}{\cancel{5}}} = $ Rs 8610

6) Packets distributed $10\frac{1}{2}$

     Number of friends   7

     Each friend gets $10\frac{1}{2} \div 7 = \frac{21}{2} \times \frac{1}{7} = \frac{\overset{3}{\cancel{21}}}{\underset{2}{\cancel{14}}} = \frac{3}{2}$

Review Exercise

1. Add these fractions.

a. $\frac{4}{6} + \frac{1}{6}$

b. $\frac{7}{10} + \frac{2}{10}$

c. $\frac{4}{11} + \frac{6}{11}$

d. $\frac{4}{18} + \frac{5}{18}$

e. $\frac{11}{21} + \frac{17}{21}$

f. $\frac{19}{55} + \frac{24}{55}$

2. Subtract the following fractions.

a. $\frac{12}{15} - \frac{14}{15}$

b. $\frac{8}{9} - \frac{4}{9}$

c. $\frac{10}{11} - \frac{2}{11}$

d. $\frac{18}{20} - \frac{9}{20}$

e. $\frac{22}{35} - \frac{9}{35}$

f. $\frac{79}{80} - \frac{47}{80}$

3. Solve the following and then simplify the fraction to the lowest form.

a. $\frac{5}{8} \times 2$

b. $2\frac{5}{4} \times 5$

c. $\frac{3}{20} \times 4$

d. $\frac{4}{12} \times 7$

4. Divide.

a. $\frac{3}{10} \div 9$

b. $\frac{21}{4} \div 14$

c. $\frac{5}{7} \div 15$

d. $\frac{23}{5} \div 23$

e. $\frac{18}{24} \div 3$

f. $5\frac{7}{9} \div 35$

5. Solve the following real-life number stories.

a. Ameerah and her friend ordered a box of doughnuts. Ameerah ate $\frac{6}{12}$ and her friend ate $\frac{4}{12}$ of the doughnuts. How much of the box of doughnuts did they eat altogether?

b. Ali had $\frac{9}{12}$ pizza. He ate $\frac{7}{12}$ of it. How much pizza is left?

c. Haider spent $\frac{6}{10}$ of an hour doing science homework and $\frac{3}{10}$ of an hour doing computers homework. How much time did spend doing homework?

d. Emaan had $\frac{15}{20}$ litre of juice. She drank $\frac{11}{20}$ litre of the juice. How much juice is left?

e. A recipe requires $\frac{1}{3}$ cup of sugar to bake a cake. How much sugar would be needed to bake 4 such cakes?

f. The tailor cuts a lace $\frac{26}{3}$ m long into 13 equal pieces. What is the length of each piece of lace?

g. Ahmed spends $\frac{2}{3}$ of his monthly salary. How much of his total salary does he spend in a year?

h. A zookeeper feeds $\frac{65}{7}$ kg of total meat to 5 lions equally. How much meat does he feed each lion?

Answer Key

1. a. $\dfrac{5}{6}$ b. $\dfrac{9}{10}$ c. $\dfrac{10}{11}$ d. $\dfrac{1}{2}$ e. $\dfrac{4}{3}$ f. $\dfrac{43}{55}$

2. a. $\dfrac{2}{15}$ b. $\dfrac{4}{9}$ c. $\dfrac{8}{11}$ d. $\dfrac{9}{20}$ e. $\dfrac{13}{35}$ f. $\dfrac{2}{5}$

3. a. $\dfrac{5}{4}$ b. $\dfrac{65}{4}$ c. $\dfrac{3}{5}$ d. $\dfrac{7}{3}$

4. a. $\dfrac{52}{315}$ b. $\dfrac{3}{8}$ c. $\dfrac{1}{21}$ d. $\dfrac{1}{5}$

5. a. $\dfrac{5}{6}$ doughnuts   b. $\dfrac{1}{6}$ pizza left   c. $\dfrac{1}{5}$ litres

   d. $\dfrac{4}{3}$ cups   e. $\dfrac{2}{3}$ m   f. $\dfrac{2}{3}$ of the total salary

   g. 9.29 kg

Decimals

Bilingual Concept Builder Notes

Competency 1

Pupils will learn to identify the place value of a digit written after decimal point.

Rationale: Use the explanations given on pages 48 and 49.

Classwork: Complete Exercise A.

Competency 2

Pupils will learn to convert the given fractions to decimals with denominator being a multiple of 10.

Rationale: Use the explanations given on pages 50 and 51.

Classwork: Complete Exercise B.

Competency 3

Pupils will learn to convert fractions to decimals.

Rationale: Use the explanations given on pages 50 and 51.

Classwork: Complete Exercise C.

Competency 4

Pupils will learn to convert decimals to fractions.

Rationale: Use the explanations given on pages 52 and 53.

Classwork: Complete Exercise D.

Competency 5

Pupils will learn to add given decimals.

Rationale: Use the explanations given on pages 53 and 54.

Classwork: Complete Exercise E.

Competency 6

Pupils will learn to subtract given decimals.

Rationale: Use the explanations given on pages 54 and 55.

Classwork: Complete Exercise F.

قابلیت ۱

طلبہ اعشاریہ کے بعد لکھے ہندسے کی مقامی قیمت کی شناخت کرنا سیکھیں گے۔

استدلال: صفحہ ۴۸ اور صفحہ ۴۹ پر دی گئی وضاحتوں کو استعمال کیجیے۔

کلاس ورک: مشق A کو مکمل کیجیے۔

قابلیت ۲

طلبہ دی گئی کسور کو نسب نما ۱۰ کے اضعاف کے ساتھ اعشاریہ میں تبدیل کرنا سیکھیں گے۔

استدلال: صفحہ ۵۰ اور ۵۱ پر دی گئی وضاحتوں کو استعمال کیجیے۔

کلاس ورک: مشق B کو مکمل کیجیے۔

قابلیت ۳

طلبہ کسور کو اعشاریہ میں تبدیل کرنا سیکھیں گے۔

استدلال: صفحہ ۵۰ اور ۵۱ پر دی گئی وضاحتوں کو استعمال کیجیے۔

کلاس ورک: مشق C کو مکمل کیجیے۔

قابلیت ۴

طلبہ اعشاریہ کو کسر میں تبدیل کرنا سیکھیں گے۔

استدلال: صفحہ ۵۲ اور ۵۳ پر دی گئی وضاحتوں کو استعمال کیجیے۔

کلاس ورک: مشق D کو مکمل کیجیے۔

قابلیت ۵

طلبہ دیے گئے اعشاریوں کو جمع کرنا سیکھیں گے۔

استدلال: صفحہ ۵۳ اور ۵۴ پر دی گئی وضاحتوں کو استعمال کیجیے۔

کلاس ورک: مشق E کو مکمل کیجیے۔

قابلیت ۶

طلبہ دیے گئے اعشاریوں کو تفریق یا گھٹانا سیکھیں گے۔

استدلال: صفحہ ۵۴ اور ۵۵ پر دی گئی وضاحتوں کا استعمال کیجیے۔

کلاس ورک: مشق F کو مکمل کیجیے۔

Competency 7

Pupils will learn to multiply the given decimals with the given whole number.

Rationale: Use the explanations given on pages 55 and 56.

Classwork: Complete Exercise G.

Competency 8

Pupils will learn to divide the given decimals by the given whole number.

Rationale: Use the explanations given on pages 57.

Classwork: Complete Exercise H.

Competency 9

Pupils will learn to round off the given numbers to nearest 10, 100, and 1000.

Stimulus: Rounding off a number to nearest 10 means to find the number in tens closest to the given number.

The process of rounding off appears very simple when learnt but for the pupils of class 4, it is a multi-skills complicated process. To round off a number to nearest 10, first introduce them with the list of numbers in tens as given below:

10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, …

Let as round off 110,117, and 133 to the nearest 10.

- 110 is part of the numbers in tens so, it doesn't require rounding off to the nearest 10.

- 117 does not belong to the list of numbers in tens so, it has to be rounded off to the nearest 10. In the list of the numbers in tens, 117 exists between 110 and 120.
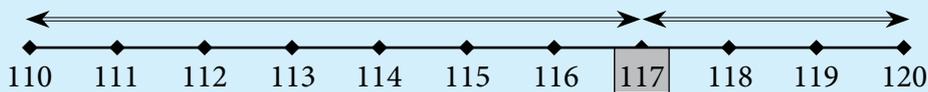
The distance of 117 from 110 and 120 is shown in the diagram above. Everybody can see that 117 is closer to 120 than 110 so, 117 to the nearest 10 is equal to 120.

133 does not belong to the list of numbers in tens so, it has to be rounded off to the nearest 10. In the list of the numbers in tens, 133 exists between 130 and 140.
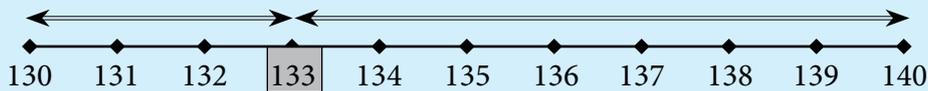
The distance of 133 from 130 and 140 is shown in the diagram above. It can be easily noticed that 133 is closer to 130 than 140 so, 133 to the nearest 10 is equal to 130.

Rounding off a number to nearest hundred means to find the number in hundreds closest to the

قابلیت ۷

طلبہ دیے گئے اعشاریوں کو مکمل عدد سے ضرب کرنا سیکھیں گے۔

استدلال: صفحہ ۵۵ اور ۵۶ پر دی گئی وضاحتوں کا استعمال کیجیے۔

کلاس ورک: مشق G کو مکمل کیجیے۔

قابلیت ۸

طلبہ دیے گئے اعشاریوں کو مکمل عدد سے تقسیم کرنا سیکھیں گے۔

استدلال: صفحہ ۵۷ پر دی گئی وضاحتوں کا استعمال کیجیے۔

کلاس ورک: مشق H کو مکمل کیجیے۔

قابلیت 9

طلبہ دیے گئے اعداد کو اپنی قریب ترین دہائی ۱۰، سیکڑہ ۱۰۰ اور ہزار ۱۰۰۰ تک (round off) کر کے لکھ سکیں گے۔

محرک: کسی دیے گئے عدد کو اپنے قریب ترین دہائی ۱۰ تک (round off) کرنے کا مطلب ہے کہ دسیوں یا دہائیوں میں دیے گئے عدد کو لکھنا بظاہر یہ عمل بہت آسان لگتا ہے لیکن چوتھی جماعت کے طلبہ کے لیے یہ ایک کثیر مہارتوں والا پیچیدہ عمل ہے کسی عدد کو قریب ترین ۱۰ پر (round off) کرنے کے لیے پہلے طلبہ کو ۱۰ کی مختلف شکلوں میں موجود اعداد کو بالترتیب متعارف کروائے اور ذیل کے مطابق لکھیے۔

10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, …

اب آپ ۱۱۰، ۱۱۷ اور ۱۳۳ کو قریب ترین ۱۰ (دسیوں کی دی گئی ترتیب میں) میں (round off) کیجیے۔

- ۱۱۰ دسیوں کی دی گئی ترتیب میں موجود ہے لہذا اسے (round off) کرنے کی ضرورت نہیں۔

- ۱۱۷ دسیوں کی دی گئی ترتیب میں موجود نہیں ہے اس لیے اسے قریب ترین ۱۰ پر (round off) کرنا ہو گا، دسیوں کی دی گئی ترتیب میں ۱۱۷ آپ کو ۱۱۰ اور ۱۲۰ کے درمیان دکھائی دے گا۔
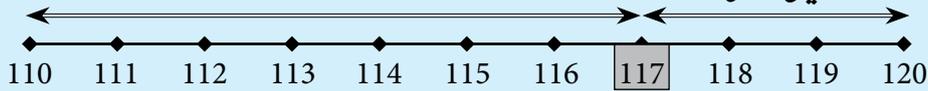
اوپر دیے گئے خاکے میں ۱۱۷ کو ۱۱۰ اور ۱۲۰ کو درمیان دکھایا گیا ہے اس میں یہ بآسانی دیکھا جا سکتا ہے کہ فاصلے کے اعتبار سے ۱۱۷، ۱۱۰ کے مقابلے میں ۱۲۰ کے زیادہ قریب ہے لہذا ۱۱۷ کو قریب کے ۱۰ دسیوں میں (round off) کرنا ہو گا، جو کہ ۱۲۰ ہے۔

۱۳۳ بھی دسیوں (دہائیوں) کی ترتیب یا فہرست میں موجود نہیں ہے۔ لہذا اسے بھی اس کے قریب ترین والی دہائی پر (round off) کرنا ہو گا۔ دہائیوں کی دی گئی ترتیب یا فہرست ۱۳۳، ۱۳۰ اور ۱۴۰ کے درمیان موجود ہے۔
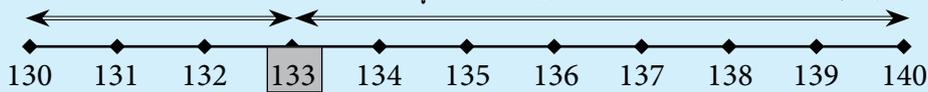
اوپر کے خاکے میں ۱۳۰ اور ۱۴۰ سے ۱۳۳ کا فاصلہ دکھایا گیا ہے۔ خاکے میں ۱۳۳ کو دیکھیے یہ ۱۴۰ کے مقابلے میں ۱۳۰ کے زیادہ قریب ہے لہذا ۱۳۳ اپنے قریب ترین ۱۰ کے یعنی ۱۳۰ کے برابر ہے

given number. First introduce them with the list of numbers in hundreds as given below:

100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, …

To round off 876 to the nearest 100, notice that 876 exists between 800 and 900. Draw a number line like below and mark the position of 876 on it.
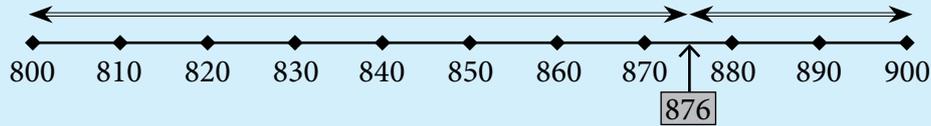
The distance of 876 from 800 and 900 is shown in the diagram above. It can be easily noticed that 876 is closer to 900 than 800 so, 876 to the nearest 100 is equal to 900.

