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The Essential Series

# Math Understood

## TEACHING GUIDE 5

## 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

Unit 1

# Whole Numbers

## Bilingual Concept Builder Notes

### Competency 1

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

**Stimulus:** The pupils are already familiar with counting in six digits. A little recap of reading and writing the names of six-digit numbers will provide a stimulus to start seven-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.

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

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

### Competency 2

Pupils will learn to add and subtract numbers up to seven digits with carrying and borrowing.

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

- How will you read 2,899,568 – 1,978,459?

(1,978,459 is subtracted from 2,899,568) or

(Subtract 1,978,459 from 2,899,568)

- What is being subtracted?

1,978,459

# مکمل اعداد

## قابلیت ۱

طلبہ لاکھوں میں دیے گئے اعداد کو معیاری شکل (standard form) اور توضیح شدہ شکل (expanded form) میں لکھ سکیں اس کے علاوہ ان اعداد میں ہندسوں کو ان کی مقامی قیمت کے مطابق شناخت کر سکیں۔

**محرک:** طلبہ چھ ہندسوں میں گنتی لکھنے پڑھنے سے مانوس ہیں لہٰذا چھ ہندسی اعداد کے نام پڑھنے اور لکھنے کا مختصر سا اعادہ انھیں سات ہندسی اعداد کو سیکھنے کے لیے بطور محرک کام کرے گا۔ ہر مخصوص ہندسے کی مقامی قیمت کو لاکھوں تک، اعشاریہ کے ساتھ میں لکھنے کا طریقہ اور انھیں الفاظ میں لکھنے کا طریقہ طلبہ کو سکھانے کے لیے نیچے دی گئی مثال کو بورڈ پر وضاحت کے ساتھ سمجھائیے۔

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

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

## قابلیت ۲

طلبہ سات ہندسی اعداد کو حاصل کے ساتھ جمع اور تفریق کرنا سیکھیں گے۔

**محرک:** طلبہ نے پچھلی جماعتوں میں جمع اور تفریق کا عمل سیکھا ہے انھیں وضاحت سے سمجھائیے کہ سب سے پہلے ایک جیسی مقامی قیمت والے ہندسوں کو ایک دوسرے کے نیچے لکھا جاتا ہے اس کے بعد انھیں جمع یا تفریق کیا جاتا ہے طلبہ سے مختصر سوالات کیجیے جیسے:

- 2,899,568 – 1,978,459? کو کیسے پڑھیں گے؟

(2,899,568 میں سے 1,978,459 کو گھٹانا ہے) یا

(2,899,568 میں سے 1,978,459 کو)

- کیا تفریق کیا جا رہا ہے؟

1,978,459

- From which number subtraction is being carried out?

2,899,568

$$\begin{array}{r} 2\ 8\ 9\ 9\ 5\ 6\ 8 \\ -\ 1\ 9\ 7\ 8\ 4\ 5\ 9 \\ \hline \\ \hline \end{array}$$

**Classwork:** Let your pupils complete Exercise B.

## Competency 3

Pupils will learn to multiply a number up to five digits with a number up to three-digits. They will also learn direct method to multiply a given number with 10, 100, or 1000.

**Rationale:** Elaborate multiplication with simpler examples and then gradually move to difficult ones. Use example given on pages 4 and 5 to elaborate multiplication of two numbers including 10, 100, and 1000.

**Classwork:** Let your pupils complete Exercise C.

## Competency 4

Pupils will learn to divide a number up to five digits by a number up to two-digits. They will also learn direct method to divide a given number by 10, 100, or 1000.

**Rationale:** Elaborate division with simpler examples first and then gradually move to complicated ones. Use example given on pages 6, 7, and 8 to elaborate division of five-digit numbers by two-digit numbers including 10, 100, and 1000.

**Classwork:** Let your pupils complete Exercise D.

## Competency 5

Pupils will apply their skill 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.

**Rationale:** Word problems have always remained a difficult area of learning at all age levels. To overcome the language barrier to understand word-problem, 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 E one by one with thorough explanation of mathematical equivalents of each phrase and word given in the problem.

- کسی عدد میں سے تفریق کیا جا رہا ہے؟

1,978,459

2 8 9 9 5 6 8
— 1 9 7 8 4 5 9

کلاس ورک: طلبہ کو مشق B مکمل کرنے دیجیے۔

### قابلیت ۳

طلبہ تین ہندسی اعداد کے ساتھ پانچ ہندسی اعداد کو ضرب دینا سیکھیں گے وہ دیے گئے عدد کو ۱۰، ۱۰۰ یا ۱۰۰۰ سے ضرب کرنے کا براہ راست طریقہ بھی سیکھیں گے۔

استدلال: ضرب کے عمل کو آسان مثالوں کے ذریعے سکھاتے ہوئے بتدریج شکل کی طرف جائیں۔ضرب دو اعداد کی ضرب بشمول ۱۰، ۱۰۰ اور ۱۰۰۰ کے ساتھ ضرب کی وضاحت کے لیے صفحہ ۴ اور ۵ پر دی گئی مثالوں کو استعمال کیجیے۔

کلاس ورک: طلبہ کو مشق C مکمل کرنے دیجیے۔

### قابلیت ۴

طلبہ کو پانچ ہندسی اعداد کو دو ہندسی اعداد سے تقسیم کر سکیں گے۔ وہ کسی دیے گئے عدد کو ۱۰، ۱۰۰ اور ۱۰۰۰ سے تقسیم کرنے کا براہ راست طریقہ بھی سیکھیں گے۔

استدلال: تقسیم کے عمل کو آسان مثالوں کے ذریعے سکھاتے ہوئے بتدریج مشکل کی طرف بڑھیں۔صفحہ ۶ ، ۷ اور ۸ کی مثالوں کے ذریعے پانچ ہندسی اعداد کو دو ہندسی اعداد بشمول ۱۰ ، ۱۰۰ اور ۱۰۰۰ سے تقسیم کرنے کا عمل وضاحت کے ساتھ سمجھائیے۔

کلاس ورک: طلبہ کو مشق D مکمل کرنے دیجیے۔

### قابلیت ۵

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

استدلال: عبارتی سوالات حل کرنا طلبہ کے لیے ہمیشہ سے مشکل رہا ہے لہٰذا عبارتی سوالوں کو سمجھنے میں درپیش زبان کی رکاوٹوں کو دور کرنا انھیں حل کرنے سے پہلے اشد ضروری ہے۔سب سے پہلے ہر سوال کو بورڈ پر لکھ کر طلبہ سے مختصر سوالات کیجیے اور مطلوبہ معلومات کو اکٹھا کر لیجیے۔عبارت میں دیے گئے الفاظ اور فقروں کے ریاضی کے متبادل لکھیے اور عبارتی سوالات کو مطلوبہ مسئلے کی روشنی میں حل کیجیے۔

کلاس ورک: مشق E میں دیے گئے عبارتی سوالوں کو باری باری حل کروائیے اور ہل کرنے سے پہلے عبارتی سوالوں میں بیان کردہ مسئلے کو وضاحت سے سمجھنے کے لیے ان میں دیے گئے الفاظ اور فقروں کے ریاضی کے متبادل بھی سمجھا کر لکھوائیے۔

## Competency 6

Pupils will learn to identify the rule in the given pattern of numbers (which could be based on addition, subtraction, multiplication, or division 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 or multiplying a fixed number to a term to obtain the next term. In a decreasing pattern, a fixed number is subtracted or divided every time to get the next term.

| 2, 6, 10, 14, 18, 22, 26, 30, 34, 38, 42, 46, … |
|---|

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

The rule to obtain next term every time is to 'add 4'.

| 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, … |
|---|

This is an increasing pattern of numbers as terms are increasing from 1 to 1024 and onward.

The rule to obtain next term every time is to 'multiply by 2'.

| 100, 95, 90, 85, 80, 75, 70, 65, 60, 55, 50, … |
|---|

This is a decreasing pattern of numbers as terms are decreasing from 100 to 50 and onward.

The rule to obtain next term every time is to 'subtract 5'.

| 1536, 768, 384, 192, 96, 48, 24, … |
|---|

This is a decreasing pattern of numbers as terms are decreasing from 1536 to 24 and onward.

The rule to obtain next term every time is to 'divide by 2'.

**Rationale:** Now elaborate to your pupils, examples given on page 12.

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

### قابلیت ۶

طلبہ اعداد کے دیے گئے نمونوں میں کارفرما اصول (جس کی بنیاد ایک مقررہ عدد کے گھٹانے، بڑھانے، ضرب یا تقسیم کرنے پر ہے) کی شناخت کرسکیں گے اور اعداد کے نمونوں کے لیے اگلا عدد لکھ سکیں گے۔

**محرک:** طلبہ کو پہلے بڑھنے اور گھٹنے کے نمونے دکھایئے پھر وضاحت کیجیے کہ increasing pattern کے لیے ہمیں ایک مقررہ عدد کو اگلے عدد میں جمع یا ضرب کرنا پڑتا ہے حاصل ہونے والے اگلے اعداد میں بتدریج اضافہ ہونے سے یہ نمونے آگے بڑھتا ہے۔ اسی طرح گھٹنے کے نمونے میں ایک مقررہ عدد کو بار بار تفریق یا گھٹانے پر ہمیں نیے اعداد ملتے ہیں۔

| |
|---|
| 2, 6, 10, 14, 18, 22, 26, 30, 34, 38, 42, 46, … |

یہ نمونہ اعداد کا ایک increasing pattern ہے جو ۲ سے شروع ہو کر ۳۵ اور مزید آگے تک بڑھایا جا سکت اہے۔
اور یہاں کارفرما اصول کے تحت ہر بار حاصل ہونے والے عدد میں ہمیں ۳ کو جمع کرنا پڑتا ہے۔

| |
|---|
| 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, … |

یہ اعداد کا ایک increasing pattern ہے جو ۱ سے شروع ہو کر ۱۰۲۴ اور مزید آگے تک بڑھایا جا سکتا ہے۔
اس نمونے میں کارفمرا اصولو کے تحت ہر بار ۲ سے ضرب کرنا پڑتا ہے۔

| |
|---|
| 100, 95, 90, 85, 80, 75, 70, 65, 60, 55, 50, … |

اعداد کا یہ ایک decreasing pattern ہے جو گھٹے ہوئے ۱۰۰ سے ۶۲ اور مزید پیچھے کی طرف بڑھایا جا سکتا ہے۔
یہاں کارفرماں اصولو کے تحت ہر بار حاصل ہونے عدد میں سے ۴ کو گھٹانا پڑے گا۔

| |
|---|
| 1536, 768, 384, 192, 96, 48, 24, … |

یہ اعداد کا ایک decreasing pattern ہے جو گھتے ہوئے ۱۵۳۶ سے ۲۴ اور مزید آگے تک بڑھایا جا سکتا ہے۔
یہاں کارفرماں اصولو کے تحت ہر بار حاصل ہونے والے عدد کو ہمیں ۲ سے تقسیم کرنا پڑتا ہے۔

**استدلال:** اب صفحہ ۱۲ پر دی گئی مثالوں کو وضاحت کے ساتھ طلبہ کو سمجھایئے۔

**کلاس ورک:** مشق F کے عبارتی سوالوں کو ایک ایک کرکے اپنی نگرانی میں حل کروایئے اور بقیہ مشق طلبہ کو خود کرنے دیجیے۔

# Scheme of Work

## Unit 1: Whole Numbers

## Estimated Number of Periods: 20

| Specific Learning Outcomes | Number of periods |
|---|---|
| • Read numbers up to 1,000,000 (one million) in numerals and words.<br>• Write numbers up to 1,000,000 (one million) in numerals and words. | 3 |
| • Add numbers up to 6-digit numbers.<br>• Subtract numbers up to 6-digit numbers. | 4 |
| • Multiply numbers, up to 5-digit, by 10, 100, and 1000.<br>• Multiply numbers, up to 5-digit, by a number up to 3-digit numbers. | 4 |
| • Divide a number up to 5-digit numbers by 10,100 and1000.<br>• Divide numbers up to 5-digit numbers by a number up to 2-digit numbers. | 4 |
| • Solve real-life situations involving operations of addition, subtraction, multiplication, and division. | 2 |
| • Identify and apply a pattern rule to determine missing elements for a given pattern.<br>• Identify the pattern rule of a given increasing and decreasing pattern and extend the pattern for the next three terms.<br>• Describe the pattern found in each table or chart. | 3 |

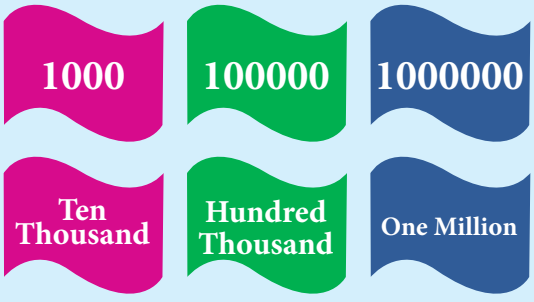
## Prior Knowledge Assessment

- Pupils have experience with 4-digit numbers.
- They will now work with up to 6-digit numbers.
- This lesson will help them add and subtract more complex numbers.
- Pupils already understand multiplication and division.
- They will use this knowledge to solve real-life problems involving mixed operations.

## Resources

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

- Number Cards



## Written Assignments

| Exercises | Class Assignment | Home Assignment |
|---|---|---|
| **Exercise A** | Q 1 (c – g), Q2 (c – i), Q3 (a – f), Q4 (a – e) | Q1 (a, b), Q2 (a, b), Q3 (g – i), Q 4 (f – h) |
| **Exercise B** | Q1 (d - h), Q2 (e – h) | Q1 (a – c), Q2 (a – d) |
| **Exercise C** | Q 1 (c – g), Q2 (c – i), Q3 (a – f) | Q1 (a, b), Q2 (a, b), Q3 (g – i) |
| **Exercise D** | Q 1 (a, b, e, f, g, h), Q2 (d - h) | Q1 (c, d), Q2 (a, b, c) |
| **Exercise E** | Q1, Q5- Q16 | Q2, Q3, Q4 |
| **Exercise F** | Q1 (d – h) | Q1 (a, b, c) |

## 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 B Pg 4

1a) 49302 + 26433 = 75735

b) 35400 + 19246 = 54646

c) 65213 + 12309 = 77522

d) 733509 + 208100 = 941609

e) 640749 + 551302 = 1192051

f) 2295806 + 329799 = 625605

g) 987654 + 123456 = 1111110

h) 100007 + 890399 = 990406

2a) 63659 − 29430 = 34229

b) 29315 − 29466 = 29859

c) 613750 − 59600 = 4150

d) 998886 − 790306 = 208580

e) 899432 − 856199 = 43233

f) 538020 − 138403 = 388097

g) 884720 − 557620 = 326890

h) 2000000 − 199999 = 100001

## EXERCISE C

Pg 6

1a) 3139 × 22

$^{1}6^{1}278$

+ 62780

69058

b) 4009 × 73

12027

+280630

292657

c) 35461 × 45

177305

+1418440

1595745

d) 63210 × 10

000000

+ 632100

632100

e) $^{2}3^{3}2412$ × 59

$^{1}2^{1}91708$

+1620600

1912308

f) 29556 × 235

147780

88680

+5911200

6945660

g) 23791 × 156

142746

1189550

+2379100

3711396

h) 31563 × 349

284067

12625200

+9468900

11015487

i) 65425 × 453

196275

3271250

+26170000

29637525

## Exercise D

Pg 8

1a) $3619 \div 21$

$$
\begin{array}{r}
172 \\
21\overline{)3619} \\
-21 \\
\hline
156 \\
-147 \\
\hline
0049 \\
-42 \\
\hline
0007
\end{array}
$$

b) $4127 \div 23$

$$
\begin{array}{r}
179 \\
23\overline{)4127} \\
-23 \\
\hline
182 \\
-161 \\
\hline
0217 \\
-207 \\
\hline
010
\end{array}
$$

c) $49542 \div 34$

$$
\begin{array}{r}
1457 \\
34\overline{)49542} \\
-34 \\
\hline
155 \\
-136 \\
\hline
194 \\
-170 \\
\hline
0242 \\
-238 \\
\hline
004
\end{array}
$$

d) $52875 \div 42$

$$
\begin{array}{r}
1258 \\
42\overline{)52875} \\
-42 \\
\hline
108 \\
-84 \\
\hline
247 \\
-210 \\
\hline
0375 \\
-336 \\
\hline
0039
\end{array}
$$

e) $64893 \div 54$

$$
\begin{array}{r}
1201 \\
54\overline{)64893} \\
-54 \\
\hline
108 \\
-108 \\
\hline
0009 \\
0 \\
\hline
893 \\
-54 \\
\hline
39
\end{array}
$$

f) $83799 \div 32$

$$
\begin{array}{r}
2618 \\
32\overline{)83799} \\
-64 \\
\hline
197 \\
-192 \\
\hline
0059 \\
-32 \\
\hline
279 \\
-256 \\
\hline
023
\end{array}
$$

Pg 8

g) 88755 ÷ 25

3550
25 | 88755
-75
137
-125
0125
-125
0005
-0
5

h) 32780 ÷ 25

1311
25 | 32780
-25
077
-75
028
-25
030
-25
005

2a) 7820 ÷ 10

7820 ÷ 10 = 782

b) 10400 ÷ 100

10400 ÷ 100 = 104

c) 83000 ÷ 1000

83000 ÷ 1000 = 83

d) 65090 ÷ 10

65090 ÷ 10 = 6509

e) 39100 ÷ 100

39100 ÷ 100 = 391

f) 45000 ÷ 1000

45000 ÷ 1000 = 45

g) 12000 ÷ 10

12000 ÷ 10 = 1200

h) 58200 ÷ 100

58200 ÷ 100 = 582

## EXERCISE E

Pg 10

1) 406299
+ 215396
621695

Areeba has Rs 621,695 altogether

2) 144236
+ 38946
181182

Total cost of both items Rs 181,182

3) 56649
+ 391786
958735

Hiba has Rs 958,735 in total

4) Apartment 353689
House - 33003
320686

The apartment is more expensive by Rs 320,686

5) 6713 5196
- 350000
385196

Roha has Rs 385,196 still in her savings

6) Value of Ibads sculpture = 593436
- 20000
Cost of Ibads sculpture 573436

7) 17848 x 230 = 4,105,040

17848
x 230
00000
53540
+ 3569600
4105040 apples harvested

8) 32,764 x 47 = 1539908

32764
x 47
229348
+ 1310560
1539908 chocolates produced

9) 13276 x 9 = 119484 motorbikes

13276
x 9
119484

10) 52230 x 124 = 6476520 people

52230
x 124
208920
1044600
+ 5223000
6476520

11) 32780 × 620 = Rs 20,323,600

32780
× 620
00000
1655600
+ 19668000
20323600

12) 73,650 ÷ 25 = 2946 beads

2946
25 | 73650
-50
236
-225
0115
-100
0150
-150
0000

13) 25,650 ÷ 50 = 513 buns

513
50 | 25650
-250
0065
-50
150
-150
000

14) 57600 ÷ 48 = 1200 stamps

1200
48 | 57600
-48
096
-96
000
0
000

15) 28800 ÷ 72 = 400 brownies

400
72 | 28800
-288
00000

16) 57,039 ÷ 33 = 1728 books with 15 books remaining

```
  1728
33)57039
 -33
  2^3A^20
  -231
  00^8B^123
    -66
    00279
     -264
     00015
```

# EXERCISE F

Pg 12

1a) 5, 10, 15, 20

5, 10, 15, 20, 25, 30, 35

Rule: Add 5 to the previous term

b) 1, 3, 5, 7, 9

1, 3, 5, 7, 9, 11, 13, 15

Rule: Add 2 to the previous term

c) 5, 8, 11, 14, 17

5, 8, 11, 14, 17, 20, 23, 26

Rule: Add 3 to the previous term

d) 95, 90, 85, 80,

95, 90, 85, 80, 75, 70, 65

Rule: Subtract 5 from the previous term

e) 1, 5, 25, 125

1, 5, 25, 125, 625, 3125, 15625

Rule: Multiply previous term by 5

f) 800, 400, 200

800, 400, 200, 100, 50, 25

Rule: Divide previous term by 2

g) 2, 6, 18, 54

2, 6, 18, 54, 162, 486, 1458

Rule: Multiply previous term by 3

h) 1, 4, 9, 16, 25

1, 4, 9, 16, 25, 36, 49, 64

Rule: Square of natural numbers

# Review Exercise

1. Write the place value of the coloured digits.

   a. 39,7**8**5 b. **6**4,173 c. 198,08**2**

   d. **5**16,223 e. 1,5**2**5,950 f. 4,**8**00,461

2. Write the expanded form of the following.

   a. 81,416 b. 59,458 c. 321,614

   d. 685,302 e. 407,671 f. 1,674,039

3. Write the following numbers in words.

   a. 26,895 b. 90,154 c. 348,986

   d. 614,321 e. 1,489,341 f. 1,812,601

4. Write the following in numerals.

   a. Forty-eight thousand, two hundred and seventy-two

   b. Three hundred and ninety-one thousand, four hundred and thirty-six

   c. Eight hundred and fifty thousand, three hundred and fourteen

   d. One million, nine hundred and ninety-four thousand, seven hundred and eleven

5. Add the following.

   a. 59,609 + 63,750 b. 790,306 + 294,806 c. 199,008 + 135,652

6. Subtract the following.

   a. 329,799 - 95,806 b. 987,654 - 123,456 c. 411,006 – 180,999

7. Multiply the following.

   a. 5029 × 82 b. 17,412 × 48 c. 63,156 × 149

8. Find quotient and remainder of the following.

   a. 89,285 ÷ 23 b. 59,329 ÷ 27 c. 75,661 ÷ 34

**9.** Fill in the missing numbers.

**a.** 72 × _____ = 7200

**b.** 53,000 ÷ _____ = 530

**c.** 410 × _____ = 41,000

**d.** 29,000 ÷ _____ = 29

**e.** 106 × _____ = 106,000

**f.** 300,000 ÷ _____ = 3000

**10.** Write the pattern rule and find the next three terms of the following number patterns.

**a.** 8, 12, 16, 20, 24

**b.** 150, 135, 120, 105, 90, 75

**c.** 100, 300, 500, 700, 900

**d.** 55, 110, 220, 440, 880

**e.** 896, 448, 224, 112, 56

**11.** Solve the following real-life number stories.

**a.** The price of one rice bag is Rs 6894. What will be the price of 312 such bags?

**b.** Mohib earns Rs 562,000 every month. If he saves Rs 188,990, how much does he spend every month?

**c.** A shopkeeper has 28 laptops with 5 laptops on each shelf. How many shelves will have 5 laptops? How many laptops are not on the shelves

**d.** Kanwal has Rs 568,300. She wants to buy furniture that costs Rs 450,600 and a refrigerator of Rs 99,870. After buying these two things, how much money is left with Kanwal?

**e.** Khalid earned Rs 192,500 in March and Rs 178,730 in April. How much did he earn in both the months?

**f.** A mobile phone company displays 17,472 phones in different shops. If the phones are displayed in 24 shops equally, how many phones were there in each shop?

**g.** A motorcycle costs Rs 35,950. If a dealer sells 761 motorcycles, find his total sales.

# Answer Key

1. a. Tens b. Ten thousand c. ones
   d. Hundred thousand b. Ten thousand c. Hundred thousand
2. a. 80000 + 1000 + 400 + 10 + 6
   b. 50000 + 9000 + 400 + 50 + 8
   c. 300000 + 20000 + 1000 + 600 + 10 + 4
3. a. Twenty-six thousand, eight hundred and ninety-five
   b. Ninety thousand , one hundred and fifty-four
   c. Three hundred and forty-eight thousand, nine hundred and eighty-six
   d. Six hundred and fourteen thousand, three hundred and twenty -one
   e. One million, four hundred and eighty-nine thousand, three hundred and forty-one
   f. One million, eight hundred and twelve thousand, six hundred and one
4. a. 48,272 b. 391,436 c. 850,314 d. 1,994,711
5. a. 123,359 b. 10,851,112 c. 334, 660
6. a. 233,993 b. 864,198 c. 230,007
7. a. 412,378 b. 835,776 c. 9,410,224
8. a. 3881 R 22 b. 2197 R 10 c. 225 R 11
9. a. 100 b. 100 c. 1000 d. 100 e. 1000 f. 100
10. a. Rule: Add 4 to each term. Next three terms are 28, 32, 36
    b. Rule: Subtract 15 from each term. Next three terms are 60, 45, 30
    c. Rule: add 200 to each term. Next three terms are 1100, 1300, 1500
    d. Rule: Multiply each term by 2. Next three terms are 1760, 3520, 7040

II. a. Rs 2,150,928

b. Rs 373,010

c. 5 shelves, 3 laptops not on the shelves

d. Rs 17830

e. Rs 371,230

f. 728 phones

g. Rs 27,357,950

Unit 2

# Highest Common Factor and Least Common Multiple

## Bilingual Concept Builder Notes

### Competency 1

Pupils will learn to calculate highest common factor (HCF) of the given numbers using division and factorisation method.

**Stimulus:** Pupils have learnt 'factors' as 'a divisor which divides the dividend exactly without leaving a remainder'. Before initiating the process of finding HCF,

$20 \div 4$

$$\begin{array}{r} 5 \\ 4 \overline{)\,20} \\ -20 \\ \hline 0 \end{array}$$

0 → Remainder

$20 \div 3$

$$\begin{array}{r} 6 \\ 3 \overline{)\,20} \\ -18 \\ \hline 2 \end{array}$$

2 → Remainder

$20 \div 6$

$$\begin{array}{r} 3 \\ 6 \overline{)\,20} \\ -18 \\ \hline 2 \end{array}$$

2 → Remainder

$20 \div 5$

$$\begin{array}{r} 4 \\ 5 \overline{)\,20} \\ -20 \\ \hline 0 \end{array}$$

0 → Remainder

$20 \div 7$

$$\begin{array}{r} 2 \\ 7 \overline{)\,20} \\ -14 \\ \hline 6 \end{array}$$

6 → Remainder

$20 \div 8$

$$\begin{array}{r} 2 \\ 8 \overline{)\,20} \\ -16 \\ \hline 4 \end{array}$$

4 → Remainder

In given examples 20 is the dividend and 3, 4, 5, 6, 7, and 8 are divisors. Note that 4 and 5 divides exactly and leaves no remainder while other divisors cannot divide 20 exactly.

So, 4 and 5 are factors of 20.

# سب سے زیادہ کامن فیکٹر اور سب سے کم مشترک ملٹیپل

**قابلیت ۱**

طلبہ دیے گئے اعداد کا مشترک عاد اعظم (Highest common factor) معلوم کرنے کے لیے تقسیم اور عمل تجزی (factorisation) کا طریقہ استعمال کریں گے۔

**محرک:** طلبہ اجزائے ضربی کو ایک ایسے تقسیم کرنے والے عدد division کے طور پر پہچانتے ہیں جو مقسوم کو مکمل طور تقسیم کرتا ہے اور باقی یا حاصل تقسیم بھی نہیں بچتا۔ مشترک عاد اعظم کو معلوم کرنے کا عمل شروع کرنے سے پہلے

$20 \div 4$

$$4 \overline{)\, 20} \quad 5$$
$$-20$$
$$0 \longrightarrow \text{Remainder}$$

$20 \div 3$

$$3 \overline{)\, 20} \quad 6$$
$$-18$$
$$2 \longrightarrow \text{Remainder}$$

$20 \div 6$

$$6 \overline{)\, 20} \quad 3$$
$$-18$$
$$2 \longrightarrow \text{Remainder}$$

$20 \div 5$

$$5 \overline{)\, 20} \quad 4$$
$$-20$$
$$0 \longrightarrow \text{Remainder}$$

$20 \div 7$

$$7 \overline{)\, 20} \quad 2$$
$$-14$$
$$6 \longrightarrow \text{Remainder}$$

$20 \div 8$

$$8 \overline{)\, 20} \quad 2$$
$$-16$$
$$4 \longrightarrow \text{Remainder}$$

اوپر دی گئی مثالوں میں ۲۰ کا عدد مقسوم اور ۷، ۶، ۵، ۴، ۳ اور ۸ مقسوم علیہ ہیں۔ غور کیجیے کہ ۵ اور ۴ ایسے مقسوم علیہ ہیں جو مکمل طور پر تقسیم کرتے ہیں اور باقی کچھ نہیں بچتا جبکہ دیگر مقسوم علیہ ۲۰ کو مکمل تقسیم نہیں کر سکتے۔

لہٰذا ۲۰ کے اجزائے ضربی ۴ اور ۵ ہیں۔

To elaborate the concept of HCF, use the following example.

Find the HCF of 24 and 36, list all the factors of 24 and 36. Pupils have learnt to list all the factors of a given number in previous class.

All factors of 24 = **1**, **2**, **3**, **4**, **6**, 8, **12**, 24

(*can divide 24 completely*)

All factors of 36 = **1**, **2**, **3**, **4**, **6**, 9, **12**, 18, 36

(can divide 36 completely)

Common factors of 24 and 36 = 1, 2, 3, 4, 6, **12**

(can divide 24 and 36 completely)

Highest common factor of 24 and 36 = 12

(the highest number which can divide 24 and 36 completely)

So, HCF of 24 and 36 = 12

(12 is the highest possible number which can divide 24 and 36 exactly without leaving a remainder)

**Rationale:** Now elaborate to your pupils, examples given on pages 14, 15, and 16. Explain to your pupils that look for the following words in the real-life problem besides the context to decide whether it involves HCF:

- highest
- greatest
- divides
- distribute etc.

**Classwork:** Complete some problems of Q1 and Q2 in Exercise A. Word problems may be done one by one after a thorough discussion about its solution.

## Competency 2

Pupils will learn to calculate least common multiple (LCM) of the given numbers using division and factorisation method.

**Stimulus:** Pupils have learnt 'multiple' as 'the product of a number'. Before initiating the process of finding LCM, explain how to find multiples of a number:

Multiples of 2 = 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, …

(exactly divisible by 2)

مشترک عاداعظم کے تصور کی وضاحت کے لیے درج ذیل مثالوں سے مدد لیجیے۔

۲۴ اور ۳۶ کے مشترک عاداعظم کو معلوم کرنے کے لیے ۲۴ اور ۳۶ کے اجزائے ضربی لکھیے۔ طلبہ پچھلی جماعت میں کسی دیے گئے عدد کے اجزائے ضربی لکھنا سیکھ چکے ہیں۔

(24 کے اجزائے ضربی = 1, 2, 3, 4, 6, 8, 12, 24)

(24 کو مکمل تقسیم کر سکتے ہیں)

(36 کے اجزائے ضربی = 1, 2, 3, 4, 6, 9, 12, 18, 36)

(36 کو مکمل تقسیم کر سکتے ہیں)

(24 اور 36 کے مشترک اجزائے ضربی = 1, 2, 3, 4, 6, 12)

(24 اور 36 مکمل تقسیم کر سکتے ہیں)

(24 اور 36 کے مشترک اجزائے ضربی = 12)

(سب سے بڑا عدد جو 24 اور 36 کو مکمل تقسیم کر سکتا ہے۔)

لہٰذا: 24 اور 36 کا مشترک عاداعظم ہے = 12

(12 وہ سب سے بڑا مشترک عدد ہے جو 24 اور 36 کو مکمل تقسیم کر سکتا ہے اور کچھ بھی باقی نہیں بچتا۔)

استدلال: طلبہ کو صفحہ 14، 15 اور 16 پر دی گئی مثالوں کو وضاحت سے سمجھائیے۔ طلبہ کو بتائیے کہ وہ درج ذیل الفاظ کو سیاق سباق کے علاوہ اپنی روزمرہ زندگی کے مسئلوں میں تلاش کرتے ہوئے فیصلہ کریں کہ آیا مشترک عاداعظم سے ان کا کوئی تعلق ہے۔

- سب سے زیادہ (highest)
- سب سے بڑا (greatest)
- تقسیم کرتا ہے (divides)
- تقسیم کرنا (distribute) وغیرہ

کلاس ورک: مشق A کے سوال ۱ اور سوال ۲ کے عبارتی سوالوں کو مکمل کیجیے۔ ہر عبارتی سوال حل کرنے کے لیے پہلے طلبہ کے ساتھ بات چیت کیجیے تاکہ اس میں بیان کردہ مسئلے کو وضاحت سے سمجھا جا سکے۔

## قابلیت ۲

طلبہ تقسیم اور عمل تجزی کو استعمال کرتے ہوئے دیے گئے اعداد کا مشترک ذواضعاف اقل معلوم کریں گے۔

محرک: طلبہ نے اضعاف کو کسی عدد کے حاصل ہونے والے اگلے عدد کے طور پر سیکھا ہے لہٰذا مشترک ذواضعاف اقل کو معلوم کرنے کا عمل شروع کرنے سے پہلے، وضاحت کیجیے کہ کسی عدد کے اضعاف کو کیسے تلاش کیا جاتا ہے۔

2 کے اضعاف = 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, ...

(2 پر قابل تقسیم ہیں)

Multiples of 3 = 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, …

(exactly divisible by 3)

Multiples of 4 = 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, …

(exactly divisible by 4)

To elaborate the concept of LCM, use the following example.

Find the LCM of 6 and 8, list multiples of 6 and 8.

