# Lesson-12: Measurement



12 Periods (40 minutes each)

Learn Better (Main Course Book), Stay Ahead (Workbook), Book of Holistic Teaching, Book of Project Ideas, CRM signs

Animation, Animated Activities, Dictionary, eBook, Explainer Video, HOTS, I Explain, Mental Maths, Quiz, Infographic, Slideshow, Test Generator

Confirming better
I can find information quickly with technology.

## Curricular Goals and Objectives (NCF)

**To enable the students:**

- to understand and apply concepts of measurement for different units like length, weight and capacity.
- to develop critical thinking skills through the estimation of measurements in everyday contexts.
- to use various measuring tools and technology responsibly for learning and information retrieval.
- to practice converting units within the Metric system and apply these conversions to real-life scenarios.
- to enhance their mathematical problem-solving skills, including addition, subtraction, multiplication and division of measurements.
- to foster collaborative learning through activities that involve real-world applications and peer interaction.

## Methodology

### Period 1

SHOULD DO
05 MIN.

**Teacher:** Good morning students. How are you all today?

**Teacher:** Wonderful. Before we begin today's lesson, let us start with a quick game to refresh our minds. I will ask you a few questions and you have to answer them as quickly as you can. Ready?

**Teacher:** Let us begin.

1. Which device are you currently using for learning? (Answer: Tablet/Computer)
2. What do we use to search for information on the internet? (Answer: Browser/Website)
3. Can you name one technology that helps us with communication? (Answer: Phone/Email)
4. What is the name of the app you use to check the weather? (Answer: Weather App)
5. How do we measure length or distance? (Answer: Using a ruler or tape measure)

**Teacher:** Great responses. You have all done really well. Now, let us dive into our lesson for today.

#### Confirming better


**Teacher:** Look at the 'Confirming better' section on page 136 of your Main Course Book. Can anyone read it aloud for me?

MUST DO
05 MIN.

**Teacher:** Good reading. It says, "I can find information quickly with technology." Can anyone tell me what technology means and how it helps us find information?

**Teacher:** Yes, technology includes devices like computers, tablets and smartphones. Do you think using technology makes it easier to find information compared to other methods like books? Why or why not?

**Teacher:** Great responses. Now, let us look at how we can use these devices to search for information. If I need to know the weather for tomorrow, where do you think, I would go to find that information quickly?

**Teacher:** That is right. We can use websites or apps to check the weather in just a few seconds. Technology allows us to find information much faster than looking through books or newspapers. Can you think of any other ways technology helps you find information quickly?

**Teacher:** Wonderful. Now that we understand how technology helps us, remember, it is important to use it responsibly. We can access information easily and at any time, but we need to make sure we are using reliable sources.

**Teacher:** We will begin a new chapter, Measurement. We are going to use a KWL chart to help us organise our thoughts and learning. I have made a KWL format on the blackboard. Please take out your notebooks and draw the same format in your notebooks.

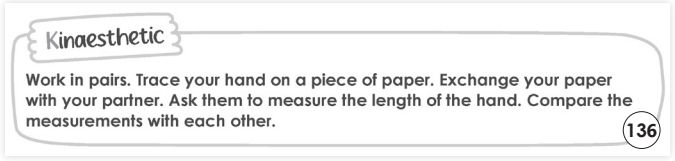
SHOULD DO
10 MIN.

| K | W | L |
|---|---|---|
| | | |

**Teacher:** Take a few minutes to think and write. If you have any questions, feel free to ask.

**Teacher:** Amazing work. We can now move to Re-KAP activities. We will use Kinaesthetic, Auditory and Pictorial activities to make our learning exciting. Let us start with the Kinaesthetic activity.

## Kinaesthetic




**Teacher:** Let us now read and understand the 'Kinaesthetic' activity. Can anyone read it aloud to the class?

MUST DO
10 MIN.

**Teacher:** Excellent reading. Everyone, please take a piece of paper and a pencil. We will be working in pairs for this activity.

**Teacher:** First, trace your hand on the piece of paper. Make sure to trace carefully around the edges of your hand.

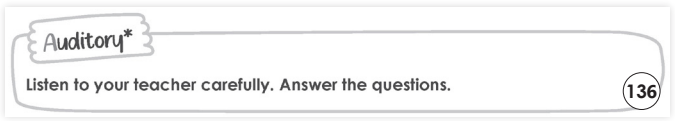
**Teacher:** Once you have traced your hand, exchange your paper with your partner. Now, your partner will measure the length of your traced hand.

**Teacher:** After they have measured it, compare their measurement with yours. Do they match? Why do you think there may be differences in the measurements?

**Teacher:** Great. Now, let us discuss how different measuring tools or techniques might affect the results. Can anyone think of a reason why measuring with a ruler might give a different result from measuring with a string?

**Teacher:** Well done, everyone. This activity helps us understand how to measure accurately and compare different methods of measurement.

## Auditory




**Teacher:** Now, listen to me carefully as I read the questions aloud. Think and answer.

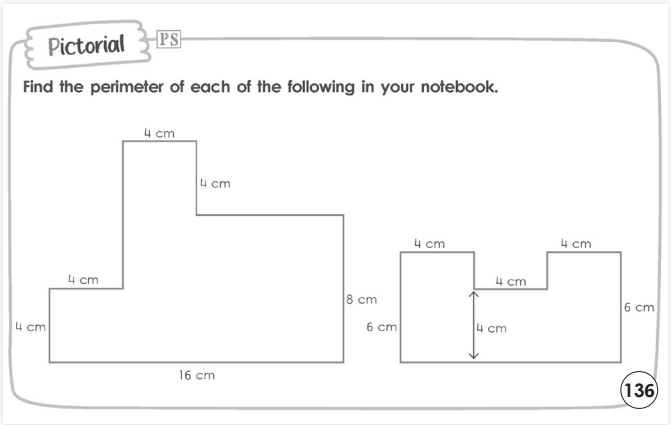
MUST DO
05 MIN.

**Teacher:** "During sports day, Riya ran a distance of 400 m on the track. His friend, Fatima ran 600 m."

1. How far did Riya run?
2. Who ran a longer distance, Riya or Fatima?

**Teacher:** Great effort, everyone, Now, let us explore the pictorial activity.

## Pictorial




**Teacher:** Look at the two shapes given in 'Pictorial' section on page 136. We need to find the perimeter of each shape.

MUST DO
05 MIN.

**Teacher:** To start, let us first recall what the perimeter is. The perimeter is the total length of all the sides of a shape. Can anyone tell me how we can calculate the perimeter of a shape?

**Teacher:** That is right. To find the perimeter, we add up the lengths of all the sides. Now, let us look at the first shape on the left. We can see that it has sides of 4 cm, 4 cm, 4 cm, 16 cm and 8 cm.

**Teacher:** Let us add those numbers together. 4 cm + 4 cm + 4 cm + 16 cm + 8 cm equals...? Can anyone do the calculation for me?

**Teacher:** Well done. The perimeter of the first shape is 36 cm. Now, let us move to the second shape on the right. It has sides of 4 cm, 4 cm, 4 cm, 4 cm, 6 cm and 6 cm.

**Teacher:** Again, let us add those numbers together. 4 cm + 4 cm + 4 cm + 4 cm + 6 cm + 6 cm equals...?

**Teacher:** Fantastic. The perimeter of the second shape is 28 cm. Let us end today's session and give ourselves a big round of applause for the effort.

You may show the **eBook** given on digital platform.

## Differentiated Activities

**110 km/hr**

Design a shape of your own, such as a pentagon or hexagon and calculate the perimeter. Use units of measurement like cm and explain why accurate measurements are important.

**80 km/hr**

Measure the perimeter of different objects in the class, such as books, boxes or tables. Write down the measurements and calculate the perimeter of each item using a ruler.

**40 km/hr**

Use a strip of paper or a string to measure simple shapes like a book or a small box. Mark the measurements on the string and then calculate the perimeter.

## Home Task

Find the perimeter of any rectangular table or a door at home. Use a tape measure or a ruler to measure the length of each side. Then, calculate the perimeter and write it down in your notebook. Ask your parents to help you check the measurements and compare the results.

# Period 2

SHOULD DO

05 MIN.

**Teacher:** Good morning/ afternoon students. How are you all today?

**Teacher:** Wonderful. Before we begin today's lesson, let us start with a quick game. I will ask some questions and you have to answer them quickly. Are you ready?

**Teacher:** Great. Can anyone tell me the difference between centimetres and millimetres?

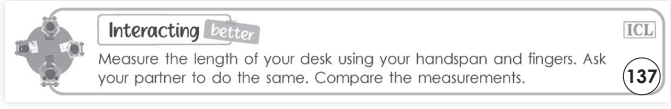
**Teacher:** Correct. Millimetres are smaller than centimetres. One centimetre equals 10 millimetres. Next, which unit would you use to measure the weight of a pencil – grams or kilograms?