In the same way rounding off to nearest 1000 can be explained.

Classwork: Let your pupils complete Q1 of Exercise I.

Competency 10

Pupils will learn to round off the given decimals to nearest whole numbers.

Rationale: Use examples 5 and 6 given on page 59 to elaborate the rounding off to nearest whole numbers.

Classwork: Let your pupils complete Q2 of Exercise I.

Competency 11

Pupils will learn to apply the process of addition, subtraction, multiplication, and division of decimals to real-life problems.

Rationale: Start this exercise only when your pupils have mastered the functions of decimals. Support your class to understand the story described in each problem. Do write each problem on board and highlight important words and phrases and mention their mathematical equivalents.

Classwork: Complete Exercise J.

کسی بھی عدد کو قریب ترین سو پر گول کرنے کا مطلب ہے کہ دیے گئے عدد کو قریب ترین سیکڑوں میں تلاش کرنا۔ اس لیے پہلے انھیں ذیل میں دی گئی سیکڑوں کی ترتیب یا فہرست سے متعارف کروایئے۔

100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, …

۸۷۶ کو قریب ترین ۱۰۰ پر راؤنڈ آف کرنے کے لیے اسے سیکڑوں کی فہرست میں دیکھیے یہ ۸۰۰ اور ۹۰۰ کے درمیان موجود ہے اب ذیل کے مطابق ایک عدد ی لکیر بورڈ پر بنایئے اور اس پر ۸۷۶ کے مقام کو نشان زد کیجیے۔
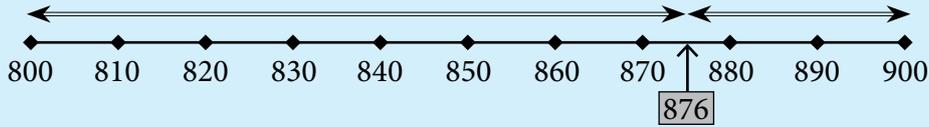
اوپر دیے گئے خاکے میں ۸۷۶ کا ۸۰۰ اور ۹۰۰ سے فاصلہ دکھائی دے رہا ہے یہاں ۸۷۶، ۸۰۰ کے مقابلے میں ۹۰۰ کے زیادہ قریب ہے لہٰذا ۸۷۶ اپنے قریب ترین سیکڑے ۱۰۰ کے حوالے سے ۹۰۰ کے مساوی ہے۔

اس طریقے سے ۱۰۰۰ تک اعداد کو (round off) کرنے کی وضاحت کی جاسکتی ہے۔

کلاس ورک: طلبہ کو مشق I کا سوال ۱ مکمل کرنے دیں۔

قابلیت ۱۰

طلبہ دیے گئے اعشاریوں کو قریب ترین مکمل اعداد تک (round off) کرنا سیکھیں گے۔

استدلال: اپنے قریب ترین مکمل اعداد پر round off کرنے کا عمل سمجھانے کے لیے صفحہ ۵۹ پر دی گئی مثالوں ۵ اور ۶ کو استعمال کیجیے۔

کلاس ورک: طلبہ کو مشق I کا سوال ۲ مکمل کرنے دیں۔

قابلیت ۱۱

طلبہ اعشاریوں کی جمع، تفریق، تقسیم اور ضرب کو اپنی زندگی میں لاگو کر کے متعلقہ عبارتی سوالوں اور مسئلوں کو حل کرسکیں گے۔

استدلال: یہ مشق اس وقت شروع کروایئے جب طلبہ اعشاریہ سے متعلق مہارتوں کو حاصل کرلیں۔ ہر سوال میں بیان کیے گئے مسئلوں کو سمجھنے میں طلبہ کی مدد کرتے ہوئے بورڈ پر وضاحت سے عبارتی سوال لکھیے اور اس کے الفاظ فقروں کو ان کے ریاضیاتی متبادل کے ساتھ مکمل لکھ دیجیے۔

کلاس ورک: طلبہ کو مشق J کو مکمل کرنے دیجیے۔

Scheme of Work

Unit 7: Decimals

Estimated Number of Periods: 28

Specific Learning Outcomes	Number of periods
• Recognise a decimal number as an alternative way of writing a fraction.	2 Periods
• Express a decimal number as a fraction whose denominator is 10, 100 or 1000.	2 Periods
• Identify and recognise the place value of a digit in decimals (up to 3-decimal places).	3 Periods
• Convert a given fraction to a decimal if: • - denominator of the fraction is 10, 100 or 1000. • - denominator of the fraction is not 10, 100 or 1000 but can be converted to 10, 100 or 1000.	4 Periods
• Convert a decimal (up to 3-decimal places) to fraction.	2 Periods
• Add and subtract 3-digit numbers (up to 2-decimal places).	2 Periods
• Multiply a 2-digit number (up to 1 decimal place) by 10, 100, and 1000.	2 Periods
• Multiply a 2-digit number with 1 decimal place by a 1-digit number.	2 Periods
• Divide a 2-digit number with 1 decimal place by a 1-digit number	2 Periods
• Solve real-life situations involving 2-digit numbers with 1 decimal place using appropriate operations.	2 Periods
• Round off a whole number to the nearest 10, 100, and 1000.	2 Periods
• Round off decimal (with 1 or 2 decimal places) to the nearest whole number.	2 Periods

Prior Knowledge Assessment

- Students have previously worked with whole numbers and fractions.
- They are familiar with addition and subtraction of numbers.
- This knowledge will help them add and subtract decimal numbers.
- Understanding division aids in converting fractions to decimals and vice versa.
- Students will be able to recognize the place value of digits in decimals.

Resources

Suggested manipulatives that can be used to create interest and create a link to the topic.

- Prepare Fraction number cards
- Prepare Decimal number cards

$$\frac{1}{4}$$

0.14

Written Assignments

Exercises	Class Assignment	Home Assignment
Exercise A	Q1 (d - j)	Q1 (a, b, c)
Exercise B	Q1 (e - o)	Q1 (a - d)
Exercise C	Q1 (c - i)	Q1 (a, b)
Exercise D	Q1 (a – i)	…
Exercise E	Q1 (d – l)	Q1(a, b, c)
Exercise F	Q1 (d – i)	Q1 (a, b, c)
Exercise G	Q1 (a – h) Q2 (c – h)	Q2 (a, b)
Exercise H	Q1 (c – h)	Q1 (a, b)
Exercise I	Q1 (a - f) Q2 (a – f)	Q1 (g, h) Q2 (g, h)
Exercise J	Q 2, Q3, Q4, Q5, Q6	Q1

Evaluation

Ways to evaluate teaching and students learning.

- Oral assessment
- Written assessment.
- Teacher's assessment
- Peer assessment
- Personal assessment

Step by Step Solution Guide

Unit 7   Pg 51

Converting fractions to decimal numbers with denominator 10, 100, 1000

• Count the number of zeros in the denominator

• Count the digits in the numerator from right to left

• Put the decimal point according to the number of zeros

EXAMPLE

a) $\frac{8}{10}$ • One zero in the denominator

                    • Count 1 digit in the numerator

                    and put a decimal before it

$\frac{8}{10}$ becomes 0.8

b) $\frac{20}{100}$ • two zeros in the denominator

                    • Count 2 digits in the numerator

                    and put a decimal before it

$\frac{20}{100}$ becomes 0.20

$\frac{50}{1000}$ • three zeros in the denominator

                    • Count 3 digits in the numerator

                    and put a decimal before it

$\frac{50}{1000}$ becomes 0.050

Exercise B   Pg 51

1a) $\frac{3}{10}$

$\frac{3}{10} = 0.3$

b) $\frac{7}{10}$

$\frac{7}{10} = 0.7$

c) $\frac{5}{10}$

$\frac{5}{10} = 0.5$

d) $\frac{9}{10}$

$\frac{9}{10} = 0.9$

e) $\frac{21}{100}$

$\frac{21}{100} = 0.21$

f) $\frac{37}{100}$

$\frac{37}{100} = 0.37$

g) $\frac{25}{100}$

$\frac{25}{100} = 0.25$

h) $\frac{47}{100}$

$\frac{47}{100} = 0.47$

i) $\frac{18}{1000}$

$\frac{018}{1000} = 0.018$

j) $\frac{19}{1000}$

$\frac{19}{1000} = 0.019$

k) $\frac{117}{1000}$

$\frac{117}{1000} = 0.117$

l) $\frac{119}{1000}$

$\frac{119}{1000} = 0.119$

m) $\frac{281}{10}$

$\frac{281}{10} = 28.1$

n) $\frac{356}{100}$

$\frac{356}{100} = 3.56$

o) $\frac{356}{1000}$

$\frac{356}{1000} = 0.356$

Exercise C

- To convert fractions into decimals first convert the denominators into 10, 100 or 1000 using equivalent fractions
- Then convert them to decimal numbers

a) $\dfrac{4}{5}$

$\dfrac{4 \times 2}{5 \times 2} = \dfrac{8}{10} = 0.8$

b) $\dfrac{1}{2}$

$\dfrac{1 \times 5}{2 \times 5} = \dfrac{5}{10} = 0.5$

c) $\dfrac{2}{5}$

$\dfrac{2 \times 2}{5 \times 2} = \dfrac{4}{10} = 0.4$

d) $\dfrac{1}{4}$

$\dfrac{1 \times 25}{4 \times 25} = \dfrac{25}{100} = 0.25$

e) $\dfrac{17}{20}$

$\dfrac{17 \times 5}{20 \times 5} = \dfrac{85}{100} = 0.85$

f) $\dfrac{21}{25}$

$\dfrac{21 \times 4}{25 \times 4} = \dfrac{84}{100} = 0.84$

g) $\dfrac{4}{50}$

$\dfrac{4 \times 2}{50 \times 2} = \dfrac{8}{100} = 0.08$

h) $\dfrac{11}{20}$

$\dfrac{11 \times 5}{20 \times 5} = \dfrac{55}{100} = 0.55$

i) $\dfrac{13}{25}$

$\dfrac{13 \times 4}{25 \times 4} = \dfrac{52}{100} = 0.52$

EXERCISE D   Pg 53

· To convert decimal places into fractions count the number of decimal places and write the denominator as 10,100 or 1000 having as many zeros as decimal places

a) 0.1

$$\frac{0.1}{10} = \frac{1}{10}$$

b) 3.5

$$\frac{3.5}{10} = \frac{35}{10}$$

c) 18.6

$$\frac{18.6}{10} = \frac{186}{10}$$

d) 0.04

$$\frac{0.04}{100} = \frac{4}{100}$$

e) 2.75

$$\frac{2.75}{100} = \frac{275}{100}$$

f) 19.03

$$\frac{19.03}{100} = \frac{1903}{100}$$

g) 0.425

$$\frac{0.425}{1000} = \frac{425}{1000}$$

h) 5.379

$$\frac{5.379}{1000} = \frac{5379}{1000}$$

i) 20.497

$$\frac{20.497}{1000} = \frac{20497}{1000}$$

Exercise E.   Pg 54

- Decimal numbers are added the same way as whole numbers
- Arrange decimal numbers according to their place value
- Decimal points should come exactly under each other