Multiples of 6 = 6, 12, 18, **24**, 30, 36, 42, **48**, 54, 60, 66, **72**, 78, …

(exactly divisible by 6)

Multiples of 8 = 8, 16, **24**, 32, 40, **48**, 56, 64, **72**, 80, …

(exactly divisible by 8)

Common multiples of 6 and 8 = **24**, 48, 72, …

(exactly divisible by both 6 and 8)

Least common multiple (LCM) of 6 and 8 = 24

(the smallest number which can be divided by 6 and 8 completely)

So, LCM of 6 and 8 = 24

(24 is the least possible number which can be divided by 6 and 8 exactly without leaving a remainder)

**Rationale:** Now elaborate to your pupils, examples given on pages 18 and 19. Explain to your pupils that look for the following words in the real-life problem besides the context to decide whether it involves LCM:

- least
- lowest
- divided
- Distributed etc.

**Classwork:** Complete some problems of Q1 and Q2 in Exercise B. Word problems may be done one by one after a thorough discussion about its solution.

3 = 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, … کے اضعاف

(3 پر قابل تقسیم ہیں)

4 = 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, … کے اضعاف

(4 پر قابل تقسیم ہیں)

مشترک ذواضعاف اقل کے تصور کی وضاحت کے لیے درج زیل مثالوں سے مدد لیجیے۔

۶ اور ۸ کے زواضعاف اقل کو معلوم کیجیے، ۶ اور ۸ کے اضعاف لکھیے

6 = 6, 12, 18, **24**, 30, 36, 42, **48**, 54, 60, 66, **72**, 78, … کے اضعاف

(6 پر قابل تقسیم ہیں)

8 = 8, 16, **24**, 32, 40, **48**, 56, 64, **72**, 80, … کے اضعاف

(8 پر قابل تقسیم ہیں)

6 = **24**, 48, 72, … اور 8 کے اضعاف

(6 اور 8 دونوں پر قابل تقسیم ہیں)

24 = 6 اور 8 کے مشترک ذواضعاف اقل

(سب سے چھوٹا عدد جو 6 اور 8 سے مکمل طور پر تقسیم کیا جا سکتا ہے۔)

لہٰذا 24 = 6 اور 8 کا LCM reminder

(24 وہ چھوٹے سے چھوٹا ممکنہ عدد ہے جو 6 اور 8 پر مکمل تقسیم ہوسکتا ہے اور کچھ باقی بھی نہیں بچتا۔)

استدلال: طلبہ کو صفحہ ۱۸ اور ۱۹ پر دی گئی مثالوں کی وضاحت سے سمجھائیے اور انھیں بتائیے کہ وہ دیے گئے الفاظ کو (سیاق سباق کے علاوہ) اپنی زندگی کے مسئلوں میں تلاش کریں اور یہ فیصلہ کریں کہ آیا مشترک ذواضعاف اقل سے ان کا کوئی تعلق ہے۔

- کم از کم (least)
- سب سے کم (lowest)
- تقسیم (divided)
- منقسم (distributed) وغیرہ

کلاس ورک: مشق B کے سوال ۱ اور سوال ۲ کے عبارتی سوالات مکمل کیجیے۔ عبارتی سوالوں میں دیے گئے مسئلوں پر طلبہ سے بات چیت کیجیے تاکہ ان کو حل کیا جا سکے۔

# Scheme of Work

## Unit 2: Highest Common Factor and Least Common Multiple

## Estimated Number of Periods: 18

| Specific Learning Outcomes | Number of periods |
|---|---|
| • Find HCF of:<br>○ two numbers up to 2-digit numbers<br>○ three numbers up to 2-digit numbers using<br>○ four numbers up to 2-digit numbers using<br>○ prime factorisation method and division method | 7 |
| • Find LCM of<br>○ two numbers up to 2-digit numbers<br>○ three numbers up to 2-digit numbers using<br>○ four numbers up to 2-digit numbers using<br>○ prime factorisation method and division method | 7 |
| • Solve real-life situations involving HCF and LCM | 4 |

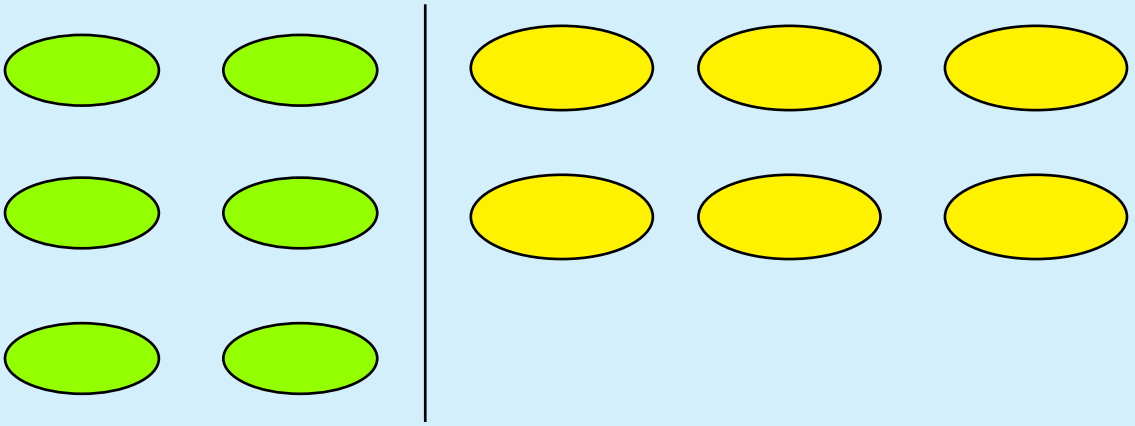
## Prior Knowledge Assessment

- Students already know how to find common multiples.
- They will now learn to find the LCM using the division method.
- They have learned how to find common factors by prime factorization.
- They will learn to find the HCF using the long division method and prime factorization.
- Students will apply their knowledge of LCM and HCF to solve real-life problems.

## Resources

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

- Make Sure You Have two coloured counters



## Written Assignments

| Exercises | Class Assignment | Home Assignment |
|---|---|---|
| **Exercise A** | Q1 (a, b, c, g, h, i), Q2 (a, d, f), Q4, Q5, Q6 | Q1 (d, e, f), Q2 (b, c), Q3 |
| **Exercise B** | Q1 (a – e, i - l), Q2 (a, b, ), Q4, Q5, Q6 | Q1(f, g, h), Q2 (c, d, e), 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 UNIT 2 Pg 16

1a) 30, 45

| 2 | 30 |
|---|---|
| 3 | 15 |
| 5 | 5 |
| | 1 |

| 3 | 45 |
|---|---|
| 3 | 15 |
| 5 | 5 |
| | 1 |

Prime factorisation of 30 = 2 x 3 x 5

Prime factorisation of 45 = 3 x 3 x 5

HCF = 3x5 = 15

b) 60, 72

| 2 | 60 |
|---|---|
| 2 | 30 |
| 3 | 15 |
| 5 | 5 |
| | 1 |

| 2 | 72 |
|---|---|
| 2 | 36 |
| 2 | 18 |
| 3 | 9 |
| 3 | 3 |
| | 1 |

Factors of 60 = 2 x 2 x 3 x 5

Factors of 72 = 2 x 2 x 2 x 3

HCF = 2x2x3 = 12

c) 60, 96

| 2 | 60 |
|---|---|
| 2 | 30 |
| 3 | 15 |
| 5 | 5 |
| | 1 |

| 2 | 96 |
|---|---|
| 2 | 48 |
| 2 | 24 |
| 2 | 12 |
| 2 | 6 |
| 3 | 3 |
| | 1 |

Factors of 60 = 2x2x3x5

Factors of 96 = 2x2x2x2x2x3

HCF = 2x2x3 = 12

Pg 16

d) 42, 70

| 2 | 42 | 2 | 70 |
|---|---|---|---|
| 3 | 21 | 5 | 35 |
| 7 | 7 | 7 | 7 |
| | 1 | | 1 |

Factors of 42 = 2×3×7

Factors of 70 = 2×5×7

HCF = 2×7 = 14

e) 48, 60

| 2 | 48 | 2 | 60 |
|---|---|---|---|
| 2 | 24 | 2 | 30 |
| 2 | 12 | 3 | 15 |
| 2 | 6 | 5 | 5 |
| 3 | 3 | | 1 |
| | 1 | | |

Factors of 48 = 2×2×2×2×3

Factors of 60 = 2×2×3×5

HCF = 2×2×3 = 12

f) 12, 16, 20

| 2 | 12 | 2 | 16 | 2 | 20 |
|---|---|---|---|---|---|
| | | 2 | 8 | 2 | 10 |
| 2 | 6 | 2 | 4 | 5 | 5 |
| 3 | 3 | 2 | 2 | | 1 |
| | 1 | | 1 | | |

Factors of 12 = 2×2×3

Factors of 16 = 2×2×2×2

Factors of 20 = 2×2×5

HCF = 2×2 = 4

g) 30, 36, 42

| 2 | 30 | 2 | 36 | 2 | 42 |
|---|---|---|---|---|---|
| 3 | 15 | 2 | 18 | | |
| 5 | 5 | 3 | 9 | 3 | 21 |
| | 1 | 3 | 3 | 7 | 7 |
| | | | 1 | | 1 |

Factors of 30 = 2×3×5

Factors of 36 = 2×2×3×3

Factors of 42 = 2×3×7

HCF = 2×3 = 6

h) 48, 72, 96

| 2 | 48 | 2 | 72 | 2 | 96 |
|---|---|---|---|---|---|
| 2 | 24 | 2 | 36 | 2 | 48 |
| 2 | 12 | 2 | 18 | | |
| 2 | 6 | 3 | 9 | 2 | 24 |
| 3 | 3 | 3 | 3 | 2 | 12 |
| | 1 | | 1 | 2 | 6 |
| | | | | 3 | 3 |
| | | | | | 1 |

Factors of 48 = 2×2×2×2×3

Factors of 72 = 2×2×2×3×3

Factors of 96 = 2×2×2×2×2×3

HCF = 2×2×2×3 = 24

i) 20, 60, 80, 100 Pg 16

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2 | 20 | 2 | 60 | 2 | 80 | 2 | 100 |
| 2 | 10 | 2 | 30 | 2 | 40 | 2 | 50 |
| 5 | 5 | 3 | 15 | 2 | 20 | 5 | 25 |
| | 1 | 5 | 5 | 2 | 10 | 5 | 5 |
| | | | 1 | 5 | 5 | | 1 |
| | | | | | 1 | | |

Factors of 20 = 2×2×5
Factors of 60 = 2×2×3×5
Factors of 80 = 2×2×2×2×5
Factors of 100 = 2×2×5×5
HCF = 2×2×5 = 20

Pg 17

2a) 48, 60

$$48\overline{)60}\ 1,\ -48,\ 12 \qquad 12\overline{)48}\ 4,\ -48,\ 00$$

HCF = 12

b) 24, 36

$$24\overline{)36}\ 1,\ -24,\ 12 \qquad 12\overline{)24}\ 2,\ -24,\ 00$$

HCF = 12

c) 25, 35, 45

$$25\overline{)35}\ 1,\ -25,\ 10 \qquad 10\overline{)25}\ 2,\ -20,\ 05 \qquad 5\overline{)45}\ 9,\ -45,\ 00$$

HCF = 5

d) 56, 84, 70 HCF = 14

$$56\overline{)84}\ 1,\ 56,\ 28 \qquad 28\overline{)56}\ 2,\ -56,\ 00 \qquad 28\overline{)140}\ 2,\ -56,\ 14$$

e) 12, 16, 20, 28

$$12\overline{)16}\ 1,\ -12,\ 04 \qquad 4\overline{)12}\ 3,\ -12,\ 00 \qquad 4\overline{)20}\ 5,\ -20,\ 00 \qquad 4\overline{)28}\ 7,\ -28,\ 00$$

HCF = 4

f) 52, 72, 84, 100 HCF of all numbers is 4

$$52\overline{)72}\ 1,\ -52,\ 20 \qquad 20\overline{)52}\ 2,\ -40,\ 12 \qquad 12\overline{)20}\ 1,\ -12,\ 8 \qquad 8\overline{)12}\ 1,\ -8,\ 4 \qquad 4\overline{)8}\ 2,\ -8,\ 0$$

HCF of 52, 72 is 4

$$4\overline{)84}\ 21,\ -84,\ 00 \qquad 4\overline{)100}\ 25,\ -8,\ 20,\ -20,\ 00$$

HCF of 84, 100 is 4

## Real Life Number Stories

Pg 17

3) 40, 60, 20

$$\begin{array}{r|l} 40 & 60 \\ -40 & \\ \hline & 20 \end{array} \quad \begin{array}{r|l} 20 & 40 \\ -40 & \\ \hline & 00 \end{array} \quad \begin{array}{r|l} 20 & 20 \\ -20 & \\ \hline & 00 \end{array}$$

Largest equal number of cookies that can be put in one box is 20 cookies

4) 42, 56, 70

$$\begin{array}{r|l} 42 & 56 \\ -42 & \\ \hline & 14 \end{array} \quad \begin{array}{r|l} 14 & 42 \\ -42 & \\ \hline & 00 \end{array} \quad \begin{array}{r|l} 14 & 70 \\ -70 & \\ \hline & 00 \end{array}$$

14 students will receive the same number of items

5) 18, 24, 30

$$\begin{array}{r|l} 18 & 24 \\ -18 & \\ \hline & 6 \end{array} \quad \begin{array}{r|l} 6 & 18 \\ -18 & \\ \hline & 00 \end{array} \quad \begin{array}{r|l} 6 & 30 \\ -30 & \\ \hline & 00 \end{array}$$

6 fruit baskets can be created equally

6) 27, 39, 51

$$\begin{array}{r|l} 27 & 39 \\ -27 & \\ \hline & 12 \end{array} \quad \begin{array}{r|l} 12 & 27 \\ -24 & \\ \hline & 3 \end{array} \quad \begin{array}{r|l} 3 & 39 \\ -39 & \\ \hline & 00 \end{array} \quad \begin{array}{r|l} 3 & 51 \\ -3 & \\ \hline & 21 \\ -21 & \\ \hline & 00 \end{array}$$

3 groups can be formed

## EXERCISE B

Pg 19

1a) 20 and 30

Prime factorisation of 20 = 2×2×5

Prime factorisation of 30 = 2×3×5

LCM = 2×2×3×5 = 60

| 2 | 20 | 2 | 30 |
|---|---|---|---|
| 2 | 10 | 3 | 15 |
| 5 | 5 | 5 | 5 |
| | 1 | | 1 |

b) 40 and 32

Prime factors of 40 = 2×2×2×5

Prime factors of 32 = 2×2×2×2×2

LCM = 2×2×2×2×2×5 = 160

| 2 | 40 | 2 | 32 |
|---|---|---|---|
| 2 | 20 | 2 | 16 |
| 2 | 10 | 2 | 8 |
| 5 | 1 | 2 | 4 |
| | | 2 | 2 |
| | | | 1 |

c) 10 and 20

Prime factors of 10 = 2×5

Prime factors of 20 = 2×2×5

LCM = 2×2×5 = 20

| 2 | 10 | 2 | 20 |
|---|---|---|---|
| 5 | 5 | 2 | 10 |
| | 1 | 5 | 5 |
| | | | 1 |

d) 24 and 32

Prime factors of 24 = 2×2×2×3

Prime factors of 32 = 2×2×2×2×2

LCM = 2×2×2×2×2×3 = 96

| 2 | 24 | 2 | 32 |
|---|---|---|---|
| 2 | 12 | 2 | 16 |
| 2 | 6 | 2 | 8 |
| 3 | 3 | 2 | 4 |
| | 1 | 2 | 2 |
| | | | 1 |

e) 45 and 75

Prime factors of 45 = 3×3×5

Prime factors of 75 = 3×5×5

LCM = 3×3×5×5 = 225

| 3 | 45 | 3 | 75 |
|---|---|---|---|
| 3 | 15 | 5 | 25 |
| 5 | 5 | 5 | 5 |
| | 1 | | 1 |

f) 16 and 48

Prime factors of 16 = 2×2×2×2

Prime factors of 48 = 2×2×2×2×3

LCM = 2×2×2×2×3 = 48

| 2 | 16 | 2 | 48 |
|---|---|---|---|
| 2 | 8 | 2 | 24 |
| 2 | 4 | 2 | 12 |
| 2 | 2 | 2 | 6 |
| | 1 | 3 | 3 |
| | | | 1 |

Pg 19

g) 18 and 24

Prime factors of 18 = 2×3×3

Prime factors of 24 = 2×2×2×3

LCM = 2×3×3×2×2 = 72

| 2 | 18 | 2 | 24 |
|---|---|---|---|
| 3 | 9 | 2 | 12 |
| 3 | 3 | 2 | 6 |
| | 1 | 3 | 3 |
| | | | 1 |

h) 8, 16 and 32

Prime factors of 8 = 2×2×2

Prime factors of 16 = 2×2×2×2

Prime factors of 32 = 2×2×2×2×2

LCM = 2×2×2×2×2×2 = 64

| 2 | 8 | 2 | 16 | 2 | 32 |
|---|---|---|---|---|---|
| 2 | 4 | 2 | 8 | 2 | 16 |
| 2 | 2 | 2 | 4 | 2 | 8 |
| | 1 | 2 | 2 | 2 | 4 |
| | | | 1 | 2 | 2 |
| | | | | | 1 |

i) 15, 25 and 30

Prime factors of 15 = 3×5

Prime factors of 25 = 5×5

Prime factors of 30 = 2×2×2×2×2

LCM = 2×3×5×5 = 160

| 3 | 15 | 5 | 25 | 2 | 30 |
|---|---|---|---|---|---|
| 5 | 5 | 5 | 5 | 2 | 16 |
| | 1 | | 1 | 2 | 8 |
| | | | | 2 | 4 |
| | | | | | 2 |
| | | | | | 1 |

j) 4, 6 and 8

Prime factors of 4 = 2×2

Prime factors of 6 = 2×3

Prime factors of 8 = 2×2×2

LCM = 2×2×2×3 = 24

| 2 | 4 | 2 | 6 | 2 | 8 |
|---|---|---|---|---|---|
| 2 | 2 | 3 | 3 | 2 | 4 |
| | 1 | | 1 | 2 | 2 |
| | | | | | 1 |

k) 10, 15, 20 and 30

Prime factors of 10 =

Prime factors of 15 =

Prime factors of 20 =

Prime factors of 30 =

LCM = 2×2×3×5 = 60

| 2 | 10 | 3 | 15 | 2 | 20 | 2 | 30 |
|---|---|---|---|---|---|---|---|
| 5 | 5 | 5 | 5 | 2 | 10 | 3 | 15 |
| | 1 | | 1 | 5 | 5 | 5 | 5 |
| | | | | | 1 | | 1 |

Pg 20

2a) 2, 4, 6

| | |
|---|---|
| 2 | 2, 4, 6 |
| 2 | 1, 2, 3 |
| 3 | 1, 1, 3 |
| | 1, 1, 1 |

LCM = 2 × 2 × 3 = 12

b) 4, 6, 8

| | |
|---|---|
| 2 | 4, 6, 8 |
| 2 | 2, 3, 4 |
| 2 | 1, 3, 2 |
| 3 | 1, 3, 1 |
| | 1, 1, 1 |

LCM = 2 × 2 × 2 × 3 = 24

c) 4, 18, 12

| | |
|---|---|
| 2 | 4, 18, 12 |
| 2 | 2, 9, 6 |
| 3 | 1, 9, 3 |
| 3 | 1, 3, 1 |
| | 1, 1, 1 |

LCM = 2 × 2 × 3 × 3 = 36

d) 3, 6, 12

| | |
|---|---|
| 2 | 3, 6, 12 |
| 2 | 3, 3, 6 |
| 3 | 3, 3, 3 |
| | 1, 1, 1 |

LCM = 2 × 2 × 3 = 12

e) 5, 10, 20

| | |
|---|---|
| 2 | 5, 10, 20 |
| 2 | 5, 5, 10 |
| 5 | 5, 5, 5 |
| | 1, 1, 1 |

LCM = 2 × 2 × 5 = 20

f) 6, 12, 24

| | |
|---|---|
| 2 | 6, 12, 24 |
| 2 | 3, 6, 12 |
| 2 | 3, 3, 6 |
| 3 | 3, 3, 3 |
| | 1, 1, 1 |

LCM = 2 × 2 × 2 × 3 = 24

g) 10, 20, 40

| | |
|---|---|
| 2 | 10, 20, 40 |
| 2 | 5, 10, 20 |
| 2 | 5, 5, 10 |
| 5 | 5, 5, 5 |
| | 1, 1, 1 |

LCM = 2 × 2 × 2 × 5 = 40

h) 4, 16, 32, 64

| | |
|---|---|
| 2 | 4, 16, 32, 64 |
| 2 | 2, 8, 16, 32 |
| 2 | 1, 4, 8, 16 |
| 2 | 1, 2, 4, 8 |
| 4 | 1, 2, 4, 4 |
| | 1, 1, 1, 1 |

LCM = 2 × 2 × 2 × 2 × 4 = 64

i) 2, 7, 14, 28

| | |
|---|---|
| 2 | 2, 7, 14, 28 |
| 2 | 1, 7, 7, 14 |
| 7 | 1, 7, 7, 7 |
| | 1, 1, 1, 1 |

LCM = 2 × 2 × 7 = 28

## Real Life Number Stories

Pg 20

3) 120, 150, 90

| | |
|---|---|
| 2 | 120, 150, 90 |
| 3 | 60, 75, 45 |
| 3 | 20, 35, 15 |
| 5 | 20, 35, 5 |
| 4 | 4, 7, 1 |
| 7 | 1, 7 |
| | 1, 1 |

LCM = 2 x 3 x 3 x 5 x 4 x 7 = 2520 days

4) 20, 30, 60

| | |
|---|---|
| 2 | 20, 30, 60 |
| 2 | 10, 15, 30 |
| 3 | 5, 15, 15 |
| 5 | 5, 5, 5 |
| | 1, 1, 1 |

LCM = 2 x 2 x 3 x 5 = 60 seconds

5) 16, 24, 32

| | |
|---|---|
| 2 | 16, 24, 32 |
| 2 | 8, 12, 16 |
| 2 | 4, 6, 8 |
| 2 | 2, 3, 4 |
| 2 | 1, 3, 2 |
| 3 | 1, 3, 1 |
| | 1, 1, 1 |

LCM = 2 x 2 x 2 x 2 x 2 x 3 = 96 days

6) 21, 35, 49

| | |
|---|---|
| 3 | 21, 35, 49 |
| 5 | 7, 35, 49 |
| 7 | 7, 7, 49 |
| 7 | 1, 1, 7 |
| | 1, 1, 1 |

LCM = 3 x 5 x 7 x 7 = 735 days

# Review Exercise

1. Find the HCF of the following numbers by using prime factorisation.
   a. 56, 70 b. 45, 90 c. 5, 35, 40 d. 16, 32, 96

2. Find the HCF by using division method.
   a. 42, 49 b. 25, 75 c. 20, 40, 80 d. 24, 48, 72

3. Find the LCM of the following numbers by using prime factorisation.
   a. 3, 15 b. 12, 80 c. 12, 14, 26 d. 10, 20, 35

4. Find the LCM of the following numbers by using division method.
   a. 15, 30 b. 12, 80 c. 8, 32, 42 d. 25, 45, 95

5. Solve the following real-life number stories.
   a. Find the minimum length of the rope which can be completely cut into pieces of lengths 9 cm, 18 cm, and 27 cm without any leftover.
   b. If the same combination of all kinds of fruits from 22 guavas, 28 apples, and 32 oranges is distributed equally among some people, find the maximum possible number of people who can receive the fruits.
   c. Some notebooks have to be arranged in piles, with 9, 12, and 18 books per pile. What is the least number of books needed to do this?
   d. Find the least number of candies which can be equally distributed among 15 children, 12 men, and 10 women.
   e. Two tanks contain 180 l and 200 l of water respectively. What will be the maximum capacity of the bucket that can exactly measure the water in the two tanks?
   f. Bushra wants to plant 42 sunflowers and 35 daffodils in her garden. What is the greatest possible number of rows if each row has same number of sunflowers and same number of daffodils.

# Answer Key

1. **a.** 14 **b.** 45 **c.** 5 **d.** 16
2. **a.** 7 **b.** 25 **c.** 20 **d.** 24
3. **a.** 15 **b.** 240 **c.** 84 **d.** 140
4. **a.** 30 **b.** 240 **c.** 672 **d.** 4275
5. **a.** 54 cm **b.** 2 people **c.** 36 books
   **d.** 60 candies **e.** 20 l **f.** 7 rows

Unit 3

# Fractions

## Bilingual Concept Builder Notes

### Competency 1

Pupils will learn to add and subtract unlike fractions and apply the same skills to solve real-life problems.

**Stimulus:** Begin your lesson with the recap of like and unlike fractions. Like fraction have the same denominator so, their numerators can be added or subtracted with the same denominator in the result, like

$$\frac{5}{13}+\frac{2}{13}=\frac{5+2}{13}=\frac{7}{13} \qquad \frac{13}{17}+\frac{9}{17}=\frac{13+9}{17}=\frac{4}{17}$$

While working with unlike fractions, we cannot add or subtract directly as their denominators are not the same. To add or subtract unlike fraction, first we have to find the least common denominator LCD can be found by calculating the LCM of denominators of all the fractions e.g.,

$$\frac{1}{6}+\frac{5}{12}+\frac{3}{8}$$

*LCM of* 6, 12 and 8 = 2 × 2 × 2 × 3 = 24

Now find the new numerator of each fraction for the new denominator, as

$$\frac{1}{6}+\frac{5}{12}+\frac{3}{18}$$
$$=\frac{4}{24}+\frac{10}{24}+\frac{9}{24}\ \text{(Like Fractions)}$$
$$=\frac{4+10+9}{24}$$
$$=\frac{23}{24}$$

| | |
|---|---|
| 2 | 6, 12, 18 |
| 2 | 3, 6, 4 |
| 3 | 3, 3, 2 |
| 2 | 1, 1, 2 |
| | 1, 1, 1 |

$$\frac{1}{6}\times 24=\frac{24}{6}=4$$
$$\frac{5}{12}\times 24\ \frac{120}{12}=10$$
$$\frac{1}{6}\times 24\ \frac{72}{8}=9$$

In the same way, subtraction of fractions can also be performed, as

## قابلیت ا

طلبہ غیر مماثل کسور (unlike fractions) کو جمع اور تفریق کرنا سیکھیں گے اور اس مہارت کو عبارتی سوالوں کو حل کرنے کے لیے استعمال کریں گے۔

**محرک:** مماثل اور غیر مماثل کسور کے اعادے کے ساتھ سبق کا آغاز کیجیے۔ مماثل کسر کا نسب نما ایک جیسا ہوتا ہے لہٰذا ان کے شمار کنندہ کو بہ آسانی جمع اور تفریق کیا جا سکتا ہے اور نتائج کچھ ایسے ہوتے ہیں جیسے

$$\frac{5}{13}+\frac{2}{13}=\frac{5+2}{13}=\frac{7}{13} \qquad \frac{13}{17}+\frac{9}{17}=\frac{13+9}{17}=\frac{4}{17}$$

غیر مماثل یا مختلف کسور کو ہم براہ راست جمع یا تفریق نہیں کر سکتے کیونکہ ان کے نسب نما ایک جیسے نہیں ہوتے لہٰذا ان کو جمع اور تفریق کرنے سے پہلے ہمیں سب سے چھوٹا نسب نما تلاش کرنا ہوگا اس کے لیے پہلے ہمیں ایسی تمام کسور کے نسب نما کے LCM معلوم کرنا ہوں گے جیسے

$$\frac{1}{6}+\frac{5}{12}+\frac{3}{8}$$

| | |
|---|---|
| 2 | 6, 12, 18 |
| 2 | 3, 6, 4 |
| 3 | 3, 3, 2 |
| 2 | 1, 1, 2 |
| | 1, 1, 1 |

$8, 6 = 2 \times 2 \times 2 \times 3 = 24$ اور 12 کا LCM

کسور کا نیا نسب نما (denominator):

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

$$\frac{5}{12}\times 24\ \frac{120}{12}=10$$

$$\frac{1}{6}\times 24\ \frac{72}{8}=9$$

$$\frac{1}{6}+\frac{5}{12}+\frac{3}{18}$$
$$=\frac{4}{24}+\frac{10}{24}+\frac{9}{24} \quad \text{(مماثل کسور)}$$
$$=\frac{4+10+9}{24}$$
$$=\frac{23}{24}$$

بالکل اسی طرح ہم کسور کو تفریق بھی کر سکتے ہیں جیسے

$$\frac{5}{6} - \frac{7}{9}$$
$$= \frac{15}{15} + \frac{14}{18} + \frac{9}{24}$$
$$= \frac{15 - 14}{18}$$
$$= \frac{1}{18}$$

$$\frac{5}{6} \times 18\,\frac{90}{6} = 15$$
$$\frac{7}{9} \times 18\,\frac{126}{9} = 14$$

| | |
|---|---|
| 3 | 6, 9, |
| 3 | 2, 3, |
| 2 | 2, 1, |
| | 1, 1, |

*LCM of* 6 and 9 = 3 × 3 × 2 = 18

**Classwork:** Complete some problems of Q1 and Q2 in Exercise A and let your class complete the remaining parts themselves independently. Elaborate each real-life related problem with thorough explanation of mathematical equivalents.

## Competency 2

Pupils will learn to multiply fractions given in different forms and apply the same skills to solve real-life problems.

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

$$\textit{Product of Fractions} = \frac{\textit{Product of all numerators}}{\textit{Product of all denumerators}}$$

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

To multiply 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.

$$5\,\frac{1}{3} \times 1\,\frac{3}{4} \times \frac{7}{3} \times \frac{7}{4} = \frac{7 \times 7}{3 \times 4} = \frac{49}{12} = 4\,\frac{1}{12}$$

**Classwork:** Complete Exercise B.

$$\frac{5}{6} - \frac{7}{9}$$
$$= \frac{15}{15} + \frac{14}{18} + \frac{9}{24}$$
$$= \frac{15 - 14}{18}$$
$$= \frac{1}{18}$$

$$\frac{5}{6} \times 18\,\frac{90}{6} = 15$$
$$\frac{7}{9} \times 18\,\frac{126}{9} = 14$$

| | |
|---|---|
| 3 | 6, 9, |
| 3 | 2, 3, |
| 2 | 2, 1, |
| | 1, 1, |

$18 = 3 \times 3 \times 2 = 9$ اور 6 کا LCM

کلاس ورک: مشق A کے سوال ۱ اور سوال ۲ کے کچھ عبارتی سوالات کروایئے اور مشق کا بقیہ حصہ طلبہ کو خود کرنے دیجیے۔ زندگی سے جڑے عبارتی سوالوں میں بیان کردہ مسائل کے ریاضی کے متبادل کی اچھی طرح وضاحت کیجیے۔

### قابلیت ۲

طلبہ کسور کی دی گئی مختلف شکلوں کو ضرب کرنا سیکھیں گے اور اس مہارت کا اطلاق کرتے ہوئے عبارتی سوالوں کو حل کریں گے۔

استدلال: کسور کو ضرب دینے کا ایک ہی اصول ہے جیسے

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

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

کسی کسر کو پورے یا مکمل عدد کے ساتھ ضرب دینے کے لیے ضربی مکمل اعداد کو ۱ کے ساتھ بطور کسر لکھیے اور اس طرح ضرب کیجیے جیسے پہلے بتایا گیا ہے۔

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

مخلوط اعداد والی کسر کو ضرب دینے کے لیے پہلے اسے غیر واجب کسور میں تبدیل کیجیے کیونکہ کسور کو ضرب دینے کے لیے ہمیں صرف شمار کنندہ اور نسب نما کی ضرورت ہے جیسے

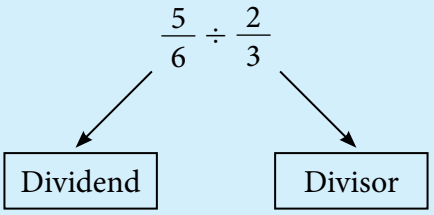
$$5\,\frac{1}{3} \times 1\,\frac{3}{4} \times \frac{7}{3} \times \frac{7}{4} = \frac{7 \times 7}{3 \times 4} = \frac{49}{12} = 4\,\frac{1}{12}$$

کلاس ورک: مشق B مکمل کیجیے۔

## Competency 3

Pupils will learn to divide fractions given in different forms and apply the same skills to solve real life problems.