**Teacher:** Yes, grams are the right unit. Kilograms are used for heavier objects. What if you wanted to measure the length of a table, which unit would you use – centimetres or metres?

**Teacher:** Well done. We use metres to measure larger lengths. So, where do we use litres?

**Teacher:** That is right. We use litres to measure liquids. You all did a great work. Let us now move on to today's lesson.

## Interacting better




**Teacher:** Look at the 'Interacting better' section on page 137 of your Main Course Book. We will measure the length of the desk in pairs using handspan and fingers. Can someone remind me what a handspan is?

MUST DO

10 MIN.

**Teacher:** Yes, it is the distance from the tip of your thumb to the tip of your little finger when your hand is fully stretched out.

**Teacher:** Now, measure the length of your desk by using your handspan and fingers. Count how many handspans or finger lengths it takes to cover the entire length of the desk.

**Teacher:** Once you have finished, exchange your results with your partner. Ask them to measure the desk in the same way and compare your measurements. Do you get the same result? Why do you think there might be a difference in the measurements?

**Teacher:** Very good. You will notice that different people have different handspans and finger sizes, which is why the measurements might vary. This helps us understand that when we measure something, it is important to use standard units to ensure accuracy. We will learn about the standard unit/ Metric system in today's class.

**Teacher:** Well done, everyone. Let us now read and discuss the story.


**Teacher:** Look at the images and the conversation between Ryan and Sam. They are chatting about the weather and exploring how technology helps them learn.

MUST DO

10 MIN.

**Teacher:** Let us begin with the first part. Ryan asks Sam how she is doing in Chennai. Can anyone tell me what Sam says in response?

**Teacher:** Yes, Sam says, 'I am fine. It has been raining here every day. I have been playing with paper boats in the puddles.' Does anyone know what weather is like in Delhi, according to Ryan?

**Teacher:** That is right. Ryan says, 'It is warm, bright and

sunny in Delhi.' What do you think about the differences in weather between the two places?

**Teacher:** Yes, it is strange how weather can be so different in two places at the same time, right? Let us move on. After this conversation, Ryan calls his father, Appa. What does Ryan ask Appa?

**Teacher:** Ryan asks, 'Appa, can you help me find out why the weather is so different in Chennai?' Does anyone remember how Appa explains this?

**Teacher:** Appa explains that the city where Ryan lives is near the equator, where it receives direct sunlight. However, Chennai is farther from the equator. Do you think this affects the weather?

**Teacher:** Yes, the amount of sunlight and the location near the equator can affect the weather in different places.

**Teacher:** At the end of the story, Appa talks about technology helping us explore and learn new things. What does Ryan want to find out next with the help of technology?

**Teacher:** That is right. Ryan asks, 'Do you know the distance between our city and Chennai?' Technology can help us learn so much and they decide to find out.

**Teacher:** Isn't it amazing how technology makes learning so much easier? What else do you think technology helps us learn?

**Teacher:** Excellent participation. Let us now move on to the next activity.

**Metric System**

METRIC SYSTEM

The metric system is a system of standard units of measurement.

There are three basic units of measurement.

- metre (m) for length*
- gram (g) for weight*
- litre (l) for capacity*

Metric table for length, weight and capacity

| measure | milli- $\frac{1}{1000}$ units | centi- $\frac{1}{100}$ units | deci- $\frac{1}{10}$ units | standard unit | deca- 10 units | hecto- 100 units | kilo- 1000 units |
|---|---|---|---|---|---|---|---|
| length | millimetre (mm) | centimetre (cm) | decimetre (dm) | **metre (m)** | decametre (dam) | hectometre (hm) | kilometre (km) |
| weight | milligram (mg) | centigram (cg) | decigram (dg) | **gram (g)** | decagram (dag) | hectogram (hg) | kilogram (kg) |
| capacity | millilitre (mL) | centilitre (cL) | decilitre (dL) | **litre (L)** | decalitre (daL) | hectolitre (hL) | kilolitre (kL) |

- If we move from right to left, each unit is $\frac{1}{10}$ times the unit on its right.
- If we move from left to right, each unit is 10 times the unit on its left.

For example, 1 decametre = 10 metres

1 hectogram = 10 decagrams

1 decimetre = $\frac{1}{10}$ metres; 1 millilitre = $\frac{1}{10}$ centilitres

138

**Teacher:** Look at the 'Metric system' section given on page 138. It is a system of standard units used for measuring length, weight and capacity. Can anyone tell me the basic units for measuring?

MUST DO

15 MIN.

**Teacher:** That is right. They are – metre (m) for length, gram (g) for weight and litre (l) for capacity.

**Teacher:** Let us take a look at the 'Metric table' for length, weight and capacity. It helps us understand how we measure these units in smaller or larger quantities.

**Teacher:** Can you look at the different prefixes in the first row of the table and tell us how much bigger or smaller a unit is?

**Teacher:** Correct. We have - Milli (1/1000 of the unit), Centi (1/100 of the unit), Deci (1/10 of the unit), Deca (10 times the unit), Hecto (100 times the unit) and Kilo (1000 times the unit).

**Teacher:** The standard units (metre, gram and litre) are in the middle. Can you tell me how these units are related if we move from right to left?

**Teacher:** Exactly. If we move from right to left in the table, each unit is 1/10 times the unit on its right. For example, 1 decimetre (dm) is equal to 10 centimetres (cm) and 1 millimetre (mm) is equal to 1000 millimetres (mm).

**Teacher:** Now, tell me how these units are related if we move from left to right?

**Teacher:** Great observation. If we move from left to right, each unit is 10 times the unit on its left. For example, 1 kilometre (km) is equal to 1000 metres (m) and 1 kilogram (kg) is equal to 1000 grams (g).

(Discuss the table with examples for better understanding of the students.)

**Teacher:** Remember, the Metric system makes it very easy to move between different units of measurement. Do the revision of this table every day at home to remember relation among different units. Let us clap for everyone's effort and end our today's session.

You may show the **Dictionary** given on digital platform.

## Differentiated Activities

**110 km/hr**

Identify five items in the classroom that can be measured using the Metric system (length, weight and capacity). Write down the measurements of each in the appropriate units (metres, grams and litres in whole numbers or up to one decimal place). Share your findings with a partner and discuss how these items are measured in daily life (e.g., measuring the length of a book in centimetres, weighing a pencil in grams).

**80 km/hr**

Choose three objects in the classroom (e.g., a lunch box, a bottle and a notebook). Measure each object using a ruler or measuring tape and write down their measurements in centimetres or millimetres. Pair up with a partner and compare your measurements.

**40 km/hr**

Measure two items in the classroom (e.g., the length of your desk and the width of the blackboard). Write down the measurements using your ruler in centimetres. If you find any differences in measurements, talk about the possible reasons.

## Home Task

Ask your parents to measure the length of something

in your house (e.g., a table, door or bed) using a ruler or measuring tape. Record the measurement in both centimetres and metres. Discuss with your parents how measurements are used in real life (for example, in shopping, cooking or measuring your height). Write about this in your notebook.

## Period 3

SHOULD DO
05 MIN.

**Teacher:** Good morning/ afternoon students. How are you all today?

**Teacher:** Wonderful. Before we begin today's lesson, let us have a quick recap. I will ask some questions and you have to answer them quickly. Are you ready?

**Teacher:** If we move from a bigger unit to a smaller unit, do we multiply or divide?

**Teacher:** That's right. We multiply when moving to a smaller unit. What is the standard unit for measuring length?

**Teacher:** Excellent. It is metre. If we wanted to convert kilometres into metres, what would we do? Would we multiply by 10, 100 or 1,000?

**Teacher:** Perfect. We multiply by 1,000 because there are 1,000 metres in 1 kilometre.

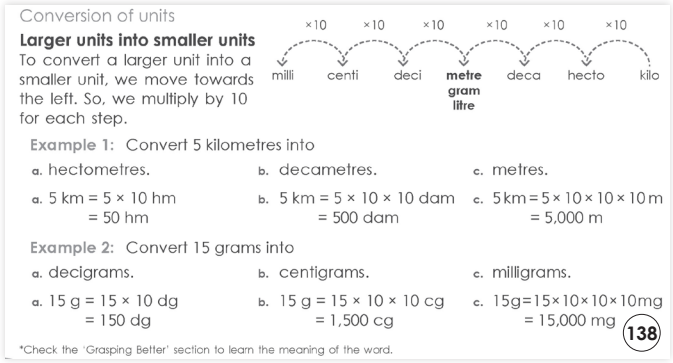
**Teacher:** What is the relationship between millimetres and centimetres? How many millimetres are there in one centimetre?

**Teacher:** Yes, exactly. There are 10 millimetres in 1 centimetre. If we have 5 kilograms, how many grams is it equal to?