a) $6.7 + 4.8$

$$\begin{array}{r} {}^{1}6.7 \\ +\ 4.8 \\ \hline 11.5 \end{array}$$

b) $8.7 + 3.8$

$$\begin{array}{r} {}^{1}8.7 \\ +\ 3.8 \\ \hline 12.5 \end{array}$$

c) $9.8 + 7.9$

$$\begin{array}{r} {}^{1}9.8 \\ +\ 7.9 \\ \hline 17.7 \end{array}$$

d) $6.7 + 4.6$

$$\begin{array}{r} {}^{1}6.7 \\ +\ 4.6 \\ \hline 11.3 \end{array}$$

e) $12.7 + 13.2$

$$\begin{array}{r} 12.7 \\ +\ 13.2 \\ \hline 25.9 \end{array}$$

f) $13.9 + 12.8$

$$\begin{array}{r} 1{}^{1}3.9 \\ +\ 12.8 \\ \hline 26.7 \end{array}$$

g) $18.2 + 18.3$

$$\begin{array}{r} {}^{1}18.2 \\ +\ 18.3 \\ \hline 36.5 \end{array}$$

h) $2.24 + 2.15$

$$\begin{array}{r} 2.24 \\ +\ 2.15 \\ \hline 4.39 \end{array}$$

i) $2.72 + 4.62$

$$\begin{array}{r} {}^{1}2.72 \\ +\ 4.62 \\ \hline 7.34 \end{array}$$

j) $1.83 + 7.4$

$$\begin{array}{r} {}^{1}1.83 \\ +\ 7.4 \\ \hline 9.23 \end{array}$$

k) $72.5 + 7.6$

$$\begin{array}{r} {}^{1}7{}^{1}2.5 \\ +\ 7.6 \\ \hline 80.1 \end{array}$$

l) $0.8 + 26.3$

$$\begin{array}{r} {}^{1}0.8 \\ +\ 26.3 \\ \hline 27.1 \end{array}$$

EXERCISE F   Pg 55

• Decimal numbers are subtracted the same way as whole numbers

• Arrange decimal numbers according to their place values

• Decimal points should come exactly under each other

a) 9.7 - 3.4   b) 18.6 - 5.2   c) 18.9 - 7.7   d) 25.7 - 13.6

```
   9 . 7          1 8 . 6            1 8 . 9              2 5 . 7
 - 3 . 4         -  5 . 2           - 7 . 7            - 1 3 . 6
   6 . 3          1 3 . 4            1 1 . 2             1 2 . 1
```

e) 5.46 - 5.24   f) 7.39 - 3.27   g) 3.38 - 2.2   h) 4.6 - 1.69

```
   5 . 4 6          7 . 3 9            3 . 3 8         ³4 . ⁷₆¹⁵10
 - 5 . 2 4        - 3 . 2 7          - 2 . 2          - 1 . 6 9
   0 . 2 2          4 . 1 2            1 . 1 8          2 . 9 1
```

i) 19.5 - 7.2

```
   1 9 . 5
 -  7 . 2
   1 2 . 3
```

EXERCISE G   Pg 56

- Arrange the numbers vertically and multiply using normal multiplaction
- Place of decimal point is equal to the sum of decimal places of multiplicand and multiplier

1a) $2.3 \times 6 = 13.8$

$^1 2.3$
$\times \ 6$
13.8

b) $4.6 \times 2 = 9.2$

$^1 4.6$
$\times \ 2$
9.2

c) $2.4 \times 5 = 12.0$

$^2 2.4$
$\times \ 5$
12.0

d) $3.5 \times 3 = 10.5$

$^1 3.5$
$\times \ 3$
10.5

e) $6.9 \times 9 = 62.1$

$^8 6.9$
$\times 9$
62.1

f) $3.4 \times 4 = 13.6$

$^1 3.4$
$\times \ 4$
13.6

g) $0.8 \times 7 = 5.6$

$^5 0.8$
$\times \ 7$
5.6

h) $3.3 \times 8 = 26.4$

$^2 3.3$
$\times \ 8$
26.4

Exercise G   Pg 56

• When multiplying decimal numbers by 10, 100 or 1000, move decimal point to the right according to the number of zeros

2a) 2.3×10

$2\ 3 \times 10 = 23$

b) 3.6×100

$3.6 \times 100 = 360$

c) 9.1×100

$9.1 \times 100 = 910$

d) 4.3×1000

$4.3 \times 1000 = 4300$

e) 8.4×1000

$8.4 \times 1000 = 8400$

f) 9.3×10

$9.3 \times 10 = 93$

g) 0.35×10

$0.35 \times 10 = 35$

h) 0.78×100

$0.78 \times 100 = 78$

EXERCISE H   Pg 57

• Division of decimal numbers by whole numbers is the same as the
division of whole numbers

1a) $6.8 \div 2 = 3.4$

$$
\begin{array}{r}
3.4 \\
2\overline{)6.8} \\
-6\downarrow \\
\hline
0\ 8 \\
0\ 8 \\
\hline
0\ 0
\end{array}
$$

b) $4.8 \div 4 = 1.2$

$$
\begin{array}{r}
1.2 \\
4\overline{)4.8} \\
-4\downarrow \\
\hline
0\ 8 \\
-0\ 8 \\
\hline
0\ 0
\end{array}
$$

c) $6.6 \div 6 = 1.1$

$$
\begin{array}{r}
1.1 \\
6\overline{)6.6} \\
-6\downarrow \\
\hline
0\ 6 \\
-0\ 6 \\
\hline
0\ 0
\end{array}
$$

d) $9.6 \div 3 = 3.2$

$$
\begin{array}{r}
3.2 \\
3\overline{)9.6} \\
-9\downarrow \\
\hline
0\ 6 \\
-0\ 6 \\
\hline
0\ 0
\end{array}
$$

e) $7.5 \div 5 = 1.5$

$$
\begin{array}{r}
1.5 \\
5\overline{)7.5} \\
-5\downarrow \\
\hline
2\ 5 \\
-2\ 5 \\
\hline
0\ 0
\end{array}
$$

f) $9.6 \div 8 = 1.2$

$$
\begin{array}{r}
1.2 \\
8\overline{)9.6} \\
-8\downarrow \\
\hline
1\ 6 \\
-1\ 6 \\
\hline
0\ 0
\end{array}
$$

g) $9.8 \div 7 = 1.4$

$$
\begin{array}{r}
1.4 \\
7\overline{)9.8} \\
-7\downarrow \\
\hline
2\ 8 \\
-2\ 8 \\
\hline
0\ 0
\end{array}
$$

h) $9.9 \div 9 = 1.1$

$$
\begin{array}{r}
1.1 \\
9\overline{)9.9} \\
-9\downarrow \\
\hline
0\ 9 \\
-0\ 9 \\
\hline
0\ 0
\end{array}
$$

Exercise I   Pg 59

Rounding off to 10

- If the digit at the ones place is less than 5, digit is replaced by 0 and digit at tens place will remain the same
- If it is equal to or greater than 5, digit is replaced by 0 and the tens place is increased by 1

Round off to nearest 100

- If the digit at the tens place is less than 5, digit is replaced by 0 and digit at hundreds place will remain the same
- If it is equal to or greater than 5, digit is replaced by 0 and the hundreds place is increased by 1

Round off to nearest 1000

- If the digit at the hundreds place is less than 5, then the digits at the hundreds, tens, and ones place is replaced by 0
- If it is equal to 5 or greater than 5, then the digits are replaced by 0 and the digit at thousands place is increased by 1

Rounding off decimals to the nearest whole number

- If the digit at tenths place (right after decimal point) is equal to or greater than 5, remove the fractional part and decimal point of the number and add 1 to the digit at ones place

EXERCISE I   Pg 59

1a) 4782

Rounded to the nearest 10 = 4780

Rounded to the nearest 100 = 4800

Rounded to the nearest 1000 = 5000

b) 9364

Rounded to the nearest 10 = 9360

Rounded to the nearest 100 = 9400

Rounded to the nearest 1000 = 9000

c) 7360

Rounded to the nearest 10 = 7360

Rounded to the nearest 100 = 7400

Rounded to the nearest 1000 = 7000

d) 6093

Rounded to the nearest 10 = 6090

Rounded to the nearest 100 = 6100

Rounded to the nearest 1000 = 6000

e) 8199

Rounded to the nearest 10 = 8200

Rounded to the nearest 100 = 8200

Rounded to the nearest 1000 = 8000

f) 3621

Rounded to the nearest 10 = 3620

Rounded to the nearest 100 = 3600

Rounded to the nearest 1000 = 4000

g) 1025

Round off to 10 = 1030

Round off to 100 = 1000

Round off to 1000 = 1000

h) 2973

Round off to 10 = 2970

Round off to 100 = 3000

Round off to 1000 = 3000

EXERCISE J   Pg 60

1) Oil used to bake a cake   8.7ml

   Oil needed to bake 10 cakes   8.7 x 10 = 87ml

2) Length of ribbon ^{8}9 .^{1}8 cm

   Length of blue part - 5 . 9 cm

   Length of red part   3 . 9 cm

3) Prepared juice   3. 6 l

Number of friends   9

Juice each friend gets   3.6 ÷ 9 = 0.4l

$$
\begin{array}{r}
0.4 \\
9\overline{)3.6} \\
-0\downarrow \\
\overline{3\ 6} \\
-3\ 6 \\
\overline{0\ 0}
\end{array}
$$

4) Cost of one pencil   Rs ^{1}4 . 6

   Cost of other pencil   Rs + 7 . 9

   Total amount paid   Rs 12 . 5

5) Length of one wire   3.27 m   3.^{1}27   5. 28
   Length of second wire   5.28 m   + 5.28   - 3.27
a) Total length of the wires = 3.27 + 5.28 = 8.55 m   8 . 55   2.0 1
b) Difference in length   = 5.28 - 3.27 = 2.01 m

Pg 60

6) Meat consumed per day   4.5

  Meat consumed in a week   4.5×7=31.5 kg

$$^3 4 . 5$$

$$\times \quad 7$$

$$\overline{31 . 5}$$

Review Exercise

I. Write a fraction and decimal for each shaded region. The first one has been done for you.

a.

decimal: _____

fraction: _____

b.

decimal: _____

fraction: _____

c.
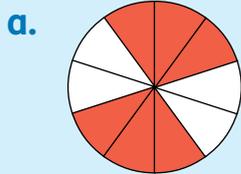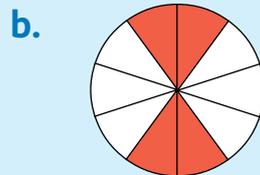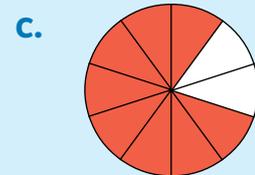
decimal: _____

fraction: _____
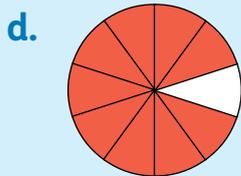
d.

decimal: _____

fraction: _____

e.

decimal: _____

fraction: _____

f.
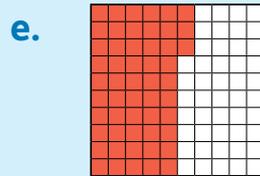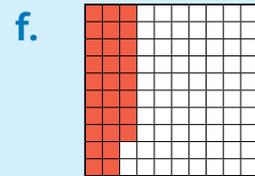
decimal: _____

fraction: _____

2. Write the place value of the following.

a. 6.02　　　　**b.** 52.346　　　　**c.** 8.273　　**d.** 3.539

3. Write the place value of the highlighted digit

a. 32.3**2**7　　　　**b.** 86.20**5**　　　　**c.** 64.**3**9

d. 1.**7**34　　　　**e.** 5.00**4**

4. Convert the following into decimal numbers.

a. $\dfrac{65}{10}$　　　　**b.** $\dfrac{7635}{1000}$　　　　**c.** $\dfrac{3518}{100}$

d. $\dfrac{280}{100}$　　　　**e.** $\dfrac{8}{1000}$　　　　**f.** $\dfrac{379}{10}$

5. Convert the following decimals into fractions.

a. 0.7　　　　**b.** 0.9　　　　**c.** 1.4

d. 2.6　　　　**e.** 3.15　　　　**f.** 5.78

6. Add the following.

    a. 4.28 + 2.6   **b.** 6.53 + 3.67   **c.** 0.04 + 0.73

    d. 9.2 + 1.18   **e.** 15.4 + 9.68   **f.** 21.63 + 73.04

7. Solve the following.

    a. 76.4 − 28.3   **b.** 9.44 − 6.37   **c.** 15.8 − 8.9

    d. 0.8 − 0.04   **e.** 61.1 − 3.87   **f.** 17.5 − 16.6

8. Multiply.

    a. 6.4×2 **b.** 7.8×3 **c.** 5.0×8

    d. 0.3×9 **e.** 0.1×4 **f.** 2.5×5

9. Round off the following to the nearest 10, 100, and 1000.

    a. 921   **b.** 782   **c.** 295

    d. 333   **e.** 6177   **f.** 8529

10. Round off the following decimal numbers to the nearest whole numbers.

    a. 68.24   **b.** 20.9   **c.** 84.05

    d. 326.56   **e.** 424.37   **f.** 555.50

11. Solve the following real-life number stories.

    a. Fariha reads one page of her book in 3.2 minutes. How long would she take to read 10 pages?

    b. A carpenter uses 4.5 m of oak wood and 6.3 m of timber. How much wood did he use altogether?

    c. Sarah made 2.5 kg biryani. She sold 1.7 kg of it. How much biryani is left?

    d. A tailor cuts 3.6 m of lace into 9 equal pieces. How long is each piece of lace?

    e. The goats at the farm are fed 23.9 kg of fodder every day. How much fodder will be fed in a week?

    f. To make curry, the chef added 9.5 g of chilli powder and 5.4 g of salt. How much spice and salt did he use altogether?

    g. The blue ribbon is 10.5 m long and the red ribbon is 7.6 m long. How much longer is the blue ribbon than red ribbon?