**Rationale:** 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




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

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

Now simply multiply, as

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

Dividing a fraction by a whole number, like

$$\frac{12}{16} \div 5 = \frac{12}{13} \div \frac{5}{1} = \frac{12}{13} \times \frac{1}{5} = \frac{12 \times 1}{13 \times 5} = \frac{12}{65}$$

Dividing a whole number by a fraction, like

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

Dividing mixed number, like

$$5\frac{3}{5} \div 3\frac{2}{3} = \frac{13}{5} \div \frac{11}{13} = \frac{13}{5} \times \frac{3}{11} = \frac{13 \times 3}{5 \times 11} = \frac{39}{55}$$

**Classwork:** Complete Exercise C.

## قابلیت ۳

طلبہ کسور کی دی گئی مختلف شکلوں کو تقسیم کر سکیں گے اور اسی مہارت کا اطلاق دیے گئے عبارتی سوالوں کو حل کرنے کے لیے کریں گے۔

**استدلال:** 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 کرتے ہیں جس کے نتیجے میں تقسیم کی صلاحیت (÷) خود بخود ضرب کی علامت (×) سے بدل جاتی ہے جیسے:

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

مقسوم (Dividend) — مقسوم علیہ (تقسیم کنندہ) Divisor

تقسیم کے عمل میں 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:

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

اب صرف ضرب کا عمل کیجیے جیسے:

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

کسر کو مکمل عدد (whole number) سے تقسیم کرنا جیسے

$$\frac{12}{16} \div 5 = \frac{12}{13} \div \frac{5}{1} = \frac{12}{13} \times \frac{1}{5} = \frac{12 \times 1}{13 \times 5} = \frac{12}{65}$$

مکمل عدد کو کسر سے تقسیم کرنا جیسے

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

ملے جلے یا مخلوط اعداد (mixed numbers) کو تقسیم کرنا جیسے

$$5\frac{3}{5} \div 3\frac{2}{3} = \frac{13}{5} \div \frac{11}{13} = \frac{13}{5} \times \frac{3}{11} = \frac{13 \times 3}{5 \times 11} = \frac{39}{55}$$

کلاس ورک: مشق C مکمل کیجیے۔

# Scheme of Work

## Unit 3: Fractions

## Estimated Number of Periods: 18

| Specific Learning Outcomes | Number of periods |
|---|---|
| • Add and subtract two or three fractions with different denominators. | 4 |
| • Solve real-life situations involving addition and subtraction of fractions. | 2 |
| • Multiply a fraction by 1-digit numbers and demonstrate with the help of diagrams.<br>• Multiply two or three fractions involving proper, improper fractions, and mixed numbers. | 4 |
| • Solve real-life situations involving multiplication of fractions. | 3 |
| • Divide a fraction by another fraction involving proper, improper fraction, and mixed numbers.<br>• Solve real-life situations involving division of fractions. | 5 |

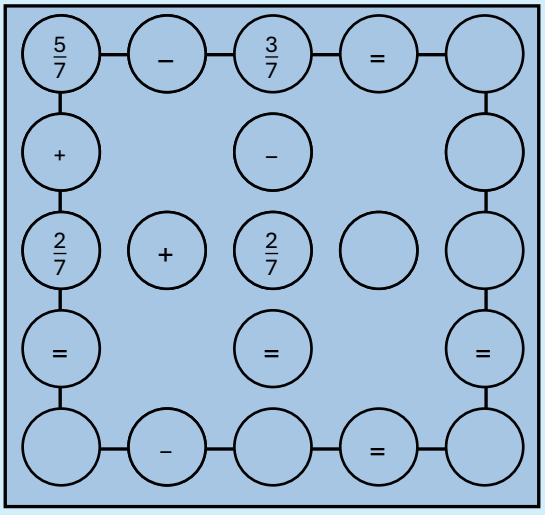
## Prior Knowledge Assessment

- Pupils are familiar with fractions but need revision.
- Starting with simpler questions will help them solve problems with minimal guidance.

## Resources

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

- Bowls
- Chits
- Puzzle activity sheet



## Written Assignments

| Exercises | Class Assignment | Home Assignment |
|---|---|---|
| **Exercise A** | Q1 (a, b, e, f), Q2 (a, b, e, f), Q4, Q5, Q6, Q8, Q10 | Q1 (c, d), Q2 (c, d), Q3, Q7, Q8, |
| **Exercise B** | Q1 (a – d, h, i), Q2 (a, d - h), Q3 (d - i), Q4, Q5, Q8, Q9, Q10 | Q1 (e, f, g), Q2 (b, c, i), Q3 (a, b, c), Q6, Q7 |
| **Exercise C** | Q1 (a, b, c), Q2, Q3, Q4, Q5 | Q1 (d, e, f) |

## 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 23

1a) $\frac{2}{3}+\frac{3}{4}$

$\frac{8+9}{12}=\frac{17}{12}=1\frac{5}{12}$

b) $\frac{5}{4}+\frac{7}{6}$

$\frac{15+14}{12}=\frac{29}{12}=2\frac{5}{12}$

c) $\frac{2}{9}+\frac{1}{2}$

$\frac{4+9}{18}=\frac{13}{18}$

d) $\frac{2}{3}+\frac{7}{12}+\frac{5}{8}$

$\frac{16+14+15}{24}=\frac{45^{15}}{24_{8}}=\frac{15}{8}=1\frac{7}{8}$

e) $\frac{7}{5}+\frac{2}{3}+\frac{5}{6}$

$\frac{42+20+25}{30}=\frac{87^{29}}{30_{10}}=\frac{29}{10}=2\frac{9}{10}$

f) $\frac{7}{9}+\frac{4}{5}+\frac{11}{15}$

$\frac{175+180+165}{225}=\frac{520^{14}}{225_{45}}=\frac{14}{45}$

2a) $\frac{3}{6}-\frac{4}{9}$

$\frac{9-8}{18}=\frac{1}{18}$

b) $\frac{4}{7}-\frac{1}{4}$

$\frac{16-7}{28}=\frac{9}{28}$

c) $\frac{7}{9}-\frac{2}{5}$

$\frac{35-18}{45}=\frac{17}{45}$

d) $\frac{6}{7}-\frac{2}{3}$

$\frac{18-14}{21}=\frac{4}{21}$

e) $\frac{5}{8}-\frac{3}{7}$

$\frac{35-24}{56}=\frac{11}{56}$

f) $\frac{9}{5}-\frac{18}{25}$

$\frac{49-18}{25}=\frac{31}{25}=1\frac{6}{25}$

## Exercise B — Pg 26

1a) $6\times\frac{3}{4}=\frac{18^{9}}{4_{2}}=\frac{9}{2}$

b) $8\times\frac{1}{4}=\frac{8^{2}}{4_{1}}=2$

c) $7\times\frac{2}{5}=\frac{14}{5}$

d) $3\times\frac{3}{5}=\frac{9}{5}$

e) $5\times\frac{6}{9}=\frac{30^{10}}{9_{3}}=\frac{10}{3}$

f) $15\times\frac{3}{5}=\frac{45^{9}}{5_{1}}=9$

g) $\frac{2}{3} \times 6 = \frac{12}{3_1} = 4$ h) $\frac{3}{4} \times 20 = \frac{\overset{15}{\cancel{60}}}{\cancel{4}_1} = 15$ i) $\frac{1}{2} \times 14 = \frac{\overset{7}{\cancel{14}}}{\cancel{2}_1} = 7$

2a) $3 \times 4\frac{3}{5}$

$3 \times \frac{23}{5} = \frac{69}{5} = 13\frac{4}{5}$

b) $5 \times 6\frac{3}{4}$

$5 \times \frac{27}{4} = \frac{135}{4} = 33\frac{3}{4}$

c) $15 \times 2\frac{3}{5}$

$15 \times \frac{13}{5} = \frac{\overset{39}{\cancel{195}}}{\cancel{5}_1} = 39$

d) $2 \times 2\frac{6}{7}$

$2 \times \frac{20}{7} = \frac{40}{7} = 5\frac{5}{7}$

e) $4 \times 5\frac{2}{3}$

$4 \times \frac{17}{3} = \frac{68}{3} = 22\frac{2}{3}$

f) $6 \times 2\frac{3}{5}$

$6 \times \frac{13}{5} = \frac{78}{5} = 15\frac{3}{5}$

g) $3 \times 3\frac{2}{3}$

$3 \times \frac{11}{3} = \frac{\overset{11}{\cancel{33}}}{\cancel{3}_1} = 11$

h) $5 \times 6\frac{5}{6}$

$5 \times \frac{41}{6} = \frac{\overset{100}{\cancel{200}}}{\cancel{6}_3} = \frac{100}{3} = 33\frac{1}{3}$

i) $3\frac{2}{5} \times 7$

$\frac{17}{5} \times 7 = \frac{119}{5} = 23\frac{4}{5}$

3a) $\frac{2}{5} \times \frac{25}{9} = \frac{\overset{10}{\cancel{50}}}{\cancel{45}_9} = \frac{10}{9}$

b) $\frac{4}{3} \times \frac{7}{2} = \frac{\overset{14}{\cancel{28}}}{\cancel{6}_3} = \frac{14}{3}$

c) $\frac{11}{4} \times \frac{6}{8} = \frac{\overset{33}{\cancel{66}}}{\cancel{32}_{16}} = \frac{33}{16}$

d) $\frac{9}{10} \times \frac{7}{27} = \frac{\cancel{63}^{7}}{\cancel{270}_{30}} = \frac{7}{30}$

e) $\frac{5}{8} \times \frac{2}{5} = \frac{\cancel{20}^{1}}{\cancel{40}_4} = \frac{1}{4}$

f) $\frac{7}{8} \times \frac{6}{8} = \frac{\overset{21}{\cancel{42}}}{\cancel{64}_{32}} = \frac{21}{32}$

g) $\frac{2}{9} \times \frac{5}{18} = \frac{\cancel{10}^{5}}{\cancel{162}_{81}} = \frac{5}{81}$

h) $\frac{5}{15} \times \frac{3}{8} = \frac{\overset{1}{\cancel{15}}}{\cancel{120}_{8}} = \frac{1}{8}$

i) $\frac{5}{21} \times \frac{7}{11} = \frac{\overset{5}{\cancel{35}}}{\cancel{231}_{33}} = \frac{5}{33}$

## Real Life Number Stories

Pg 27

4) $2\frac{1}{2} \times 5$

$\frac{5}{2} \times 5 = \frac{25}{2} = 12\frac{1}{2}$ min

5) $\frac{2}{5} \times 625$

$\frac{2}{5} \times 625 = \frac{\overset{250}{\cancel{1250}}}{\cancel{5}_1} = Rs\ 250$

6) $\frac{1}{2} \times 124$

$\frac{1}{2} \times 124 = \frac{\overset{62}{\cancel{124}}}{\cancel{2}_1} = Rs\ 62$

7) $\frac{5}{8} \times \frac{1}{2} = \frac{5}{16}$

8) $\frac{7}{8} \times \frac{2}{15} = \frac{\overset{7}{\cancel{14}}}{\cancel{120}_{60}} = \frac{7}{60}$

9) $\frac{9}{20} \times \frac{1}{8} = \frac{\cancel{9}^{3}}{\cancel{160}_{20}} = \frac{3}{20}$

10) $\frac{3}{4} \times 48 = \frac{\overset{\overset{36}{\cancel{72}}}{\cancel{144}}}{\cancel{4}_1} = 36$

## EXERCISE C

Pg 29

1a) $\frac{4}{9} \div \frac{12}{18}$ b) $\frac{5}{12} \div \frac{7}{6}$ c) $\frac{9}{35} \div 1\frac{3}{5}$

$\frac{4}{9} \times \frac{12}{18} = \frac{48}{162} = \frac{8}{27}$ $\frac{5}{12} \times \frac{6}{7} = \frac{5}{14}$ $\frac{9}{35} \times \frac{8}{8} = \frac{9}{56}$

d) $\frac{11}{22} \div 1\frac{1}{2}$ e) $\frac{13}{32} \div \frac{4}{9}$ f) $\frac{35}{42} \div \frac{5}{7}$

$\frac{11}{22} \times \frac{2}{3} = \frac{22}{66} = \frac{1}{3}$ $\frac{13}{32} \times \frac{9}{4} = \frac{117}{128}$ $\frac{35}{42} \times \frac{7}{5} = \frac{245}{210} = \frac{7}{6}$

## REAL LIFE NUMBER STORIES

2) $11\frac{1}{4} \div 2\frac{1}{4}$

$\frac{45}{4} \div \frac{9}{4}$

$\frac{45}{4} \times \frac{4}{9} = 5$ Tania can bake 5 cakes

3) $\frac{2}{3} \div 3$

$\frac{2}{3} \times \frac{1}{3} = \frac{2}{9}$ Ayman uses $\frac{2}{9}$ of the roll

4) $21\frac{3}{5} \div 3\frac{3}{5}$

$\frac{108}{5} \div \frac{18}{5}$

$\frac{108}{5} \times \frac{8}{18} = 6$

Ahmed can make 6 bed covers

5) $5 \div \frac{1}{5}$

$5 \times \frac{5}{1} = \frac{25}{1} = 25$

It will take the tortoise 25 hours

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# Review Exercise

**1.** Add the following fractions.

**a.** $\frac{1}{3} + \frac{2}{5}$ **b.** $\frac{3}{5} + \frac{3}{4}$ **c.** $1\frac{2}{5} + 1\frac{3}{4}$

**d.** $1\frac{4}{7} + 2\frac{2}{3}$ **e.** $\frac{7}{20} + 4\frac{3}{10}$ **f.** $6\frac{2}{3} + 1\frac{3}{4}$

**2.** Subtract the following fractions.

**a.** $\frac{3}{2} - \frac{2}{5}$ **b.** $\frac{5}{6} - \frac{6}{11}$ **c.** $4\frac{1}{6} - \frac{17}{18}$

**d.** $2\frac{2}{3} - \frac{3}{4}$ **e.** $5\frac{1}{8} - 1\frac{1}{15}$ **f.** $2\frac{3}{18} - 1\frac{5}{6}$

**3.** Multiply the following fractions.

**a.** $\frac{5}{9} \times 4$ **b.** $\frac{2}{3} \times 7$ **c.** $\frac{3}{4} \times 4$

**d.** $\frac{1}{4} \times \frac{4}{5}$ **e.** $\frac{5}{3} \times 1\frac{75}{15}$ **f.** $\frac{20}{33} \times 2\frac{3}{4}$

**g.** $1\frac{3}{5} \times 2\frac{3}{4}$ **h.** $1\frac{2}{3} \times \frac{7}{8} \times 3\frac{1}{5}$ **i.** $2\frac{3}{4} \times 4\frac{4}{5} \times 6\frac{3}{2}$

**4.** Divide the following fractions.

**a.** $\frac{4}{5} \div \frac{4}{15}$ **b.** $\frac{14}{18} \div \frac{7}{3}$ **c.** $\frac{4}{12} \div \frac{4}{18}$

**d.** $\frac{5}{60} \div \frac{7}{20}$ **e.** $3\frac{1}{4} \div 4\frac{2}{9}$ **f.** $5\frac{5}{9} \div 9\frac{6}{7}$

**5.** Solve the following real-life number stories.

**a.** Saba and Faiza bought a chocolate bar. Saba ate $\frac{1}{8}$ and Faiza $\frac{3}{4}$ of the chocolate. Who ate more and by how much?

**b.** About $\frac{2}{5}$ of the world's cropland is used to grow inedible crops. Of this, $\frac{1}{2}$ is used to grow cotton. What fraction of the world's cropland is used to grow cotton?

**c.** Majid did $\frac{1}{2}$ of his homework on Friday and $\frac{1}{3}$ of his homework on Saturday. What fraction of the work has been done?

**d.** Bisma has a piece of ribbon $\frac{5}{9}$ m long. She wants to cut it into $\frac{1}{9}$ m long pieces. How many pieces can be cut?

**e.** Adil cuts a rope into 8 equal pieces, each $\frac{21}{2}$ m long. What was the length of the rope?

**f.** Asma read $\frac{1}{2}$ of a storybook in the Ist week and $\frac{1}{3}$ of the book in the 2nd week. What fraction of the book is still unread?

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# Answer Key

**1.** **a.** $\frac{11}{15}$ **b.** $1\frac{7}{20}$ **c.** $3\frac{3}{20}$ **d.** $4\frac{5}{21}$ **e.** $4\frac{13}{20}$ **f.** $8\frac{5}{12}$

**2.** **a.** $10\frac{1}{10}$ **b.** $\frac{19}{66}$ **c.** $3\frac{2}{9}$ **d.** $1\frac{11}{12}$ **e.** $4\frac{7}{12}$ **f.** $\frac{1}{6}$

**3.** **a.** $2\frac{2}{9}$ **b.** $\frac{1}{3}$ **c.** $1\frac{1}{2}$ **d.** $\frac{5}{21}$ **e.** $\frac{117}{152}$ **f.** $\frac{350}{321}$

**4.** **a.** 3 **b.** $\frac{1}{3}$ **c.** $1\frac{1}{2}$ **d.** $\frac{5}{21}$ **e.** $\frac{117}{152}$ **f.** $\frac{350}{321}$

**5.** **a.** Faiza ate $\frac{5}{8}$ more of the chocolate bar

**b.** $\frac{1}{5}$ **c.** $\frac{5}{6}$ **d.** 5 pieces **e.** 84 m **f.** $\frac{1}{6}$

Unit 4

# Decimals

## Bilingual Concept Builder Notes

### Competency 1

Pupils will learn to compare the given decimals and decide whether decimal written on the left-hand side is smaller or greater than the decimal given on the right-hand side. Using the same skill, they will be able to write given decimals in ascending and descending order.

**Rationale:** Use the information given on pages 30 and 31 to explain decimals, their comparison, and writing them in order.

**Classwork:** Complete Exercise 4A.

### Competency 2

Pupils will learn to convert the given fractions to decimals by division.

**Rationale:** Use the explanations given on pages 32 and 33.

**Classwork:** Complete Exercise B.

### Competency 3

Pupils will learn to add and subtract given decimals.

**Rationale:** Pupils are already familiar with the addition and subtraction of decimals, just to recap, use the example given on page 34.

**Classwork:** Complete Exercise C.

### Competency 4

Pupils will learn to multiply given decimals by 10, 100, or 1000.

**Rationale:** Pupils have already learnt multiplication of decimals with whole numbers, 10, 100, and 1000. To recap, use the example given on page 35.

**Classwork:** Complete Exercise D.

### Competency 5

Pupils will learn to multiply the given decimals with the given whole number and another decimal.

**Stimulus:** Pupils have already learnt multiplication of decimals with the whole numbers. To recap, use the example given on page 35.

### قابلیت ۱

طلبہ اعشاریوں میں دی گئی مقداروں کوموازنہ کرتے ہوئے یہ فیصلہ کریں گے کہ بائیں یا دائیں جانب والی مقداروں میں سے کون سی چھوٹی ہے اور کون سی بڑی اس مہارت کو استعمال کرتے ہوئے وہ اعشاریہ میں دی گئی مقداروں کو صعودی (ascending) اور نزولی (descending) ترتیب میں لکھ سکیں گے۔

استدلال: صفحہ ۳۰ اور ۳۱ پر دی گئی معلومات ذریعے، اعشاریہ، ان کا موازنہ اور ترتیب سے لکھنے کے طریقے کار کو وضاحت سے بیان کیجیے۔

کلاس ورک: مشق A مکمل کیجیے۔

### قابلیت ۲

طلبہ دی گئی کسور کو تقسیم کے ذریعے اعشاری مقداروں میں لکھیں گے۔

استدلال: صفحہ ۳۲ اور ۳۳ پر دیے گئے وضاحتی بیانوں کو استعمال کیجیے۔

کلاس ورک: مشق B مکمل کیجیے۔

### قابلیت ۳

طلبہ اعشاریہ میں دی گئی مقداروں کو جمع اور تفریق کرنا سیکھیں گے۔

استدلال: طلبہ اعشاری مقداروں کی جمع اور تفریق سے بخوبی واقف ہیں لہٰذا اعادے کے لیے صفحہ ۳۴ پر دی گئی مثالوں کو استعمال کیجیے۔

کلاس ورک: مشق C مکمل کیجیے۔

### قابلیت ۴

طلبہ اعشاریہ میں دی گئی مقداروں کو ۱۰، ۱۰۰ اور ۱۰۰۰ سے ضرب دینا سیکھیں گے۔

استدلال: طلبہ اعشاری مقداروں کے ساتھ مکمل اعداد (whole numbers) ۱۰، ۱۰۰ اور ۱۰۰۰ کو ضرب دینا سیکھ چکے ہیں لہٰذا اعادے کے لیے صفحہ ۳۵ کی مثال کو استعمال کیجیے۔

کلاس ورک: مشق D مکمل کیجیے۔

### قابلیت ۵

طلبہ اعشاریہ میں دی گئی مقدار کو دیے گئے مکمل عدد (whole numbers) اور دوسری اعشاریہ مقداروں کے ساتھ ضرب دینا سیکھیں گے۔

محرک: طلبہ اعشاری مقداروں کے ساتھ مکمل اعداد (whole numbers) ۱۰، ۱۰۰ اور ۱۰۰۰ کو ضرب دینا سیکھ چکے ہیں لہٰذا صفحہ پر ۳۵ پر دی گئی مثال کے ذریعے اعادی کروایئے۔

To explain multiplication of two decimals, consider the following example:

$23.4 \times 3.42$

While multiplying decimal numbers, ignore the decimal point and assume you have to multiply 234 by 342.

| | | | | | |
|---|---|---|---|---|---|
| | | 2 | 3 | 4 | ← Multiplicand |
| | × | 3 | 4 | 2 | ← Multiplier |
| | | 4 | 6 | 8 | ← 234 × 2 |
| | 9 | 3 | 6 | 0 | ← 234 × 40 |
| + | 7 | 0 | 2 | 0 | 0 ← 234 × 300 |
| | 8 | 0 | 0 | 2 | 8 ← (There are 3 digits after decimal point in multiplicand and multiplier) |

**Classwork:** Complete Exercise E.

## Competency 6

Pupils will learn to divide the given decimals by 10, 100, and 1000.

**Rationale:** Use the explanations given on page 38.

**Classwork:** Complete Exercise F.

## Competency 7

Pupils will learn to divide the given decimal by a whole number and a decimal. They will also learn to apply the division of decimal numbers to the real-life problems.

**Rationale:** Use the examples given on page 39 as well as elaborate how the position of decimal point affects the quotient in the following demonstration of division of decimals.

$\boxed{616 \div 11}$

$$
\begin{array}{r}
56 \\
11\overline{)\,616} \\
-55\downarrow \\
\hline
66 \\
66 \\
\hline
\times\times
\end{array}
$$

$\boxed{61.6 \div 11}$

$$
\begin{array}{r}
4 \\
11\overline{)\,61.6} \\
-55\downarrow \\
\hline
66 \\
66 \\
\hline
\times\times
\end{array}
$$

دو اعشاریہ کی ضرب کے لیے درج ذیل مثال کو بہ غور دیکھیے:

$23.4 \times 3.42$

اعشاری ضرب کرتے ہوئے، اعشاریہ کو نظر انداز کرتے ہوئے یہ فرض کیجیے کہ آپ کو ۲۳۴ کو ۳۴۲ سے ضرب دینا ہے۔

| | | | | | |
|---|---|---|---|---|---|
| | | 2 | 3 | 4 | ←——Multiplicand |
| | × | 3 | 4 | 2 | ←——Multiplier |
| | | 4 | 6 | 8 | ←——$234 \times 2$ |
| | 9 | 3 | 6 | 0 | ←——$234 \times 40$ |
| + | 7 | 0 | 2 | 0 | 0 ←——$234 \times 300$ |
| | 8 | 0 | 0 | 2 | 8 ←——(There are 3 digits after decimal point in multiplicand and multiplier) |

کلاس ورک: مشق E مکمل کیجیے۔

### قابلیت ۶

طلبہ اعشاریہ میں دی گئی مقداروں کو ۱۰، ۱۰۰ اور ۱۰۰۰ سے تقسیم کریں گے۔

استدلال: صفحہ ۳۸ پر دی گئی وضاحتوں کو استعمال کیجیے۔

کلاس ورک: مشق F کو مکمل کیجیے۔

### قابلیت ۷

طلبہ اعشاریہ میں دی گئی مقدار کو دیے گئے مکمل عدد () اور دوسری اعشاری مقدار کے ساتھ تقسیم کرنا سیکھیں گے اس مہارت کو استعمال کرتے ہوئے وہ عبارتی سوالوں کو حل کرسکیں گے۔

استدلال: صفحہ ۳۹ پر دی گئی مثالوں کو استعمال کرتے ہوئے طلبہ کو وضاحت سے بتایئے کہ اعشاریہ کی تقسیم کے عمل میں اعشاریہ کا مقام حاصل قسمت پر کس طرح اثر انداز ہوتا ہے۔ دیکھیے درج ذیل مثالیں:

کلاس ورک: مشق F کو مکمل کیجیے۔

$61.6 \div 11$

```
      4
   ------
11 ) 61.6
     -55
   ------
      66
      66
   ------
      ××
```

$616 \div 11$

```
      56
   ------
11 ) 616
     -55
   ------
      66
      66
   ------
      ××
```

$$\boxed{6.16 \div 11}$$

$$\begin{array}{r} 0.56 \\ 11\overline{)\,6.16} \\ -5\;5\downarrow \\ \hline 66 \\ 66 \\ \hline \times\times \end{array}$$

**Classwork:** Complete Exercise G.

## Competency 8

Pupils will learn to round off the given decimals to 1 and 2 decimal places. They will apply the rounding off method to estimate result to the given problems involving decimals.

**Rationale:** Use the examples given on pages 41, 42, and 43.

**Classwork:** Complete Exercise H.

$$\boxed{6.16 \div 11}$$

$$\begin{array}{r} 0.56 \\ 11\overline{)\,6.16} \\ -5\;5\downarrow \\ \hline 66 \\ 66 \\ \hline \times\times \end{array}$$

کلاس ورک: مشق G کو مکمل کیجیے۔

### قابلیت ۷

طلبہ اعشاریہ میں دی گئی مقداروں کو اعشاریہ کے بعد اور ۲ ہندسوں تک round off کرنا سیکھیں گے۔

استدلال: صفحہ ۴۱، ۴۲ اور ۴۳ کی مثالوں کو استعمال کیجیے۔

کلاس ورک: مشق H کو مکمل کیجیے۔

# Scheme of Work

## Unit 4: Decimals

## Estimated Number of Periods: 25

| Specific Learning Outcomes | Number of periods |
|---|---|
| • Compare numbers up to 3-digits with 2 decimal places using signs <,> or =.<br>• Arrange numbers up to 3-digit numbers with 2 decimal places in ascending and descending order. | 4 |
| • Add and subtract 4-digit numbers up to 3 decimal places. | 3 |
| • Multiply a 3-digit number up to 2 decimal places by 10, 100, and 1000.<br>• Multiply a 3-digit number up to 2 decimal places by a whole number up to 2-digit.<br>• Multiply a 3-digit number up to 2 decimal places by a 3-digit number up to 2 decimal places. | 6 |
| • Divide a 3-digit number up to 2 decimal places by 10, 100, and 1000.<br>• Divide a 3-digit numbers up to 2 decimal places by a whole number up to 2-digit.<br>• Divide a 3-digit number up to 2 decimal places by a 2-digit number up to 1 decimal place. | 6 |
| • Convert fractions to decimals using division.<br>• Solve real-life situations involving division of 3-digit numbers up to 2 decimal places.<br>• Round off a 4-digit number up to 3 decimal places to the nearest tenth or hundredth.<br>• Estimate sum or difference of the numbers (up to 4 digits). | 6 |

## Prior Knowledge Assessment

- Pupils learned about decimals previiously.
- They learned to convert decimal numbers to fractions and vice versa.
- They applied basic operations on decimal numbers.
- They also learned to estimate decimal numbers to whole numbers.
- Now, they will perform four operations on decimals with more decimal places.

## Resources

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

- Make Sure You Have paper chits with addition and subtraction sums


## Written Assignments

| Exercises | Class Assignment | Home Assignment |
|---|---|---|
| **Exercise A** | Q1 (a - d), Q2 (a, b, c), Q3 (a, b, c) | Q1 (e, f), Q2 (d), Q3 (d) |
| **Exercise B** | Q1 (a - g) | Q1 (h, I, j) |
| **Exercise C** | Q1 (a, b, c, g, h, i), Q2 (a, b, c, g, h, i) | Q1 (d, e, f), Q2 (d, e, f) |
| **Exercise D** | Q1 (a - f), Q2 (a -d) | Q1 (g, h, i), Q2e, f() |
| **Exercise E** | Q1 (a, b, c, h - l), Q2 (a, b, e - h) | Q1 (d, e, f, g), Q2 (c, d) |
| **Exercise F** | Q1 (a - f) | Q1 (g, e, f) |
| **Exercise G** | Q1 (a – e, i), Q2 (a, b, c, g, h, i) | Q1 (f, g, h), Q2 (d, e, f) |
| **Exercise H** | Q1 (a, b, c, g, h), Q2 (a, b, c, g, h), Q3 (a, b, d) | Q1 (d, e, f), Q2 (d, e, f), Q3 (c) |

## 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 B — UNIT 4 — Pg 33

1a) $\frac{8}{5} = 1.6$

$$5\overline{)8} \quad 1.6$$
$-5$
$30$
$-30$
$00$

b) $\frac{29}{4} = 7.25$

$$4\overline{)29} \quad 7.25$$
$-28$
$010$
$-8$
$20$
$-20$
$00$

c) $\frac{69}{10} = 6.9$

$$10\overline{)69} \quad 6.9$$
$-60$
$090$
$-90$
$00$

d) $\frac{3}{8} = 0.375$

$$8\overline{)3} \quad 0.375$$
$-0$
$030$
$-24$
$060$
$-56$
$040$
$-40$
$000$

e) $\frac{3}{12} = 0.25$

$$12\overline{)3} \quad 0.25$$
$-0$
$030$
$-24$
$060$
$-60$
$000$

f) $\frac{9}{8} = 1.125$

$$8\overline{)9} \quad 1.125$$
$-8$
$010$
$-8$
$020$
$-16$
$040$
$-40$
$00$

g) $\frac{5}{4} = 1.25$

$$4\overline{)5} \quad 1.25$$
$-4$
$010$
$-8$
$20$
$-20$
$00$

h) $\frac{45}{4}$

$$4\overline{)45} \quad 11.25$$
$-4$
$05$
$-4$
$010$
$-8$
$20$
$-20$
$00$

i) $\frac{11}{5} = 2.2$

$$5\overline{)11} \quad 2.2$$
$-10$
$010$
$-10$
$00$

j) $\frac{7}{8} = 0.875$

$$8\overline{)7} \quad 0.875$$
$-0$
$070$
$-64$
$060$
$-56$
$40$
$-40$
$00$

## EXERCISE C

1a) $5.632 + 3.389 = 9.021$

b) $7.120 + 8.017 = 15.137$

c) $34.28 + 14.65 = 48.93$

d) $89.56 + 5.321 = 94.881$

e) $5.889 + 35.67 = 41.559$

f) $53.57 + 34.13 = 87.70$

g) $2.236 + 9.983 = 12.219$

h) $4.512 + 96.27 = 100.782$

i) $7.250 + 29.003 = 36.253$

2a) $9.230 - 2.129 = 7.101$

b) $56.281 - 3.431 = 2.850$

c) $25.38 - 15.32 = 10.06$

d) $8.548 - 5.285 = 3.263$

e) $43.693 - 26.12 = 27.573$

f) $59.62 - 35.34 = 24.38$

g) $64.38 - 2.859 = 4.969$

h) $56.237 - 5.336 = 0.901$

i) $98.31 - 70.99 = 19.02$

## EXERCISE D

Pg 36

1a) $2.89 \times 10$

$2.89 \times 10 = 28.9$

b) $9.68 \times 100$

$9.68 \times 100 = 968$

c) $2.39 \times 1000$

$2.39 \times 1000 = 2390$

d) $51.2 \times 100$

$51.2 \times 100 = 5120$

e) $3.34 \times 1000$

$3.34 \times 1000 = 3340$

f) $8.68 \times 10$

$8.68 \times 10 = 86.8$

g) $9.23 \times 100$

$9.23 \times 100 = 923$

h) $83.3 \times 1000$

$83.3 \times 1000 = 83300$

i) $27.3 \times 100$

$27.3 \times 100 = 2730$

## EXERCISE D Pg 36

1a) $2.89 \times 10$ b) $9.68 \times 100$ c) $2.39 \times 1000$

$2.89 \times 10 = 28.9$ $9.68 \times 100 = 968$ $2.39 \times 1000 = 2390$

d) $51.2 \times 100$ e) $3.34 \times 1000$ f) $8.68 \times 10$

$51.2 \times 100 = 5120$ $3.34 \times 1000 = 3340$ $8.68 \times 10 = 86.8$

g) $9.23 \times 100$ h) $83.3 \times 1000$ i) $27.3 \times 100$

$9.23 \times 100 = 923$ $83.3 \times 1000 = 83300$ $27.3 \times 100 = 2730$

## EXERCISE E Pg 37

1a) $3.9 \times 4 = 15.6$ b) $4.4 \times 8 = 35.2$ c) $1.8 \times 3 = 5.4$

$$\begin{array}{r} {}^{3}3.9 \\ \times\ 4 \\ \hline 15.6 \end{array} \qquad \begin{array}{r} {}^{3}4.4 \\ \times\ 8 \\ \hline 35.2 \end{array} \qquad \begin{array}{r} {}^{2}1.8 \\ \times\ 3 \\ \hline 5.4 \end{array}$$

d) $1.38 \times 5 = 6.9$ e) $9.26 \times 26 = 240.76$ f) $3.02 \times 47 = 141.94$

$$\begin{array}{r} {}^{1}1.{}^{4}38 \\ \times\ 5 \\ \hline 6.90 \end{array} \qquad \begin{array}{r} 9.26 \\ \times\ 26 \\ \hline {}^{1}5556 \\ +\ {}^{1}18520 \\ \hline 240.76 \end{array} \qquad \begin{array}{r} 3.02 \\ \times\ 47 \\ \hline 2114 \\ +\ 12080 \\ \hline 141.94 \end{array}$$

g) $0.25 \times 52 = 13$ h) $6.71 \times 85 = 570.35$ i) $8.65 \times 44 = 380.6$

$$\begin{array}{r} 0.25 \\ \times\ 52 \\ \hline {}^{1}050 \\ 1250 \\ \hline 13.00 \end{array} \qquad \begin{array}{r} 6.71 \\ \times\ 85 \\ \hline {}^{1}{}^{3}{}^{1}3\ 55 \\ +\ 53680 \\ \hline 570.35 \end{array} \qquad \begin{array}{r} 8.65 \\ \times\ 44 \\ \hline {}^{2}3460 \\ +\ 34600 \\ \hline 380.60 \end{array}$$

j) $1.96 \times 90 = 176.4$ k) $22.2 \times 5 = 111$ l) $5.07 \times 65 = 329.55$

$$\begin{array}{r} 1.96 \\ \times\ 90 \\ \hline 000 \\ 176.40 \\ \hline 176.40 \end{array} \qquad \begin{array}{r} 22.2 \\ \times\ 5 \\ \hline 111.0 \end{array} \qquad \begin{array}{r} 5.07 \\ \times\ 65 \\ \hline 2535 \\ +\ 30420 \\ \hline 329.55 \end{array}$$