**Teacher:** Excellent. 5 kilograms equals 5,000 grams.

**Teacher:** Well done, everyone. Let us move on to today's lesson on converting larger units into smaller units.

### Conversion of units



Conversion of units

**Larger units into smaller units**

To convert a larger unit into a smaller unit, we move towards the left. So, we multiply by 10 for each step.

×10 ×10 ×10 ×10 ×10 ×10

milli centi deci **metre gram litre** deca hecto kilo

**Example 1:** Convert 5 kilometres into

a. hectometres. b. decametres. c. metres.

a. 5 km = 5 × 10 hm = 50 hm

b. 5 km = 5 × 10 × 10 dam = 500 dam

c. 5 km = 5 × 10 × 10 × 10 m = 5,000 m

**Example 2:** Convert 15 grams into

a. decigrams. b. centigrams. c. milligrams.

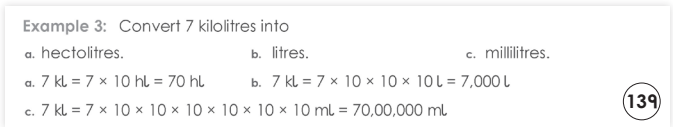
a. 15 g = 15 × 10 dg = 150 dg

b. 15 g = 15 × 10 × 10 cg = 1,500 cg

c. 15g = 15 × 10 × 10 × 10mg = 15,000 mg

138

*Check the 'Grasping Better' section to learn the meaning of the word.



**Example 3:** Convert 7 kilolitres into

a. hectolitres. b. litres. c. millilitres.

a. 7 kL = 7 × 10 hL = 70 hL

b. 7 kL = 7 × 10 × 10 × 10 L = 7,000 L

c. 7 kL = 7 × 10 × 10 × 10 × 10 × 10 × 10 mL = 70,00,000 mL

139

MUST DO
15 MIN.

**Teacher:** Open your Main Course Book and look at the 'Conversion of units' section on page 138.

**Teacher:** We are going to learn how to convert larger units into smaller units. When we convert a larger unit into a smaller unit, we move towards the left in the Metric table and for each step, we multiply by 10.

**Teacher:** Let us look at the Example 1(a). It asks us to convert 5 kilometres into smaller units. Can anyone tell me what happens when we move from kilometres to hectometres?

(Encourage students to refer to the 'Matric table' as/ when required.)

**Teacher:** Correct. We multiply by 10. So, 5 kilometres = 5 × 10 = 50 hectometres (hm). Similarly, 5 kilometres = 5 × 10 × 10 = 500 decametres (dam) and 5 kilometres = 5 × 10 × 10 × 10 = 5,000 metres (m).

**Teacher:** Great job, everyone. Let us look at the Example 2(a). We need to convert 15 grams into smaller units. How do we convert 15 grams into decigrams?

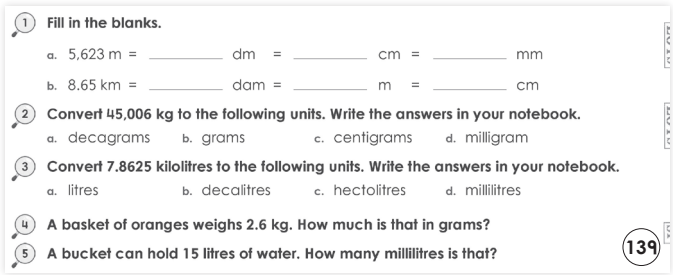
**Teacher:** Correct. We multiply by 10 for each step, so 15 g = 15 × 10 = 150 decigrams (dg). Similarly, 15 g = 15 × 10 × 10 = 1,500 centigrams (cg) and 15 g = 15 × 10 × 10 × 10 = 15,000 milligrams (mg).

**Teacher:** Now, let us look at the Example 3(a). We are converting 7 kilolitres into smaller units. First, how do we convert 7 kilolitres into hectolitres?

**Teacher:** Correct. 7 kL = 7 × 10 = 70 hectolitres (hL). Similarly, 7 kL = 7 × 10 × 10 × 10 = 7,000 litres (L) and 7 kL = 7 × 10 × 10 × 10 × 10 × 10 × 10 = 70,000,000 millilitres (mL).

**Teacher:** Great work, everyone. You all did a fantastic work understanding how to convert larger units into smaller units. Remember, when we move towards the left in the Metric table, we multiply by 10 for each step. Keep practicing and you will get even better.

### Exercise 1, 2, 3, 4 and 5



1. **Fill in the blanks.**
   a. 5,623 m = _____ dm = _____ cm = _____ mm
   b. 8.65 km = _____ dam = _____ m = _____ cm
2. **Convert 45,006 kg to the following units. Write the answers in your notebook.**
   a. decagrams b. grams c. centigrams d. milligram
3. **Convert 7.8625 kilolitres to the following units. Write the answers in your notebook.**
   a. litres b. decalitres c. hectolitres d. millilitres
4. **A basket of oranges weighs 2.6 kg. How much is that in grams?**
5. **A bucket can hold 15 litres of water. How many millilitres is that?**

139

MUST DO
20 MIN.

**Teacher:** Look at the given exercises on page 139. Let us solve them one by one.

**Teacher:** Look at questions in Exercise 1. Convert larger units into smaller units and fill in the blanks. Write the answers in your notebook.

**Teacher:** Now, look at questions in Exercise 2. Convert 45,006 kg into the given units and write the answers in your notebook.

**Teacher:** Look at questions in Exercise 3. Convert 7,8625 kilolitres into the given units and write the answers in your notebook.

**Teacher:** Now, read the word problem given in Exercise 4. Convert the weight into grams and write the answers in your notebook.

**Teacher:** Let us read the word problem given in Exercise 5. Convert litres into millilitres and write the answers in your notebook.

(Where required, guide students to solve the questions and complete the Exercises 1-5.)

**Teacher:** Let us all give a huge round of applause to everyone for the effort and end today's session. See you in the next class. Have a wonderful day ahead.

You may show the **Animated Activities** given on digital platform.

## Differentiated Activities

**110 km/hr**

Convert - 3.5 kilometres into millimetres and 10 kilograms into milligrams. Show your working and explain why we need different units.

**80 km/hr**

Convert - 7 kilometres into metres and centimetres and 50 grams into milligrams. Show your working and explain why we need different units.

**40 km/hr**

Convert - 5 centimetres into millimetres and 2 kilograms into grams. Show your working and explain why we need different units.

## Home Task

With the help of your parents, convert the following measurements:

- Find the length of a book or table in centimetres. Convert it into millimetres.
- Find the weight of a fruit or vegetable in kilograms. Convert it into grams.

Write down your findings and bring them to class tomorrow.

## Period 4

SHOULD DO
05 MIN.

**Teacher:** Good morning/ afternoon everyone. How are you all today?

**Teacher:** Wonderful. Before we begin today's lesson, let us have a quick recap. I will ask some questions and you have to answer them quickly. Are you ready?

**Teacher:** Let us start with the first question. How many millimetres are there in a centimetre?

**Teacher:** That is right. There are 10 millimetres in 1 centimetre. Now, tell me if you have a metre ruler, how many centimetres it measures?

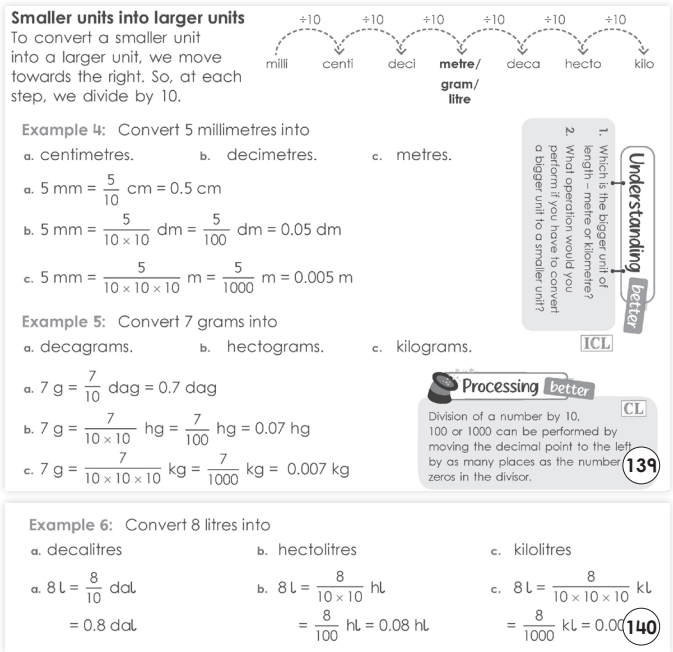
**Teacher:** Correct. There are 100 centimetres in 1 metre. How many grams are there in a kilogram?