Answer Key

1. **a.** 0.6, $\frac{6}{10}$ **b.** 0.4, $\frac{4}{10}$ **c.** 0.8, $\frac{8}{10}$ **d.** 0.9, $\frac{9}{10}$ **e.** 0.53, $\frac{53}{100}$
   f. 0.28, $\frac{28}{100}$

2. **a.** Place value of 6 is one   **b.** Place value of 5 is tens
      Place value of 0 is tenth   Place value of 2 is ones
      Place value of 2 is hundredth   Place value of 3 is tenth
                                        Place value of 4 is hundredth
                                        Place value of 6 is thousandh

   c. Place value of 8 is ones   **d.** Place value of 3 is ones
      Place value of 2 is tenth   Place value of 5 is tenth
      Place value of 7 is hundredth   Place value of 3 is hundredth
      Place value of 3 is thousandth   Place value of 9 is thousandth

3. **a.** hundredth   **b.** thousandth   **c.** tenth
   d. tenth   **e.** thousandth

4. **a.** 6.5   **b.** 7.635   **c.** 3.518   **d.** 2.80   **e.** 0.008   **f.** 37.9
   g. 0.6   **h.** 9.45   **i.** 0.25   **j.** 1.496   **k.** 0.16   **l.** 0.425

5. **a.** $\frac{7}{10}$ **b.** $\frac{9}{10}$ **c.** $\frac{14}{10} = \frac{7}{5}$ **d.** $\frac{26}{10} = 2\frac{3}{5}$ **e.** $\frac{315}{100} = 3\frac{3}{20}$
   f. $\frac{578}{100} = 5\frac{39}{50}$ **g.** $\frac{1203}{1000}$ **h.** $\frac{4211}{1000}$ **i.** $\frac{17777}{1000}$

6. **a.** 6.88   **b.** 10.2   **c.** 0.77   **d.** 10.38   **e.** 25.08   **f.** 94.67

8. **a.** 12.8   **b.** 23.4   **c.** 40   **d.** 2.7   **e.** 0.4   **f.** 12.5
   g. 64   **h.** 810   **i.** 3700   **j.** 5   **k.** 20   **l.** 900

9. **a.** 920, 900 **b.** 780, 800 **c.** 300, 300

d. 330, 300 **e.** 6180, 6200, 6000 **f.** 8530, 8500, 9000

g. 5320, 5300, 5000 **h.** 1860, 1900, 2000 **i.** 2460, 2500, 2000

10. **a.** 68 **b.** 21 **c.** 84 **d.** 327 **e.** 424 **f.** 556

11. **a.** 32 min **b.** 10.8 **c.** 0.8 kg **d.** 0.4 m **e.** 167.3 kg **f.** 14.9 g

g. 2.9 m **h.** 0.6 l

Bilingual Concept Builder Notes

Competency 1

Pupils will learn to convert Km to m, m to cm, and cm to mm.

Rationale: Pupils have already learnt in previous classes that

> 1 Km = 1000 m

To convert a given length in Km to m, multiply the number by 1000, like

5 km = 5 × 1000 m = 5000 m

> 1m = 100 cm

We know that

To convert a given length in m to cm, multiply the number by 100, like

5 m = 5 × 1000 cm = 5000 cm

> 1cm = 10 mm

We know that

To convert a given length in cm to mm, multiply the number by 10, like

5 cm = 5 × 10 mm = 50 mm

Classwork: Complete Exercise 8A.

Competency 2

Pupils will learn to add or subtract the given lengths with the same unit and apply the same skill to solve the given real-life problems.

Rationale: Use examples 1, 2, and 3 given on pages 62 and 63 to elaborate the process to add or subtract the lengths with the same unit.

Classwork: Complete Exercise B.

Competency 3

Pupils will learn to convert Kg to g.

قابلیت ۱

طلبہ کلومیٹر کو میٹر، میٹر کو سینٹی میٹر اور سینٹی میٹر کو ملی میٹر میں تبدیل کرنا سیکھیں گے۔

استدلال: طلبہ پچھلی جماعتوں میں سیکھ چکے ہیں کہ

$$1 \text{ Km} = 1000 \text{ m}$$

دی گئی لمبائی کو کلومیٹر سے میٹر میں تبدیل کرنے کے لیے دیے گئے عدد کو ۱۰۰۰ سے ضرب دینا پڑتا ہے، جیسے

$$5 \text{ km} = 5 \times 1000 \text{ m} = 5000 \text{ m}$$

$$1 \text{m} = 100 \text{ cm}$$

ہمیں معلوم ہے کہ

میٹر میں دی گئی لمبائی کو سینٹی میٹر میں بدلنے کے لیے ہمیں مطلوبہ عدد کو ۱۰۰ سے ضرب دینا پڑتا ہے، جیسے

$$5 \text{ m} = 5 \times 1000 \text{ cm} = 5000 \text{ cm}$$

$$1 \text{cm} = 10 \text{ mm}$$

ہمیں معلوم ہے کہ

سینٹی میٹر میں دی گئی لمبائی کو ملی میٹر میں تبدیل کرنے کے لیے مطلوبہ عدد کو ۱۰ سے ضرب دینا پڑتا ہے، جیسے

$$5 \text{ cm} = 5 \times 10 \text{ mm} = 50 \text{ mm}$$

کلاس ورک: مشق A کو مکمل کیجیے۔

قابلیت ۲

طلبہ دی گئی ایک جیسی پیمائش اکائیوں کو جمع اور تفریق کرنا سیکھیں گے اور اس مہارت کا اطلاق دیے گئے عبارتی سوالوں میں کر کے زندگی سے جڑے مسئلوں کو سمجھ کر حل کر سکیں گے۔

استدلال: لمبائی کی ایک پیمائش والی اکائیوں کو جمع یا تفریق کرنے کے لیے صفحہ ۶۲ اور ۶۳ پر دی گئی مثالوں ۱، ۲ اور ۳ کو استعمال کیجیے اور اس عمل کی وضاحت کیجیے۔

کلاس ورک: مشق B کو مکمل کروائیے۔

قابلیت ۳

طلبہ کلوگرام میں دیے گئے وزن کو گراموں میں تبدیل کر سکیں گے۔

Rationale: Pupils have already learnt in previous classes that

$$1 \text{ Kg} = 1000 \text{ g}$$

To convert a given mass in Kg to g, multiply the number by 1000, like

5 Kg = 5 × 1000 g = 5000 g

Classwork: Complete Exercise C.

Competency 4

Pupils will learn to add or subtract the given masses with the same unit and apply the same skill to solve the given real-life problems.

Rationale: Use examples 1, 2, 3, and 4 given on page 65 to elaborate the process to add or subtract the masses with the same unit.

Classwork: Complete Exercise D.

Competency 5

Pupils will learn to convert l (liter) to ml.

Rationale: Pupils have already learnt in previous classes that

$$1 \text{ l} = 1000 \text{ ml}$$

To convert a given mass in l to ml, multiply the number by 1000, like

5 l = 5 × 1000 ml = 5000 ml

Classwork: Complete Exercise E.

Competency 6

Pupils will learn to add or subtract the given capacities with the same unit and apply the same skill to solve the given real-life problems.

Rationale: Use examples 1, 2, 3, and 4 given on pages 67 and 68 to elaborate the process to add or subtract the capacities with the same unit.

Classwork: Complete Exercise F.

استدلال: طلبہ پچھلی جماعتوں میں سیکھ چکے ہیں کہ

$$1 \text{ Kg} = 1000 \text{ g}$$

کلوگرام میں دیے گئے وزن کو گرام میں تبدیل کرنے کے لیے مطلوبہ عدد کو ۱۰۰۰ سے ضرب دیا جاتا ہے۔

$$5 \text{ Kg} = 5 \times 1000 \text{ g} = 5000 \text{ g}$$

کلاس ورک: مشق C کو مکمل کیجیے۔

قابلیت ۴

طلبہ دیے گئے ایک جیسی پیمائشی اکائی والے کمیت (masses) (اوزان) کو جمع اور تفریق کرنا سیکھیں گے اور اس مہارت کا اطلاق عبارتی سوالوں میں کرکے زندگی سے جڑے مسئلوں کو سمجھ کر حل کرسکیں گے۔

استدلال: کمیت (وزن) کی ایک جیسی پیمائش والی اکائیوں کو جمع یا تفریق کرنے کے لیے صفحہ ۶۵ پر دی گئی مثالوں ۱، ۲، ۳ اور ۴ کی مدد سے اس عمل کی وضاحت کیجیے۔

کلاس ورک: مشق 8D کو مکمل کیجیے۔

قابلیت ۵

طلبہ لیٹر کو ملی لیٹر میں تبدیل کرسکیں گے۔

استدلال: طلبہ پچھلی جماعتوں میں سیکھ چکے ہیں کہ

$$1 \text{ l} = 1000 \text{ ml}$$

لیٹر میں دیے گئے mass کے مطلوبہ عدد کو لیٹر میں تبدیل کرنے کے لیے ۱۰۰۰ سے ضرب دیجیے جیسے

$$5 \text{ l} = 5 \times 1000 \text{ ml} = 5000 \text{ ml}$$

کلاس ورک: مشق E کو مکمل کیجیے۔

قابلیت ۶

طلبہ دی گئی گنجائش کی ایک جیسی پیمائشی اکائیوں کو جمع اور تفریق کرسکیں گے اور اس مہارت کا اطلاق عبارتی سوالوں میں کرکے زندگی سے جڑے مسئلوں کو سمجھ کر حل کرسکیں گے۔

استدلال: گنجائش کی ایک جیسی پیمائش والی اکائیوں کو جمع یا تفریق کرنے کے لیے صفحہ ۶۷ پر دی گئی مثالوں ۱، ۲، ۳ اور ۴ کی مدد سے اس عمل کی وضاحت کیجیے۔

کلاس ورک: مشق F کو مکمل کیجیے۔

Scheme of Work

Unit 8: Measurement: Length, Mass, and Capacity
Estimated Number of Periods: 25

Specific Learning Outcomes	Number of periods
• Use standard metric units to measure the length of different objects.	2 Period
• Convert larger to smaller metric units (2-digits numbers with one decimal place): • kilometres into meters - meters into centimetres • centimetres into millimetres	3 Period
• Add and subtract measures of length in same units.	2 Period
• Use standard metric units to measure the mass of different objects.	2 Period
• Convert larger to smaller metric units (2-digit numbers with one decimal place): • kilograms into grams • grams into milligrams	3 Period
• Add and subtract measures of mass in same units.	2 Period
• Use standard metric units to measure the capacity of different containers.	2 Period
• Convert larger to smaller metric units (2-digit numbers with one decimal place) • litre into millilitres.	3 Period
• Add and subtract measure of capacity in same units.	2Period
• Solve real-life situations involving conversion, addition and subtraction of measures of length, mass and capacity.	3 Period

Prior Knowledge Assessment

- Students have experience with units of length, mass, and volume/capacity.
- They are familiar with adding, subtracting, and converting these units.
- Their knowledge includes working with the same units for these operations.

Resources

Suggested manipulatives that can be used to create interest and create a link to the topic.
- Weighing balance
- Object of different sizes
- Ruler
- Metre stick
- Conversion chart
- Containers of different capacities

- Empty bottles

Written Assignments

Exercises	Class Assignment	Home Assignment
Exercise A	Q1 (d - l) Q2 (d – j) Q3 (a – g)	Q1 (a, b, c) Q2 (a, b, c) Q3 (h, I, j)
Exercise B	Q1 (e - i) Q2 (a – f) Q3 Q4 Q7 Q8 Q9	Q1 (a - d) Q2 (g, h, i) Q5, Q6
Exercise C	Q1 (e - l)	Q1 (a, b, c, d)
Exercise D	Q1 (a – i) Q2 (a - f) Q2 Q3 Q4 Q8 Q9	Q2 (g, h, i) Q5, Q6, Q7
Exercise E	Q1 (d – l)	Q1(a, b, c)
Exercise F	Q1 (d – i) Q2 (a - f) Q2 Q5	Q1 (a, b, c) Q2 (g, h, i) Q3 Q4

Evaluation

Ways to evaluate teaching and students learning.