2a) $4.3 \times 0.6 = 2.58$

$$\begin{array}{r} 4.3 \\ \times 0.6 \\ \hline 2\,5\,8 \\ +0\,0\,0 \\ \hline 2.5\,8 \end{array}$$

b) $2.56 \times 1.8 = 4.608$

$$\begin{array}{r} 2.5\,6 \\ \times 1.8 \\ \hline 20\,48 \\ +25\,60 \\ \hline 4.6\,08 \end{array}$$

c) $3.24 \times 4.2 = 13.608$

$$\begin{array}{r} 3.24 \\ \times 4.2 \\ \hline {}^{1}6\,48 \\ +{}^{1}{}^{2}12\,960 \\ \hline 13\,6\,08 \end{array}$$

d) $9.36 \times 0.8 = 7.488$

$$\begin{array}{r} 9.36 \\ \times 0.8 \\ \hline 7488 \\ +0000 \\ \hline 7.488 \end{array}$$

e) $6.25 \times 7.3 = 45.625$

$$\begin{array}{r} 6.25 \\ \times 7.3 \\ \hline {}^{1}{}^{3}18\,75 \\ +437\,50 \\ \hline 45625 \end{array}$$

f) $4.96 \times 3.75 = 18.6$

$$\begin{array}{r} 4.96 \\ \times 3.75 \\ \hline {}^{2}{}^{2}{}^{1}24\,80 \\ {}^{1}347\,20 \\ 1488\,00 \\ \hline 18.6000 \end{array}$$

## EXERCISE F

Pg 39

1a) $3.63 \div 10$

$3.63 \div 10 = 0.363$

b) $37.1 \div 100$

$37.1 \div 100 = 0.371$

c) $49.6 \div 1000$

$49.6 \div 1000 = 0.049$

d) $27.1 \div 100$

$27.1 \div 100 = 0.271$

e) $8.29 \div 1000$

$8.29 \div 1000 = 0.00829$

f) $4.77 \div 100$

$4.77 \div 100 = 0.047$

g) $89.3 \div 10$

$89.3 \div 10 = 8.93$

h) $2.43 \div 100$

$2.43 \div 100 = 0.024$

i) $125 \div 1000$

$125 \div 1000 = 0.125$

## EXERCISE G

Pg 40

1a) $8.92 \div 4 = 2.23$

$$\begin{array}{r} 2.23 \\ 4\overline{)8.92} \\ -8 \\ \hline 0.92 \\ \quad 8 \\ \hline \quad 12 \\ \quad 12 \\ \hline \quad 00 \end{array}$$

b) $56.8 \div 4 = 14.2$

$$\begin{array}{r} 14.2 \\ 4\overline{)56.8} \\ -4 \\ \hline 16 \\ 16 \\ \hline 008 \\ 008 \\ \hline 000 \end{array}$$

c) $18.9 \div 9 = 2.1$

$$\begin{array}{r} 2.1 \\ 9\overline{)18.9} \\ -18 \\ \hline 00.9 \\ \quad 9 \\ \hline 000 \end{array}$$

d) $2.17 \div 7 = 0.31$

$$\begin{array}{r} 0.31 \\ 7\overline{)2.17} \\ -0 \\ \hline 21 \\ -21 \\ \hline 007 \\ -007 \\ \hline 000 \end{array}$$

e) $14.5 \div 5 = 2.9$

$$\begin{array}{r} 2.9 \\ 5\overline{)14.5} \\ 10 \\ \hline 045 \\ -45 \\ \hline 000 \end{array}$$

f) $21.5 \div 5 = 4.3$

$$\begin{array}{r} 4.3 \\ 5\overline{)21.5} \\ -20 \\ \hline 015 \\ \quad 15 \\ \hline \quad 00 \end{array}$$

g) $2.79 \div 3 = 0.93$

$$\begin{array}{r} 0.93 \\ 3\overline{)2.79} \\ 0 \\ \hline 27 \\ -27 \\ \hline 009 \\ \quad -9 \\ \hline 000 \end{array}$$

h) $35.8 \div 6 = 5.96$

$$\begin{array}{r} 5.96 \\ 6\overline{)35.8} \\ -30 \\ \hline 058 \\ -54 \\ \hline 04{\not}0 \\ -36 \\ \hline 04 \end{array}$$

i) $76.5 \div 9 = 8.5$

$$\begin{array}{r} 8.5 \\ 9\overline{)76.5} \\ -72 \\ \hline 045 \\ -45 \\ \hline 000 \end{array}$$

Pg 40

2a) $4.8 \div 0.6 = 8$

$\frac{4.8 \times 10}{0.6 \times 10} = \frac{48}{6} = 8$

b) $4.24 \div 0.2 = 21.2$

$\frac{4.24 \times 10}{0.2 \times 10} = \frac{42.4}{2} = 21.2$

$2\overline{)42.4}$

$-4$

$02$

$-2$

$04$

$-04$

$00$

c) $6.9 \div 0.3 = 23$

$\frac{6.9 \times 10}{0.3 \times 10} = \frac{69}{3} = 23$

d) $3.55 \div 0.5 = 7.1$

$\frac{3.55 \times 10}{0.5 \times 10} = \frac{355}{50} = 7.1$

e) $54.6 \div 0.3 = 182$

$\frac{54.6 \times 10}{0.3 \times 10} = \frac{546}{3} = 182$

f) $4.41 \div 0.7 = 6.3$

$\frac{4.41 \times 10}{0.7 \times 10} = 7\overline{)44.1}$

$-42$

$021$

$021$

$000$

g) $5.52 \div 2.4 = 2.3$

$\frac{5.52 \times 10}{2.4 \times 10} = \frac{55.2}{24} = 24\overline{)55.2} = 2.3$

$-48$

$72$

$-72$

$00$

h) $0.578 \div 1.7 = 0.34$

$\frac{0.578 \times 10}{1.7 \times 10} = \frac{5.78}{17} = 0.34$

$17\overline{)5.78}$

$0$

$57$

$-51$

$068$

$-068$

$000$

i) $0.406 \div 1.4 = 0.29$

$\frac{0.406 \times 10}{1.4 \times 10} = \frac{4.06}{14} = 14\overline{)4.06} = 0.29$

$0$

$340$

$-28$

$126$

$-126$

$000$

## Real Life Number Stories

Pg 40-41

3) $12.5 \times 15 = 187.5$ cm

$$\begin{array}{r} 12.50 \\ \times\ 15 \\ \hline 00\ 00 \\ 6\ 2\ 5\ 0 \\ +\ 1\ 2\ 5\ 0\ 0 \\ \hline 1\ 8\ 7.5\ 0 \end{array}$$

4) $788 \div 5 =$ Rs $157.6$

$$\begin{array}{r} 157.6 \\ 5\overline{)788} \\ 5 \\ \hline 28 \\ -25 \\ \hline 038 \\ -35 \\ \hline 0030 \\ -30 \\ \hline 0000 \end{array}$$

5) $4.8 \div 8 = 0.6$ kg

$$\begin{array}{r} 0.6 \\ 8\overline{)4.8} \\ 0 \\ \hline 48 \\ -48 \\ \hline 00 \end{array}$$

6) $15.80 \div 4 = 3.95$ m

$$\begin{array}{r} 3.95 \\ 4\overline{)15.80} \\ -12 \\ \hline 038 \\ 36 \\ \hline 020 \\ 20 \\ \hline 000 \end{array}$$

7) $3.5 \times 20 = 70$ cm

$$\begin{array}{r} 3.5 \\ \times\ 20 \\ \hline 0\ 0 \\ +\ 7\ 0\ 0 \\ \hline 70.0 \end{array} = 70$$

8) $4.75 \div 5 = 0.95$ kg

$$\begin{array}{r} 0.95 \\ 5\overline{)4.75} \\ 0 \\ \hline 47 \\ -45 \\ \hline 25 \\ -25 \\ \hline 00 \end{array} = 0.95$$

9) $1.4 \times 5 = 7$ m

$$\begin{array}{r} 1.4 \\ \times\ 5 \\ \hline 7.0 \end{array}$$

## EXERCISE H

Pg 44

One decimal place

- Digit at the 100ths place is less than 5, digit at 10ths place remains same, remaining decimal part is deleted
- Digit at the 100ths place is 5 or greater than 5, digit at 10ths place increases by 1, remaining decimal part is deleted

Two decimal places

Digit at 1000th place less than 5, digit at 100th place does not change

Digit at 1000th place greater than 5, digit at 100th place increases by 1, and other digits in decimal parts become zero.

1a) 1.482 = 1.5, b) 2.341 = 2.3, c) 3.686 = 3.7, d) 5.654 = 5.7

e) 7.538 = 7.5, f) 8.475 = 8.5, g) 7.347 = 7.3, h) 3.955 = 4.0

2a) 3.182 = 3.18, b) 5.235 = 5.24, c) 2.129 = 2.13, d) 5.222 = 5.22

e) 3.728 = 3.72, f) 1.326 = 1.33, g) 3.237 = 3.24, h) 5.128 = 5.13

3a)
$$\begin{array}{r} {}^{1}3.{}^{1}\!/_{6}8 \\ +\ 5.44 \\ \hline 9.12 \end{array} \approx 9.1$$

b)
$$\begin{array}{r} 7.3{}^{1}\!/_{2}{}^{1}1 \\ -\ 4.108 \\ \hline 3.213 \end{array} \approx 3.21$$

c)
$$\begin{array}{r} 2.8{}^{3}\!/_{3}8 \\ +\ 6.009 \\ \hline 8.847 \end{array}$$

d)
$$\begin{array}{r} 2{}^{4}\!/_{8}.{}^{1}07 \\ -\ 23.72 \\ \hline 01.35 \end{array}$$

# Review Exercise

**1.** Write > or < to compare the following pairs of decimal numbers.

**a.** 2.36 _____ 2.34 **b.** 5.3 _____ 6.02 **c.** 7.99 _____ 7.89

**d.** 6.42 _____ 3.5 **e.** 2.53 _____ 4.07 **f.** 0.02 _____ 0.1

**2.** Write the following decimal numbers in ascending order.

**a.** 0.7, 0.15, 0.07, 0.8 **b.** 4.10, 2.03, 5.21, 2.13

**c.** 6.21, 8.09, 0.42, 6.17 **d.** 8.43, 5.69, 9.65, 3.20

**3.** Write the following decimal numbers in descending order.

**a.** 2.61, 0.72, 2.03, 8.11 **b.** 2.6, 3.15, 1.74, 6.27

**c.** 2.10, 6.1 3, 6.08, 7.03, 6.52 **d.** 5.5, 9.10, 7.42, 6.12

**4.** Express following as decimal numbers using division method.

**a.** $\frac{6}{5}$ **b.** $\frac{2}{5}$ **c.** $\frac{5}{8}$ **d.** $\frac{7}{4}$ **e.** $\frac{62}{5}$ **f.** $\frac{124}{8}$

**5.** Add the following decimal numbers.

**a.** 1.644 + 7.21 **b.** 57.48 + 3.7 **c.** 22.3 + 45.12

**d.** 2.4 + 33.56 **e.** 29.09 + 34.65 **f.** 47.25 + 8.241

**6.** Subtract the following.

**a.** 32.3 – 19.56 **b.** 87.07 – 67.98 **c.** 3.456 – 0.078

**d.** 100 – 45.99 **e.** 49.05 – 7.892 **f.** 65.08 – 29.32

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**7.** Multiply the following.

**a.** 4.39 x 10 **b.** 2.455 x 100 **c.** 3.862 x 1000

**d.** 3.1 × 4 **e.** 24.67 × 46 **f.** 15.87 × 3.2

**g.** 4.5 × 0.25 **h.** 3.12 × 1.3 **i.** 49.66 × 8.44

**8.** Divide the following.

**a.** 4.67 ÷ 10 **b.** 90.6 ÷ 100 **c.** 6.23 ÷ 1000

**d.** 9.72 ÷ 3 **e.** 8.19 ÷ 18 **f.** 64.8 ÷ 50

**g.** 2.92 ÷ 1.6 **h.** 6.24 ÷ 0.2 **i.** 3.68 ÷ 0.4

**9.** Round off the given decimals to.

| Decimal | to the nearest tenth | to the nearest hundredth |
|---|---|---|
| **a.** 4.154 | | |
| **b.** 0.595 | | |
| **c.** 1.926 | | |
| **d.** 7.008 | | |

**10.** Round off the decimals to one and two decimal places.

| Decimal | One decimal place | Two decimal places |
|---|---|---|
| **a.** 3.832 | | |
| **b.** 12.950 | | |
| **c.** 72.015 | | |
| **d.** 45.055 | | |

**11.** Estimate the sum and difference of the following calculations by rounding off the numbers to the specified number of decimal places.

**a.** 4.928 + 1.125 ≈ _____ (one decimal place)

**b.** 6.827 – 2.999 ≈ _____ (two decimal place)

**c.** 4.628 + 1.952 ≈ _____ (three decimal place)

**12.** Solve the following real-life number stories.

**a.** The cost of 5 rulers is Rs 75.50. Find the cost of 1 ruler.

**b.** Safia wants to buy 12 pencils. If one pencil costs Rs 6.25, how much money does she need?

**c.** Zakir wants to buy a chocolate which costs Rs 96.45. He has Rs 72.56. How much more money does he need?

**d.** If a group of people consume 3.25 kg of flour in one day, how much flour is need for 25 such groups to consume in a day?

**e.** Tania bought two rolls of cloth. One roll has 27.84 metres cloth and the other has 38.65 metres. How much cloth was there in both the rolls?

**f.** Beena has 3.75 kg flour. She wants to pack the flour in 5 bags equally. How much flour will be there in each bag?

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# Answer Key

1. a. > b. < c. > d. > e. < c. <
2. a. 0.07, 0.15, 0.7, 0.8 b. 03, 2.13, 4.10, 5.21b
   c. 0.42, 6.17, 6.21, 8.09 d. 3.20, 5.69, 8.43, 9.65
3. a. 8.11, 2.61, 2.03, 0.72 b. 6.27, 3.15, 2.6, 1.74
   c. 7.03, 6.52, 6.13, 6.08, 2.10 d. 9.10, 7.42, 6.12, 5.5
4. a. 1.2 b. 0.4 c. 0.625 d. 1.75 e. 12.4 f. 15.5
5. a. 8.854 b. 61.18 c. 67.42 d. 35.96 e. 63.74 f. 55.491
6. a. 12.74 b. 19.09 c. 3.378 d. 54.01 e. 41.158 f. 35.76
7. a. 43.9 b. 245.5 c. 3862 d. 12.4 e. 1134.82 f. 50.784
   g. 1.125 h. 4.056 i. 419.1304
8. a. 0.467 b. 0.906 c. 0.00623 d. 3.24 e. 0.455 f. 1.296
   g. 1.825 h. 31.2 i. 9.2
9. a. 4.2, 4.15 b. 0.6, 0.60 c. 1.9, 1.93 d. 7.0, 7.01
10. a. 3.8, 3.83 b. 13.0, 12.95
    c. 72.0, 72.02 d. 45.1, 45.06
11. a. 6 b. 3.83 c. 6.580
12. a. Rs 15.10 b. Rs 75 c. Zakir needs Rs 23.89 more
    d. 81.25 kg e. 66.49 m f. 0.75 kg

Unit 5

# Percentage

## Bilingual Concept Builder Notes

### Competency 1

Pupils will learn to convert given fractions and decimals to percentages and convert given percentages to fractions and decimals. They will apply the same skill to given real-life related problems.

**Stimulus:** Elaborate the following vocabulary to your pupils first:

| No | Term | Meaning |
|---|---|---|
| 1 | per | for one |
| 2 | cent | hundred |
| 3 | percent | for one hundred |
| 4 | percentage | out of hundred |

Percentage symbol: %

The value of % = $\frac{1}{100}$

If you wish to change a number to percentage, simply multiply it by 100% as

100%

= 100% × $\frac{1}{100}$ (= 100% × $\frac{1}{100}$)

= $\frac{100}{100}$

= 1 (If number is multiplied by 1, it remains unchanged.)

Change these to percentages:

| | | |
|---|---|---|
| 2<br>= 2 × 100%<br>= 200% | $\frac{2}{5}$<br>= $\frac{2}{5}$ × 100%<br>= $\frac{200}{5}$%<br>= 40% | 1.59<br>= 1.59 × 100%<br>= 1.59% |

If you wish to remove percentage sign from a number, simply replace it by its value i.e., $\frac{1}{100}$.
Consider the following examples:

# فی صد

## قابلیت ا

طلبہ اعشاریہ میں دی گئی مقداروں اور کسور کو فی صد میں اور ت فی صد میں دی گئی مقداروں کو اعشاری مقداروں اور کسور میں تبدیل کرنا سیکھیں گے اور اس مہارت کا اطلاق عبارتی سوالوں پر کر کے انھیں حل کر سکیں گے۔

محرک: طلبہ کو درج ذیل الفاظ وضاحت سے بتایئے:

| No | اصلاحات | وضاحت |
|---|---|---|
| 1 | per | for one |
| 2 | cent | hundred |
| 3 | percent | for one hundred |
| 4 | percentage | out of hundred |

فی صد کی علامت: ٪

٪ کی قدر (value): $\frac{1}{100}$

اگر آپ کسی عدد کو فی صد میں تبدیل کرنا چاہتے ہیں تو اسے 100٪ سے ضرب دیجیے۔ جیسے

$$= 100\% \times \frac{1}{100} \left(= 100\% \times \frac{1}{100}\right)$$
$$= \frac{100}{100}$$

اگر عدد کو ا سے ضرب دیں تو ا = 1

انھیں فی صد میں تبدیل کیجیے:

$$1.59$$
$$= 1.59 \times 100\%$$
$$= 1.59\%$$

$$\frac{2}{5}$$
$$= \frac{2}{5} \times 100\%$$
$$= \frac{200}{5}\%$$
$$= 40\%$$

$$2$$
$$= 2 \times 100\%$$
$$= 200\%$$

اگر آپ کسی عدد سے فی صد کی علامت ہٹانا چاہتے ہیں تو اسے صرف اس کی قدر سے بدل دیں جیسے $\frac{1}{100}$

درج ذیل مثالوں پر غور کریں۔

75%

$= 75\% \times \frac{1}{100}$

$= \frac{75}{100}$

$= 0.75\%$

75%

$= 75\% \times \frac{1}{100}$

$= \frac{75}{100}$

$= \frac{75}{100}$

$= \frac{3}{4}$

700%

$= 700\% \times \frac{1}{100}$

$= \frac{700}{100}$

$= 7$

If a child scores 57 marks out of 100, what is the percentage of his score?

Marks scored $= \frac{75}{100}$

Percentage of marks scored $= \frac{75}{100} \times 100\% = 57\%$

If a child scores 37 marks out of 50, what is the percentage of his score?

Marks scored $= \frac{37}{50}$

Percentage of marks scored $= \frac{37}{50} \times 100\% = \frac{3700}{50}\% = 74\%$

If a child scores 17 marks out of 25, what is the percentage of his score?

Marks scored $= \frac{17}{25}$

Percentage of marks scored $= \frac{17}{25} \times 100\% = \frac{1700}{25}\% = 68\%$

**Classwork:** Complete Exercise A.

$$75\% = 75\% \times \frac{1}{100} = \frac{75}{100} = 0.75\%$$

$$75\% = 75\% \times \frac{1}{100} = \frac{75}{100} = \frac{75}{100} = \frac{3}{4}$$

$$700\% = 700\% \times \frac{1}{100} = \frac{700}{100} = 7$$

اگر کوئی بچّہ 100 میں سے 57 نمبر حاصل کرتا ہے تو اس کے حاصل کردہ نمبروں کا فی صد کیا ہو گا؟

$$\text{حاصل کردہ نمبر} = \frac{75}{100}$$

$$\text{حاصل کردہ نمبروں کا فی صد} = \frac{75}{100} \times 100\% = 57\%$$

اگر کوئی بچّہ 50 میں سے 37 نمبر لیتا ہے، تو اس کے حاصل کردہ نمبروں کا فی صد معلوم کیجیے؟

$$\text{حاصل کردہ نمبر} = \frac{37}{50}$$

$$\text{حاصل کردہ نمبروں کا فی صد} = \frac{37}{50} \times 100\% = \frac{3700}{50}\% = 74\%$$

اگر کوئی بچّہ 25 میں سے 17 نمبر لیتا ہے، تو اس کے حاصل کردہ نمبروں کا فی صد معلوم کیجیے؟

$$\text{حاصل کردہ نمبر} = \frac{17}{25}$$

$$\text{حاصل کردہ نمبروں کا فی صد} = \frac{17}{25} \times 100\% = \frac{1700}{25}\% = 68\%$$

کلاس ورک: مشق A مکمل کیجیے۔

# Scheme of Work

## Unit 5: Percentage

## Estimated Number of Periods:10

| Specific Learning Outcomes | Number of periods |
|---|---|
| • Recognise percentage as a special kind of fraction.<br>• Convert percentage to fraction and to decimal number and vice versa (only for numbers without decimal part).<br>• Solve real-life situations involving percentages. | 10 |

## Prior Knowledge Assessment

- Students will understand that a percentage is a special type of fraction.
- They will learn to convert percentages to fractions and decimals, and vice versa.
- They will apply this knowledge to solve real-life problems.

## Resources

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

- Create worksheets for the students to practice in class.

| Percentage | Fraction | Decimal |
|---|---|---|
| 50% | | |
| | $\frac{3}{4}$ | |
| | | 8.5 |
| 50% | | |

## Written Assignments

| Exercises | Class Assignment | Home Assignment |
|---|---|---|
| **Exercise A** | Q1 (a – g, k, l), Q2 (a - e), Q3 (a - f), Q4 (a - f), Q5, Q6, Q7, 10 | Q1 (h, I j), Q2 (f, g, h) Q3 (g, h), Q4 (g, h) Q8, Q9 |

## Evaluation

Ways to evaluate teaching and students learning.

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

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# Step by Step Solution Guide

EXERCISE A UNIT 5 Pg 47

- To convert to percentage, multiply by 100
- To convert to fractions/decimals divide by 100

1a) $\frac{3}{10}$ b) $\frac{5}{10}$ c) $\frac{7}{10}$

$\frac{3}{1\cancel{0}} \times 1\cancel{00} = 3 \times 10 = 30\%$ $\frac{5}{1\cancel{0}} \times 1\cancel{0}0 = 5 \times 10 = 50\%$ $\frac{7}{1\cancel{0}} \times 1\cancel{0}0 = 7 \times 10 = 70\%$

d) $\frac{9}{10}$ e) $\frac{17}{100}$ f) $\frac{26}{100}$

$\frac{9}{1\cancel{0}} \times 1\cancel{0}0 = 9 \times 10 = 90\%$ $\frac{17}{100} \times 100 = 17\%$ $\frac{26}{\cancel{100}} \times \cancel{100} = 26\%$

g) $\frac{8}{100}$ h) $\frac{6}{100}$ i) $\frac{1}{2}$

$\frac{8}{\cancel{100}} \times \cancel{100} = 8\%$ $\frac{6}{100} \times 100 = 6\%$ $\frac{1}{\cancel{2}_1} \times \overset{50}{\cancel{100}} = 50\%$

j) $\frac{2}{5}$ k) $\frac{1}{4}$ l) $\frac{3}{4}$

$\frac{2}{\cancel{5}_1} \times \overset{20}{\cancel{100}} = 40\%$ $\frac{1}{\cancel{4}_1} \times \overset{\cancel{50}\,25}{\cancel{100}} = 25\%$ $\frac{3}{\cancel{4}_1} \times \overset{50\,25}{\cancel{100}} = 75\%$

2a) 20% b) 45% c) 85% d) 70%

$\frac{\cancel{20}}{\cancel{100}} = \frac{1}{5}$ $\frac{\cancel{45}}{\cancel{100}} = \frac{9}{20}$ $\frac{\cancel{85}}{\cancel{100}} = \frac{17}{20}$ $\frac{7\cancel{0}}{10\cancel{0}} = \frac{7}{10}$

e) 10% f) 25% g) 93% h) 68%

$\frac{1\cancel{0}}{10\cancel{0}} = \frac{1}{10}$ $\frac{\cancel{25}}{\cancel{100}} = \frac{1}{4}$ $\frac{93}{100}$ $\frac{\cancel{68}}{\cancel{100}} = \frac{17}{25}$

Pg 47

3a) 40% b) 83% c) 75% d) 52%

$\frac{40}{100} = 0.4$ $\frac{83}{100} = 0.83$ $\frac{75}{100} = 0.75$ $\frac{52}{100} = 0.52$

e) 18% f) 26% g) 96% h) 15%

$\frac{18}{100} = 0.18$ $\frac{26}{100} = 0.26$ $\frac{96}{100} = 0.96$ $\frac{15}{100} = 0.15$

Pg 48

4a) 0.12 b) 0.56 c) 0.81

$0.12 \times 100 = 12\%$ $0.56 \times 100 = 56\%$ $0.81 \times 100 = 81\%$

d) 0.27 e) 0.34 f) 0.76

$0.27 \times 100 = 27\%$ $0.34 \times 100 = 34\%$ $0.76 \times 100 = 76\%$

g) 0.71 h) 0.08

$0.71 \times 100 = 71\%$ $0.08 \times 100 = 8\%$

5) $\frac{73}{100} \times 100 = 73\%$

Saba's percentage is 73%

6) Number of students = 15

Total students = 30

Percentage $= \frac{15}{30} \times 100 = 50\%$

7) 12%

Fraction $= \frac{12}{100} = \frac{3}{25}$, Decimal $= 12 \times 100 = 0.12$

8) 40% $\frac{40}{100} = \frac{2}{5}$

Pg 48

9) Total students = 25

Absent = 5

Present = 25 − 5 = 20

Percentage present = $\frac{20}{25} \times \frac{100}{1} = 80\%$

10) Total marks = 50

Correct spellings = 80%

$\frac{50 \times 80}{100}$ = 40 spellings

# Review Exercise

**1.** Convert each of the following fractions into percentages.

**a.** $\frac{6}{10}$ **b.** $\frac{7}{10}$ **c.** $\frac{8}{10}$ **d.** $\frac{9}{10}$ **e.** $\frac{13}{100}$ **f.** $\frac{23}{100}$

**g.** $\frac{4}{100}$ **h.** $\frac{8}{100}$ **i.** $\frac{1}{2}$ **j.** $\frac{1}{20}$ **k.** $\frac{8}{25}$ **l.** $\frac{3}{50}$

**2.** Convert percentages to fractions.

**a.** 29% **b.** 35% **c.** 33% **d.** 70% **e.** 85% **f.** 75%

**g.** 94% **h.** 48%

**3.** Convert percentages to decimal.

**a.** 14% **b.** 25% **c.** 53% **d.** 68% **e.** 76% **f.** 92%

**4.** Convert decimals to percentages.

**a.** 0.53 **b.** 0.27 **c.** 0.19 **d.** 0.33 **e.** 0.80 **f.** 0.77

**5.** Solve the following real-life number stories.

**a.** There are 60% women in a market. Express this percentage as a fraction.

**b.** A library has 500 story books. 200 books are based on fiction. Express the fraction of fictional books as percentage.

**c.** In an aptitude test, Shan was able to answer 20 out of 25 questions correctly. What is the percentage of correct answers?

**d.** There are 14 girls in a class of 25 students. Write as a fraction and then express as a percentage.

**e.** Saima scored 48 out of 50 in Maths and 92 out of 100 in English. Convert these percentages in fractions to find out in which subject she scored a higher percentage.

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# Answer Key

**1.** **a.** 0.6 **b.** 0.7 **c.** 0.8 **d.** 0.9 **e.** 0.13 **f.** 0.23
**g.** 0.04 **h.** 0.08 **i.** 0.5 **j.** 0.05 **k.** 0.32 **l.** 0.06

**2.** **a.** $\frac{29}{100}$ **b.** $\frac{7}{20}$ **c.** $\frac{33}{100}$ **d.** $\frac{7}{10}$ **e.** $\frac{17}{20}$ **f.** $\frac{3}{4}$
**g.** $\frac{47}{50}$ **h.** $\frac{12}{25}$

**3.** **a.** 0.14 **b.** 0.25 **c.** 0.53 **d.** 0.68 **e.** 0.76 **f.** 0.92

**4.** **a.** 0.53% **b.** 27% **c.** 19% **d.** 33% **e.** 80% **f.** 77%

**5.** **a.** $\frac{3}{5}$ **b.** 40% **c.** 80% **d.** 56% **e.** Maths 96%

Unit 6

# Unitary Method

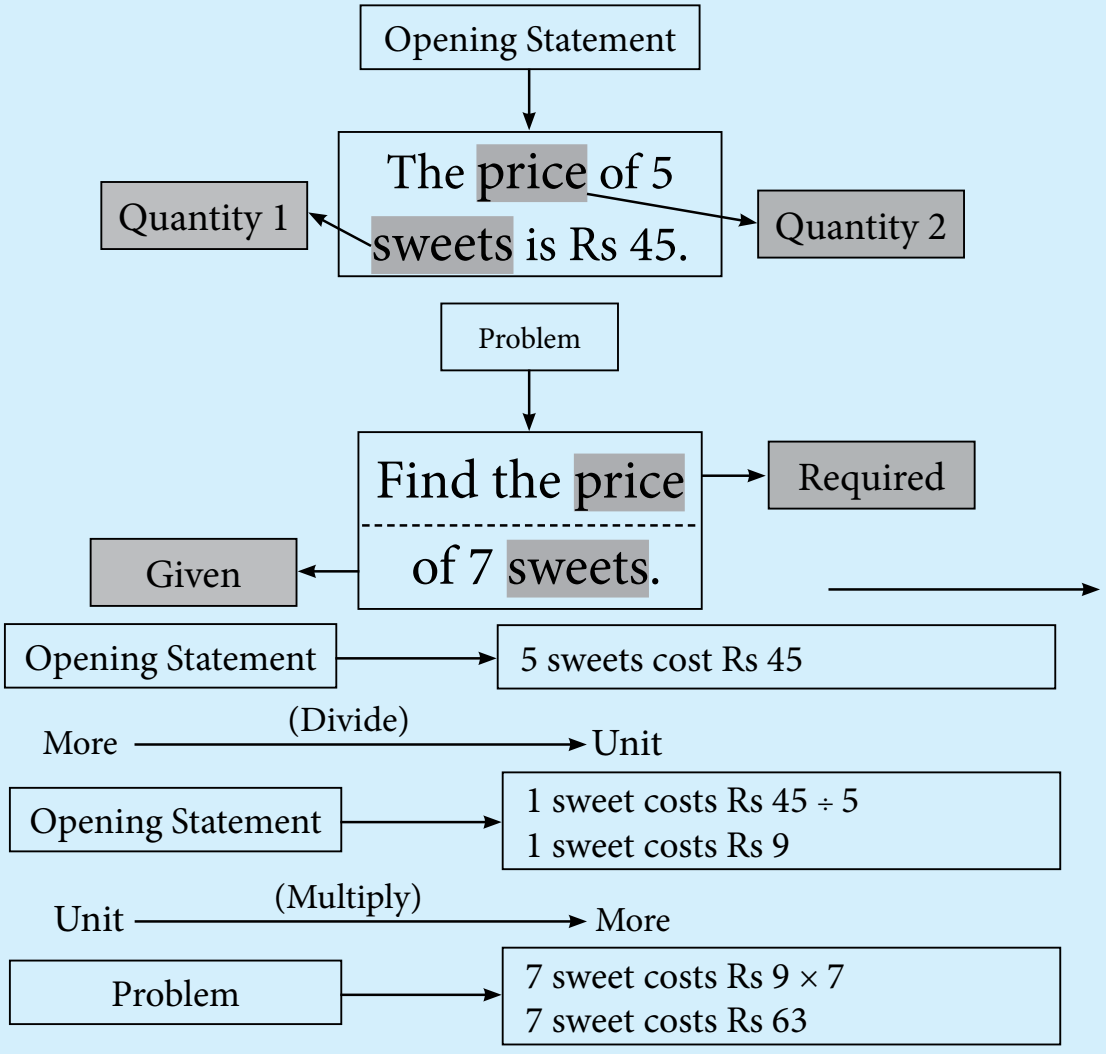
## Bilingual Concept Builder Notes

### Competency 1

Pupils will learn to apply unitary method to solve real-life problems.

**Stimulus:** Unitary method is a classical technique used in Mathematics to solve real-life problems containing proportional quantities.

The word 'Unitary' has been driven from 'Unit'. In unitary method, to solve a problem, first value of one unit is calculated then the value of required units is found. Elaborate the following example to your class in the same way: 'The price of 5 sweets is Rs 45. Find the price of 7 sweets.'