**Teacher:** Exactly. There are 1000 grams in 1 kilogram. What is the standard unit we use to measure the capacity of liquids?

**Teacher:** Perfect. Liquid is measured in litres. Can you tell me what the abbreviation "kg" stands for?

**Teacher:** Great. It stands for 'kilogram'. Let us now dive into today's lesson on converting smaller units into larger units in the metric system.

**Smaller units into larger units**




**Teacher:** Look at the 'Smaller units into larger units' section given on page 139. We will learn how to convert smaller units into larger units in the Metric system.

MUST DO
15 MIN.

**Teacher:** Look at the chart given on page 138. We need to move towards the right side of the chart to convert smaller units into larger units. To do this, we divide by 10 at each step. Let us look at some examples to understand this better.

**Teacher:** Look at Example 4: Convert 5 millimetres into larger units.

**Teacher:** In 4(a), we need to convert millimetres into centimetres. Remember, 1 centimetre is equal to 10 millimetres. So, we divide 5 millimetres by 10. What do we get?

**Teacher:** Exactly. 5 millimetres divided by 10 gives us 0.5 centimetres. Now, let us move to 4(b), where we convert 5 millimetres into decimetres. How many millimetres make 1 decimetre?

**Teacher:** Yes, 10 millimetres make 1 decimetre and there are 10 decimetres in a metre. So, if we divide 5 millimetres by 100, we get 0.05 decimetres.

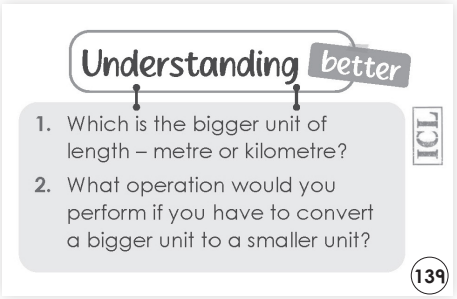
**Teacher:** Great. Now, let us look at 4(c) where we convert 5 millimetres into metres. We know that 1 metre is equal to 1000 millimetres. So, let us divide 5 millimetres by 1000. What do we get?

**Teacher:** Excellent. 5 millimetres divided by 1000 gives us 0.005 metres.

(Similarly, explain Example 5 and 6 in steps to the class.)

**Teacher:** We have now successfully converted smaller units into larger units. This helps us understand how to handle different measurements in everyday life.

## Understanding better




**Teacher:** Let us now take a look at 'Understanding better' section. Think about the questions and answer them carefully.

MUST DO
05 MIN.

**Teacher:** Which is the bigger unit of length – metre or kilometre?

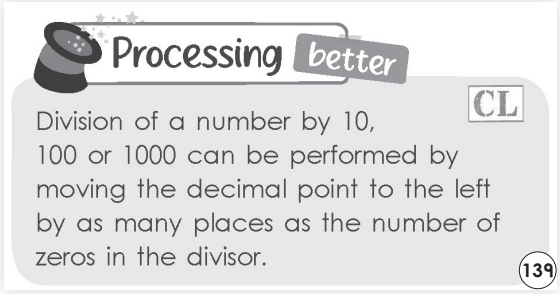
**Teacher:** That is right. A kilometre is the bigger unit of length. 1 kilometre equals 1,000 metres. It is used for measuring longer distances, like the distance between cities, while metre is used for shorter distances, like the length of a room or a pencil.

**Teacher:** Now, let us think about the second question: What operation would you perform if you have to convert a bigger unit to a smaller unit?

**Teacher:** Excellent. When we convert a bigger unit to a smaller unit, we multiply. For example, when we convert kilometres to metres, we multiply by 1,000 because there are 1,000 metres in 1 kilometre.

**Teacher:** Let us now move forward and understand 'Processing better'.

## Processing better




**Teacher:** Let us focus on 'Processing better' and understand the trick that will help you when dividing by 10, 100 or 1,000.

MUST DO
05 MIN.

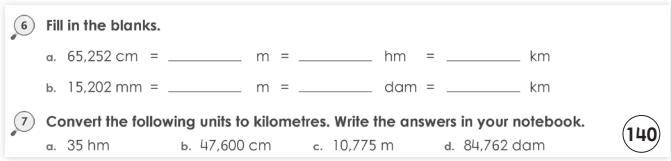
**Teacher:** We know that when we divide a number by 10, 100 or 1,000, we can move the decimal point to the left. But how do we know how many places to move the decimal point?

**Teacher:** It is easy. You simply move the decimal point to the left by as many places as the number of zeros in the divisor. For example,

- If we divide 345 by 10, we move the decimal point 1 place to the left. So, 345 ÷ 10 = 34.5.
- If we divide 345 by 100, we move the decimal point 2 places to the left. So, 345 ÷ 100 = 3.45.
- If we divide 345 by 1,000, we move the decimal point 3 places to the left. So, 345 ÷ 1,000 = 0.345.

**Teacher:** This method is really useful and makes division much easier. Let us now practice more question based on converting smaller units into larger units.

**Exercise 6 and 7**


6 **Fill in the blanks.**

a. 65,252 cm = _____ m = _____ hm = _____ km

b. 15,202 mm = _____ m = _____ dam = _____ km

7 **Convert the following units to kilometres. Write the answers in your notebook.**

a. 35 hm b. 47,600 cm c. 10,775 m d. 84,762 dam

140

**Teacher:** Look at Exercise 6 on page 140. We need to fill in the blanks after converting the smaller units into larger units. Solve the questions in your notebook and compare your answers with a partner.

MUST DO
10 MIN.

**Teacher:** If you have any doubts, raise your hand and we will discuss them together.

**Teacher:** In Exercise 7, we need to convert the units to kilometres. Write the answers in your notebook and compare answers with a partner.

(Guide/help students to solve the questions and complete both the exercises.)

**Teacher:** Excellent work today, let us end the session with a huge round of applause.

You may show the **Animation** given on digital platform.

## Differentiated Activities

**110 km/hr**

Convert: 120 millilitres into litres and kilolitres and 4,500 milligrams into grams and kilograms. Show your working and explain the steps.

**80 km/hr**

Convert: 30 millimetres into centimetres and decimetres and 0.75 litres into hectolitres. Show your working and explain the steps.

**40 km/hr**

Convert: 50 millimetres into centimetres and 100 grams into kilograms. Show your working and explain the steps.

## Home Task

Complete Exercises 8 – 14 given on page 140 in the Main Coursebook.

## Period 5

SHOULD DO
05 MIN.

**Teacher:** Good morning/ afternoon everyone. How are you all today?

**Teacher:** Wonderful. Before we begin today's lesson, let us have a quick recap. I will ask some questions and you have to answer them quickly. Are you ready?

**Teacher:** If we have litres and millilitres, which unit is bigger and why?

**Teacher:** That is right. Litres are bigger than millilitres. 1 litre is equal to 1,000 millilitres. What If I have 1000 millilitres, how many litres do I have?

**Teacher:** Excellent. 1,000 millilitres is equal to 1 litre because 1 litre = 1,000 millilitres. When adding or subtracting units like kilometres and metres, what should we remember to do with the units before adding or subtracting?

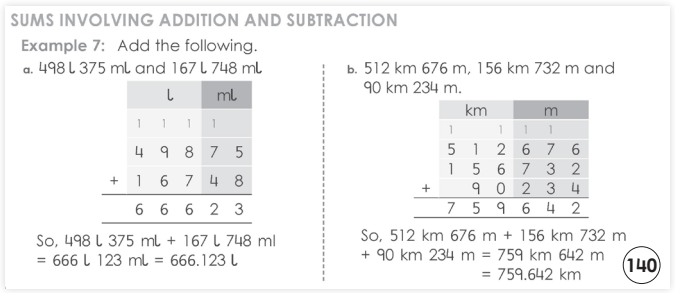
**Teacher:** Great. We need to make sure that both units are the same before adding or subtracting. For example, we should either convert kilometres to metres or vice versa.

**Teacher:** If I add 500 grams and 200 grams, what is the total weight in grams? Can you also convert it to kilograms?

**Teacher:** Well done. 500 grams + 200 grams = 700 grams. And if we convert that into kilograms, 700 grams = 0.7 kilograms because 1 kilogram = 1,000 grams.

**Teacher:** Let us now move on to today's lesson where we will learn how to add and subtract units like litres, kilometres, grams and more.