- Oral assessment
- Written assessment.
- Teacher's assessment
- Peer assessment
- Personal assessment

Step by Step Solution Guide

EXERCISE A   UNIT 8   Pg 62

$$1 \text{ km} = 1000 \text{ m}$$
$$1 \text{ m} = 100 \text{ cm}$$
$$1 \text{ cm} = 10 \text{ mm}$$

1a) 4 km

$4 \times 1000 = 4000 \text{ m}$

b) 5 km

$5 \times 1000 = 5000 \text{ m}$

c) 7 km

$7 \times 1000 = 7000 \text{ m}$

d) 8 km

$8 \times 1000 = 8000 \text{ m}$

e) 23 km

$23 \times 1000 = 23000 \text{ m}$

f) 42 km

$42 \times 1000 = 42000 \text{ m}$

g) 68 km

$68 \times 1000 = 68000 \text{ m}$

h) 10 km

$10 \times 1000 = 10000 \text{ m}$

i) 12 km

$12 \times 1000 = 12000 \text{ m}$

j) 74 km

$74 \times 1000 = 74000 \text{ m}$

k) 33 km

$33 \times 1000 = 33000 \text{ m}$

l) 91 km

$91 \times 1000 = 91000 \text{ m}$

Q2a) 6m

$6 \times 100 = 600 \text{ cm}$

b) 4 m

$4 \times 100 = 400 \text{ cm}$

c) 36m

$36 \times 100 = 3600 \text{ cm}$

d) 63m

$63 \times 100 = 6300 \text{ cm}$

e) 81m

$81 \times 100 = 8100 \text{ cm}$

f) 73m

$73 \times 100 = 7300 \text{ cm}$

g) 79m

$79 \times 100 = 7900 \text{ cm}$

h) 99m

$99 \times 100 = 9900 \text{ cm}$

EXERCISE A (continued)   Pg 62

2i) 42m   j) 28m   k) 52m   l) 87m

42×100=4200cm   28×100=2800cm   52×100=5200cm   87×100=8700cm

                        1 cm = 10 mm

3a) 4cm   b) 16cm   c) 10cm   d) 25cm

4×10=40mm   16×10=160mm   10×10=100mm   25×100=2500mm

e) 54 cm   f) 60cm   g) 35cm   h) 43cm

54×10=540mm   60×10=600mm   35×10=350mm   43×10=430mm

i) 87cm   j) 46cm   k) 24cm   l) 91 cm

87×10=870mm   46×10=460mm   24×10=240mm   91×10=910mm

EXERCISE B   Pg 63

1a) 2 km and 25 km   b) 13km and 46km   c) 72m and 38m

       25   46 ^{1}72

      + 2   +13   + 38

      27 km   59 km   110 m

d) 43m and 29m   e) 46cm and 12 cm   f) 36cm and 49cm

      ^{1}43   46 ^{1}49

      + 29   + 12   + 36

       72 m   58 cm   85 cm

g) 38mm and 193mm   h) 53cm and 62 cm   i) 58m and 17m

      ^{1}^{1}93   62 ^{1}58

      + 38   +53   +17

      231 mm   115 cm   75 m

2a) 35km from 92 km   b) 38 km from 56km   c) 68 km from 94 km

      8$\cancel{9}$^{1}2   4$\cancel{5}$^{1}6   8$\cancel{9}$^{1}4

      - 35   - 38   - 68

      57 km   18 km   26 km

d) 52 km from 63 km   e) 11 cm from 23cm   f) 42 cm from 57cm

       63   23   57

      - 52   -11   - 42

      11 km   12 cm   15 cm

g) 33mm from 69mm   h) 85cm from 98 cm   i) 35m from 92 m

       69   98   8$\cancel{9}$^{1}2

       33   - 85   -35

      36 mm   13 cm   57 m

REAL LIFE NUMBER STORIES   Pg 63

3) Length of white cloth 25 m
   Length of brown cloth -15 m
                                            10 m

      Hina bought 10 m more cloth

4) Length of first piece of cloth ^{179} m
   Length of second piece of cloth $+31$ m
   Length of both pieces 110 m

5) Asims plant height $^1\overset{2}{2}^13$ cm
   Javeds plant height -18 cm
   Difference between the height 05 cm

6) Length of bamboo shoot $^0\overset{1}{1}^12$ m
   Bamboo shoot underground -9 m
   Bamboo shoot above the ground 03 m

Pg 64

7) Rope bought by sailor   20 m

   Rope bought by his friend   + 36 m

Rope they bought altogether   56 m

8) Travel by car   35 km   35 ^{1}59

   Travel by train   24 km   + 24   + 2

    Travel by foot   + 2 km   59   61

Total km's travelled   61 km

9) Sanitary pipe bought by plumber   5 m

  PVC pipe bought by electrician   + 7 m

Pipe bought altogether   12 m

EXERCISE C Pg 65

$$1 \text{ kg} = 1000 \text{ g}$$
$$1 \text{ g} = 1000 \text{ mg}$$

1a) 4 kg

4 × 1000 = 4000 g

b) 8 kg

8 × 1000 = 8000 g

c) 9 kg

9 × 1000 = 9000 g

d) 12 kg

12 × 1000 = 12,000 g

e) 28 kg

28 × 1000 = 28,000 g

f) 36 kg

36 × 1000 = 36,000 g

2a) 3 g

3 × 1000 = 3000 mg

b) 7 g

7 × 1000 = 7000 mg

c) 16 g

16 × 1000 = 16000 mg

d) 10 g

10 × 1000 = 10000 mg

e) 48 g

48 × 1000 = 48000 mg

f) 65 g

65 × 1000 = 65000 mg

EXERCISE D   Pg 66

1a) 7 kg and 1 kg
7+1 = 8 kg

b) 13 kg and 9 kg
13+9 = 22 kg
$\begin{array}{r}{}^113\\+9\\\hline 22\end{array}$

c) 15 kg and 10 kg
15+10 = 25 kg

d) 38 kg and 29 kg
38+29 = 67 kg
$\begin{array}{r}{}^138\\+29\\\hline 67\end{array}$

e) 10g and 12g
10+12 = 22g

f) 36g and 49g
36+49 = 85g
$\begin{array}{r}{}^136\\+49\\\hline 85\end{array}$

g) 45g and 38g
45+38 = 83g
$\begin{array}{r}{}^145\\+38\\\hline 83\end{array}$

h) 30mg and 26mg
30+26 = 56 mg
$\begin{array}{r}30\\+26\\\hline 56\end{array}$

i) 58mg and 77 mg
58+77 = 135 mg
$\begin{array}{r}{}^177\\+58\\\hline 135\end{array}$

2a) 26 kg from 48 kg
$\begin{array}{r}48\text{ kg}\\-26\text{ kg}\\\hline 22\text{ kg}\end{array}$

b) 10 kg from 12 kg
$\begin{array}{r}12\text{ kg}\\-10\text{ kg}\\\hline 02\text{ kg}\end{array}$

c) 23 kg from 29 kg
$\begin{array}{r}29\text{ kg}\\-23\text{ kg}\\\hline 06\text{ kg}\end{array}$

d) 39 kg from 72 kg
$\begin{array}{r}{}^6 7{}^12\text{ kg}\\-39\text{ kg}\\\hline 33\text{ kg}\end{array}$

e) 11g from 23g
$\begin{array}{r}23\text{ g}\\-11\text{ g}\\\hline 12\text{ g}\end{array}$

f) 42g from 57g
$\begin{array}{r}57\text{ g}\\-42\text{ g}\\\hline 15\text{ g}\end{array}$

g) 390 g from 582g
$\begin{array}{r}{}^45 8{}^12\text{ g}\\-390\text{ g}\\\hline 192\text{ g}\end{array}$

h) 48mg from 92mg
$\begin{array}{r}{}^89{}^12\text{ mg}\\-48\text{ mg}\\\hline 44\text{ mg}\end{array}$

i) 49mg from 60 mg
$\begin{array}{r}{}^56{}^10\text{ mg}\\-49\text{ mg}\\\hline 11\text{ mg}\end{array}$

REAL-LIFE NUMBER STORIES   Pg 66

3) Parcel 1 ^{1}8^{1}45 g   4) Weight of :

   Parcel 2   + 7 68 g   Sugar 120 kg | 120 ^{1}470

                 16 1 3 g   Rice 350 kg | +350   +40

                                   Flour + 40 kg | 470   510

                          Weight altogether 510 kg

5) Sugar in the bag   4 $\cancel{5}$10 kg

   Sugar taken out   - 1 5 kg

Sugar left in the bag   3 5 kg

6) Weight of first bag ^{1}1500 mg

   Weight of second bag   + 2500 mg

                                   4000 mg

7) Sarah needed: 50   100   8) Farmer had ^{0}1^{1}000 g

   Flour   50 g $\frac{+50}{100}$ $\frac{+25}{125}$ He sold   - 900 g

   Sugar   50 g   0 1 00 g

Cocoa powder +25 g

           125 g

9) Maize bought by shopkeeper   2 7 kg

   Maize sold   - 1 5 kg

   Maize left   1 2 kg

Exercise F   Pg 67

1 litre = 1 000 millilitres

1a) 3 L   b) 5 L   c) 9 L

3 × 1000 = 3000 ml   5 × 1000 = 5000 ml   9 × 1000 = 9000 ml

d) 6 L   e) 21 L   f) 44 L

6 × 1000 = 6000 ml   21 × 1000 = 21000 ml   44 × 1000 = 44000 ml

g) 52 L   h) 87 L   i) 40 L

52 × 1000 = 52000 ml   87 × 1000 = 87000 ml   40 × 1000 = 40000 ml

j) 64 L   k) 73 L   l) 50 L

64 × 1000 = 64000 ml   73 × 1000 = 73000 ml   50 × 1000 = 50000 ml

EXERCISE F   Pg 68

1a) 6l and 5l   b) 3l and 9l   c) 5l and 10l

   6 + 5 = 11l   9 + 3 = 8l   5 + 10 = 15l

d) 38l and 62l   e) 16ml and 23ml   f) 83ml and 14ml

   ^{1}6 2l   2 3 ml   8 3 ml

   + 3 8 l   + 1 6 ml   + 1 4 ml

   100 l   3 9 ml   9 7 ml

g) 34ml and 98ml   h) 40l and 68l   i) 59l and 28l

   ^{1}9 8 ml   6 8 l ^{1}5 9 l

   + 3 4 ml   + 40 l   + 2 8 l

   1 3 2 ml   108 l   8 7 l

2a) 3l from 7l   b) 8l from 14l   c) 36l from 45l

   7 - 3 = 4l ^{0}1^{1}4 l ^{3}4^{2}5 l

                                   - 8 l   - 3 6 l

                                   0 6 l   0 9 l

d) 74l from 81l   e) 16ml from 24ml   f) 42ml from 81ml

   ^{7}8^{1}1 l ^{1}2^{1}4 ml ^{7}8^{1}1 ml

   - 7 4 l   - 1 6 ml   - 4 2 ml

   0 7 l   0 8 ml   3 9 ml

g) 24ml from 64ml   h) 38l from 47l   i) 57l from 75l

   6 4 ml ^{3}4^{1}7 l ^{6}4^{1}5 l

   - 2 4 ml   - 3 8 l   - 5 7 l

   4 0 ml   0 9 l   1 8 l

REAL-LIFE NUMBER STORIES   Pg 68

3) Capacity of two buckets $^5\!6^2\!5$ L
   Capacity of one bucket -27 L
Water the other bucket can hold   3 8 L

4) Oil in first tin $^1\!27$ L
   Oil in second tin $+25$ L
Oil bought altogether   52 L

5) Milk consumed by Sarah:

         Monday   1 50 ml $^1\!150$ 240
         Tuesday   90 ml $+90$ $+120$
         Wednesday + 1 20 ml   240   360
                      360 ml

6) Capacity of the container $^2\!3^1\!5$ Litres
   Juice poured into container -7 Litres
   Capacity of the container left   2 8 Litres

7) Milk bought   2 7 Litres
   Milk used for pudding -17 Litres
   Milk left   10 Litres

8) Water contained in aquarium   1 2 Litres
   Water added $+6$ litres
   Water in the aquarium   18 Litres

EXERCISE B   Pg 73

1 min = 60 seconds   1 year = 12 months

1 hour = 60 min   1 month = 30 days

1 week = 7 days

1a) 3 hours   b) 4 hours   c) 5 hours

3×60 = 180 min   4×60 = 240 min   5 × 60 = 300 min

d) 6 hours   e) 7 hours   f) 8 hours

6×60 = 360 min   7×60 = 420 min   8×60 = 480 min

2a) 5 minutes   b) 6 minutes   c) 7 minutes

5×60 = 300 sec   6×60 = 360 sec   7×60 = 420 sec

d) 15 minutes   e) 8 minutes   f) 20 minutes

15×60 = 900 sec   8×60 = 480 sec   20×60 = 1200 sec

Pg 74

$$1 \text{ min} = 60 \text{ seconds} \qquad 1 \text{ year} = 12 \text{ months}$$
$$1 \text{ hour} = 60 \text{ min} \qquad 1 \text{ month} = 30 \text{ days}$$
$$1 \text{ week} = 7 \text{ days}$$

3a) 4 years

$4 \times 12 = 48$ months

b) 6 years

$6 \times 12 = 72$ months

c) 7 years

$7 \times 12 = 84$ months

d) 8 years

$8 \times 12 = 96$ months

e) 10 years

$10 \times 12 = 120$ months

f) 12 years

$12 \times 12 = 144$ months

g) 15 years

$15 \times 12 = 180$ months

h) 50 years

$50 \times 12 = 600$ months

i) 72 years

$72 \times 12 = 864$ months

4a) 8 months

$8 \times 30 = 240$ days

b) 6 months

$6 \times 30 = 180$ days

c) 132 months

$132 \times 30 = 3960$ days

d) 38 months

$38 \times 30 = 1140$ days

e) 92 months

$92 \times 30 = 2760$ days

f) 24 months

$24 \times 30 = 720$ days

g) 56 months

$56 \times 30 = 1680$ days

h) 83 months

$83 \times 30 = 2490$ days

i) 52 months

$52 \times 30 = 1560$ days

EXERCISE C   Pg 76

1) Aleenas time   2 min 35 sec   2) Mairas time   4 hr 08 min
   Saleems time + 2 min 15 sec   Harris'time   + 5 hr 20 min
   Total time taken   4 min 50 sec   Total time taken 9 hrs 28 min

3) 1st boy   1 min 50 sec   4) 1st milkman   2 hr 30 min
   2nd boy   - 1 min 20 sec   2nd milkman   2 hr 10 min
   2nd boy 1s   0 min 30 sec faster   2nd milkman is   0   20 min faster