**Classwork:** Complete Exercise A.

# وجدانی طریقہ

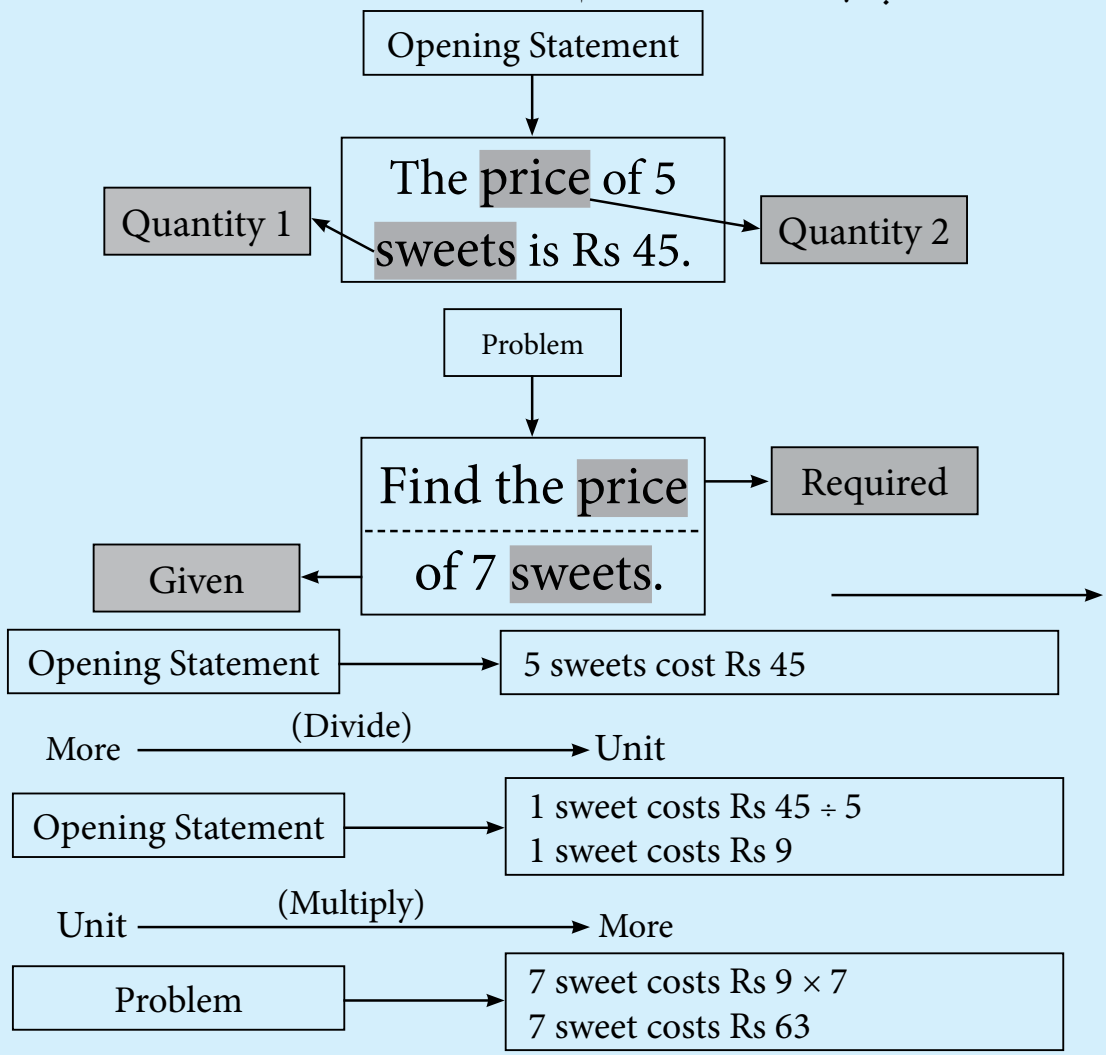
**قابلیت ۱**

طلبہ حقیقی زندگی سے جڑے عبارتی سوالوں کو حل کرنے کے لیے وجدانی طریقے کا استعمال کرنا سیکھیں گے۔

**محرک:** وجدانی طریقہ ریاضی کی سوالات حل کرنے کی ایک اور کلاسیکی تکنیک ہے جو عبارتی سوالوں میں دی گئی متناسب مقداروں کو حل کرنے کے لیے استعمال ہوتی ہے۔

Unitary دراصل لفظ unit سے اخذ کیا گیا ہے۔ وجدانی طریقے میں کسی مسئلے کو حل کرنے کے لیے پہلے ایک یونٹ یا چیز کا حساب نکالا جاتا ہے پھر مطلوبہ چیزوں کی اکائیوں کی قیمت یا قدر معلوم کی جاتی ہے۔ اب کمرۂ جماعت میں درج ذیل مثال کو وضاحت کے ساتھ سمجھائیے۔

کہ ۵ مٹھائیوں کی قیمت ۴۵ روپے ہے۔ ۷ مٹھائیوں کی قیمت معلوم کیجیے۔




کلاس ورک: مشق A کو مکمل کیجیے۔

# Scheme of Work

## Unit 6: Unitary Method

## Estimated Number of Periods: 12

| Specific Learning Outcomes | Number of periods |
|---|---|
| • Calculate the value of many objects of the same kind when the value of one of these<br>• objects are given | 4 |
| • Calculate the value of one object of the same kind when the value of many objects is given. | 4 |
| • Calculate the value of many objects of the same kind when the value of some of these objects is given | 4 |

## Prior Knowledge Assessment

- Students know the four operations (addition, subtraction, multiplication, division).
- They will learn to use these operations to find the value of one or multiple objects.
- They will work with larger amounts involving measurements of mass and capacity.
- They will solve real-life problems using unitary methods.

## Resources

Suggested manipulatives that can be used to create interest and create a link to the topic, like currency coins and notes, grocery bills, shopping area in the classroom, objects of daily use with price tags etc.

## Written Assignments

| Exercises | Class Assignment | Home Assignment |
|---|---|---|
| **Exercise A** | Q1, Q2, Q3, Q6, Q7, Q9, Q10, Q14 - 20 | Q 4, Q5, Q8, Q11 - 13 |

## 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 6 Pg 50

1) Distance covered = 168 km

Time taken = 4 hours

Distance covered in 1 hour = 168 ÷ 4 = 42 km

2) Cost of a melon = Rs 30

Cost of 14 melons = 30 × 14 = Rs 420

3) Cost of book = Rs 54

Cost of 36 books = 54 × 36 = Rs 1944

4) Matchsticks in the box = 25

Matchsticks in 25 boxes = 25 × 25 = 625 matchsticks

5) Stamps collected = 105

Number of days = 7

Stamps collected in one day = 105 ÷ 7 = 15

6) Words written on 1 page = 40

Words written on 50 pages = 40 × 50 = 2000 words

7) Earning in a month = Rs 485

Earning in a year = 485 × 12 = Rs 5820

8) Cloth needed for one shirt = 3m

Cloth needed for 36 shirts = 36 × 3 = 108 m

42
4)168
-16
008
-008
000

15
7)105
-7
035
-035
000

Pg 50

9) Number of soldiers 860

Number of rows 5

Soldiers in each row $860 \div 5 = 172$

$$\begin{array}{r} 172 \\ 5\overline{)860} \\ -5 \\ \hline 36 \\ 35 \\ \hline 010 \\ -010 \\ \hline 000 \end{array}$$

10) Four packets of jelly = Rs 80

Cost of one packet $= 80 \div 4 = Rs\ 20$

11) Mass of 1 packet of sweets = 4 kg

Mass of 12 packets of sweets $= 12 \times 4 = 48$ kg

12) Cost of 1 kg mangoes = Rs 36

Cost of 64 kg mangoes $= 64 \times 36 = Rs\ 2304$

13) Books in 15 cupboards = 60

Books in 1 cupboards $= 60 \div 15 = 4$

Books in 45 cupboards $= 45 \times 4 = 180$ books

14) Cloth required for 5 tables = 15m

Cloth required for 1 table $= 5 \div 15 = 3$m

Cloth required for 25 tables $= 3 \times 25 = 75$m

15) 12 books bought for = Rs 126

Cost of 1 book $= 126 \div 12 = \frac{21}{2}$

Cost of 18 books $= \frac{21}{\cancel{2}_1} \times \cancel{18}^{9} = Rs\ 189$

Pg 51

16) Number of students = 30

Number of benches = 15

Number of students on one bench = 30 ÷ 15 = 2

Number of students on 35 benches = 35 x 2 = 70 students

17) Number of eggs = 360 eggs

Number of boxes = 18

Eggs in one box = 360 ÷ 18 = 20 eggs

Eggs in 35 boxes = 35 x 20 = 700 eggs

18) Mass of rice = 150 kg

Cost of rice = Rs 1500

Cost of 1 kg of rice = 1500 ÷ 150 = Rs 10

Rice bought for Rs 100 = 100 ÷ 10 = 10 kg

19) Distance 684 km

Time 12 hours

Distance covered in one hour = 684 ÷ 12 = 57

Distance covered in 23 hours = 57 x 23 = 1311 km

20) Capacity of 16 bottles = 64 L

Capacity of 1 bottle = 64 ÷ 16 = 4 L

Capacity of 32 bottles = 32 x 4 = 128 litres

# Review Exercise

Solve the following real-life number stories.

1. The cost of 8 books is Rs 320.
   a. What is the cost of one book?
   b. What is the cost of 10 books?
2. The cost of 7 litres milk is Rs 1050.
   a. What is the cost of one litre?
   b. What is the cost of 10 litres?
3. Three cows eat 15 kg of fodder.
   a. How much will one cow eat?
   b. How much will 13 cows eat?
4. Aslam reads 250 pages in 5 days.
   a. How many pages will he read in one day?
   b. How many pages will he read in 17 days?
5. Lubna paid Rs 285 for 3 rings. What is the price of 1 ring if the cost is same for each?
6. Price of 5 pairs of shoes is Rs 3000. Find the price of 12 pairs.
7. Dawood can proofread 240 pages in 40 minutes. How many pages can he proofread in 2 hours?
8. Fahim works in a factory where he is paid Rs 75000 for 6 days' work. If he works for 20 days, how much will he get?
9. Ahmed bought 8 packs of chocolates, each with 6 bars for Rs 960. What will be the cost of 30 bars of chocolate?
10. Sobia went to the market to buy notebooks. The cost of 5 notebooks is Rs 250. Find the price of 3 such notebooks bought by Sobia?

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# Answer Key

1. a. Rs 40 b. Rs 400
2. a. Rs 150 b. Rs 1500
3. a. 5 kg b. 65 kg
4. a. 50 pages b. 850 pages
5. a. Rs 95 b. Rs 7200
7. a. 720 pages b. Rs 250,000
9. a. Rs 600 b. Rs 150

Unit 7

# Distance and Time

## Bilingual Concept Builder Notes

### Competency 1

Pupils will learn to convert Km to m, m to cm, cm to mm and vice versa.

**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

To convert a given length in m to Km, divide the number by 1000, like

3000m = $\frac{3000}{1000}$ km 3km

We know that

| 1m = 100 cm |
|---|

To convert a given length in m to cm, multiply the number by 100, like

5 m = 5 × 100 cm = 500 cm

To convert a given length in cm to m, divide the number by 100, like

3000 cm = $\frac{300}{100}$ m 3 m

We know that

| 1cm = 10 mm |
|---|

To convert a given length in cm to mm, multiply the number by 10, like

5 cm = 5 × 10 mm = 50 mm

To convert a given length in mm to cm, divide the number by 10, like

30 mm = $\frac{30}{10}$ cm 3 cm

**Classwork:** Complete Exercise A.

### Competency 2

Pupils will learn to add or subtract the given lengths with the same and different units and apply the

### قابلیت ۱

طلبہ کلو میٹر کو میٹر، میٹر کو سینٹی میٹر، سینٹی میٹر کو ملی میٹر اور اس کے برعکس عمل کر سکیں گے۔

استدلال: طلبہ پچھلی جماعتوں میں پہلے ہی سیکھ چکے ہیں۔

| |
|---|
| 1 Km = 1000 m |

کلو میٹر میں دی گئی لمبائی کو میٹر میں تبدیل کرنے کے لیے، کلو میٹر میں موجود عدد کو 1000 سے ضرب کیجیے، جیسے

$$5 \text{ km} = 5 \times 1000 \text{ m} = 5000 \text{ m}$$

میٹر میں دی گئی لمبائی کو کلو میٹر میں تبدیل کرنے کے لیے، میٹر میں دی گئی مقدار 1000 سے تقسیم کیجیے جیسے

$$3000\text{m} = \frac{3000}{1000} \text{ km } 3\text{km}$$

ہم جانتے ہیں کہ

| |
|---|
| 1 m = 100 cm |

میٹر میں دی گئی لمبائی کو سینٹی میٹر میں بدلنے کے لیے، میٹر میں دی گئی مقدار کو 100 سے ضرب دیجیے، جیسے

$$5 \text{ m} = 5 \times 100 \text{ cm} = 500 \text{ cm}$$

سینٹی میٹر میں دی گئی لمبائی کو میٹر میں بدلنے کے لیے، سینٹی میٹر میں دی گئی مقدار کو 100 سے تقسیم کیجیے جیسے

$$3000 \text{ cm} = \frac{300}{100} \text{ m } 3 \text{ m}$$

ہم جانتے ہیں کہ

| |
|---|
| 1 cm = 10 mm |

سینٹی میٹر میں دی گئی لمبائی کو ملی میٹر میں بدلنے کے لیے، سینٹی میٹر میں دی گئی مقدار کو 10 سے ضرب دیجیے، جیسے

$$5 \text{ cm} = 5 \times 10 \text{ mm} = 50 \text{ mm}$$

ملی میٹر میں دی گئی مقدار کو سینٹی میٹر میں بدلنے کے لیے، دی گئی مقدار کو ۱۰ سے تقسیم کیجیے جیسے

$$30 \text{ mm} = \frac{30}{10} \text{ cm } 3 \text{ cm}$$

کلاس ورک: مشق A کو مکمل کیجیے۔

### قابلیت ۲

طلبہ ایک جیسی اور مختلف اکائیوں میں دی گئی لمبائی کو جمع اور تفریق کر سکیں گے اور اسی مہارت کو عبارتی سوالوں کو حل کرنے کے لیے استعمال کریں گے۔

same skill to solve the given real-life problems.

Rationale: Pupils are already familiar with the addition and subtraction lengths with the same units. Use examples 1, 2 given on page 52 to elaborate the process to add or subtract the lengths with different unit.

**Classwork:** Complete Exercise B.

## Competency 3

Pupils will learn to convert minutes, hours, months, and years to their multiples and 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

| 1 hour = 60 minutes |
|---|

$$9 \text{ hours} = 9 \times 60 \text{ minutes} = 540 \text{ minutes}$$

To convert a unit to its multiple units, we just need to multiply by the relative number which relates both units, as

$$360 \text{ minutes} = \frac{360}{60} \text{ hours} = 6 \text{ hours}$$

| 1 minute = 60 seconds |
|---|

To convert a unit to its multiple units, divide the given time by the relative number which relates both units, as

$$4 \text{ minutes} = 4 \times 60 \text{ seconds} = 240 \text{ seconds}$$

To convert seconds to minutes, divide the given time by the relative number which relates both units, as

$$360 \text{ seconds} = \frac{360}{60} \text{ minutes} = 6 \text{ minutes}$$

| 1 year = 12 months |
|---|

$$5 \text{ years} = 5 \times 12 \text{ months} = 60 \text{ months}$$

and

$$36 \text{ months} = \frac{360}{60} \text{ years} = 3 \text{ years}$$

| 1 month = 30 days |
|---|

$$7 \text{ months} = 7 \times 30 \text{ days} = 210 \text{ days}$$

استدلال: طلبہ لمبائی کی ایک جیسی اکائیوں کو جمع اور تفریق کرنا پہلے سیکھ چکے ہیں۔ لہٰذا صفحہ ۱ اور ۲ پر دی گئی مثالوں کی مدد سے لمبائی کی مختلف اکائیوں کو جمع اور تفریق کرنے کا عمل وضاحت سے انھیں سمجھائیے۔

کلاس ورک: مشق B کو مکمل کیجیے۔

### قابلیت ۳

طلبہ منٹوں، گھنٹوں، مہینوں اور سالوں کو اپنے (multiplies) اور ذیل اکائیوں (sub-units) میں تبدیل کریں گے۔

استدلال: کسی اکائی کو ذیلی اکائی میں تبدیل کرنے کے لیے ہمیں اس عدد سے ضرب کرنا ہو گا جو دونوں اکائیوں سے تعلق کو ظاہر کرتا ہے جیسے

| |
|---|
| 1 گھنٹہ = 60 منٹ |

9 گھنٹہ = 9 × 60 منٹ = 540 منٹ

ایک اکائی (unit) کو اس کی جزوی اکائیوں میں تبدیل کرنے کے لیے ہمیں اس عدد سے تقسیم کرنا ہو گا جو دونوں اکائیوں سے تعلق کو ظاہر کرتا ہے جیسے

360 منٹ = $\frac{360}{60}$ گھنٹے = 6 گھنٹے

| |
|---|
| 1 منٹ = 60 سیکنڈ |

ایک اکائی (unit) کو اس کی جزوی اکائیوں میں تبدیل کرنے کے لیے ہمیں دیے گئے وقت کو اس عدد سے ضرب دینا ہو گا جو دونوں اکائیوں سے تعلق کو ظاہر کرتا ہے جیسے

9 منٹ = 9 × 60 سیکنڈ = 540 سیکنڈ

سیکنڈوں کو منٹوں میں تبدیل کرنے کے لیے ہمیں دیے گئے وقت کو اس عدد سے تقسیم کرنا ہو گا جو دونوں اکائیوں سے تعلق کو ظاہر کرتا ہے جیسے

360 سیکنڈ = $\frac{360}{60}$ منٹ = 6 منٹ

| |
|---|
| 1 سال = 12 مہینے |

5 سال = 5 × 12 مہینے = 60 مہینے

اور

36 مہینے = $\frac{36}{12}$ سال = 3 سال

| |
|---|
| 1 مہینہ = 30 دن |

7 مہینے = 7 × 30 دن = 210 دن

اور

270 دن = $\frac{270}{30}$ مہینے = 9 مہینے

and

$$270 \text{ days} = \frac{270}{30} \text{ months} = 9 \text{ months}$$

| 1 week = 7 days |
|---|

$$3 \text{ weeks} = 3 \times 7 \text{ days} = 21 \text{ days}$$

and

$$63 \text{ days} = \frac{63}{7} \text{ weeks} = 9 \text{ weeks}$$

**Classwork:** Complete Exercise C.

## Competency 4

Pupils will learn to add and subtract time mentioned with different units and use it to solve real-life related problems.

**Rationale:** To add time mentioned with different units, must ensure to simplify same units first and then convert smaller unit to bigger one and finally simplify them.

$$\begin{array}{r} 5 \text{ hours } 33 \text{ minutes} \\ +\ 2 \text{ hours } 45 \text{ minutes} \\ \hline 7 \text{ hours } 78 \text{ minutes} \end{array}$$

This is the result of addition normally we do not write 78 minutes as it is more than an hour, we will change to hour as

$$78 \text{ minutes} = 1 \text{ hour } 18 \text{ minutes} \quad (1 \text{ hour} = 60 \text{ minutes})$$

Now we will write 7 hour and 78 minutes as

$$\begin{aligned} &7 \text{ hours} \quad 78 \text{ minutes} \\ &= \underline{7 \text{ hours} + 1 \text{ hour}} \quad 18 \text{ minutes} \\ &= 8 \text{ hours} \quad 18 \text{ minutes} \end{aligned}$$

To subtract time mentioned with different units, must ensure to simplify same units first. If we need to subtract a bigger number from the smaller, we will borrow 1 from the bigger unit and then convert it smaller unit, as

$$\begin{array}{r} 5 \text{ hours } 36 \text{ minutes} \\ \underline{-\ 2 \text{ hours } 45 \text{ minutes}} \end{array}$$

45 minutes cannot be subtracted from 36 minutes, so we will borrow 1 hour from 5 hours and will add them to 33 minutes, as

$$5 \text{ hours} \quad 36 \text{ minutes}$$

| 1 ہفتہ = 30 دن |
|---|

3 ہفتے $= 3 \times 7$ دن $= 21$ دن

اور

65 دن $= \frac{63}{7}$ ہفتے $= 9$ ہفتے

کلاس ورک: مشق C کو مکمل کیجیے۔

### قابلیت ۴

طلبہ مختلف اکائیوں کے ساتھ دیے گئے وقت کو جمع اور تفریق کرنا سیکھیں گے اور اس مہارت کا اطلاق زندگی سے جڑے عبارتی سوالات کو حل کرنے کے لیے کریں گے۔

استدلال: وقت کی جمع کو آسان بنانے کے لیے پہلے ہمیں مختلف اکائیوں میں دیے گئے وقت کو کسی ایک ہی اکائی میں تبدیل کرنا ہو گا اور اس کے بعد چھوٹی اکائی کو بڑی اکائی میں تبدیل کرنا ہو گا۔

5 hours 33 minutes

+ 2 hours 45 minutes

7 hours 78 minutes

وقت کی حاصل جمع سے ہمیں ۷ گھنٹے اور 78 منٹ ملے اور 78 منٹ کیونکہ ایک گھنٹے سے زیادہ ہیں لہٰذا ہم اسے گھنٹوں میں تبدیل کر لیں گے جیسے

78 منٹ = 1 گھنٹہ 18 منٹ (1 گھنٹہ = 60 منٹ)

7 گھنٹے اور 78 منٹوں کو ہم یوں لکھیں گے

7 hours 78 minutes

= 7 hours + 1 hour 18 minutes

= 8 hours 18 minutes

وقت کی تفریق کو سادہ اور آسان بنانے کے لیے پہلے ہمیں مختلف اکائیوں میں دیے گئے وقت کو کسی ایک ہی اکائی میں تبدیل کرنا ہو گا۔ اگر ضرورت پڑے تو چھوٹی مقدار سے بڑی مقدار کو گھٹانے کے لیے ۱ کو بطور حاصل کے ادھار تک لینا ہو گا۔ اس کے بعد چھوٹی اکائی کو بڑی اکائی تبدیل کرنا ہو گا، جیسے

5 hours 36 minutes

− 2 hours 45 minutes

45 منٹوں کو 36 منٹوں میں سے تفریق نہیں کیا جا سکتا لہٰذا ہمیں 5 گھنٹوں میں سے 1 گھنٹے کو حاصل کرنا ہو گا اور اسے 33 منٹوں میں شامل کرنا ہو گا جیسے

5 hours 36 minutes

= 4 hours + 1 hour 36 minutes

= 4 hours + 1 hour  36 minutes

As we know that 1 hour = 60 minutes so,

5 hours  36 minutes

= 4 hours + 1 hour  36 minutes

= 4 hours  60 minutes + 36 minutes

= 4 hours  96 minutes

Now re-write the question and subtract time mentioned with the same unit, as

4 hours  96 minutes

– 2 hours  45 minutes

2 hours  51 minutes

Use examples 1, 2, 3, 4, and 5 given on pages 58 and 59 to further elaborate the addition and subtraction of time.

**Classwork:** Complete Exercise D.

جیسا کہ ہم جانتے ہیں 1 گھنٹہ = 60 منٹ تو

5 hours 36 minutes

= 4 hours + 1 hour 36 minutes

= 4 hours 60 minutes + 36 minutes

= 4 hours 96 minutes

اب یہ سوال دوبارہ لکھیے اور ایک جیسی اکائی میں تبدیل کردہ وقت کو تفریق کیجیے جیسے

4 hours 96 minutes

− 2 hours 45 minutes

2 hours 51 minutes

صفحہ 58 اور 59 پر دی گئی مثالوں 1، 2، 3، 4 اور 5 کے ذریعے جمع اور تفریق کے عمل کی مزید وضاحت کیجیے۔

کلاس ورک: مشق D کو مکمل کیجیے۔

# Scheme of Work

## Unit 7: Distance and Time

## Estimated Number of Periods: 15

| Specific Learning Outcomes | Number of periods |
|---|---|
| • Convert measurement given in:<br>  ○ kilometre to metres and vice versa<br>  ○ metres to centimetres and vice versa<br>  ○ centimetres to millimetres and vice versa.<br>• Solve real-life situations involving conversion, addition and subtraction of measures of distance. | 4 |
| • Convert hours to minutes and vice versa minutes to seconds and vice versa.<br>• Convert years to months and vice versa, months to days and vice versa, weeks to days and vice versa. | 4 |
| • Add and subtract intervals of time in hours and minutes with carrying and borrowing.<br>• Solve real-life situations involving conversion, addition and subtraction of intervals of time. | 7 |

## Prior Knowledge Assessment

- Students have experience with units of length and time.
- They understand addition, subtraction, and conversion of length units.
- This knowledge will help them add and subtract distances.

## Resources

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

- Conversion table
- Some real-life examples of distance and ask them to help you do some conversions on the board.
  Jawad was going to distribute Eid sweets in his neighbourhood.
  He walked 20 metres to the first house. How many centimetres did he walk?
  He walked 100 meters to the next house. How many centimetres did he walk?
  He walked 100 meters. How many millimetres did he walk?

Make worksheets to explain the concept of time

| | | |
|---|---|---|
| 1. Yousuf decides to start practising for his Math exam on Friday at 3:15 p.m. which is due after the weekend.<br>Day: Friday<br>Time: 3:15 p.m. | 2. 5 hours later he gets bored and decides to take a break for dinner.<br>Day:<br>Time: | 3. 15 hours later he picks up his science book and starts reading the new topic his teacher gave him for homework.<br>Day:<br>Time: |
| After 2 hours he decides to take a break for lunch.<br>Day:<br>Time: | Half an hour later he takes a nap for 45 minutes.<br>Day:<br>Time: | Then he goes for a bicycle ride with his friends for an hour. What time is it now?<br>Day:<br>Time: |

## Written Assignments

| Exercises | Class Assignment | Home Assignment |
|---|---|---|
| **Exercise A** | Q1 (a – g, k, l), Q2 (a - f), Q3 (a – d, h, i), Q4 (a - f), Q5 (a -d, h, i), Q6 (a - f) | Q1 (h, I, j), Q2 (g, h, i), Q3 (e, f, g), Q4 (g, h, i), Q5 (e, f, g), Q6 (g, h, i) |
| **Exercise B** | Q1 (a – e), Q2 (a - e), Q3, Q4, Q5, Q7, Q8, Q10 | Q1 (f, g, h), Q2 (f, g, h), Q6, Q9 |
| **Exercise C** | Q1 (a -f), Q2 (a - f), Q3 (a - f), Q4 (), Q5 (a - f), Q7 (a - f), Q8, (a - f), Q9 (a - d) | Q1 (g, h), Q2 (g, h), Q3 (g, h), Q4 (g, h), Q5 (g, h) (), Q9 (e, f) |
| **Exercise D** | Q1, Q2, Q3, Q4, Q5, Q8, Q9, Q12, Q12 | Q 6, Q7, Q10 |

## 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 7 Pg 54

1a) 4 km b) 5 km c) 7 km

$4 \times 1000 = 4000$ m $5 \times 1000 = 5000$ m $7 \times 1000 = 7000$ m

d) 8 km e) 9 km f) 15 km

$8 \times 1000 = 8000$ m $9 \times 1000 = 9000$ m $15 \times 1000 = 15000$ m

g) 13 km h) 10 km i) 65 km

$13 \times 1000 = 13000$ m $10 \times 1000 = 10000$ m $65 \times 1000 = 65000$ m

j) $2\frac{3}{4}$ km k) $6\frac{1}{2}$ km l) $12\frac{1}{4}$ km

$\frac{11}{4} \times 1000$ $\frac{13}{2} \times 1000$ $\frac{49}{4} \times 1000$

$\frac{11000}{4} = 2750$ m $\frac{13000}{2} = 6500$ m $\frac{49000}{4} = 12250$ m

2a) 5000 m b) 8000 m c) 16000 m d) 12000 m

$\frac{5000}{1000} = 5$ km $\frac{8000}{1000} = 8$ km $\frac{16000}{1000} = 16$ km $\frac{12000}{1000} = 12$ km

e) 15 m f) 22 m g) 349 m

$\frac{15}{1000} = \frac{3}{200} = 0.015$ km $\frac{22}{1000} = \frac{11}{500} = 0.022$ km $\frac{349}{1000} = 0.349$ km

h) 450 m i) 732 m

$\frac{450}{1000} = 0.45$ km $\frac{732}{1000} = 0.732$ km

3a) 3 m b) 36 m c) 67 m

$3 \times 100 = 300$ cm $36 \times 100 = 3600$ cm $67 \times 100 = 6700$ cm

d) 73 m e) 96 m f) 55 m

$73 \times 100 = 7300$ cm $96 \times 100 = 9600$ cm $55 \times 100 = 5500$ cm

g) $4\frac{1}{2}$ m h) $79\frac{1}{4}$ m i) $28\frac{1}{3}$

$\frac{9}{2} \times 100 = \frac{900}{2} = 450$ cm $\frac{317}{4} \times 100 = \frac{31700}{4} = 7925$ cm $\frac{85}{3} \times 100 = \frac{8500}{3}$ cm

1m = 100cm Pg55

4a) 300cm b) 500cm c) 4500cm d) 4900cm

$\frac{300}{100} = 3m$ $\frac{500}{100} = 5m$ $\frac{4500}{100} = 45m$ $\frac{4900}{100} = 49m$

e) 5600cm f) 63cm g) 71cm h) 278cm

$\frac{5600}{100} = 56m$ $\frac{63}{100} = 0.63m$ $\frac{71}{100} = 0.71m$ $\frac{278}{100} = 2.78m$

i) 595cm

$\frac{595}{100} = 5.95m$

1cm = 10mm

5a) 3cm b) 12cm c) 10cm d) 17cm

$3 \times 10 = 30mm$ $12 \times 10 = 120mm$ $10 \times 10 = 100mm$ $17 \times 10 = 170mm$

e) 29cm f) $9\frac{3}{4}$ cm g) $35\frac{1}{4}$ cm

$29 \times 10 = 290mm$ $\frac{39}{4} \times 10 = \frac{\overset{195}{390}}{2} = \frac{195}{2} = 97.5mm$ $\frac{141}{4} \times 10 = \frac{\overset{705}{1410}}{2} = \frac{705}{2} = 352.5mm$

h) $43\frac{1}{2}$ cm i) $58\frac{1}{2}$ cm

$\frac{87}{2} \times 10 = \frac{\overset{435}{870}}{2} = 435$ $\frac{117}{2} = 58.5m$

6a) 60mm b) 70mm c) 50mm d) 90mm e) 85mm

$\frac{60}{10} = 6cm$ $\frac{70}{10} = 7cm$ $\frac{50}{10} = 5cm$ $\frac{90}{10} = 9cm$ $\frac{85}{10} = 8.5cm$

f) 12mm g) 93mm h) 75mm i) 89mm

$\frac{12}{10} = 1.2cm$ $\frac{93}{10} = 9.3cm$ $\frac{75}{10} = 7.5cm$ $\frac{89}{10} = 8.9cm$

## EXERCISE B

Pg 56

1a) 68km + 1·25 km

68 + 1.25 = 69.25 km

b) 95m + 46m

95 + 46 = 141m

c) 15cm + 38cm

15 + 38 = 53cm

d) 38mm + 29mm

38 + 29 = 67mm

e) 46m + 3km

3 × 1000 = 3000m

46m + 3000m = 3046m

f) 36mm + 9cm

9 × 10 = 90mm

36mm + 90mm = 126mm

g) 38m + 19cm

38 × 100 = 3800 cm

3800 + 19 = 3819 cm

h) 30cm + 26mm

30 × 10 = 300 mm

300 + 26 = 326 mm

2a) 48km − 26km

48 − 26 = 22km

b) 38m − 10m

38 − 10 = 28m

c) 45cm − 23cm

45 − 23 = 22cm

d) 53mm − 39mm

53 − 39 = 14mm

e) 23km − 11.9m

23 × 1000 = 23000 m

23000 − 11.9 = 22988.1

f) 7km − 296m

7 × 1000 = 7000m

7000 − 296 = 6704m

g) 6cm − 53mm

6 × 10 = 60mm

60 − 53 = 7mm

h) 8.45m − 80.3cm

8.45 × 100 = 845

845 − 80.3 = 764.7cm

## REAL LIFE NUMBER STORIES

3) $\frac{3300}{1000}$ = 3.3 km

4) 9.7m × 1000 = 9700m

Aiza hiked 3.3km

5) 8.3m (1m = 1000mm)

8.3m × 1000 = 8300mm

6) 25cm + 17mm

25 × 10 = 250mm

250 + 17 = 267mm

7) 1.9km + 2.7km

1.9 + 2.7 = 4.6km

8) 1.7km + 450m

1.7m × 1000 = 1700m

1700 + 450 = 2150m

9) 4 × 1000 = 4000 (4000 + 396 = 4396)

3 × 1000 = 3000 (3000 + 420 = 3420)

4396 − 3420 = 976m

Khurram travelled more by 976m

10) 6m − 130cm

6 × 100 = 600

600 − 130 = 470 cm

• Seconds = sec • Hours = hrs

## EXERCISE C

Pg 60

1a) 4 hrs b) 3 hrs c) 6 hrs d) 8 hrs

4 x 60 = 240 min 3 x 60 = 180 min 6 x 60 = 360 min 8 x 60 = 480 min

e) 7 hrs f) 5 hrs g) 9 hrs h) 2 hrs

7 x 60 = 420 min 5 x 60 = 300 min 9 x 60 = 540 min 2 x 60 = 120 min

2a) 120 min b) 600 min c) 420 min d) 540 min

$\frac{2\ 120}{180}$ = 2 hrs $\frac{10\ 600}{180}$ = 10 hrs $\frac{7\ 420}{180}$ = 7 hrs $\frac{9\ 540}{180}$ = 9 hrs

e) 780 min f) 840 min g) 660 min h) 180 min

$\frac{13\ 780}{180}$ = 13 hrs $\frac{14\ 840}{180}$ = 14 hrs $\frac{11\ 660}{180}$ = 11 hrs $\frac{3\ 180}{180}$ = 3 hrs