### Sums involving addition and subtraction



SUMS INVOLVING ADDITION AND SUBTRACTION

**Example 7:** Add the following.

a. 498 L 375 mL and 167 L 748 mL

| | L | mL |
|---|---|---|
| | 1 1 1 | 1 |
| | 4 9 8 | 7 5 |
| + | 1 6 7 | 4 8 |
| | 6 6 6 | 2 3 |

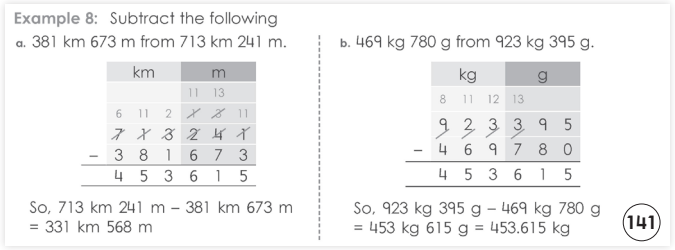
So, 498 L 375 mL + 167 L 748 ml = 666 L 123 mL = 666.123 L

b. 512 km 676 m, 156 km 732 m and 90 km 234 m.

| | km | m |
|---|---|---|
| | 1 1 | 1 1 |
| | 5 1 2 | 6 7 6 |
| | 1 5 6 | 7 3 2 |
| + | 9 0 | 2 3 4 |
| | 7 5 9 | 6 4 2 |

So, 512 km 676 m + 156 km 732 m + 90 km 234 m = 759 km 642 m = 759.642 km

140



**Example 8:** Subtract the following

a. 381 km 673 m from 713 km 241 m.

| | km | m |
|---|---|---|
| | | 11 13 |
| | 6 11 2 | ~~1~~ ~~2~~ 11 |
| | ~~7~~ ~~1~~ ~~3~~ | ~~2~~ ~~4~~ ~~1~~ |
| – | 3 8 1 | 6 7 3 |
| | 4 5 3 | 6 1 5 |

So, 713 km 241 m – 381 km 673 m = 331 km 568 m

b. 469 kg 780 g from 923 kg 395 g.

| | kg | g |
|---|---|---|
| | 8 11 12 | 13 |
| | ~~9~~ ~~2~~ ~~3~~ | 3 9 5 |
| – | 4 6 9 | 7 8 0 |
| | 4 5 3 | 6 1 5 |

So, 923 kg 395 g – 469 kg 780 g = 453 kg 615 g = 453.615 kg

141

MUST DO
15 MIN.

**Teacher:** Look at the 'Sums involving addition and subtraction' section on page 140. We are going to learn how to add and subtract measurements involving different units.

**Teacher:** Let us look at Example 7(a) where we need to add 498 litres 375 millilitres and 167 litres 748 millilitres. What do we need to do first?

**Teacher:** Yes, we start by aligning the units correctly. The litres should be added together and the millilitres should be added separately.

**Teacher:** Let us add the millilitres first. What is 375 + 748?

**Teacher:** That is right. 375 + 748 equals 1123 millilitres. But since 1000 millilitres equals 1 litre, we need to carry over 1 litre to the litres column.

**Teacher:** Now, let us add the litres. We add 498 litres and 167 litres and do not forget the 1 litre we carried over. So, 498 + 167 + 1 gives us 666 litres.

**Teacher:** Therefore, the final answer is 666.123 litres.

(Similarly, explain Example 7(b) to the class in steps.)

**Teacher:** Let us move on to Example 8(a), which involves subtraction. We need to subtract 381 km 673 m from 713 km 241 m. What should we do first, class?

**Teacher:** Yes, we will subtract the metres first. To subtract 673 metres from 241 metres, we need to borrow 1 kilometre from the kilometres column because 241 is smaller than 673.

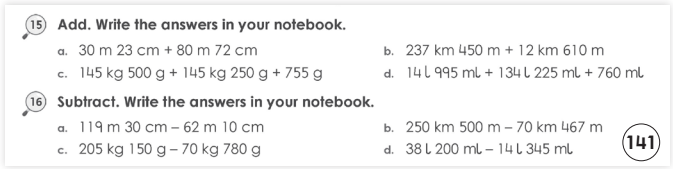
**Teacher:** Let us take 1 kilometre from 713 kilometres and convert it into 1000 metres, so we now have 1000 + 241 = 1241 metres. Now, what is 1241 – 673?

**Teacher:** Yes, it is 568 metres. Let us subtract the kilometres now. We have 712 kilometres left after sharing 1 kilometre. So, 712 km – 381 km gives us 331 km. So, the final answer is 331 km 568 m.

(Similarly, explain Example 8(b) to the class in steps.)

**Teacher:** Great work, everyone. Let us solve one question each from Exercise 15 and 16 for better understanding of adding and subtracting measurements involving different units.

### Exercise 15 and 16



15 **Add. Write the answers in your notebook.**

a. 30 m 23 cm + 80 m 72 cm
b. 237 km 450 m + 12 km 610 m
c. 145 kg 500 g + 145 kg 250 g + 755 g
d. 14 L 995 mL + 134 L 225 mL + 760 mL

16 **Subtract. Write the answers in your notebook.**

a. 119 m 30 cm – 62 m 10 cm
b. 250 km 500 m – 70 km 467 m
c. 205 kg 150 g – 70 kg 780 g
d. 38 L 200 mL – 14 L 345 mL

141

MUST DO
10 MIN.

**Teacher:** Look at the question 15(a) on page 141. We need to add "30 m 23 cm + 80 m 72 cm". Follow the steps and add them. Write the answers in your notebook and compare answers with a partner.

**Teacher:** If you have any doubts, raise your hand and we will discuss them together.

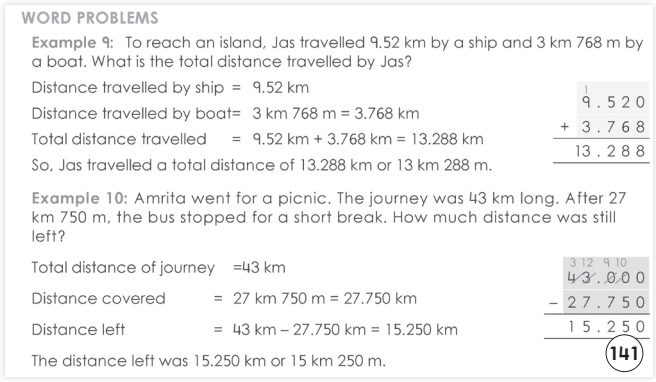
**Teacher:** Let us try another question 16(a), we need to subtract "119 m 30 cm – 62 m 10 cm". Follow the steps and subtract them. Write the answers in your notebook and compare answers with a partner.

**Teacher:** If you have any doubts, raise your hand and we will discuss them together.

(Guide/help students to solve the questions and complete rest of the question in both the exercises at home.)

**Teacher:** Excellent work today, let us now move on to the word problems.

**Word problems**



WORD PROBLEMS

**Example 9:** To reach an island, Jas travelled 9.52 km by a ship and 3 km 768 m by a boat. What is the total distance travelled by Jas?

Distance travelled by ship = 9.52 km

Distance travelled by boat= 3 km 768 m = 3.768 km

Total distance travelled = 9.52 km + 3.768 km = 13.288 km

So, Jas travelled a total distance of 13.288 km or 13 km 288 m.

```
  1
  9.520
+ 3.768
 13.288
```

**Example 10:** Amrita went for a picnic. The journey was 43 km long. After 27 km 750 m, the bus stopped for a short break. How much distance was still left?

Total distance of journey =43 km

Distance covered = 27 km 750 m = 27.750 km

Distance left = 43 km – 27.750 km = 15.250 km

The distance left was 15.250 km or 15 km 250 m.

```
  3 12  9 10
  43.000
– 27.750
  15.250
```

141

**Teacher:** Alright, students, let us begin with solving word problems based on addition and subtraction of different units. Look at Example 9. Can anyone read it aloud for me?

MUST DO

10 MIN.

**Teacher:** Excellent reading. It says, "Jas travelled 9.52 km by a ship and 3 km 768 m by a boat. What is the total distance travelled by Jas?" What should we do first?

**Teacher:** Yes, first identify the two distances Jas travelled - 9.52 km (by ship) and 3 km 768 m (by boat). What should we do next?

**Teacher:** Exactly. Since the units are different, we must convert them to the same unit. Let us convert the 768 m into kilometres. How much would it be?

**Teacher:** Correct. 768 metres = 0.768 km (since 1000 m = 1 km). Now, add the two distances in kilometres. 9.52 km (by ship) + 3.768 km (by boat) = 13.288 km.

**Teacher:** So, Jas travelled a total distance of 13.288 km or 13 km 288 m.

(Similarly, explain the next Example 10 and 11 to the students in steps.)

**Teacher:** Well done, everyone. We can now easily solve word problems by carefully reading the details, converting units when necessary and using addition or subtraction. Let us clap for everyone's effort and end our today's session.

You may show the **I Explain** given on digital platform.

## Differentiated Activities

**110 km/hr**

- Add 123 km 450 m and 76 km 872 m.
- Subtract 587 litres 389 millilitres from 914 litres 500 millilitres.

**80 km/hr**

- Add 5 m 65 cm and 12 m 50 cm.
- Subtract 200 kg 875 g from 500 kg.