5) Sick days   1 week 6 days   6) Soap factory   3 weeks 4 days
   Leave taken - 1 week 3 days   Rubber factory + 1 week 1 day
   Away from school 0 week 3 days more   Total work done 4 week 5 day

7) Lahore visit   2 months 2 weeks   8) 1st course   3 years 5 months
   Karachi visit + 3 months 1 week   2nd course - 2 years 1 month
   Stay in both cities 5 months 3 weeks   Time taken for 1st 1 year 4 months
                                                course

EXERCISE G   Pg 92,93,94

·To find perimeter add all given lengths

1a) Length= 7+7 = 14 cm   b) Length = 2+1+1+1+1+1+1+2=10cm

   Width = 4+4 = 8   Lengths at base= 1+1+1+1 = 4cm

   Perimeter= 14+8= 22 cm   Width = 1+1+1+1+1+1+1 = 7cm

                                  Width at base= 1+1+3+1+1 = 7cm

                                  P= 10+4+7+7= 28 cm

c) Length= 4+2+2+4 = 12 cm   d) Length= 1+1+1+1+1+1 = 6 cm

   width = 2+3+2+7 = 14 cm   Width= 4+2+1+5+1+1 = 14 cm

   P= 12+ 14 = 26 cm   P= 14 + 6 = 20 cm

e) Length= 4+2+2= 8 cm   f) Length= 1+4+1+1+1+1 = 9 cm

   Width = 2+3+5= 10cm   Width = 4+2+1+5+1+1 = 14 cm

   P= 10 + 8 = 18 cm   P= 14 + 9= 23 cm

2) Count the boxes inside the figure to find Area

a) 28 cm²   b) 12 cm²   c) 14 cm²   d) 16 cm²   e) 22 cm²

f) 19 cm²   g) 20 cm²   h) 13 cm²

Review Exercise

1. Convert the following as required.

    a. 50 km = _____ m

    b. 250 cm = _____ mm

    c. 723 m = _____ cm

    d. 65 cm = _____ mm

    e. 44 m = _____ cm

    f. 78 km = _____ m

    g. 33 m = _____ mm

    h. 80 m = _____ cm

2. Solve the following real-life number stories.

    a. The construction worker used 48 m of concrete pipe and 56 m of PVC pipe. How much pipe did he use altogether?

    b. On Monday, the red bus travelled 96 km while the blue bus travelled 77 km. How much more did the red bus travel?

    c. Saad is 178 cm tall and Ali is 156 cm tall. How much taller is Saad than Ali?

    d. Ayesha walked 3 km in the morning and 6 km in the evening. How much distance did she walk altogether?

3. Convert the following as required.

    a. 69 kg = _____ g

    b. 6.9 g = _____ mg

    c. 326 kg = _____ g

    d. 63 g = _____ mg

    e. 124 kg = _____ g

    f. 39 g = _____ mg

    g. 75 kg = _____ g

    h. 5.5 g = _____ mg

4. Solve the following real-life number stories.

    a. A shopkeeper had 35 kg of watermelons. He sold 27 kg. How many kilograms of watermelons are left?

    b. In a basket, there are 350 g of peanuts and 777 g of cashews. What is the total mass of nuts?

    c. The cement bag weighs 128 kg and the pebbles bag weigh 222 kg. How much heavier is the bag of pebbles?

d. For a cake, the baker added 350 g of flour and 175 g of cocoa powder to make cookies. How much flour and cocoa powder did she use altogether?

5. Convert l to ml.

   a. 39 l   **b.** 74 l   **c.** 89 l

   d. 12 l   **e.** 8 l   **f.** 91 l

6. Solve the following real-life number stories.

   a. The capacity of a serving bowl is 750 ml and the capacity of the dessert bowl is 265 ml. What is the total capacity of both bowls?

   b. The capacity of a large bucket is 71 l and the capacity of the small bucket is 69 l. What is the difference in the capacity of both buckets?

   c. Ayesha's water bottle can hold 900 ml of water. The bottle contains 666 ml of water. How much more water needs to be added to fill it completely?

   d. The capacity of Aquarium A is 29 l and the capacity of Aquarium B is 34 l. What is the total capacity of both aquariums?

Answer Key

1. **a.** 50,000 m   **b.** 2500 mm   **c.** 72300 cm   **d.** 650 mm

    e. 4400 cm   **f.** 78,000   **g.** 330 mm   **h.** 8000 cm

2. **a.** 104 m   **b.** 19 km   **c.** 22 cm   **d.** 9 km

3. **a.** 69000 g   **b.** 6900 mg   **c.** 326000 g   **d.** 63000 mg

    e. 124000 g   **f.** 39000 mg   **g.** 75000 g   **h.** 5500 mg

4. **a.** 8 kg   **b.** 1127 g   **c.** 94 kg   **d.** 525 g

5. **a.** 39000 ml   **b.** 74000 l   **c.** 89000 ml   **d.** 12000 mi

    e. 8000 ml   **f.** 91000 ml

6. **a.** 1015 ml   **b.** 2 l   **c.** 234 ml   **d.** 63 l

Bilingual Concept Builder Notes

Competency 1

Pupils will learn to identify the occurrence of time in a.m. and p.m. at specific events of the day.

Rationale: Elaborate the information given on pages 70 and 71.

Classwork: Complete Exercise A.

Competency 2

Pupils will learn to convert minutes, hours, months, and years to sub-units.

Rationale: To convert a unit to its sub-unit, we just need to multiply by the relative number which relates both units, as

9 hours = 9 × 60 minutes = 540 minutes	1 hour = 60 minutes
9 hours = 9 × 60 minutes = 540 minutes	1 minute = 60 seconds
9 hours = 9 × 60 minutes = 540 minutes	1 year = 12 months
9 hours = 9 × 60 minutes = 540 minutes	1 month = 30 days
9 hours = 9 × 60 minutes = 540 minutes	1 week = 7 days

Classwork: Complete Exercise B.

Competency 3

Pupils will learn to add and subtract minutes, hours, weeks, and days without carrying or borrowing and apply it to real-life problems.

Rationale: Use examples given on pages 74 and 75 elaborate the method of adding and subtracting a quantity mentioned with different units.

Classwork: Complete Exercise C.

قابلیت ١

طلبہ دن کے مخصوص اوقات میں am اور pm کو شناخت کرنا سیکھیں گے۔

استدلال: صفحہ ٧٠ اور ٧١ پر دی گئی معلومات کی وضاحت کیجیے۔

کلاس ورک: مشق A کو مکمل کیجیے۔

قابلیت ٢

طلبہ منٹ، گھنٹوں، مہینوں اور سالوں کو وقت کی ذیلی اکائیوں میں تبدیل کرنا سیکھیں گے۔

استدلال: کسی اکائی کو اس کی ذیلی اکائی میں تبدیل کرنے کے لیے ہم متعلقہ عدد جو وقت کی دونوں اکائیوں میں تعلق کو ظاہر کرتا ہے، سے ضرب دیں گے۔

9 hours = 9 × 60 minutes = 540 minutes	1 hour = 60 minutes
9 hours = 9 × 60 minutes = 540 minutes	1 minute = 60 seconds
9 hours = 9 × 60 minutes = 540 minutes	1 year = 12 months
9 hours = 9 × 60 minutes = 540 minutes	1 month = 30 days
9 hours = 9 × 60 minutes = 540 minutes	1 week = 7 days

کلاس ورک: مشق B کو مکمل کیجیے۔

قابلیت ٣

طلبہ منٹ سے گھنٹوں، ہفتوں اور دنوں کو بغیر حاصل کے جمع اور تفریق کرسکیں گے اور اس مہارت کا اطلاق کرتے ہوئے عبارتی سوالوں میں بیان کر دہ زندگی سے جڑے مسئلوں کو سمجھ کر حل کرسکیں گے۔

استدلال: صفحہ ٧٤ اور ٧٥ پر دی گئی مثالوں کے ذریعے مختلف اکائیوں کے ساتھ دی گئی مقدار کو جمع اور تفریق کرنے کے طریقے کی وضاحت کیجیے۔

کلاس ورک: مشق C کو مکمل کیجیے۔

Scheme of Work

Unit 9: Measurement: Time
Estimated Number of Periods: 15

Specific Learning Outcomes	Number of Periods
• Read and write the time using digital and analogue clocks on 12 hour and 24-hour format.	3 Periods
• Convert hours to minutes and minutes to seconds.	3 Periods
• Convert years to months, months to days, and weeks to days.	3Periods
• Add and subtract measures of time without carrying and borrowing.	2 Periods
• Solve simple real-life situations involving conversion, addition and subtraction of measures of time.	4 Periods

Prior Knowledge Assessment

- Pupils know how to use a.m. and p.m. to record time on analogue and digital clocks.
- They are familiar with converting units of time.
- This knowledge will aid in converting between years, months, weeks, and days.

Resources

Suggested manipulatives that can be used to create interest and create a link to the topic.
- Analogue clock
- Clock faces showing different time
- Class timetable
- Bus/train sceduals

Written Assignments

Exercises	Class Assignment	Home Assignment
Exercise A	Whole Exercise	…
Exercise B	Q1 (a, b, c) Q2(d, e, f) Q3 (e – i) Q4	Q1 (d, e, f) Q2 (a, b, c) Q3 (a – d)
Exercise C	Q3 Q4 Q5 Q6 Q7 Q8	Q1 Q2

Evaluation

Ways to evaluate teaching and students learning.
- Oral assessment
- Written assessment.
- Teacher's assessment
- Peer assessment
- Personal assessment

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Review Exercise

I. Write the time in I2-hour and 24-hour format.

	Clocks	Activity	I2-hour format	24-hour format
a.		Aleena wakes up.		
b.		Aleena plays in a park.		
c.		Aleena takes her lunch.		
d.		Aleena eats her breakfast.		
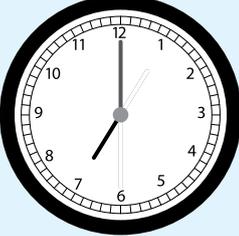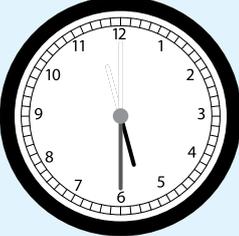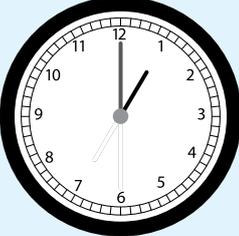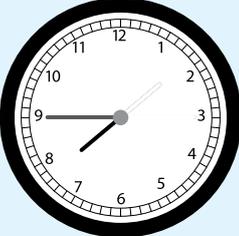
2. Convert the following as required.

a. 3 hours = _____ minutes   **b.** 63 minutes = _____ seconds

c. 24 hours = _____ minutes   **d.** 50 minutes = _____ seconds

e. 5 years = _____ months   **f.** I2 weeks = _____ days

g. 10 months = _____ days

h. 22 years = _____ months

i. 21 weeks = _____ days

j. 14 months = _____ days

3. Solve the following.

a.
hr	min
08	25
+ 14	30

b.
min	sec
38	47
+ 16	02

c.
hr	min
16	42
– 4	20

d.
months	days
10	23
+ 01	04

e.
years	months
12	10
– 10	06

f.
min	sec
55	42
– 30	01

4. Solve the following real-life number stories.

a. A labour worked for 5 hours 30 minutes in the morning and 4 hours 23 minutes in the evening. How much longer did he work in the morning?

b. Aliya was 5 years 3 months when she joined the basketball team. She is now 8 years 5 months. How long has Aliya been in the team for?

c. Saad takes 5 minutes and 30 seconds to complete the jogging track and Ali takes 4 minutes and 15 seconds to complete the track. How much more time does Saad take?

d. The Ali family decided to visit America for 2 weeks and 5 days and to visit England for 3 weeks and 1 day. How long did they spend in both the countries?

Answer Key

1. **a.** 7;00 a.m. , 7 00   **b.** 5:30 p.m. , 17 30   **c.** 1:00 p.m. , 13 00

    d. 7:45 a.m. , 7 45   **e.** 10:30 p.m. , 22 39

2. **a.** 180 min   **b.** 3780 sec   **c.** 1440 min

    d. 900 sec   **e.** 960 min   **f.** 3000 sec

    g. 60 months   **h.** 84 days   **i.** 300 days

    j. 264 months   **k.** 147 days   **l.** 420 days

3. **a.** 22 hr 55 min   **b.** 54 min 49 sec   **c.** 7 years 10 months

    d. 11 months 27 days   **e.** 12 hr 22 min   **f.** 25 min 41 sec

    g. 2 years 4 months   **h.** 5 months 19 days

4. **a.** 1 hr 7 min   **b.** 3 years 2 months   **c.** 1 min 15 sec

    d. 5 weeks and 6 days

Bilingual Concept Builder Notes

Competency 1

Pupils will learn to identify parallel and non-parallel lines.

Rationale: Use the information given on pages 77 and 78 to elaborate the concept of parallel and non-parallel lines.

Classwork: Complete Exercise A.

Competency 2

Pupils will learn to define an angle and classify given angles into right, acute, and obtuse angles. They will learn to use protractor to measure the given angles.

Rationale: Use the explanations given on pages 80, 81, and 82 to elaborate the concept of angle, types of angles, and the usage of protractor to measure the given angles in degrees.