3a) 2 hrs 23 min b) 3 hrs 15 min c) 14 hrs 26 min

2 x 60 = 120 min 3 x 60 = 180 min 14 x 60 = 840 min

120 + 23 = 143 min 180 + 15 = 195 min 840 + 26 = 866 min

d) 15 hrs 56 min e) 23 hrs 42 min f) 49 hrs 35 min

15 x 60 = 900 min 23 x 60 = 1380 min 49 x 60 = 2940

900 + 56 = 956 min 1380 + 42 = 1422 min 2940 + 35 = 2975 min

g) 52 hrs 12 min h) 73 hrs 10 min

52 x 60 = 3120 73 x 60 = 4380

3120 + 12 = 3132 min 4380 + 10 = 4390 min

4a) 6 min b) 8 min c) 9 min d) 12 min

6 x 60 = 360 sec 8 x 60 = 480 sec 9 x 60 = 540 sec 12 x 60 = 720 sec

e) 3 min f) 5 min g) 7 min h) 4 min

3 x 60 = 180 sec 5 x 60 = 300 sec 7 x 60 = 420 sec 4 x 60 = 240 sec

Pg 61

5a) 180 sec = 3 min (180 ÷ 60)

b) 240 sec = 4 min (240 ÷ 60)

c) 360 sec = 6 min (360 ÷ 60)

d) 540 sec = 9 min (540 ÷ 60)

e) 480 sec = 8 min (480 ÷ 60)

f) 300 sec = 5 min (300 ÷ 60)

g) 420 sec = 7 min (420 ÷ 60)

h) 720 sec = 12 min (720 ÷ 60)

6a) 3 min 10 sec
3 × 60 = 180 sec
180 + 10 = 190 sec

b) 5 min 45 sec
5 × 60 = 300 sec
300 + 45 = 345 sec

c) 6 min 18 sec
6 × 60 = 360 sec
360 + 18 = 378 sec

d) 10 min 55 sec
10 × 60 = 600 sec
600 + 55 = 655 sec

e) 15 min 25 sec
15 × 60 = 900 sec
900 + 25 = 925 sec

f) 18 min 30 sec
18 × 60 = 1080 sec
1080 + 30 = 1110 sec

g) 30 min 8 sec
30 × 60 = 1800 sec
1800 + 8 = 1808 sec

h) 19 min 14 sec
19 × 60 = 1140
1140 + 14 = 1154

7a) 3 weeks 4 days
3 × 7 = 21
21 + 4 = 25 days

b) 4 weeks 5 days
4 × 7 = 28 days
28 + 5 = 33 days

c) 5 weeks 3 days
5 × 7 = 35 days
35 + 3 = 38 days

d) 7 weeks 4 days
7 × 7 = 49 days
49 + 4 = 53 days

e) 2 weeks 6 days
2 × 7 = 14 days
14 + 6 = 20 days

f) 9 weeks 8 days
9 × 7 = 63 days
63 + 8 = 71 days

8a) 28 days = 4 weeks (28 ÷ 7)

b) 42 days = 6 weeks (42 ÷ 7)

c) 56 days = 8 weeks (56 ÷ 7)

d) 84 days = 12 weeks (84 ÷ 7)

e) 63 days = 9 weeks (63 ÷ 7)

f) 77 days = 11 weeks (77 ÷ 7)

(Years: yrs)

Pg 61

9a) 2yrs 3months
2 x 12 = 24
24 + 3 = 27 months

b) 3yrs 9months
3 x 12 = 36
36 + 9 = 45 months

c) 5yrs 7months
5 x 12 = 60
60 + 7 = 67 months

d) 6yrs 9months
6 x 12 = 72
72 + 9 = 81 months

e) 8yrs 10months
8 x 12 = 96
96 + 10 = 106 months

f) 9yrs 11 months
9 x 12 = 108
108 + 11 = 119 months

EXERCISE D

Pg 63

1) Najma 1 hr 45 min
Waseem - 1 hr 30 min
0 hr 15 min
Najma took 15 min more

2) Tariq 2 hr 30 min
Rameez 1 hr 45 min
Tariq = 2 x 60 = 120 min
Rameez = 1 x 60 = 60 min
120 + 30 = 150
60 + 45 = 105
150 - 105 = 45 min
Rameez completed the paper 45 min early

3) 1 hr 20 min
+ 35 min
1 hr 55 min
Ayesha rehearsed for 1 hr 55 min

4) Day 1 2 hrs 10 min
Day 2 - 1 hr 5 min
Postman took 1 hr 5 min less

5) Romana 20 min 12 sec
Raheela + 15 min 20 sec
35 min 32 sec

6) Nabeel 6 min 4 52 sec
Sarah - 5 min 43 sec
Sarah took 1 min 09 sec less

7) Homework 1 hr 25 min
Quran + 30 min
1 hr 55 min

8) Bus journey 2 hrs 15 min

Walk + 45 min

Aslam took 2hrs 60 min = 3hrs to reach home

9) Travel altogether 7 hrs 45 min

+ 6 hrs 30 min

13 hrs 75 min

Pg 64

10) 4 weeks 6 days

4x7= 28 days

28+6= 34 days

Sadia took 34 days

11) 1 year 5 months

2 years 6 months

3 years 11 months

12) 1 hr 45 min

+ 20 min

1 hr 65 min

- 2 hrs 5 min

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# Review Exercise

**1.** Convert the following units.

**a.** 7 km = _____ m **b.** 15 m = _____ cm **c.** 72 cm = ____mm

**d.** 62000 m = _____ km **e.** 785 cm = _____m **f.** 92 mm = _____cm

**2.** Convert the following units of time.

**a.** 15 hr = _____ min **b.** 3 hr 30 min = _____ min

**c.** 12 hr _____ min = 750 min **d.** _____ hr 15 min = 435 min

**e.** 180 min = _____ hr **f.** 40 min = _____sec

**g.** 50 min 6 sec = _____ sec **h.** 69 sec = _____ min _____ sec

**i.** 320 min = _____ hr _____min

**3.** Solve:

**a.** 9 hr 32 min + 2 hr 59 min **b.** 5 hr 10 min – 2 hr 45 min

**c.** 8 hr 35 min + 48 min **d.** 11 hr 10 min – 37 min

**e.** 8 hr 33 min – 7 hr 56 min **f.** 7hr + 3 hr 49 min

**4.** Solve the following real-life number stories.

**a.** On a business trip, Kamran travels 375 km 685 m on the 1st day, and 408 km 556 m on the 2nd. Calculate the total distance travelled by him.

**b.** Imran's house is 625 m away from Adil's house. The gymnasium is 1.25 km away from Imran's house. If Adil walks from his house to Imran's, and then to the gymnasium, how far does he walk?

**c.** The total distance a car has travelled is 5983.6 km. What will be the distance covered after a journey of further 416.5 km?

**d.** Ahsan worked for 8 hours 20 minutes in a factory and 4 hours 45 minutes in a bookshop. How long did he work in total?

**e.** Atif is studying 6 hours 30 minutes daily for the preparation of annual examination. Previously, he was studying 3hours 45 minutes a day. How much more time is he giving to his studies now?

**f.** Bilal participated in a writing competition. He took 1200 seconds to complete the task. How many minutes did he take?

**g.** Dania stayed 3 weeks with her grandmother. During her stay she went to her friend's place for 6 days. How many days did she spend with her grandmother?

**h.** Ayan was 3 years 5 months old when joined the school. Now he is 12 years old. For how many months he has been to school?

**i.** How many days are there in 7 years?

# Answer Key

1. **a.** 7000 m **b.** 1500 cm **c.** 720 mm **d.** 62 km **e.** 7.85 m **f.** 9.2 cm
2. **a.** 900 m **b.** 210 min **c.** 30 min **d.** 7 hr **e.** 3 hr **f.** 2400
   **g.** 3006 sec **h.** 1 min 9 sec **i.** 5 hr 20 min
3. **a.** 12 hr 31 min **b.** 2 hr 25 min **c.** 9 hr 23 min
   **d.** 10 hr 33 min **e.** 37 min **f.** 10 hr 19 min

Unit 8

# Geometry

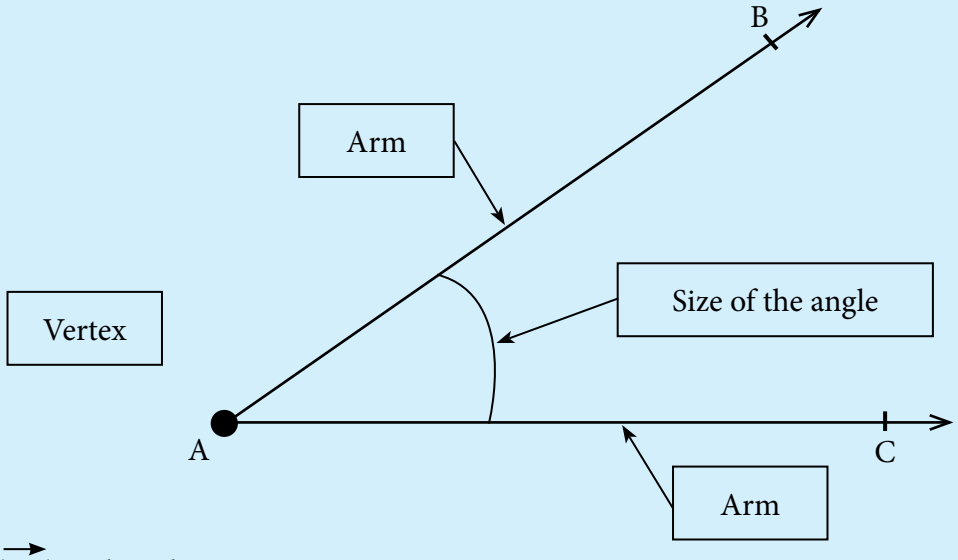
## Bilingual Concept Builder Notes

### Competency 1

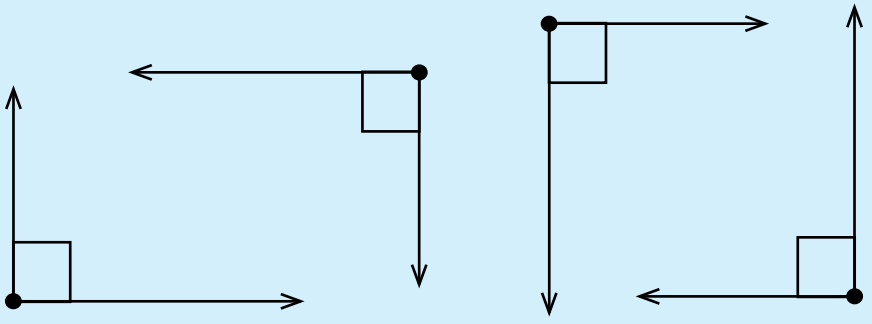
Pupils will learn to classify given angles into acute, right, and obtuse angles. They will also learn to calculate the complementary and supplementary angle of the given angles.

**Stimulus:** Elaborate following concepts to your pupils.

- Two rays having the same end point, form an angle.




- Ray AB ($\overrightarrow{AB}$) with end point A.
- Ray AC ($\overrightarrow{AC}$) with end point A.
- A is the common end point of two rays, which called the Vertex of the angle.
- Ray AB and ray AC are called the arms of the angle.
- Angle can be named with the points of rays as angle BAC .
- Angle is also named with the name of its vertex as angle A .

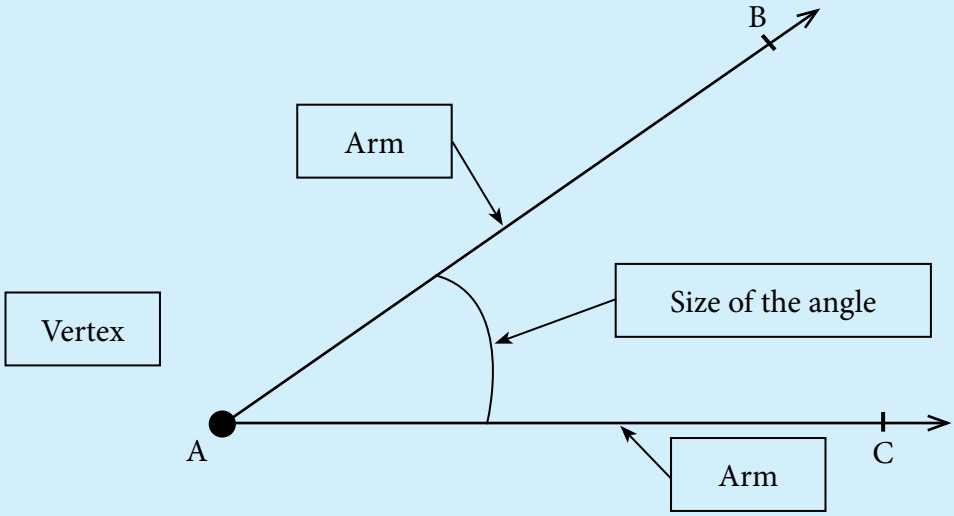


**قابلیت ا**

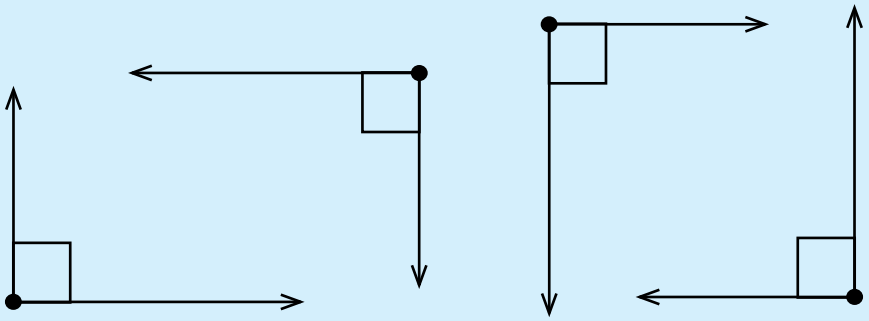
طلبہ دیے گئے زاویوں کی درجہ بندی بطور حادّہ (acute)، قائمہ (right) اور منفرجہ (obtuse) کے کر سکیں گے۔ وہ دیے گئے زاویوں کے تکمیلی (complementary) اور ضمنی (supplementary) زاویے کا تخمینہ معلوم کرنا بھی سیکھیں گے۔

**محرک:** مندرجہ ذیل تصورات کو طلبہ پر واضح کیجیے۔

- ایک اختتامی نقطہ (end point) رکھنے والی دو شعاعیں مل کر ایک زاویہ بناتی ہیں۔




- شعاع AB ($\overrightarrow{AB}$) اختتامی نقطہ A کے ساتھ
- شعاع AC ($\overrightarrow{AC}$) اختتامی نقطہ A کے ساتھ
- دو شعاعوں کا مشترک اختتامی نقطہ A ہے جسے زاویے کا راس (vertex) کہتے ہیں۔
- شعاع AB اور شعاع AC زاویے کا بازو (arms) کہلاتا ہے۔
- زاویوں کے نام شعاعوں کے نقطوں (points) کی مناسبت سے زاویہ BAC رکھے جا سکتے ہیں
- زاویوں کے نام ان کے راس (vertex) کی مناسبت سے زاویہ A بھی رکھے جا سکتے ہیں۔



یہ بہت خاص زاویے ہیں زاویہ قائمہ کو مربع کے راس (vertex) دو اطراف پہلوؤں کے ساتھ گیا ہے جب کہ بقیہ زاویوں کا سائز/دائرے کے حصے

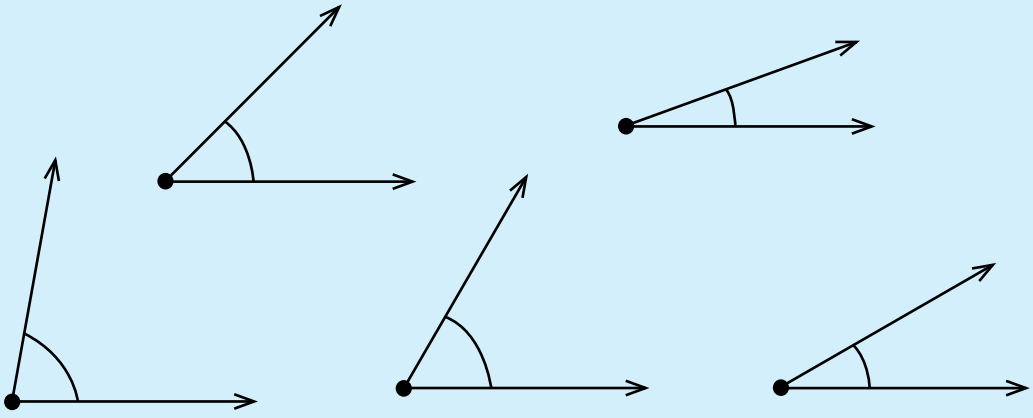
These are very special angles. The size of a right angle is shown with the two sides of a square at the vertex while the size of the rest of the angles is shown with the part of a circle. In these angles one arm of the angle is horizontal while the other is vertical. These are all right angles.

This is the most observed angle in the real-life situation, like

- ✓ Floor and wall are at right angle to each other.
- ✓ Wall and ceiling are at right angle to each other.
- ✓ Adjacent sides of a door are at right angle to each other.
- ✓ Adjacent sides of a window are at right angle to each other, etc.

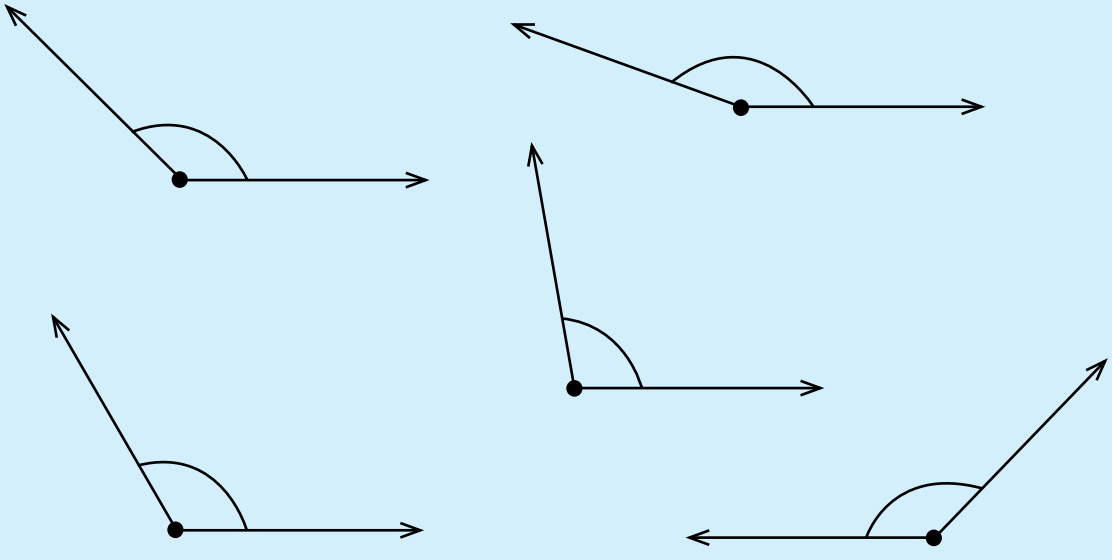
Now ask your students to look around and identify right angles.

The angles which are less than a right angle is called acute angles.



Now ask your students to look around and identify acute angles.

The angles which are more than one right angle, and less than two right angles is called **obtuse angles**.



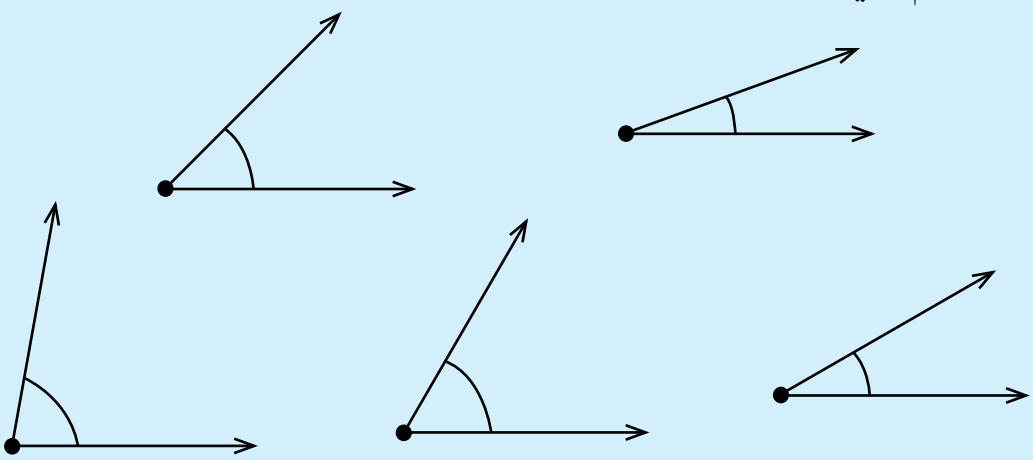
کے ساتھ دکھایا گیا ہے ان زاویوں کا ایک بازو (arm) افقی (horizontal) ہے جبکہ دوسرا بازو عمودی (vertical) ہے یہ تمام زاویے قائمہ (right angle) ہیں۔

حقیقی زندگی میں سب سے زیادہ دکھائی دینے والا زاویہ ہے جیسے

- ✓ فرش اور دیوار مل کر زاویہ قائمہ بناتے ہیں
- ✓ دیوار اور چھت ایک دوسرے کے ساتھ زاویہ قائم بناتے ہیں۔
- ✓ دروازے کے ملحقہ اطراف ایک دوسرے کے ساتھ کل کر زاویہ قائمہ بناتے ہیں۔
- ✓ کھڑکی کے ملحقہ اطراف ایک دوسرے کے ساتھ مل کر زاویہ قائمہ بناتے ہیں۔

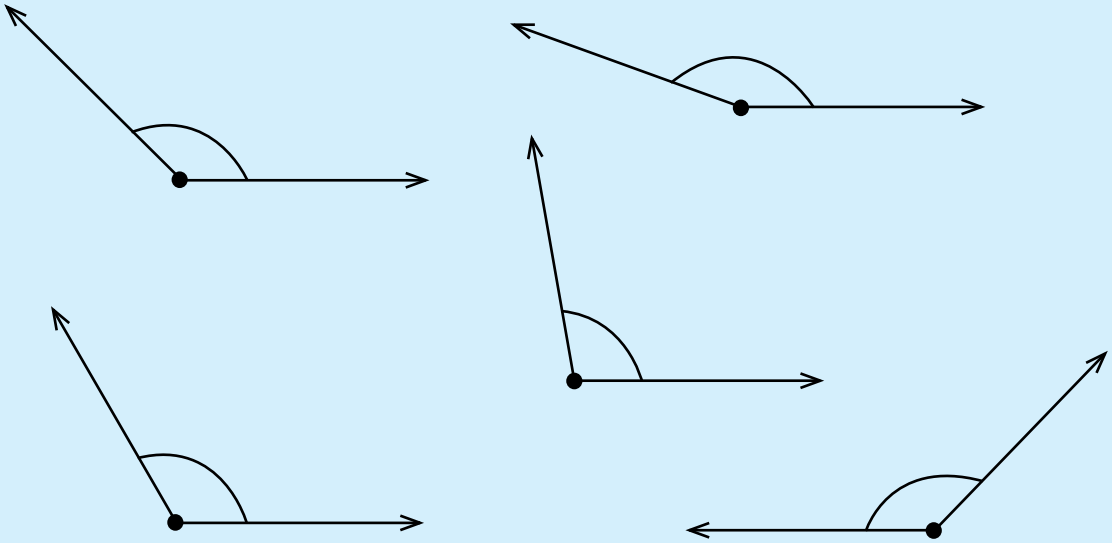
اب طلبہ سے کہیے کہ وہ کمرہ جماعت کا جائزہ لیں اور زاویہ قائمہ تلاش کریں۔

زاویہ قائمہ سے چھوٹے تمام زاویے حادّہ کہلاتے ہیں۔

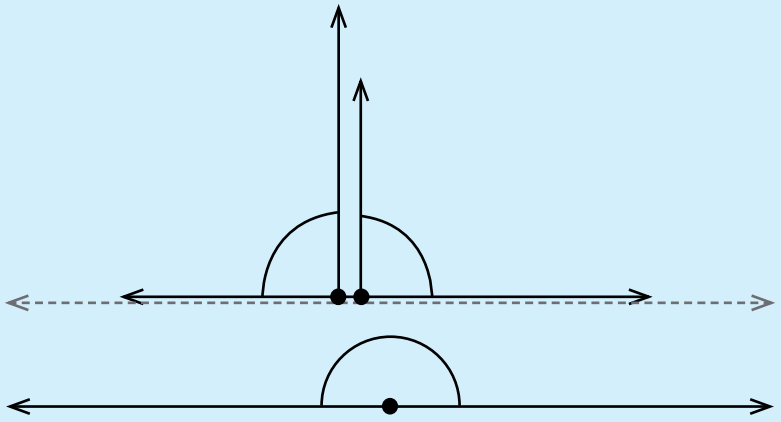


اب طلبہ کو ہدایت کیجیے کہ وہ کمرۂ جماعت کا جائزہ لیں اور حادّہ لیں اور حادّہ زاویے تلاش کریں۔

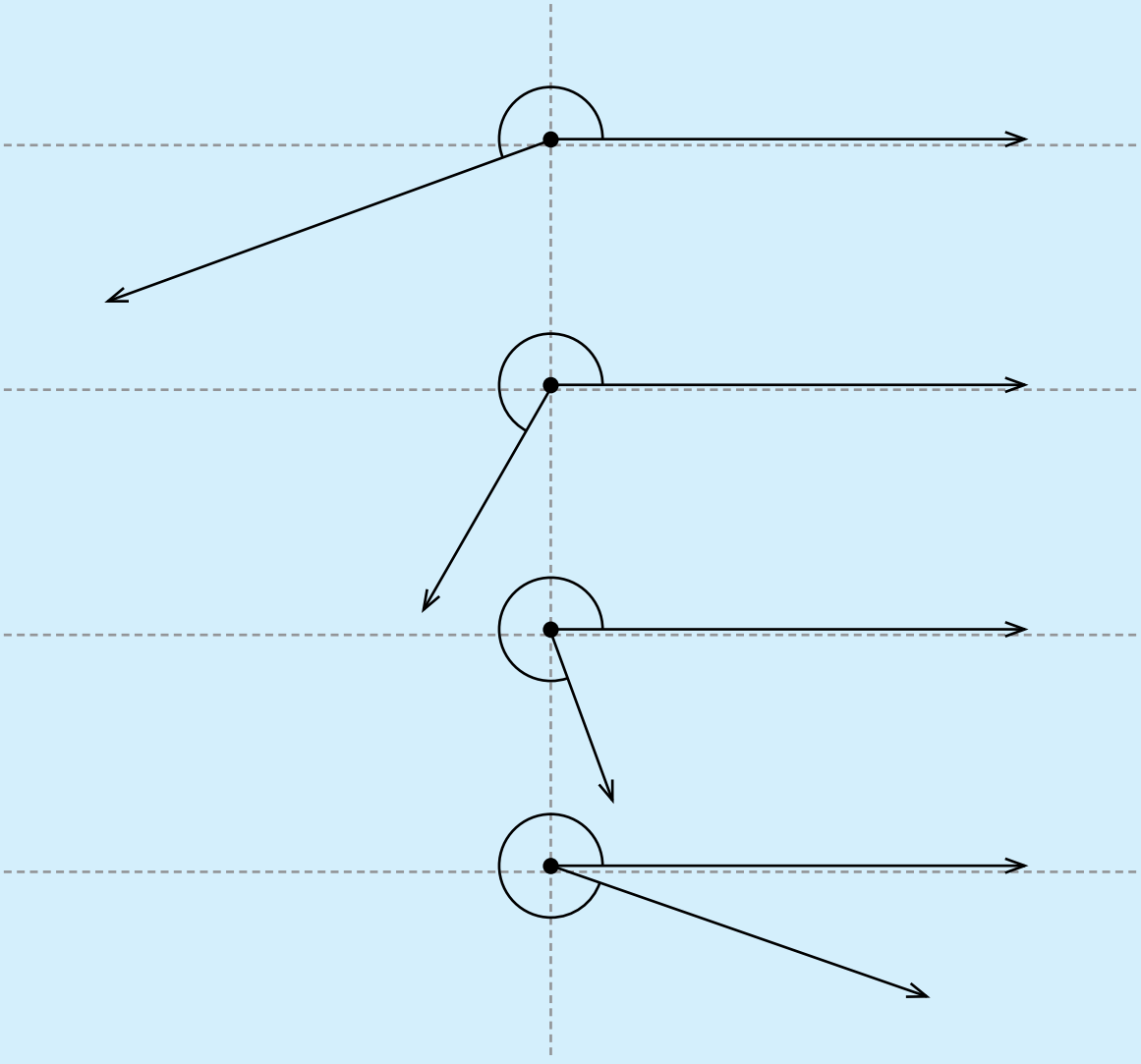
وہ زاویہ جو زاویہ قائمہ سے بڑا اور دو زاویہ قائمہ سے کم ہو زاویہ منفرجہ کہلاتا ہے۔



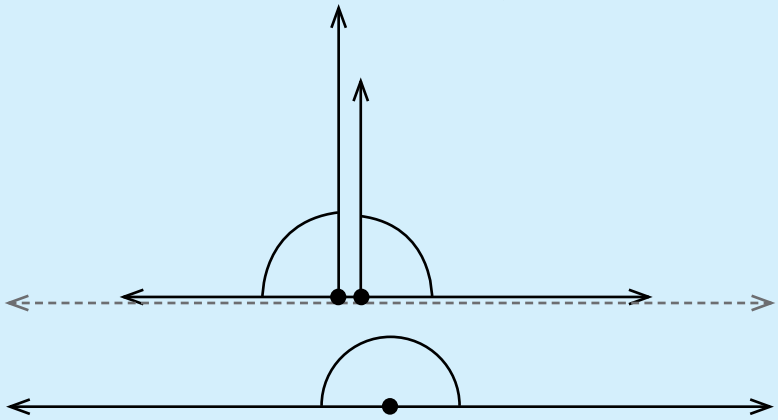
The angles which are exactly equal to two right angles is called **straight angles**.



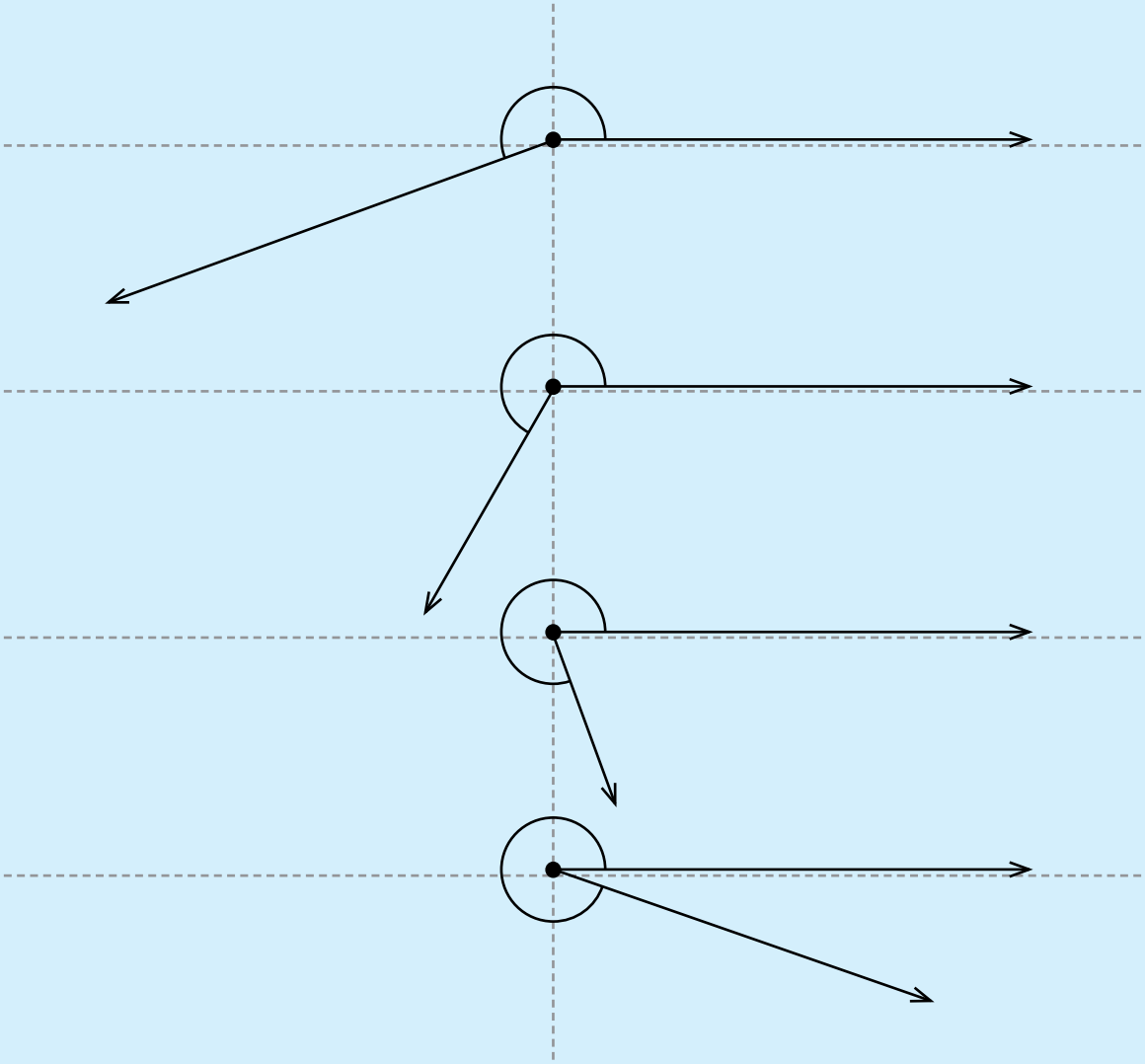
The angles which are more than two right angles, but less than four right angles are called **reflex angles**.