**40 km/hr**

- Add 300 m 50 cm and 200 m 25 cm.
- Subtract 50 kg 300 g from 100 kg.

## Home Task

Complete Exercise 15(b, c, d), 16(b, c, d) and 17 given on page 141-142 in Main Coursebook.

# Period 6

SHOULD DO

05 MIN.

**Teacher:** Good morning/ afternoon everyone. How are you all today?

**Teacher:** Wonderful. Before we begin today's lesson, let us have a quick recap. I will ask some questions and you have to answer them quickly. Are you ready?

**Teacher:** If you have 3.5 kilometres of fabric and you want to make 7 pieces of equal length, how long will each piece be?

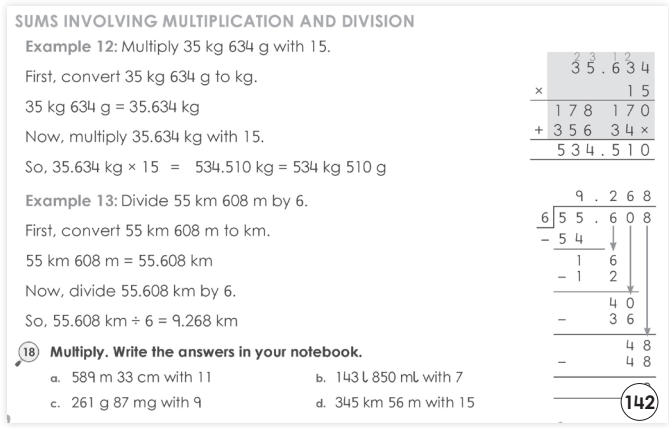
**Teacher:** Very good. It would be 500 metres each. What if a factory produces 4.8 kilograms of chocolate every hour. How many kilograms of chocolate will the factory produce in 15 hours?

**Teacher:** Excellent. It will produce 72 kilograms of chocolate. If 1 kilogram equals 1000 grams, how many grams are there in 13.7 kilograms?

**Teacher:** That is right. 13.7 kilograms equals to 13,700 grams. If a car travels 85 kilometres per hour, how far will it travel in 4.5 hours?

**Teacher:** Excellent. It will travel 382.5 kilometres. We will work with similar concepts involving larger and smaller measuring units in today's session.

**Sums involving multiplication and division**



SUMS INVOLVING MULTIPLICATION AND DIVISION

**Example 12:** Multiply 35 kg 634 g with 15.

First, convert 35 kg 634 g to kg.

35 kg 634 g = 35.634 kg

Now, multiply 35.634 kg with 15.

So, 35.634 kg × 15 = 534.510 kg = 534 kg 510 g

```
    2 3  1 2
    35.634
×       15
  178 170
+356 34×
  534.510
```

**Example 13:** Divide 55 km 608 m by 6.

First, convert 55 km 608 m to km.

55 km 608 m = 55.608 km

Now, divide 55.608 km by 6.

So, 55.608 km ÷ 6 = 9.268 km

```
    9.268
6 | 55.608
  – 54
    16
    – 12
      40
      – 36
        48
        – 48
```

(18) **Multiply. Write the answers in your notebook.**

a. 589 m 33 cm with 11

b. 143 L 850 mL with 7

c. 261 g 87 mg with 9

d. 345 km 56 m with 15

142

**Teacher:** Let us see the 'Sums involving multiplication and division' section on page 142.

MUST DO

10 MIN.

**Teacher:** Look at Example 12 where we need to multiply 35 kg 634 g with 15. What should we do first?

**Teacher:** Yes, first we convert the 35 kg 634 g into kilograms. 35 kg 634 g = 35.634 kg (since 1000 g = 1 kg).

**Teacher:** Next, let us multiply 35.634 kg by 15. So, the total weight is 534 kg 510 g.

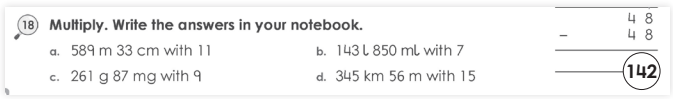
**Teacher:** Now, let us look at the next Example 13, divide 55 km 608 m by 6. What should we do first?

**Teacher:** Exactly. We need to convert 55 km 608 m into kilometres which is 55.608 km. What is the next step?

**Teacher:** That is correct. We need to divide 55.608 km by 6. So, we get 9.268 km.

**Teacher:** Well done, everyone. You can see how we first convert the units to the same unit (like converting grams to kilograms or meters to kilometres) and then use multiplication or division to solve the problem. Keep practicing and these calculations will become easier for you.

**Exercise 18 and 19**

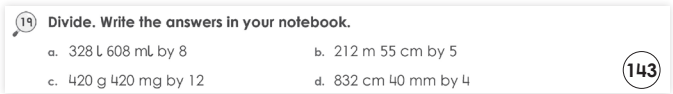


18 **Multiply. Write the answers in your notebook.**

a. 589 m 33 cm with 11 b. 143 L 850 mL with 7

c. 261 g 87 mg with 9 d. 345 km 56 m with 15

142



19 **Divide. Write the answers in your notebook.**

a. 328 L 608 mL by 8 b. 212 m 55 cm by 5

c. 420 g 420 mg by 12 d. 832 cm 40 mm by 4

143

**Teacher:** Look at the question 18(a) on page 142. We need to multiply "589 m 33 cm by 11". Follow the steps and multiply them. Write the answers in your notebook and compare answers with a partner.

MUST DO

10 MIN.

**Teacher:** If you have any doubts, raise your hand and we will discuss them together.

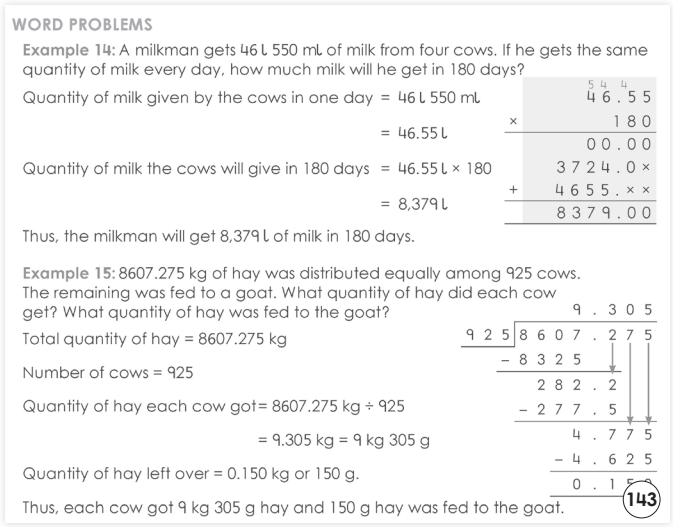
**Teacher:** Let us try another question 19(a), we need to divide "328 608 m by 8". Follow the steps and divide them. Write the answers in your notebook and compare answers with a partner.

**Teacher:** If you have any doubts, raise your hand and we will discuss them together.

(Guide/help students to solve the questions and complete rest of the question in both the exercises at home.)

**Teacher:** Excellent work today, let us now move on to the word problems.

**Word problems**



WORD PROBLEMS

**Example 14:** A milkman gets 46 L 550 mL of milk from four cows. If he gets the same quantity of milk every day, how much milk will he get in 180 days?

Quantity of milk given by the cows in one day = 46 L 550 mL = 46.55 L

Quantity of milk the cows will give in 180 days = 46.55 L × 180 = 8,379 L

Thus, the milkman will get 8,379 L of milk in 180 days.

**Example 15:** 8607.275 kg of hay was distributed equally among 925 cows. The remaining was fed to a goat. What quantity of hay did each cow get? What quantity of hay was fed to the goat?

Total quantity of hay = 8607.275 kg

Number of cows = 925

Quantity of hay each cow got = 8607.275 kg ÷ 925 = 9.305 kg = 9 kg 305 g

Quantity of hay left over = 0.150 kg or 150 g.

Thus, each cow got 9 kg 305 g hay and 150 g hay was fed to the goat.

143

**Teacher:** Let us begin with solving word problems based on multiplication and division of different units. Look at Example 14. Can anyone read it aloud for me?

MUST DO

10 MIN.

**Teacher:** Excellent reading. It says, "A milkman gets 46 L 550 mL of milk from four cows. If he gets the same quantity of milk every day, how much milk will he get in 180 days?" What do we know from the problem?

**Teacher:** Yes, the milkman gets 46 L 550 mL of milk every day. We need to find out how much he gets in 180 days. What should we do now?

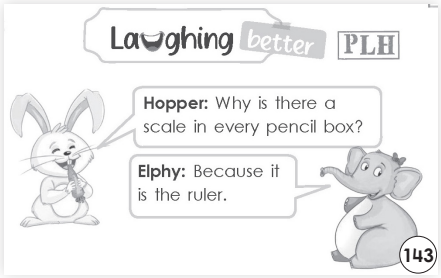
**Teacher:** To do this, we multiply the quantity of milk given by the cows in one day (46 L 550 mL) by the number of days (180). Let us do the calculation together.