Classwork: Complete Exercise B.

Competency 3

Pupils will learn to draw the angle with a protractor when its measurement in degrees is given.

Rationale: Use example 1 given on pages 82 to demonstrate the process of drawing an angle with the help of a protractor.

Classwork: Complete Exercise C.

Competency 4

Pupils will learn to draw and identify centre, radius and diameter in a circle.

Rationale: Use the information given on pages 83 to elaborate the fundamental parts of a circle.

Classwork: Complete Exercise D.

Competency 5

Pupils will learn to identify the line of symmetry in a given shape as well as they will draw the other half of the given shape about the line of symmetry on a square grid.

Rationale: Pupils have already learnt the concept of reflective symmetry and line of reflective symmetry. Use information given on pages 84 and 85 to recap the concept of symmetry and enable them to complete the given shape about the line of symmetry on a square grid.

Classwork: Complete Exercise E.

قابلیت ۱

طلبہ متوازی (parallel) اور غیر متوازی (non-parallel) خطوط کو شناخت کرنا سیکھیں گے۔

استدلال: صفحہ ۷۷ اور ۷۸ پر دی گئی معلومات کی روشنی میں متوازی اور غیر متوازی خطوط کے تصور کو واضح کیجیے۔

کلاس ورک: مشق A کو مکمل کیجیے۔

قابلیت ۲

طلبہ زاویے کی تعریف سے واقف ہوں گے اور دیے گئے زاویوں کی درجہ بندی بہ طور قائمہ، حادّہ اور منفرجہ کر سکیں گے۔ وہ زاویوں کی پیمائش کے لیے D یا پروٹریکٹر کو استعمال کرنا سیکھیں گے۔

استدلال: زاویے کے تصور، زاویوں کی اقسام اور دیے گئے زاویوں کو ڈگریوں میں ناپنے کے لیے D یا پروٹریکٹر کے استعمال کو وضاحت سے سمجھانے کے لیے صفحہ ۸۰، ۸۱ اور ۸۲ پر دی گئی وضاحتوں کو استعمال کیجیے۔

کلاس ورک: مشق B کو مکمل کیجیے۔

قابلیت ۳

طلبہ ڈگریوں میں دی گئی پیمائش کے مطابق D پروٹریکٹر کی مدد سے زاویہ کھینچنا سیکھیں گے۔

استدلال: پروٹریکٹر کی مدد سے زاویہ کھینچنے کے عمل کو دکھانے کے لیے صفحہ ۸۲ پر دی گئی مثال ۱ کو استعمال کیجیے۔

کلاس ورک: مشق C کو مکمل کیجیے۔

قابلیت ۴

طلبہ ایک دائرے میں مرکز، قطر یا رداس اور نصف قطر کو کھینچنا اور پہچاننا سیکھیں گے۔

استدلال: دائرے کے بنیادی حصّوں کی وضاحت کے لیے صفحہ ۸۳ پر دی گئی معلومات کو استعمال کیجیے۔

کلاس ورک: مشق D کو مکمل کیجیے۔

قابلیت ۵

طلبہ دی گئی اشکال میں خط تشاکل (line of symmetry) کو شناخت کرنا سیکھیں گے اس کے ساتھ ہی اس مربع گرڈ پر (line of symmetry) دوسری جانب اس جیسی نصف شکل کو بنانا سیکھیں گے۔

استدلال: طلبہ خط منعکسی تشاکل (line of reflective symmetry) اور منعکس تشاکل (reflective symmetry) کا تصور پہلے ہی سیکھ چکے ہیں اب صفحہ ۸۴ اور ۸۵ پر دی گئی معلومات کو استعمال کرتے ہوئے تشاکل (symmetry) کے تصوّر کا اعادہ کروائیے تا کہ طلبہ دی گئی شکل جیسی نصف شکل کو مربع گرڈ (line of symmetry) کی دوسری جانب بنا کر شکل مکمل کر سکیں۔

کلاس ورک: مشق E کو مکمل کیجیے۔

Competency 6

Pupils will learn to identify cube, cuboid, cylinder, cone, sphere, and pyramid in the given 3D objects. They will also learn to identify edges, surfaces, and vertices in a given 3D object.

Rationale: Use the information given on pages 86 and 87 to elaborate 3D objects and their properties.

Classwork: Complete Exercise F.

Competency 7

Pupils will learn to find perimeter and area of the given shapes on a square grid.

Rationale: Use the information given on pages 90, 91, and 92 to elaborate the process of finding perimeter and area of the given shapes on a square grid.

Classwork: Complete Exercise G.

قابلیت ۶

طلبہ دی گئی 3D اشیا میں مکعب ، مکعب نما، بیلن نما، مخروط، کروی اور اہرام کو پہچان سکیں گے۔ وہ دیے گئے 3D چیزوں میں کناروں، سطحوں اور چوٹیوں کی شناخت کرنا بھی سیکھیں گے۔

استدلال: صفحہ ۸۶ اور ۸۷ پر دی گئی معلومات کو 3D اشیا اور ان کی خصوصیات کی وضاحت کے لیے استعمال کیجیے۔

کلاس ورک : مشق F کو مکمل کیجیے۔

قابلیت ۷

طلبہ دی گئی شکلوں کا احاطہ اور علاقہ ایک مربع گرڈ پر معلوم کرنا سیکھیں گے۔

محرک: صفحہ ۹۰،۹۱ اور ۹۲ کی معلومات کو مربع گرڈ پر دی گئی شکلوں کے احاطے اور رقبے کو معلوم کرنے کے طریقے کی وضاحت کے لیے استعمال کیجیے۔

کلاس ورک : مشق G کو مکمل کیجیے۔

Scheme of Work

Unit 10: Geometry
Estimated Number of Periods: 25

Specific Learning Outcomes	Number of Periods
• Recognise and identify parallel and non-parallel lines.	1 Period
• Recognise an angle formed by intersection of two rays.	1 Period
• Measure angles in degree (o) by using protractor.	2 Periods
• Draw an angle of given measurement and use the symbol (∠) to represent it.	2 Periods
• Differentiate acute, obtuse, and right angle.	2 Periods
• Measure angles using protractor where: • Upper scale of protractor reads the measure of angle from left to right. • Lower scale of protractor reads the measure of angle from right to left.	2 Periods
• Identify right angles in 2D shapes.	1 Period
• Describe radius, diameter and circumference of a circle.	2 Periods
• Find perimeter of a 2D figures on a square grid	2 Periods
• Recognise that perimeter is measured in units of length.	1 Period
• Find area of 2D figures on a square grid.	2 Periods
• Recognise that area of a square is measured in metre square (m^2) and centimetre square (cm^2).	1 Period
• Recognise lines of symmetry in two-dimensional (2D) shapes.	2 Periods
• Complete a symmetrical figure with respect to a given line of symmetry on square grid/dot pattern.	2 Periods
• Compare and sort 3-D objects (cubes, cuboids, pyramids, cylinder, cone, sphere).	2 Periods

Prior Knowledge Assessment

- Students recognize 3-D and 2-D shapes from daily life.
- They've seen and handled objects like:
  - Sphere (ball)
  - Cube (dice)
  - Cuboid (toothpaste box, lunch box)
  - Cone (ice cream cone)
- They've felt flat shapes like:
  - Square (floor tile)
  - Rectangle (windowpane)
  - Circle (round plate)
- They have a visual idea of these shapes but often confuse the names.

- At this level, their understanding of shapes becomes more formal.

Resources

Suggested manipulatives that can be used to create interest and create a link to the topic.

- Blank paper chits
- Centimeter grid
- Playdough
- Square grid paper
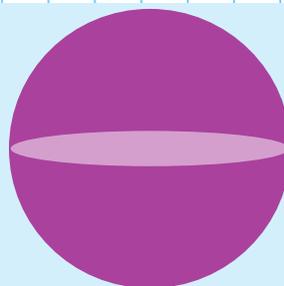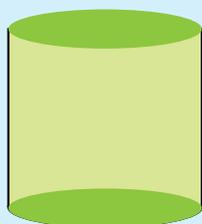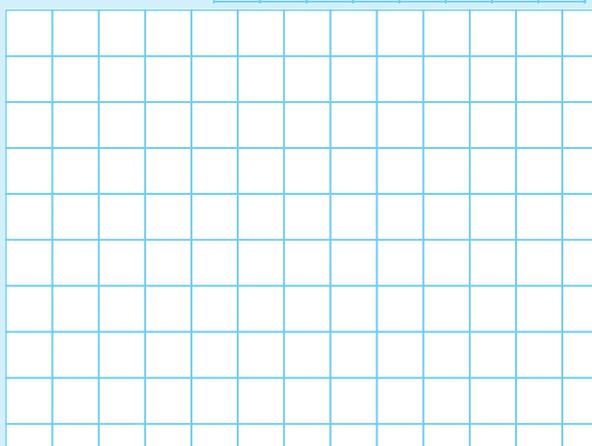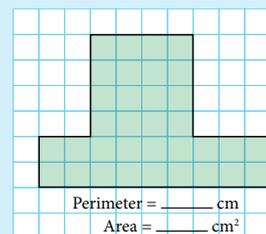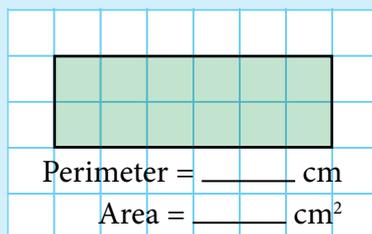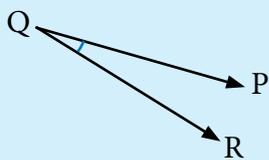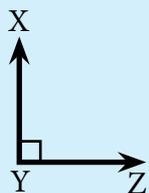
Perimeter = _____ cm

Area = _____ cm^2

Perimeter = _____ cm

Area = _____ cm^2

Written Assignments

Exercises	Class Assignment	Home Assignment
Exercise A	Whole Exercise	…
Exercise B	Q1 Q2(e – h) Q3 (c - f) Q4	Q2 (a- d) Q3 (a, b)
Exercise C	Q1 (d – i)	Q1 (a, b, c)
Exercise D	Q1 Q2	…
Exercise E	Q1 Q2 (b, c, e, f)	Q1 (a, d)
Exercise F	Q1 b(c, d, e) Q2	Q1 (a, b)
Exercise G	Q1 (a – d) Q2 (a, b, e, f, g, h))	Q1 (e, f) Q2 (c, d)

Evaluation

Ways to evaluate teaching and students learning.

- Oral assessment
- Written assessment.
- Teacher's assessment
- Peer assessment
- Personal assessment

Review Exercise

Review Exercise

I. Look at the following parts.
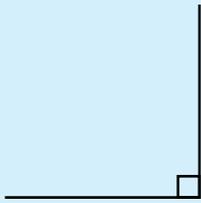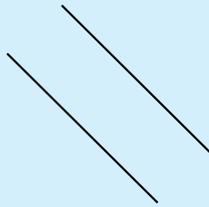
a.   b.   C.
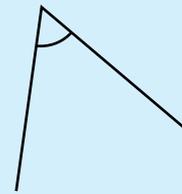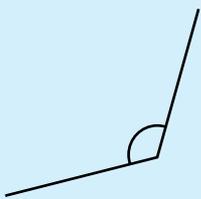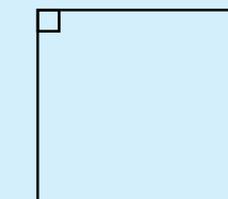
d.   e.   f.
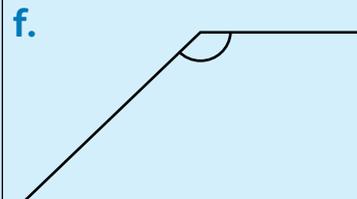
Answer the questions?
a. Which parts contain acute angle?   _____
b. Which part contains obtuse angles?   _____
c. Which part contains right angles?   _____
d. Which parts contain parallel lines?   _____

2. Measure these angles using protractor.
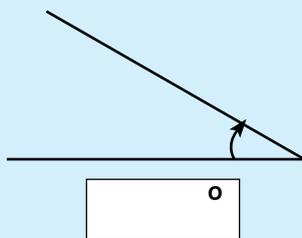
a.   b.
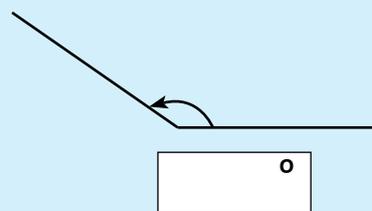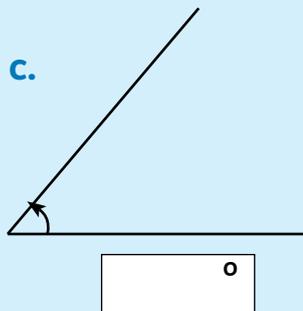
c.   d.
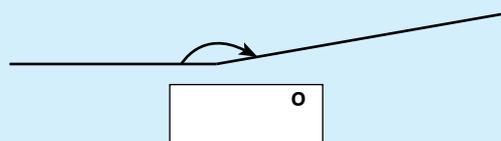
3. Use the base line to construct the angles using protractor.

a.

_____
80°

b.

_____
155°

c.

_____
25°

d.