وہ زاویہ جو دو زاویہ قائمہ کے بالکل برابر ہو اسے زاویہ مستقیم کہتے ہیں۔

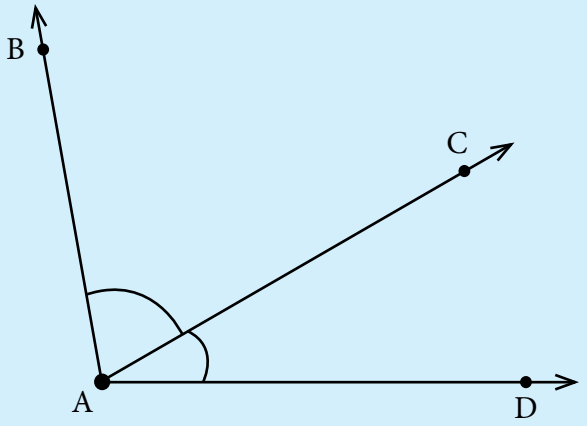


وہ زاویہ جو دو زاویہ قائمہ سے زیادہ اور زاویہ قائمہ سے کم ہو زاویہ انعکاس کہلاتا ہے۔



Two angles formed at the same vertex and have one common arm are called **adjacent angles**.

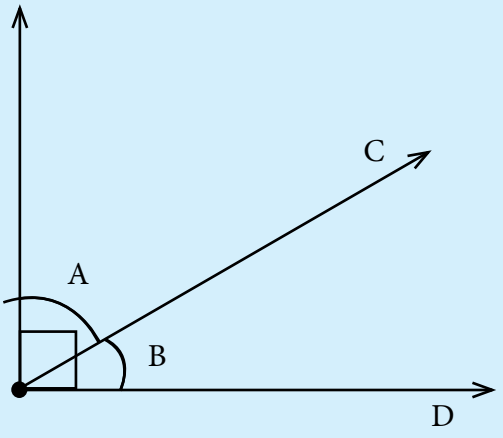
- $\overrightarrow{AB}$, $\overrightarrow{AC}$, and $\overrightarrow{AD}$ have common end point A.
- $\overrightarrow{AC}$ is the common arm of ∠BAC and ∠CAD.
- ∠BAC and ∠CAD are **adjacent angles**




If two adjacent angles together form a right angle, they are called **complementary angles**.

∠A and ∠B are complementary angles.

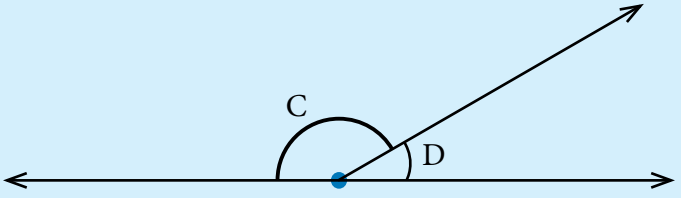
∠A + ∠B = 90^o




If two adjacent angles together form a straight angle, they are called Supplementary Angles.

∠C and ∠D are **supplementary angles**.

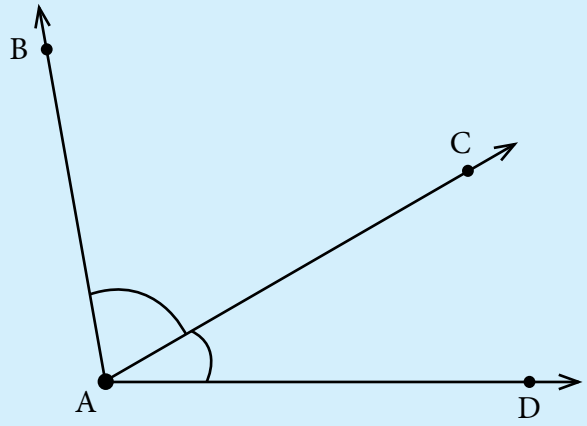
∠A + ∠B = 180^o




**Rationale:** Elaborate examples 1 and 2 given on page 64.

**Classwork:** Complete Exercise A.

ایک راس (vertex) پر بننے والے دو زاویے ایک مشترکہ بازو (common arm) ملحقہ زاویے (adjacent angles) کہلاتے ہیں۔

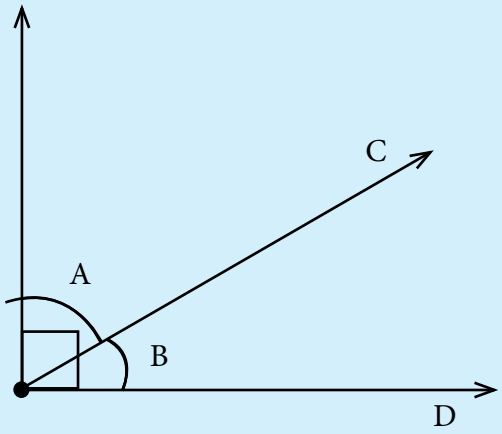



$\overrightarrow{AB}$، $\overrightarrow{AC}$ اور $\overrightarrow{AD}$ میں A مشترکہ اختتامی نقطہ ہے۔

زاویہ ∠BAC اور ∠CAD کا مشترکہ بازو $\overrightarrow{AC}$ (Common arm) ہے۔

∠BAC اور ∠CAD ملحقہ زاویے ہیں۔

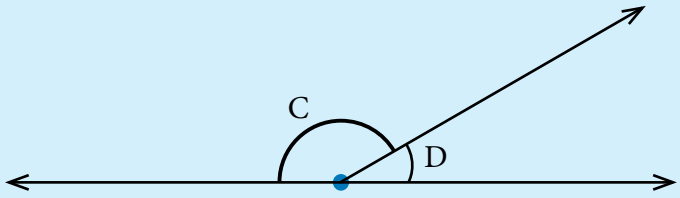
اگر دو ملحقہ زاویے مل کر ایک قائمہ زاویہ بنائیں تو یہ تکمیل زاویے (Complementary angles) کہلاتے ہیں۔




∠A اور ∠B تکمیلی زاویے (Complementary angles) ہیں۔

$\angle A + \angle B = 90^\circ$

اگر دو ملحقہ زاویے مل کر ایک مستقیم زاویہ (Straight angle) بناتے ہیں۔




∠D اور ∠C تکمیلی زاویے (Supplementary angles) ہیں۔

$\angle A + \angle B = 180^\circ$

استدلال: صفحہ 64 پر دی گئی مثال 1 اور 2 کی وضاحت کیجیے۔

کلاس ورک: مشق A کو مکمل کیجیے۔

## Competency 2

Pupils will learn to all types of angles using ruler and protractor.

**Rationale:** Use examples 1, 2, 3, and 4 given on pages 66 and 67.

**Classwork:** Complete Exercise B.

## Competency 3

Pupils will learn to identify types of triangles on the basis of their sides and angles.

**Rationale:** Use information given on pages 68 and 69 to elaborate triangle and types of triangles.

**Classwork:** Complete Exercise C.

## Competency 4

Pupils will learn to construct the triangle on the basis of its two sides and included angle or two angles and included side.

**Rationale:** Use information given on page 71 to elaborate the construction of triangles.

**Classwork:** Complete Exercise D.

## Competency 5

Pupils will learn to identify square, rectangle, parallelogram, rhombus, trapezium, and kite among the given quadrilaterals and list their distinguishing properties.

**Rationale:** Use information given about square, rectangle, parallelogram, rhombus, trapezium, and kite on pages 72 and 73 to highlight their properties.

**Classwork:** Complete Q1 of Exercise E.

## Competency 6

Pupils will learn to construct square and rectangle with ruler and protractor.

**Rationale:** Use examples 1 and 2 on pages 73 and 74 to elaborate the construction square and rectangle.

**Classwork:** Complete Q2, Q3, Q4, Q5, and Q6 of Exercise E.

### قابلیت ۲

طلبہ رولر اور پروٹریکٹر یا ڈی کا استعمال کر کے ہر قسم کے زاویے سیکھیں گے۔

استدلال: صفحہ 66 اور 67 پر دی گئی مثالوں 1، 2، 3 اور 4 کو استعمال کریں گے۔

کلاس ورک: مشق B کو مکمل کیجیے۔

### قابلیت ۳

طلبہ مثلث (triangle) کی اقسام کو ان کے اطراف اور زاویوں کی بنیاد پر شناخت کر سکیں گے۔

استدلال: مثلث اور اس کی اقسام کی وضاحت کے لیے صفحہ ۶۷ اور ۶۹ پر دی گئی معلومات کو استعمال کیجیے۔

کلاس ورک: مشق C کو مکمل کیجیے۔

### قابلیت ۴

طلبہ مثلث کو اس کے دو اطراف بہ شمول زاویے یا دو زاویے بہ شمول اطراف کی بنیاد پر بنانا سیکھیں گے۔

استدلال: صفحہ 71 پر دی گئی معلومات کی روشنی میں مثلث (triangles) کو بنانے کی وضاحت کیجیے۔

کلاس ورک: مشق D کو مکمل کیجیے۔

### قابلیت ۵

طلبہ دی گئی چار ضلعی اشکال میں مربع (square)، مستطیل (triangles) متوازی الاضلاع (parallelogram) معین (rhombus) ذو ذئقہ (trapezium) اور پتنگ (kite) کو شناخت کریں گے اور ان کی امتیازی خصوصیات کو لکھیں گے۔

استدلال: مربع، مستطیل، متوازی الاضلاع، معین، ذوذئقہ اور پتنگ کے بارے میں صفحہ 72 اور 73 پر دی گئی معلومات کی روشنی میں ان کی خصوصیات کو اُجاگر (highlight) کیجیے۔

کلاس ورک: مشق E کو مکمل کیجیے۔

### قابلیت ۶

طلبہ مربع اور مستطیل کو ruler اور پروٹریکٹر کی مدد سے بنائیں گے۔

استدلال: صفحہ 73 اور 74 پر دی گئی مثالوں 1 اور 2 کی مدد سے مربع اور مستطیل کو بنانا سکھایئے۔

کلاس ورک: مشق E کے سوالات 2، 3، 4، 5 اور 6 کو مکمل کیجیے۔

## Competency 7

Pupils will learn to recognise reflective symmetry in the given shape and draw line of reflective symmetry in it.

**Rationale:** Use examples 1 on page 75 to elaborate the reflective symmetry and line of reflective symmetry.

**Classwork:** Complete Q1 of Exercise F.

## Competency 8

Pupils will learn to find the order of rotational symmetry for a given shape and mark centre of rotational symmetry on it.

**Rationale:** Use explanation and example 1 on page 76 to elaborate the order of rotational symmetry and centre of rotational symmetry.

**Classwork:** Complete Q2 of Exercise F.

## Competency 9

Pupils will learn to distonguish between faces, edges, vertices, and draw net diagram of cube, cuboid, sphere, pyramid, and cone.

**Rationale:** Share the information given on pages 78 and 79 to elaborate faces, edges, vertices, and net diagram of cube, cuboid, sphere, pyramid, and cone. The best way to teach 3D objects is to show the models of wood, clay, or any material to enable your pupils to visualize the concepts of edges, vertices, and faces of 3D objects. Better wrap up paper around a 3D object to explain net diagram of the shape.

**Classwork:** Complete Exercise G.

### قابلیت ۷

طلبہ دی گئی اشکال میں (reflective symmetry) شناخت کریں گے اور ان کے درمیان خط تشاکل (line of symmetry) کھینچ سکیں گے۔

استدلال: صفحہ 75 پر دی گئی مثال 1 کو استعمال کرتے ہوئے (reflective symmetry) اور line of reflective symmetry کی وضاحت کیجیے۔

کلاس ورک: مشق F کا سوال 1 مکمل کروایئے۔

### قابلیت ۸

طلبہ دی گئی اشکال میں rotational symmetry کی ترتیب کو معلوم کرنا سیکھیں گے اور اس پر rotational symmetry کا مرکز (centre) نشان زد کریں گے۔

استدلال: صفحہ 76 پر دی گئی مثال 1 اور وضاحتی بیان کو استعمال کرتے ہوئے rotational symmetry کی ترتیب اور centre of rotational symmetry کی وضاحت کیجیے۔

کلاس ورک: مشق F کا سوال 2 مکمل کیجیے۔

### قابلیت ۹

طلبہ مکعب cube، cubaid، sphere، pyramid اور cone کے خاکے میں، شکل face، کنارے edges، راس vertices کو پہچان سکیں گے۔

استدلال: صفحہ 78 اور 79 پر دی گئی معلومات کی روشنی میں cube، cubaid، sphere، pyramid اور cone کے خاکوں میں face، edges، vertices کو وضاحت کے ساتھ طلب کو سمجھایئے۔

3D اشیا کو پڑھانے کا بہترین طریقہ یہ ہے کہ ان کے مٹی، لکڑی یا اس جیسے کسی مواد سے تیار کیے گئے نمونے (models) طلبہ کو کمرۂ جماعت میں لاکر دکھائے جائیں تاکہ وہ 3D اشیا کو چھو کر ان کے vertices اور faces کے تصور کو بہتر طور پر سمجھ سکیں۔ 3D شکل کے اصل خاکے کی وضاحت کے لیے اس کے گرد کاغذ لپٹنا بہتر ہے۔

کلاس ورک: مشق C کو مکمل کروایئے۔

# Scheme of Work

## Unit 8: Geometry

## Estimated Number of Periods: 35

| Specific Learning Outcomes | Number of periods |
|---|---|
| • Recognise straight and reflex angle.<br>• Recognise the standard units for measuring angles is 1˚, which is defined as 1/360 of a complete revolution. | 4 |
| • Identify, describe and estimate the size of angles and classify them as acute, right or obtuse.<br>• Compare angles with right angles and recognise that a straight line is equivalent to two right angles. | 4 |
| • Use protractor and ruler to construct:<br>○ a right angle<br>○ a straight angle<br>○ reflex angles of different measures.<br>• Describe adjacent, complementary and supplementary angles. | 5 |
| • Identify and describe triangles with respect to their sides. (isosceles, equilateral, and scalene).<br>• Identify and describe triangles with respect to their angles. (acute-angled triangle, obtuse-angled triangle and right-angled triangles). | 5 |
| • Use protractor and ruler to construct a triangle when<br>○ two angles and their included side is given<br>○ two sides and included angle is given.<br>• Measure the lengths of the remaining sides and angles of the triangle.<br>• Recognise the kinds of quadrilaterals (square, rectangle, parallelogram, rhombus, trapezium, and kite). | 7 |
| • Identify and describe properties of quadrilaterals including square, rectangle, parallelogram, rhombus, trapezium, and kite, and classify those using parallel sides, equal sides and equal angles.<br>• Use protractor and ruler to construct a square and a rectangle when lengths of sides are given | 7 |
| • Identify cubes, cuboids and pyramids from their nets.<br>• Describe and make 3-D objects (cubes, cuboids, cylinder, cone, sphere, pyramids). | 3 |

## Prior Knowledge Assessment

- Students have learned to draw vertical and horizontal lines.

- They know how to measure and name angles using a protractor, based on their sizes (acute, right, obtuse, straight, reflex) and positions (adjacent, complementary, supplementary).
- In this unit, students will:
  - Identify different triangles by their sides and angles.
  - Identify the hypotenuse of a right-angled triangle.
  - Identify and name various types of quadrilaterals.
  - Use compasses and rulers to construct triangles.
- Students are familiar with 3D and 2D shapes from daily life, such as:
  - Sphere (ball)
  - Cube (dice)
  - Cuboid (toothpaste box, lunch box)
  - Cone (ice cream cone)
  - Square (floor tile)
  - Rectangle (windowpane)
  - Circle (round plate)
  - They have a visual idea of these shapes but often confuse their names.
  - At this level, their knowledge of shapes becomes more formal.

## Resources

Suggested manipulatives that can be used to create interest and create a link to the topic.
Make sure you have A4 sheets.

- Pupils bring pictures of household items (e.g., clock, fork, table) with identifiable angles.
- Protractor and a pair of compasses
- Angle flash cards

## Written Assignments

| Exercises | Class Assignment | Home Assignment |
|---|---|---|
| **Exercise A** | Q1 (a - f), Q2 (a - e), Q3 (a - e) | Q2 (f - j), Q3 (f - j) |
| **Exercise B** | Q1, Q2, Q3 (a – h) | Q3 (i, j) |
| **Exercise C** | Q1 (d, e, f), Q2 (a, b, c) | Q1 (a, b, c), Q2 ( d – f) |
| **Exercise D** | Q1, Q2, Q3, | Q4 |
| **Exercise E** | Q1, 3, Q4, Q5, | Q2, Q6 |
| **Exercise F** | Q1 (a - f), Q2 (a, b, c. d) | Q1 (g, h, i), Q2 (e, f) |
| **Exercise G** | Q1, Q3 | Q2 |

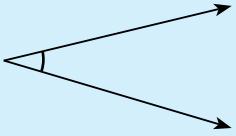
## Evaluation

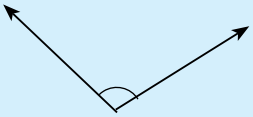
Ways to evaluate teaching and students learning.

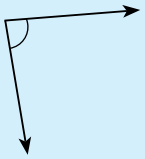
- Oral assessment
- Written assessment.
- Teacher's assessment
- Peer assessment
- Personal assessment

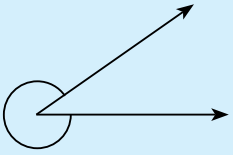
# Review Exercise

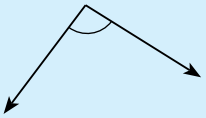
1. Identify the following as Acute, obtuse, and right angles.

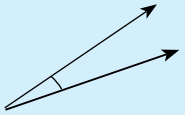
a. 

b. 

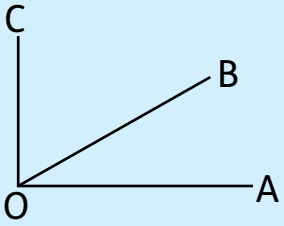
c. 

d. 

e. 

f. 

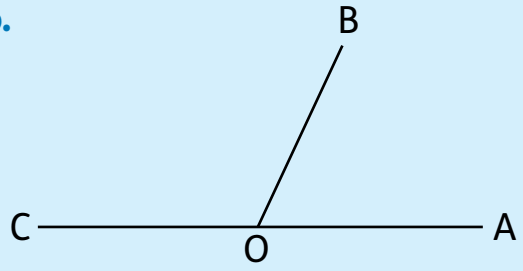
2. a.




∠AOB + ∠BOC = _____

∠AOB and ∠BOC are _____ angles.

b.




∠ AOB +∠ BOC = 180°

∠ AOB and ∠ BOC are _____ angles.

3. Draw the following angles.

a. 65° b. 90° c. 120° d. 180° e. 175° f. 280°

4. Identify which of the following shows angles at a point.

figure 1

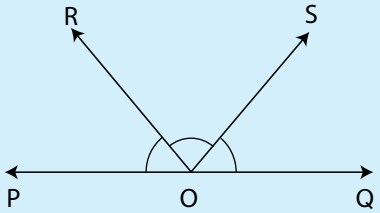
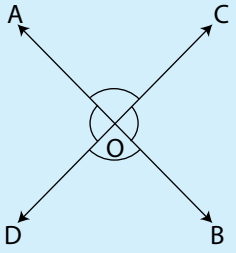
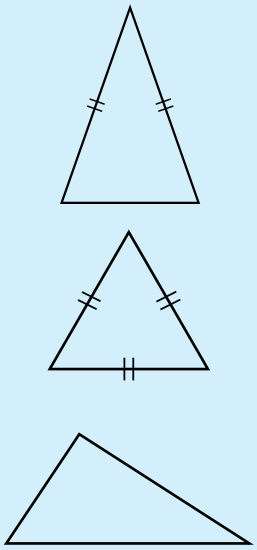



figure 2



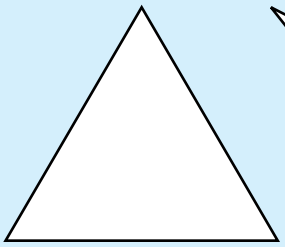
**5.** Match the triangles with their correct names and describe them.



| Triangle name | Description with respect to sides |
|---|---|
| Scalene | |
| Isosceles | |
| Equilateral | |

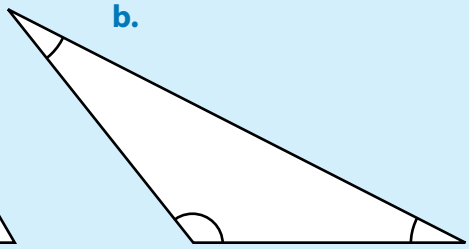
**6.** Identify the triangles with respect to their angles.

**a.**



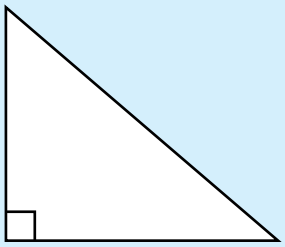
_____

**b.**



_____

**c.**



_____

**7.** Construct the given triangles using protractor and ruler.

**a.** ΔPQR, where
mPQ = 4.5 cm
m ∠P = 70°
m ∠Q = 35°

**b.** ΔKLM, where
m KL = 4.5 cm
m LM = 4 cm
m ∠ L = 53°

**c.** Δ ABC, where
m ∠ B = 67°
m AB = 5.5 cm
m BC = 3 cm

**8.** Write the name and draw with the correct quadrilateral.

| | | Name | Shape |
|---|---|---|---|
| a. | I have four right angles and all my sides are equal. | | |
| b. | I am a quadrilateral having only one pair of parallel lines. | | |
| c. | I am a quadrilateral with opposite sides equal and parallel. My opposite angles are equal but not 90°. | | |
| d. | I am a quadrilateral. My two pairs of adjacent sides are equal. None of my angle is 90°. | | |

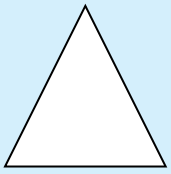
**9.** Use protractor and ruler to construct squares with the given lengths.

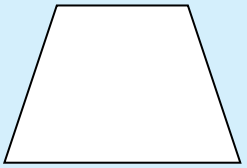
**a.** 3cm **b.** 4.7 cm **c.** 5cm **d.** 2.8 cm

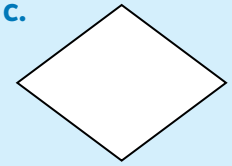
**10.** Use protractor and ruler to construct squares with the given lengths.

**a.** Length = 5 cm, Breadth = 3 cm **b.** Length = 4.5 cm, Breadth = 2.5 cm

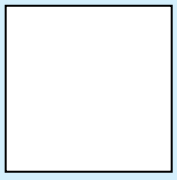
**11.** Draw all possible lines of symmetry in the following shapes.

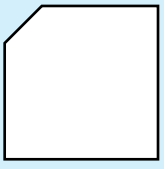
**a.** 

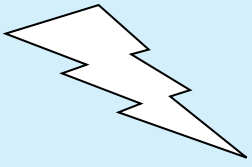
**b.** 

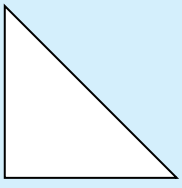
**c.** 

**d.** 

**e.** 

**f.** 

**g.** 

**h.** 

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# Answer Key

1. **a.** acute **b.** obtuse **c.** Acute **d.** Reflex **e.** Obtuse **f.** Acute
2. **a.** 90° , complementary angles **b.** Supplementary angles
4. ∠POR, ∠ROS, and ∠SOQ; ∠AOC, ∠COB, ∠BOD, and ∠AOD
5. Scalene: two sides of the triangle are equal.

   Isosceles: no sides of the triangle are equal.

   Equilateral: All three sides of the triangle are equal.
6. **a.** Acute angled triangle

   **b.** Obtuse angled triangle

   **c.** Right angled triangle
8. **a.** Square **b.** Trapezium

   **c.** Parallelogram **d.** Kite

Unit 9

# Perimeter and Area

## Bilingual Concept Builder Notes

### Competency 1

Pupils will learn to find the length of the missing sides in a rectangle or square and will calculate its perimeter. They will apply the skill of finding perimeter to real-life situations.

**Rationale:** Share the information given on pages 85 and 86 to elaborate the method to calculate the perimeter of a rectangle and a square.

**Classwork:** Complete Exercise A.

### Competency 2

Pupils will learn to find the area of a rectangle or a square and will apply the skill of calculating area to real-life situations.

**Rationale:** Share the information given on pages 88 and 89 to elaborate the method to calculate the area of a rectangle and a square.

**Classwork:** Complete Exercise B.

**قابلیت ۱**

طلبہ مستطیل یا مربع کے گم شدہ یا نامعلوم اطراف کی لمبائی کو معلوم کریں گے اور اس کے کل احاطہ کا حساب لگائیں گے۔ اس مہارت کا اطلاق کرتے ہوئے وہ حقیقی زندگی میں ایسے مسائل کو حل کر سکیں گے۔

استدلال: طلبہ کے ساتھ صفحہ 85 اور 86 پر دی گئی معلومات کو share کرتے ہوئے انھیں کسی مستطیل اور مربع کے احاطے کو معلوم کرنے کا طریقہ وضاحت سے سمجھایئے۔

کلاس ورک: مشق A کو مکمل کیجیے۔

**قابلیت ۲**

طلبہ کسی مستطیل یا مربع کا رقبہ معلوم کرنا سیکھیں گے اور اس مہارت کو اپنی زندگی میں ایسے مسئلے کے حل کے لیے استعمال کریں گے۔

استدلال: کسی مربع یا مستطیل کے رقبے کو معلوم کرنے کے طریقہ کار کی وضاحت کے لیے صفحہ 88 اور 89 پر دی گئی معلومات کو استعمال کیجیے۔

کلاس ورک: مشق A کو مکمل کیجیے۔

# Scheme of Work

## Unit 9: Perimeter and Area

## Estimated Number of Periods: 14

| Specific Learning Outcomes | Number of periods |
|---|---|
| • Differentiate between perimeter and area of a square and rectangular region.<br>• Identify the units for measurement of perimeter and area. | 7 |
| • Find and apply formulas to find perimeter and area of a square and rectangular region.<br>• Solve real-life situations involving perimeter and area of square and rectangular regions. | 7 |

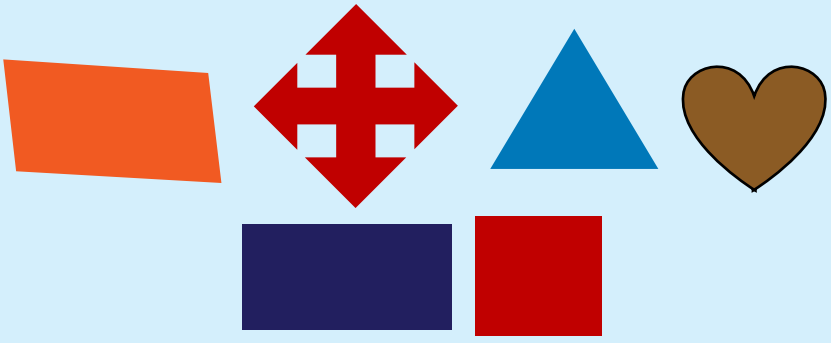
## Prior Knowledge Assessment

- Students have learned to find the perimeter and area of 2-D shapes on a square grid.
- They know the units used for area and perimeter.
- Now, they will learn to find the area and perimeter of squares and rectangles in real-life situations.

## Resources

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

- A4 Sheets
- Tracing paper
- Paper Plates



## Written Assignments

| Exercises | Class Assignment | Home Assignment |
|---|---|---|
| **Exercise A** | Q1 (a, b, c, d), Q2 (a, b, c, d), Q3 (a, b, c, d), Q4, Q5, Q7, Q8 | Q1 (e, f), Q2 (e, f), Q3 (e, f), Q6 |
| **Exercise B** | Q1 (), Q2 (), Q3, Q5, Q6, Q7 | Q1 (), Q2 (), 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 9 Pg 86

Perimeter of rectangle = 2(l+b)

Perimeter of square = 4 x length of side

1a) Length = 3mm, breadth = 5mm

P = 2(3+5)

P = 2(8)

P = 16mm

b) Length = 10mm, breadth = 7mm

P = 2(10+7)

P = 2(17)

P = 34mm

c) Length = 400cm, breadth = 650cm

P = 2(400+650)

P = 2(1050)

P = 2100cm

d) Length = 101cm, breadth = 85cm

P = 2(101+85)

P = 2(186)

P = 372cm

e) Length = 55m, breadth = 45m

P = 2(55+45)

P = 2(100)

P = 200m

f) Length = 212m, breadth = 120m

P = 2(212+120)

P = 2(332)

P = 664m

2a) Length = 3mm

P = 4x3

P = 12mm

b) Length = 12mm

P = 4x12

P = 48mm

c) Length = 50cm

P = 4x50

P = 200cm

d) Length = 13cm

P = 4x13

P = 52cm

e) Length = 46m

P = 4x46

P = 184m

f) Length = 70m

P = 4x70

P = 280m

## Real Life Number Stories

Pg 88

4) Length = 10m, width = 8m

$P = 2(10+8)$

$P = 2(18)$

$P = 36\,m$

5) Length = 95cm, width = 75cm

$P = 2(95+75)$

$P = 2(170)$

$P = 340\,cm$

6) Length = 50m

$P = 4 \times 50$

$P = 200\,m$

7) length = 180m, width = 40m

$P = 2(180+40)$

$P = 2(220)$

$P = 440\,m$

8) Length = 300cm, width = 400cm

$P = 2(300+400)$

$P = 2(700)$

$P = 1400\,cm$

$1m = 100cm$

$1400cm = \frac{1400}{100} = 14m$

Cost of fencing = Rs 150 per metre

$= 150 \times 14m$

$= Rs\ 2100$

## EXERCISE B

Pg 89

Area of rectangle = $l \times b$

Area of square = $l \times l$

1a) Length = 7mm, breadth = 8mm

$A = 7 \times 8$

$A = 56\ mm^2$

b) Length = 120mm, breadth = 180mm

$A = 120 \times 180$

$A = 21600\ mm^2$

c) Length = 25cm, breadth = 15cm

$A = 25 \times 15$

$A = 375\ cm^2$

d) Length = 111cm, breadth = 90cm

$A = 111 \times 90$

$A = 9990\ cm^2$

e) Length = 267m, breadth = 150m

$A = 267 \times 150$

$A = 40050\ m^2$

f) Length = 333m, breadth = 111m

$A = 333 \times 111$

$A = 36963\ m^2$

2a) Length = 5mm

$A = 5 \times 5$

$A = 25\ mm^2$

b) Length = 20mm

$A = 20 \times 20$

$A = 400\ mm^2$

c) Length = 53cm

$A = 53 \times 53$

$A = 2809\ cm^2$

d) Length = 69cm

$A = 69 \times 69$

$A = 4761\ cm^2$

e) Length = 158m

$A = 158 \times 158$

$A = 24964\ m^2$

f) Length = 365m

$A = 365 \times 365$

$A = 133225\ m^2$

## Real Life Number Stories

Pg 90

4) Length = 590 cm

$A = 590 \times 590$

$A = 348100\ cm^2$

5) Length = 60 cm

$A = 60 \times 60$

$A = 3600\ cm^2$

6) Length = 29 cm, width = 21 cm

$A = 29 \times 21$

$A = 609\ cm^2$

7) Length = 15 m, width = 16 m

$A = 15 \times 16$

$A = 240\ m^2$

8) Length = 3.5 m, width = 5 m

$A = 3.5 \times 5$

$A = 17.5\ m^2$

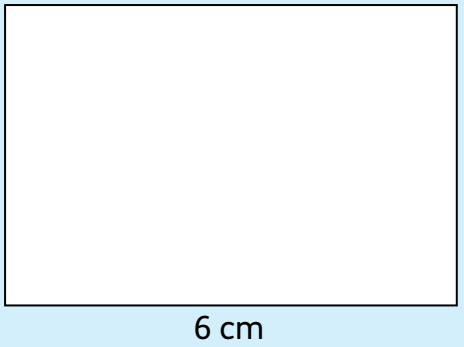
Cost of painting the wall = $240 \times 75$

= Rs 18000

# Review Exercise

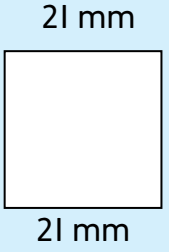
**1.** Find the perimeter and area of the following.