**Teacher:** That is correct. The milkman will get 46.550 × 180 = 8,379 L of milk in 180 days.

(Similarly, explain the next Example 15 to the students in steps.)

**Teacher:** Well done, everyone. Keep practicing this method of solving word problems and soon you will find them easier and faster.

## Laughing better




**Teacher:** Look at the 'Laughing better' section. It is a fun time. Hopper the rabbit and Elphy the elephant are having a funny conversation. Let us read it together.

SHOULD DO

05 MIN.

**Teacher:** Look at the conversation in the picture. Hopper asks, "Why is there a scale in every pencil box?"

**Teacher:** Can anyone guess what Elphy replied?

**Teacher:** That is right. Elphy replied, "Because it is the ruler."

**Teacher:** What do you think Elphy means by saying "it is the ruler"?

**Teacher:** Yes, Elphy is giving a funny answer. A scale, also known as a ruler, is used for measuring things, but here, Elphy is treating it like a ruler for the pencil box.

**Teacher:** Well done, everyone. Keep thinking creatively and enjoy these moments of fun and laughter. Let us give ourselves a round of applause for having fun with the activity and end today's session.

You may show the **Explainer Video** given on digital platform.

## Differentiated Activities

**110 km/hr**

- A train covers a total distance of 84 kilometres 600 metres in 9 equal parts between stations. What is the distance between two stations?

**80 km/hr**

- A running track in the school playground is 150 metres 30 centimetres long. A student runs it 8 times in the morning. What is the total distance the student runs?

**40 km/hr**

- A walking trail is 1 kilometre 200 metres long. The teacher wants to divide it into 4 equal parts for a group activity. What is the length of each part?

## Home Task

Complete Exercise 18(b, c, d), 19(b, c, d) and 20 given on page 142-143 in Main Coursebook.

# Period 7

**SHOULD DO**

05 MIN.

**Teacher:** Good morning/ afternoon everyone. How are you all today?

**Teacher:** Wonderful. Before we begin today's lesson, let us play a quick game to get our minds warmed up. Are you ready?

**Teacher:** I will tell you the names of a few everyday objects and you need to guess how big or heavy they might be without using any measuring tools.

**Teacher:** Let us start with something easy. How long do you think your pencil is?

**Teacher:** Great. Now, what do you think the weight of a watermelon might be? Guess in kilograms.

**Teacher:** Well done. Lastly, how much do you think a cup of water holds in millilitres? Guess quickly.

**Teacher:** Fantastic. This is what we call estimating measures. We try to guess the size, weight or capacity of things around us when we do not have measuring tools. It is like a quick, rough guess.

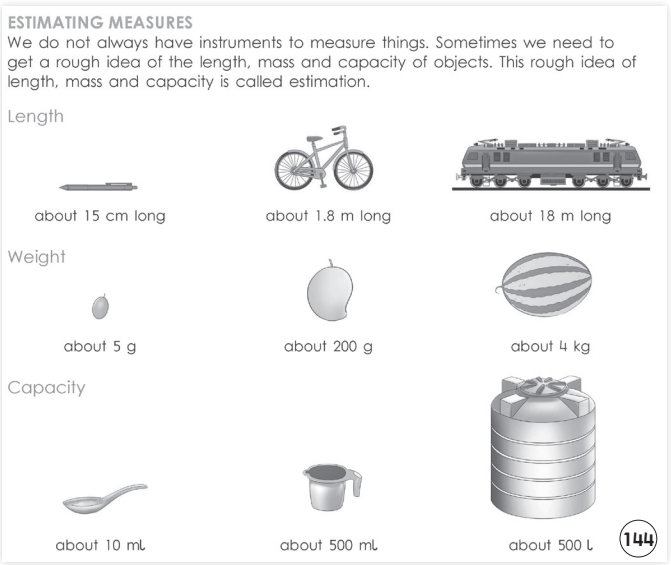
**Teacher:** Let us learn how we can estimate measures for different things like length, weight and capacity in today's session.

**Estimating Measures**

**MUST DO**

10 MIN.

**Teacher:** Look at 'Estimating Measure' section on page 144 of your Main Coursebook. Can anyone read it aloud for me?



ESTIMATING MEASURES

We do not always have instruments to measure things. Sometimes we need to get a rough idea of the length, mass and capacity of objects. This rough idea of length, mass and capacity is called estimation.

Length

about 15 cm long | about 1.8 m long | about 18 m long

Weight

about 5 g | about 200 g | about 4 kg

Capacity

about 10 mL | about 500 mL | about 500 L

144

**Teacher:** Excellent reading. Sometimes, we do not always have the exact tools to measure things. Instead, we make a rough guess of the length, weight or capacity of an object. This rough idea is called estimation.

**Teacher:** Let us begin with length. Look at the first picture of the pencil. Can anyone guess how long the pencil might be?

**Teacher:** Yes, it is about 15 cm long. Now, look at the 'bicycle'. How long a bicycle might be?

**Teacher:** That is right. It is about 1.8 m long. It is much longer than the pencil. What about the length of a train?

**Teacher:** It is about 18 m long. That is quite a big difference compared to the pencil and bicycle, isn't it?

**Teacher:** Next, let us talk about weight. Look at the picture of the lemon. How much do you think it weighs?

**Teacher:** Yes, about 200 g. It is a bit heavier than the fruit beside it. What about watermelon? How much do you think it weighs?

**Teacher:** Exactly, around 4 kg. It is much heavier than the lemon.

**Teacher:** Finally, let us look at capacity. Look at the picture of the spoon. How much liquid do you think it holds?

**Teacher:** Yes, about 10 mL. It is a very small amount of liquid. And the cup in the next picture holds about 500 mL. It is much more than the spoon, isn't it?

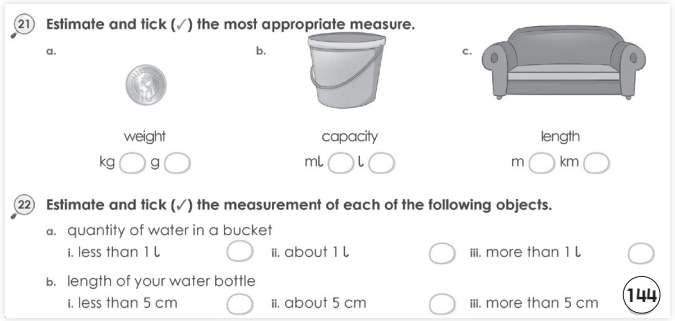
**Teacher:** Look at the large water tank now. Can anyone guess its capacity?

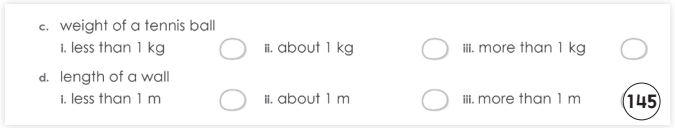
**Teacher:** Yes, it holds about 500 L. That is a huge difference compared to the spoon and cup. Great participation, everyone. Let us now move on to exercises and practice questions based on it.

**Exercise 21 and 22**

**Teacher:** Look at questions given in Exercise 21 on page 144. We need to estimate and tick the most appropriate measures of the objects.

SHOULD DO
10 MIN.



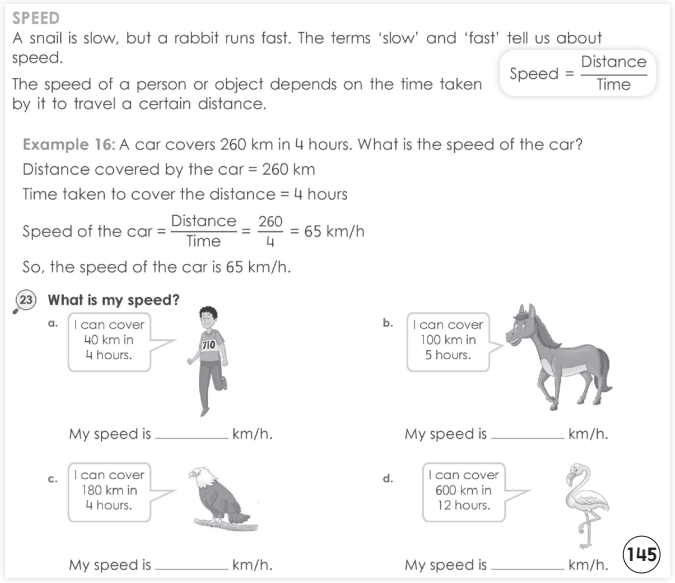

**Teacher:** Compare your answers with a partner. If you have any doubts, feel free to ask.

**Teacher:** Well done. Similarly, in Exercise 22, we need to estimate and tick the measurement of each of the given objects.