_____
100°
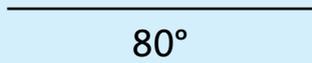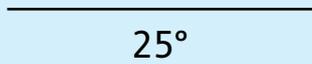
4. Classify these angles as acute, obtuse and right angle.

a.
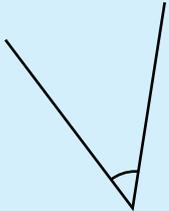
b.

c.

d.
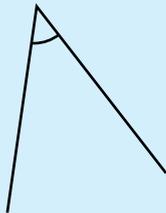
e.
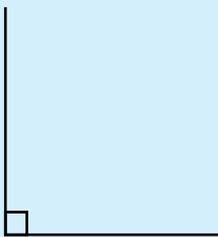
f.
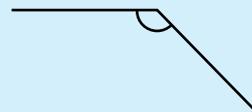
5. Here are some shapes. Draw a circle over all the right angles.
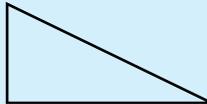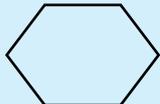
a.	**b.**
c.	**d.**
e.	**f.**
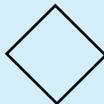
6. Write names of parts of the given circle using following letters.

[A, B, C, D]

a. Centre: ☐   **b.** Radius: ☐

c. Diameter: ☐   **d.** Circumference: ☐
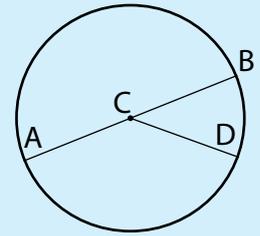
7. How many lines of symmetry do the following shapes have?

a. ☐   **b.** ☐   **c.** ☐   **d.** ☐

e. ☐   **f.** ☐   **g.** ☐   **h.** ☐

8. Complete each shape with respect to the given line of symmetry. Lines of symmetry are shown by dotted lines.

a.   **b.**   **c.**

9. Fill in the banks using the given word bank.

> cone   cylinder   circular   cube   triangular   cuboid

a. _____ and _____ have same number of edges.

b. Pyramid with a square base has _____ faces.

c. _____ has two circular faces.

d. _____ has only one vertex.

e. Cone has only one _____ surface.

10. Identify the 3D shapes using the riddles given.

	Riddles	Who am I?
a.	I have no edges. I have no vertices. I only have a curved surface.	
b.	I have 8 vertices. I have 6 surfaces. All my faces are square in shape.	
c.	I have 8 vertices. I have 6 faces. I am not a cube. My faces can be rectangle and square in shape.	
d.	I have 5 vertices. I have 5 surfaces. 4 surfaces are triangular in shape.	
e.	I have 2 surfaces. I have one edge that is curved. I have 1 vertex.	

11. Find out the perimeter and area of the following shape if it is drawn on **1 metre grid.** Choose the correct unit.
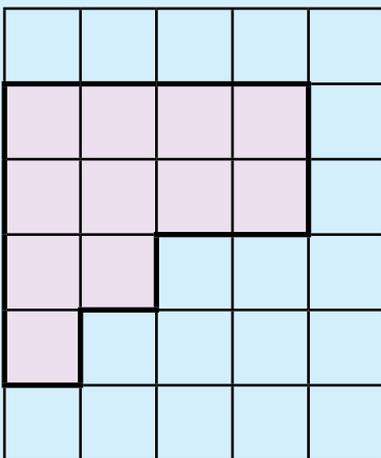
Perimeter = _____ cm / m

Area = _____ cm² / m²

Answer Key

I. **a.** c **b.** d and f **c.** a and e **d.** b

2. **a.** 30° **b.** 150° **c.** 50° **d.** 170°

4. **a.** Acute angle **b.** Obtuse angle **c.** Obtuse angle
  d. Acute angle **e.** Right angle **f.** Obtuse angle
  g. Obtuse angle **h.** Acute angle **i.** right angle

6. **a.** C **b.** CD **c.** AB **d.** ABDA

7. **a.** 4 **b.** 5 **c.** 2 d. I **e.** 0 **f.** I
  g. I **h.** I **i.** I **j.** I **k.** 4

9. **a.** Cube and cuboid **b.** 5 **c.** Cylinder d. Cone **e.** flat

10. **a.** Sphere **b.** Cube **c.** Cuboid d. Pyramid **e.** Cone

II. Perimeter = 16 m   Area = 11 m^2

Bilingual Concept Builder Notes

Competency 1

Pupils will learn to read and interpret vertical and horizontal bar graphs.

Rationale: Use examples 1 and 2 given on pages 95 and 96 respectively to elaborate Bar Graphs.

Classwork: Complete Exercise A.

Competency 2

Pupils will learn to read and interpret line graph.

Rationale: Use example given on page 100 to enable your pupils to read and comprehend given line graph and answer the questions regarding the line graph.

Classwork: Complete Exercise B.

Competency 3

Pupils will learn to read and interpret Pie Chart on the basis of relative size of each given part.

Rationale: Use example given on page 102 to enable your pupils to read and comprehend given Pie Chart and answer the questions regarding each sector of the Pie Chart.

Classwork: Complete Exercise C.

قابلیت ۱

طلبہ عمودی اور افقی بار گراف کو پڑھنا اور وضاحت کرنا سیکھیں گے۔

استدلال: بار گراف کی وضاحت کے لیے بالترتیب صفحہ ۹۵ اور ۹۶ پر دی گئی مثالوں ۱ اور ۲ کو استعمال کیجیے۔

کلاس ورک: مشق 11A کو مکمل کیجیے۔

قابلیت ۲

طلبہ خطی یا لائن گراف کو پڑھنا اور اس کی وضاحت کرنا سیکھیں گے۔

استدلال: صفحہ ۱۰۰ پر دی گئی مثال کو وضاحت کے لیے استعمال کیجیے تا کہ طلبہ دیے گئے لائن گراف کو پڑھ اور سمجھ سکیں اور لائن گراف سے متعلق سوالات کے جوابات دے سکیں۔

کلاس ورک: مشق 11B کو مکمل کیجیے۔

قابلیت ۳

طلبہ پر دیے گئے رقبے اور سائز کی بنیاد پر پائی چارٹ کو پڑھنا اور سمجھنا سیکھیں گے۔

استدلال: صفحہ ۱۰۲ پر دی گئی مثال کا استعمال کیجیے تا کہ طلبہ دیے گئے پائی چارٹ کو پڑھنے اور سمجھنے کے قابل ہو جائیں اور پائی چارٹ سے متعلق سوالوں کے جوابات دے سکیں۔

کلاس ورک: مشق 11C کو مکمل کیجیے۔

Scheme of Work

Unit 11: Data Handling

Estimated Number of Periods:

| Specific Learning Outcomes	Number of periods
• Read simple bar graphs given in horizontal and vertical form. • Interpret real-life situations using data presented in bar graphs.	
• Read line graph. • Interpret real-life situations using data presented in line graphs.	
• Read pie chart. • Interpret real-life situations using data presented in pie chart.	

Prior Knowledge Assessment

- Pupils should be proficient in using tally charts and representing data in tables.
- They have learned to interpret picture graphs and will use this knowledge to interpret bar and line graphs by counting intervals on the horizontal and vertical axes.
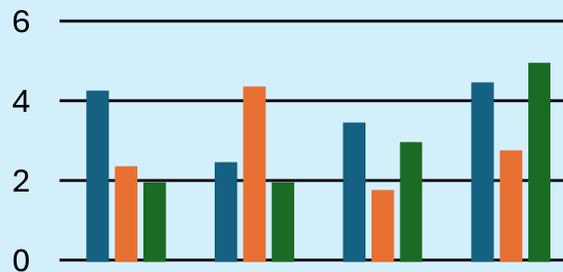
Resources

Suggested manipulatives that can be used to create interest and create a link to the topic.

Pie Chart
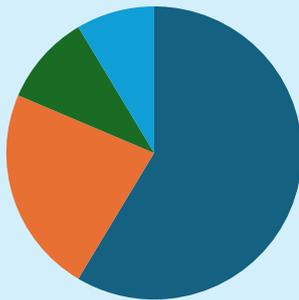
Bar Graph

Written Assignments

Exercises	Class Assignment	Home Assignment
Exercise A	Q1 (a, b, c) Q2 (a, b)	Q1 (d)
Exercise B	Q1 (a, b)	…
Exercise C	Q1 Q2	…

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Evaluation

Ways to evaluate teaching and students learning.

- Oral assessment
- Written assessment.
- Teacher's assessment
- Peer assessment
- Personal assessment

Review Exercise

1. Class 4 of a school surveyed how they travelled to school. They showed the results using a bar graph given below.

Use the bar graph to answer the following.

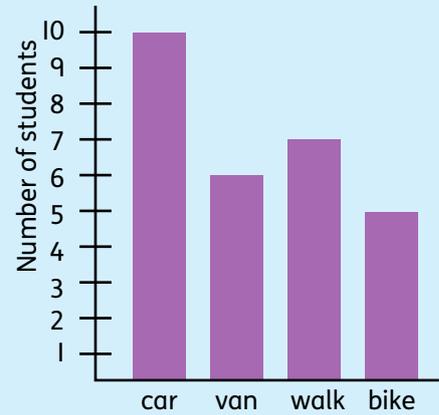
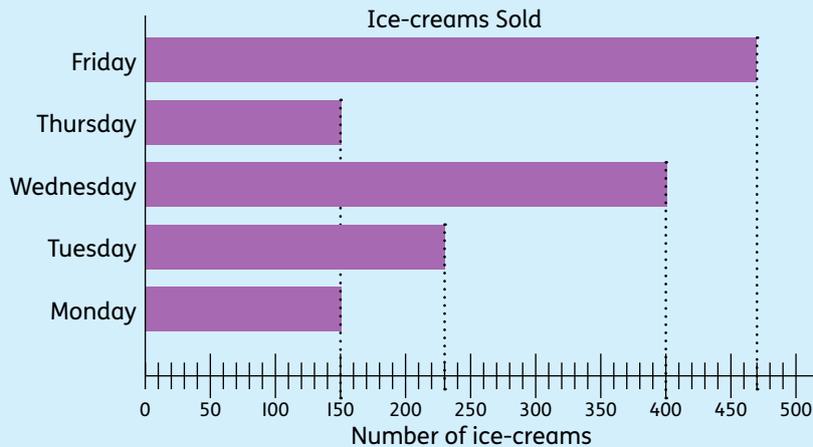**a.** How many children travelled to school by

  i. car? _____

  ii. van? _____

  iii. bike? _____

b. How many children were there in class 4? _____

c. How many more children travelled by car than by bike? _____

2. Furqan works in an ice-cream shop. The bar graph shows the number of ice-creams sold over five days.

Use the bar graph to answer the questions.

a. 400 ice-creams were sold on _____.

b. The same number of ice-creams was sold on _____ and _____.

c. How many more ice-creams were sold on Tuesday than Thursday?

_____

d. Which day is the busiest in all? _____

3. The line graph shows the number of vacuum cleaners sold by an electronics store every month from January to May.
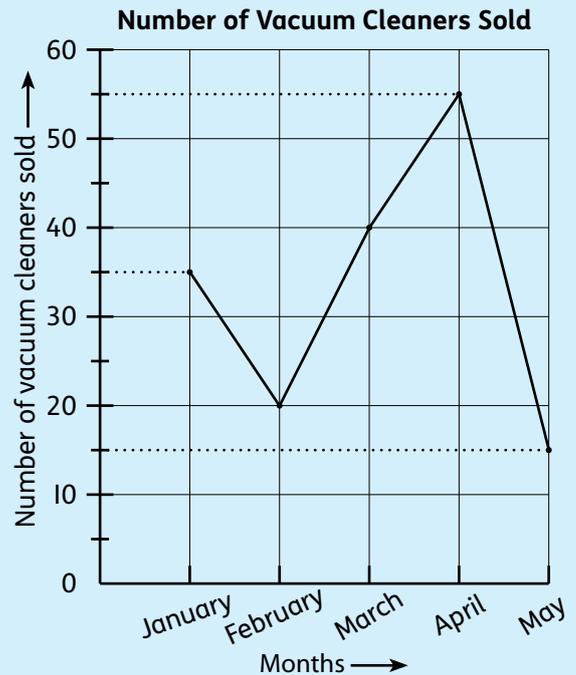
Look at the line graph and answer the questions.

a. How many vacuum cleaners were sold in March? _____

b. At which month did the store sell the greatest number of vacuum cleaners? _____

c. How many more vacuum cleaners were sold in April than in March?

_____

d. What is the difference in the number of vacuum cleaners sold in April and in May? _____

Number of Vacuum Cleaners Sold

4. The pie chart shows the number of books of different genres on a book shelf. Read the pie chart and answer the following.

a. How many books are there on the shelf? _____

b. How many non-fiction books are there?

_____

c. How many horror books are there on the shelf?

_____

Answer Key

1. **a. i.** 10 children   **ii.** 6 children   **iii.** 5 children

   b. 32 children

2. **a.** Wednesday   **b.** Monday and Thursday

   c. 100 ice- creams   **d.** Friday

3. **a.** 40 vacuum cleaners   **b.** April   **c.** 15 more

   d. 40 vacuum cleaners

4. **a.** 132 books   **b.** 22 non-fiction books   **c.** 33 horror books