**a.**

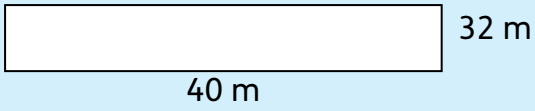



**b.**

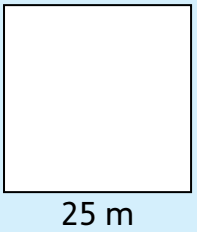

**c.**



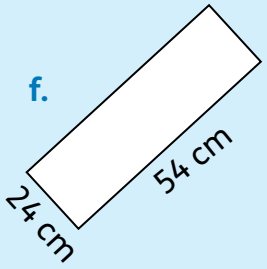

**d.**




**e.**




**f.**




**2.** Solve the following real-life number stories.

**a.** The breadth of a rectangular lawn is 10 m and its length is 15 m. Find the perimeter of the lawn.

**b.** The floor of a warehouse is 60 m long and 40 m wide. Find the cost of polishing the floor if polishing costs Rs 80 per square metre.

**c.** A field is 250 m long and 160 m wide. If it costs Rs 45 per square metre to lay Korean grass on the field, find the total cost for the entire field.

**d.** The sides of a triangular park are 70 m, 50 m, and 90 m long. A brick wall surrounds it. Find the length of the wall.

**e.** The height of a wall is 6 m and its length is 4 m. Find the cost of painting if labour charges are Rs 200 per square metre.

**f.** Find the perimeter of a book whose length is 8 cm and breadth is 4 cm.

**g.** Find the area of a playground whose length is 60 m and breadth is 27 m.

**h.** Find the area of a door whose height is 1.8 m and breadth is 1.3 m.

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# Answer Key

**1.** **a.** 20 cm **b.** 24 mm **c.** 84 mm **d.** 144 m **e.** 100 m **f.** 156 m

**2.** **a.** 50 m **b.** Rs 16000 **c.** Rs 1,800,000 **d.** 210 m

**e.** Rs 4800 **f.** 24 cm **g.** 420 $m^2$ **h.** 2.34 $m^2$

Unit 10

# Data Handling

## Bilingual Concept Builder Notes

### Competency 1

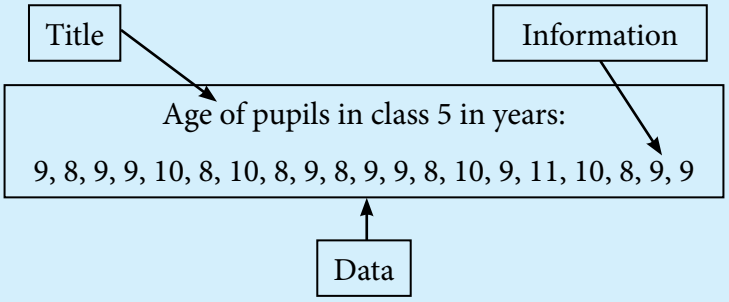
Pupils will learn to calculate the average (mean) of the given data and apply the same skill on real-life problems.

**Stimulus:** Pupils have learnt the topic 'Data Handling' in previous class as well, but the word 'data' has not been elaborated so far.

Datum (singular): one bit of information

Data (plural): a set of information

Ask every pupil in your class to tell his age in years. Jot down all the numbers on the board as (Assumed there are 20 pupils present in the class)




'Data is composed of information as well as a title to it.'

Now ask your pupils, what is that single number of years which could be considered the age of every pupil in the class? Without refusing any answer, just ask; how did you get it? Answers could be

- 8 years as it is the smallest.
- 9 years as it repeated the most.
- 11 years as it is the highest. etc. etc.

The representative value of a data which could stand for every entry in the data is called the **average** of the data.

$$\text{Average} = \frac{\text{Sum of all entries in the data}}{\text{Number of entries in the data}}$$

Average age of class 5

$$\text{Average age of class 5} = \frac{\text{Sum of all ages in the class}}{\text{Number of pupils in the class}}$$

$$\frac{9 + 8 + 9 + 9 + 10 + 8 + 10 + 8 + 9 + 9 + 8 + 10 + 9 + 11 + 10 + 8 + 9 + 9}{20}$$

# معلومات اخذ کرنا

**قابلیت ا**

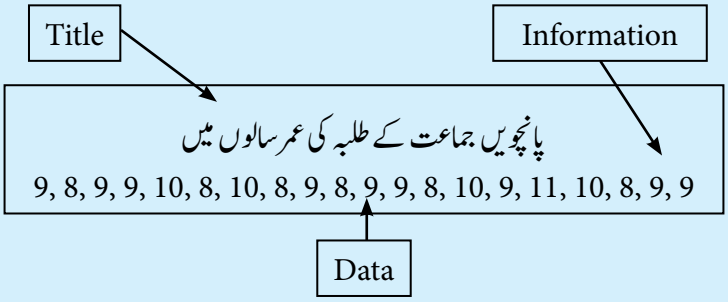
طلبہ دیے گئے ڈیٹا (معلومات) کی اوسط معلوم کرنا سیکھیں گے۔ اور اس مہارت کا اطلاق کرتے ہوئے اپنی حقیقی زندگی سے جڑے عبارتی سوالوں کو حل کرسکیں گے۔

محرک: طلبہ نے اس موضوع کو پچھلی جماعتوں میں پڑھا ہے لیکن لفظ 'date' کی اب تک وضاحت نہیں کی گئی ہے۔

ڈیٹم (Datum) (واحد): ون بائٹ یعنی تھوڑی سی معلومات

ڈیٹا (Data) (جمع): معلومات کا مجموعہ

کمرۂ جماعت میں موجود ہر طالب علم سے اس کی عمر (سالوں میں) پوچھیے اور بلیک بورڈ پر ترتیب سے لکھتے جایئے۔ فرض کیجیے ۲۰ طلبہ کمرۂ جماعت میں بیٹھے ہیں۔




ڈیٹا معلومات کے ساتھ ساتھ اس کے عنوان میں شامل ہوتا ہے۔

اب طلبہ سے پوچھیے کہ کیا وہ بتا سکتے ہیں کہ سالوں میں وہ واحد عدد کیا ہے جو جماعت کے جو ہر طالب کی عمر کو ظاہر کر سکے۔

طلبہ کی جانب سے ملنے والے حوالوں کو رد کیے بغیر پوچھیے کہ آپ نے یہ کیسے معلوم کیا؟ جواب میں کہیں گے۔

- 8 سال کیونکہ یہ سب سے چھوٹا عدد ہے۔
- 9 سال کیونکہ یہ عدد سب سے زیادہ مرتبہ آیا ہے۔
- 11 سال کیونکہ یہ عدد سب سے بڑا ہے۔

ڈیٹا کی وہ قدر (value) جو اکثریت کی نمائندگی کرتی ہے اسے ڈیٹا کی اوسط (average) کہا جاتا ہے۔

$$\text{اوسط} = \frac{\text{ڈیٹا میں تمام اندراجات کا مجموعہ}}{\text{ڈیٹا میں اندراجات کی تعداد}}$$

لہٰذا پانچویں جماعت کی اوسط عمر

$$\text{پانچویں جماعت کی اوسط عمر} = \frac{\text{جماعت میں تمام عمروں کا مجموعہ}}{\text{جماعت میں طلبہ کی تعداد}}$$

$$\frac{9+8+9+9+10+8+10+8+9+9+8+10+9+11+10+8+9+9}{20}$$

$$\text{Average age of class 5} = \frac{180}{20} = 9 \text{ years}$$

Elaborate to your pupils the explanations given on page 91 as well.

**Classwork:** Complete Exercise A.

## Competency 2

Pupils will learn to real the given bar graphs and answer the questions following them and draw bar graphs based on the given information.

**Rationale:** Elaborate the examples 1, 2, and 3 given on pages 94, 95, and 96 to your pupils.

**Classwork:** Complete Exercise A.

پانچویں جماعت کی اوسط عمر $= \frac{180}{20} = 9$ سال

صفحہ 91 پر دی گئی وضاحتوں/تشریحات کو طلبہ کے ساتھ share کیجیے۔

کلاس ورک: مشق A کو مکمل کیجیے۔

### قابلیت ۲

طلبہ دیے گئے بار گراف کو سیکھ کر ان سے متعلقہ پوچھے گئے سوالوں کے جواب دیں گے اور دی گئی معلومات کے ہوالے سے بار گراف تیار کریں گے۔

استدلال: صفحہ 94، 95 اور 96 پر دی گئی مثالوں کے ذریعے طلبہ کو وضاحت سے سمجھائیے۔

کلاس ورک: مشق A کو مکمل کیجیے۔

# Scheme of Work

## Unit 10: Data Handling

## Estimated Number of Periods: 24

| Specific Learning Outcomes | Number of periods |
|---|---|
| Find and describe the average of given quantities in the data.<br>Solve real-life situations involving average | 7 |
| Organise the given data using bar graph.<br>Read and interpret a bar graph given in horizontal and vertical form. | 7 |
| Draw horizontal and vertical bar graphs for given data.<br>Solve real-life situations using data presented in bar graphs. | 10 |

## Prior Knowledge Assessment

- Students will build on their existing knowledge of reading and interpreting block and line graphs.
- They will draw block graphs and column graphs in both horizontal and vertical formats.
- Additionally, they will learn to calculate the average of given data.

## Resources

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

- Paper plates
- Grid paper
- Random data
- Coloured pencils

## Written Assignments

| Exercises | Class Assignment | Home Assignment |
|---|---|---|
| **Exercise A** | Q1 (a, b, c, d), Q2 (), Q3, Q5, Q6, Q7 | Q1 (e, f), Q2 (d, e), Q 4 |
| **Exercise B** | Q1, Q2, Q4, Q7 | Q3, Q5, Q6 |

## 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 10 Pg 92

Average = $\frac{\text{Sum of values}}{\text{Number of values}}$ Sum of values = Avg x No. of values

No. of values = $\frac{\text{Avg}}{\text{Sum of values}}$

1a) 3, 7, 5, 1, 4, 6, 2

Average = $\frac{3+7+5+1+4+6+2}{7} = \frac{28^{4}}{7_{1}} = 4$

b) 9, 14, 18, 22, 10

Average = $\frac{9+14+18+22+10}{5} = \frac{73}{5} = 14.6$

c) 0.3, 0.5, 0.8, 1.0

Average = $\frac{0.3+0.5+0.8+1.0}{4} = \frac{2.6}{4} = 0.65$

d) 56, 58, 67, 60, 65, 70, 72

Average = $\frac{56+58+67+60+65+70+72}{7} = \frac{448^{64}}{7_{1}} = 64$

e) 16.4, 30.1, 25.5

Average = $\frac{16.4+30.1+25.5}{3} = \frac{72^{24}}{3_{1}} = 24$

f) 101, 109, 100, 106, 104, 110

Average = $\frac{101+109+100+106+104+110}{6} = \frac{630^{105}}{6_{1}} = 105$

2a) Average = $\frac{250}{4} = 62.5$ b) Average = $\frac{3705}{15} = 247$

c) Sum of values = $187.9 \times 10 = 1879$ d) Sum of values = $64.8 \times 7 = 453.6$

e) No. of values = $\frac{4290}{715} = 6$

## Real Life Number Stories

Pg 92-93

3) Heights of plants = 15.4 cm, 10.7 cm, 12.3 cm, 14 cm, 15.9 cm

$$\text{Avg} = \frac{15.4 + 10.7 + 12.3 + 14 + 15.9}{5} = \frac{68.3}{5} = 13.66 \text{ cm}$$

4) Hours worked Mon-Thurs = 7.5 hours, 6 hours, 9.5 hours, 10, hours

$$\text{Avg} = \frac{7.5 + 6 + 9.5 + 10}{4} = \frac{33}{4} = 8.25$$

5) Avg test scores in all subjects $= \frac{91 + 92 + 89 + 83 + 76 + 85}{6} = \frac{516}{6} = 86$

6) a) Rainfall Day 1 $= \frac{2.5 + 5.0 + 1.8 + 3.7}{4} = \frac{13}{4} = 3.25 \text{ mm}$

b) Rainfall Day 2 $= \frac{2.9 + 4.2 + 3.9 + 2.1}{4} = \frac{13.1}{4} = 3.275 \text{ mm}$

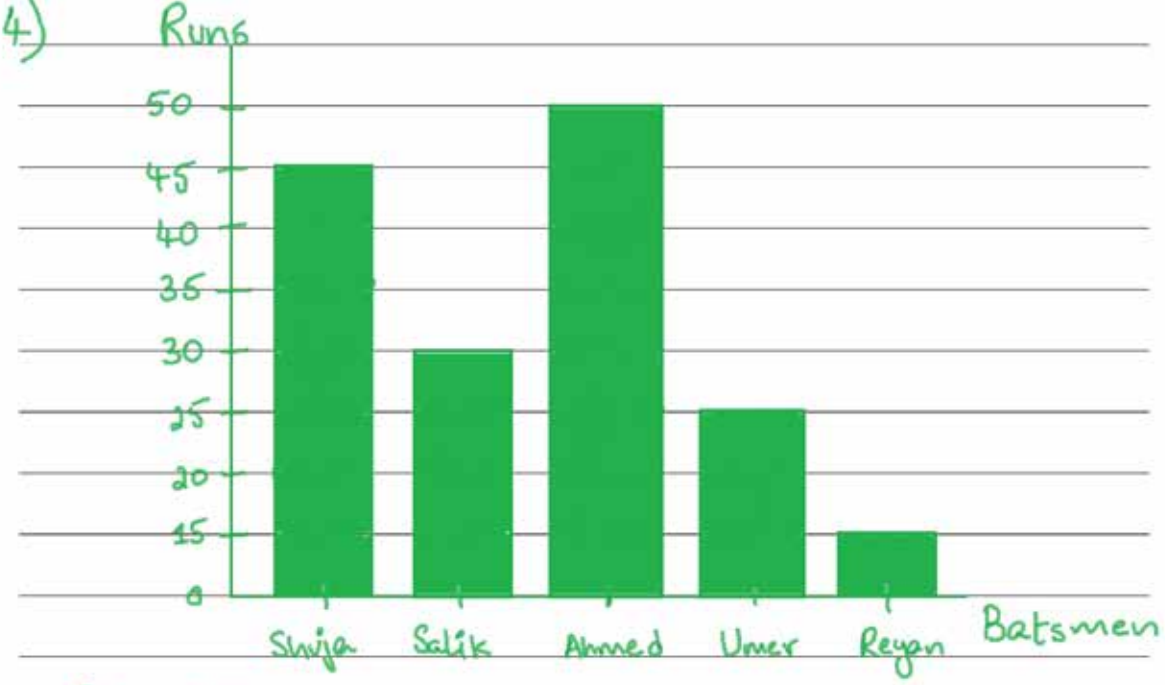
c) Rainfall in Karachi $= \frac{2.5 + 2.9}{2} = \frac{5.4}{2} = 2.7 \text{ mm}$

d) Rainfall in Sukkur $= \frac{1.8 + 3.9}{2} = \frac{5.7}{2} = 2.85 \text{ mm}$

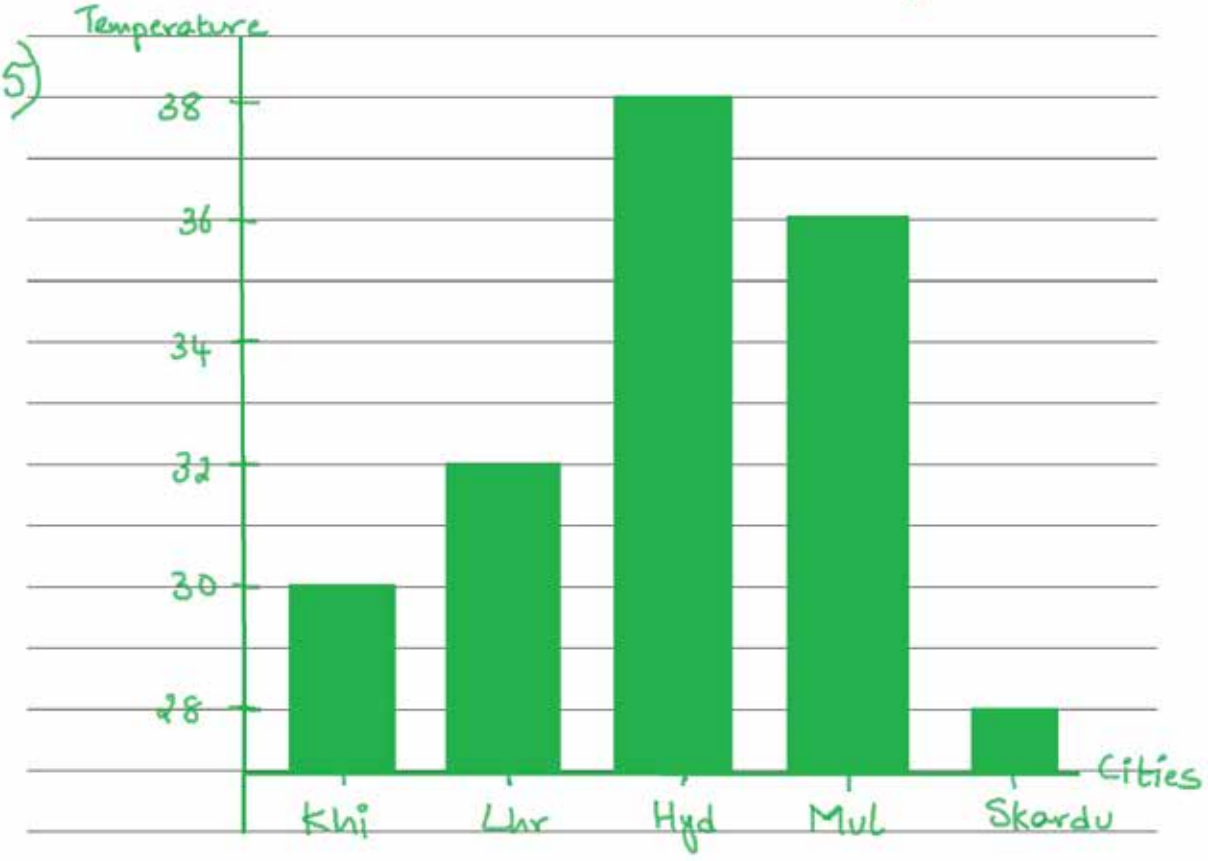
7) Total mass of mangoes $= 336.7 \times 12 = 4040.4 \text{ g}$

EXERCISE B Pg 100

4)

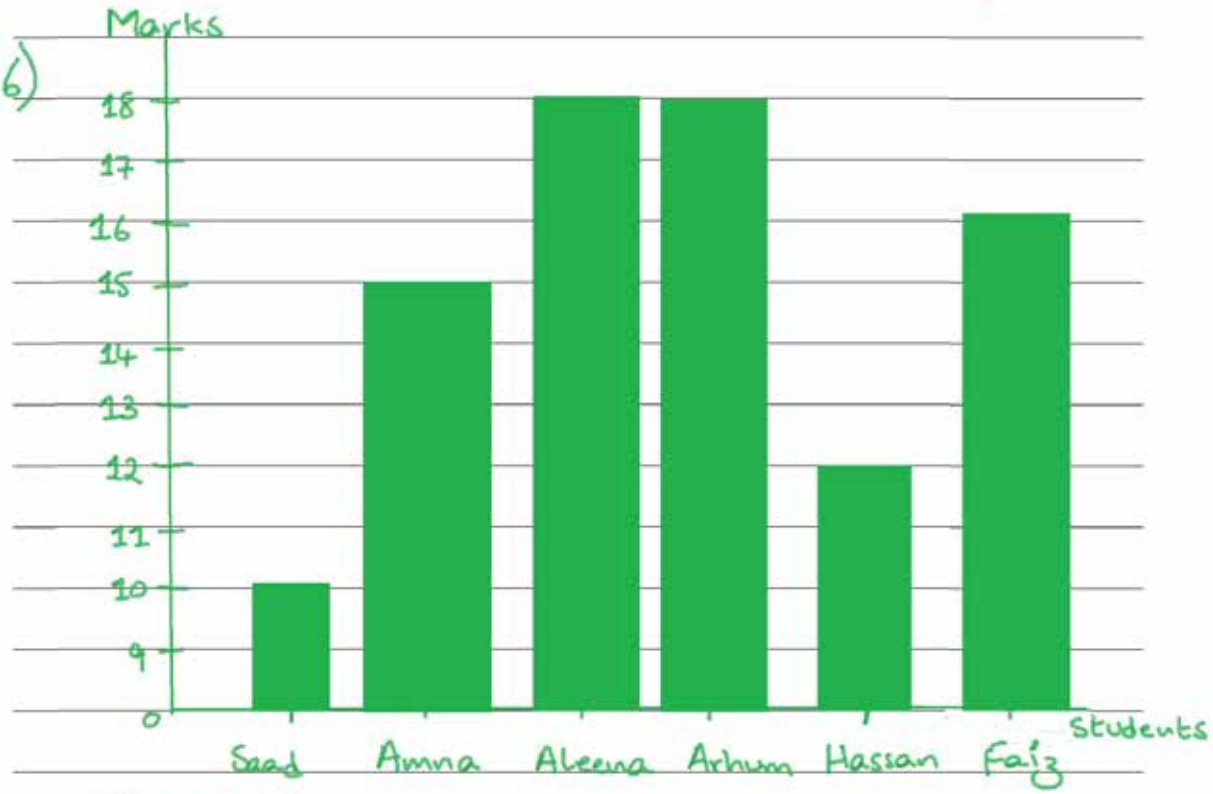



5)

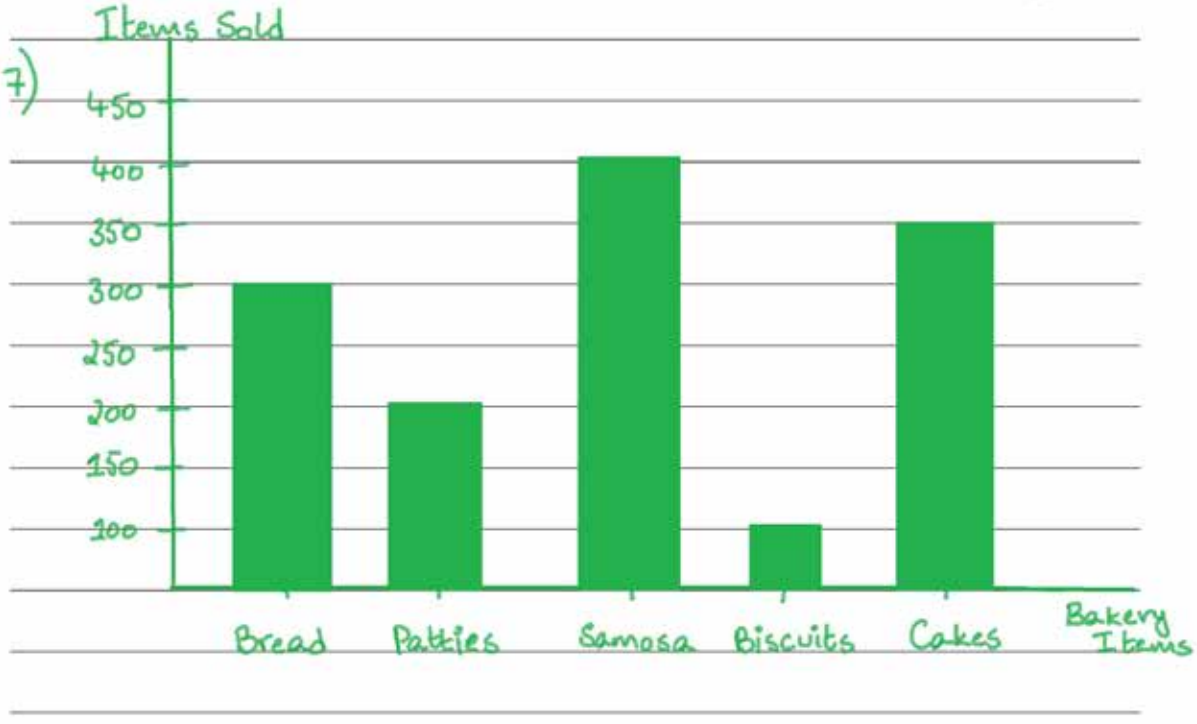


Pg 100

6)


Marks
18
17
16
15
14
13
12
11
10
9
0
Saad
Amna
Aleena
Arhum
Hassan
Faiz
Students

7)


Items Sold
450
400
350
300
250
200
150
100
Bread
Patties
Samosa
Biscuits
Cakes
Bakery Items

# Review Exercise

**1.** Find the average of the following set of numbers:

**a.** 54 kg, 52 kg, 39 kg, 44 kg, 36 kg

**b.** 92, 74, 68, 22, 58, 16

**c.** 1, 2, 3, 4, 5

**d.** the first 5 odd numbers

**2.** Solve the following real-life number stories.

**a.** Find the average mass of the following data.

63 g, 66 g, 68 g, 65 g, 66 g, 68 g, 67 g, 70 g, 66 g, and 69 g.

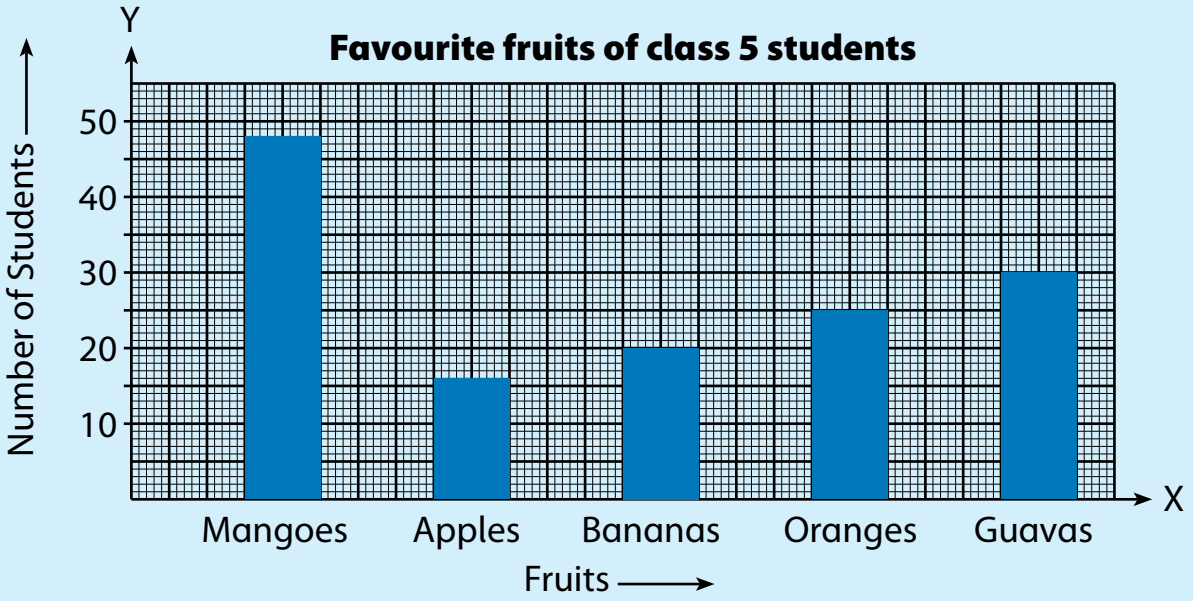
**b.** A bus travelled from a city to another city in 6 hours. In the 1st hour, it travelled 43 km; in the 2nd hour, 46 km; in the 3rd, 35 km; in the 4th, 40 km; in the 5th, 40 km; and in the 6th hour, 36 km. Find the average distance covered by the bus.

**c.** Following are the lengths of 5 pieces of ribbon.

11 cm, 14 cm, 15 cm, 15 cm, 20 cm

What is the average length?

**3.** Following is the graph of a survey of favourite fruits of class 5 students. Study the graph carefully and answer the questions.



**a.** How many students like Mangoes? _____

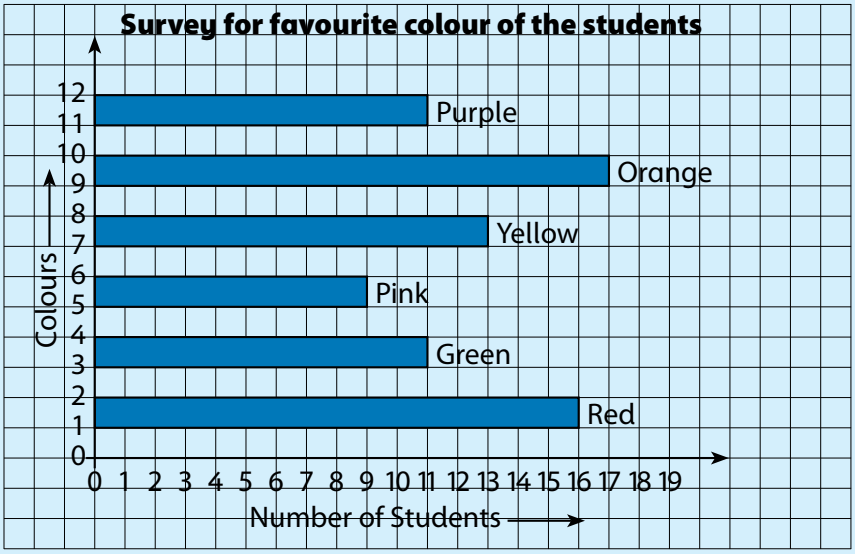
**b.** Is the number of students liking apples is more than the students liking Oranges? _____

**c.** Which one is the most favourite fruit? _____

**d.** What is the total number of students who like Guavas and Bananas? _____

**e.** How many students participated in the survey? _____

**4.** Study the graph carefully and answer the questions.




**a.** Which colour is liked the most? _____

**b.** How many students like orange colour? _____

**c.** What is the total number of students who liked orange, yellow, and pink? _____

**d.** Do the most of the students liked purple colour? _____
How many are they? _____

**e.** Which two colours are liked by equal number of students? _____
What is the total numbers of these students? _____

**f.** Write the total number of students who took part in the survey. _____

**5.** The number of bed-sheets manufactured by a factory during five consecutive weeks is given

| Weeks | First | Second | Third | Fourth | Fifth | Sixth |
|---|---|---|---|---|---|---|
| Number of bedsheets | 500 | 400 | 620 | 600 | 400 | 630 |

Draw a vertical bar graph representing the above data.

**6.** The number of absentees in all the sections of class V was recorded in a week. Represent this data on a horizontal bar graph.

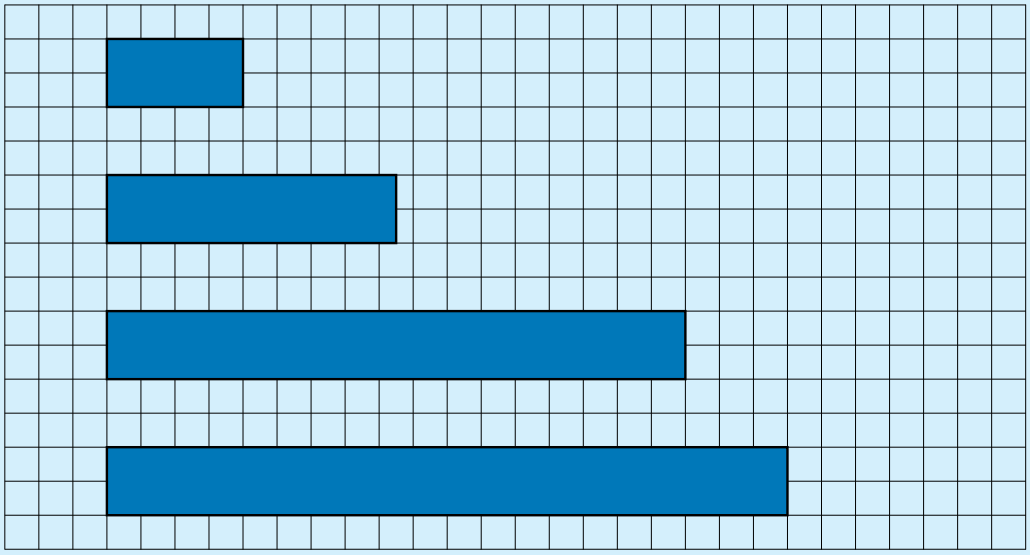
| Days | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| Number of absentees | 36 | 45 | 48 | 24 | 38 |

**a.** On which day the maximum and minimum students were absent?

**b.** How many students were absent on Wednesday and Friday?

**7.** Below shown a horizontal bar graph representing the data of animals in a zoo. Complete the graph by writing the title, mentioning the X-axis and Y- axis. Also write the category on Y-axis and division of numbers on X-axis.

| **Animals** | Zebra | Lion | Deer | Leopard |
|---|---|---|---|---|
| **Number** | 17 | 4 | 20 | 8 |



**8.** Fill in the blanks.

**a.** In a bar graph the _____ of each bar is same.

**b.** Bar graphs can be drawn horizontally and _____

**c.** On a graph paper vertical line is marked as _____

**d.** On a graph paper horizontal line is marked as _____

**e.** In a vertical bar graph X-axis is taken for _____ of the data.

**f.** In a horizontal bar graph X-axis is taken to label the _____ of the data.

# Answer Key

1. **a.** 45 kg **b.** 55 **c.** 3 **d.** 5
2. **a.** 66.8 g **b.** 40 km/hr **c.** 15 cm
3. **a.** 48 **b.** No **c.** Mangoes **d.** 50 **e.** 139
4. **a.** orange **b.** 17 students **c.** 39 **d.** no, 11 students
   **e.** purple and green, the total is 22 **f.** 77 students
8. **a.** height
   **b.** vertically
   **c.** Y-axis
   **d.** X-axis
   **e.** group
   **f.** value