**Teacher:** Compare your answers with a partner. If you have any doubts, feel free to ask.

**Teacher:** Excellent. Let us clap for everyone and move on to our next activity.

**Speed**




**Teacher:** Look at the 'Speed' section on page 145. Can anyone guess what speed means?

MUST DO
10 MIN.

**Teacher:** Great. It actually tells us how fast or slow something moves. Can you guess what it is dependent on?

**Teacher:** Exactly. The speed of a person or object depends on the time taken by it to travel a certain distance.

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

**Teacher:** Let us look at Example 16 to understand it better. We need to find the speed of the car. What do we need to find the speed of the card?

**Teacher:** Yes, we need 'distance' and 'time'. Here, the card covers 260 km, so the distance = 260 km and it took 4 hours to cover the distance, so the time = 4 hours.

**Teacher:** Therefore, the speed of the car = 260 ÷ 4 = 65 km/h. This means the car travels 65 km every hour. The unit for speed is often kilometres per hour or km/h. Let us now complete the next exercise..

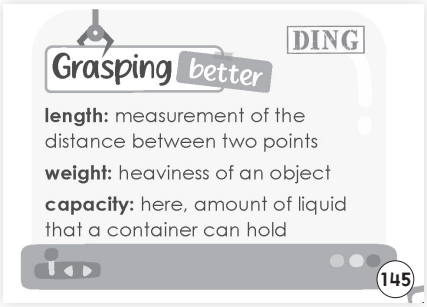
**Exercise 23**

**Teacher:** Look at questions given in Exercise 23. Use the concept/formula we just learnt and find their speeds.

**Teacher:** Compare your answers with a partner. If you have any doubts, feel free to ask.

**Teacher:** Excellent work everyone. We can now move on to our next activity.

## Grasping better




**Teacher:** Look at the 'Grasping better' section. What do you understand by length, weight and capacity based on today's discussion? Let us start with 'length'.

MUST DO
05 MIN.

**Teacher:** That is correct. Length is the measurement of the distance between two points. For example, if we measure the length of a pencil, we are measuring how far it is from one end to the other.

**Teacher:** Next, we have weight. What do you understand by it?

**Teacher:** Exactly. Weight refers to the heaviness of an object. For example, a book might be heavy, while a feather is light.

**Teacher:** Finally, capacity. What do you understand by it?

**Teacher:** That is right. Capacity is the amount of liquid that a container can hold. For example, a glass can hold a certain amount of water and that amount is its capacity. We use this to measure liquids.

**Teacher:** Great. Let us clap for everyone's effort and end our today's session.

You may show the **Infographic** given on digital platform.

## Differentiated Question

**110 km/hr**

Estimate the length of a room in metres. Then, measure the room using a measuring tape and calculate the difference between your estimate and the actual length.

**80 km/hr**

Estimate the weight of a book in grams. Then, weigh the book on a scale and compare the actual weight with your estimate.

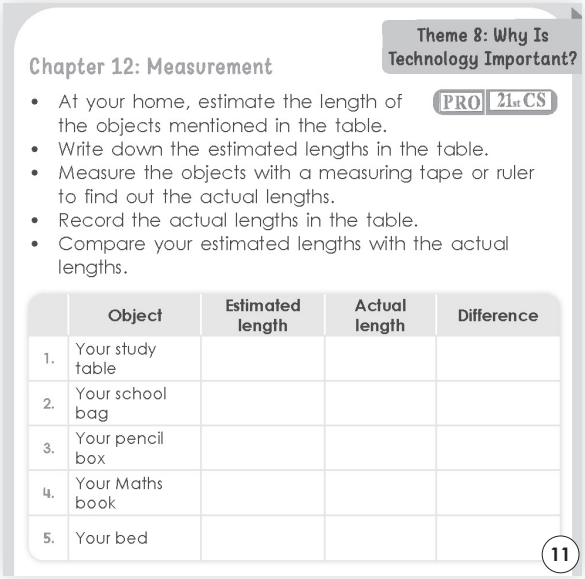
**40 km/hr**

Estimate how many millilitres of water a glass can hold. Then, fill the glass with water and measure the actual amount.

## Home Task

Tell students to bring a beaker, bowl, water glass and a jug for an activity in the next period.

## Book of Project Ideas



Theme 8: Why Is Technology Important?

Chapter 12: Measurement

PRO 21st CS

- At your home, estimate the length of the objects mentioned in the table.
- Write down the estimated lengths in the table.
- Measure the objects with a measuring tape or ruler to find out the actual lengths.
- Record the actual lengths in the table.
- Compare your estimated lengths with the actual lengths.

| | Object | Estimated length | Actual length | Difference |
|---|---|---|---|---|
| 1. | Your study table | | | |
| 2. | Your school bag | | | |
| 3. | Your pencil box | | | |
| 4. | Your Maths book | | | |
| 5. | Your bed | | | |

11

Ask students to complete this project at home with parental guidance. Estimate the length of the objects listed in the table and write down the estimated lengths. Use a measuring tape or ruler to measure the actual lengths of these objects and record the results in the table. Compare the estimated lengths with the actual lengths and note the difference. Discuss with parents about ways to estimate measures and ensure accuracy in the process. Encourage students to reflect on how close their estimates were and what they learned from the activity. Provide guidance as needed and encourage creative thinking.

(Remind them to review their work and practise presenting. Each student will get 3-5 minutes to present. Ensure they understand deadlines and provide assistance as needed.)

# Period 8

SHOULD DO 05 MIN.

**Teacher:** Good morning/ afternoon everyone. How are you all today?

**Teacher:** Wonderful. Before we begin today's lesson, let us play a quick game to get our minds warmed up. Let us see what you remember from this lesson. Are you ready?

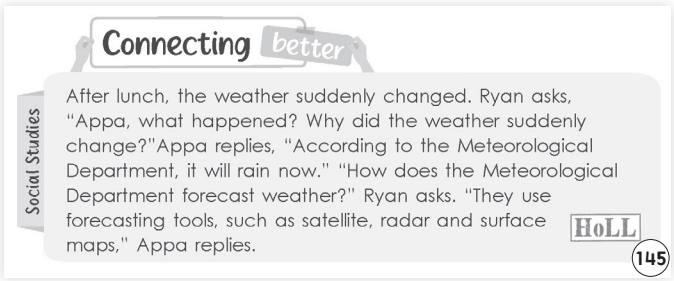
**Teacher:** Think about the length of your tiffin box. Can anyone guess which unit we should use to measure it?

**Teacher:** Yes, we would use centimetres (cm) to measure the length of the tiffin box. Now, imagine you have a bag of apples. How would we measure its weight?

**Teacher:** That is right, we would use kilograms (kg) or grams (g) for the weight. Now, what about a bottle of water. What unit would we use to measure its capacity?

**Teacher:** Yes, we would use millilitres (mL) or litres (L) for measuring liquid capacity. Let us move on to our next activity.

## Connecting better



Connecting better

Social Studies

After lunch, the weather suddenly changed. Ryan asks, "Appa, what happened? Why did the weather suddenly change?"Appa replies, "According to the Meteorological Department, it will rain now." "How does the Meteorological Department forecast weather?" Ryan asks. "They use forecasting tools, such as satellite, radar and surface maps," Appa replies.

HoLL

145

MUST DO 05 MIN.

**Teacher:** Look at the 'Connecting better' section. In this part, Ryan is talking to his father, Appa, about the sudden change in the weather. After lunch, the weather changed unexpectedly and Ryan asks, "Appa, what happened? Why did the weather suddenly change?"

**Teacher:** Appa replies, "According to the Meteorological Department, it will rain now." Ryan is curious and asks, "How does the Meteorological Department forecast the weather?" Can anyone guess what Appa might say next?

**Teacher:** Yes. Appa explains, "They use forecasting tools, such as satellites, radar and surface maps." These are the tools that help meteorologists predict the weather.

**Teacher:** Isn't it fascinating how technology and special tools like satellites help us understand the weather? We can use these tools to predict rain, storms and other weather changes in advance.

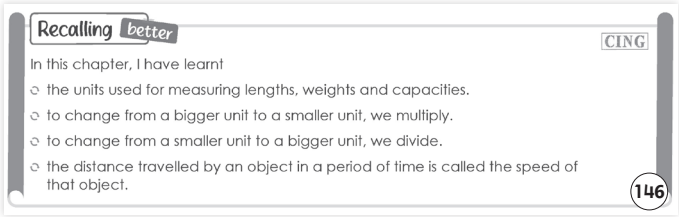
**Teacher:** Do you think weather forecasts help us in our daily lives? How do you think they are helpful?

**Teacher:** Excellent responses, everyone. Let us give

ourselves a round of applause for connecting better with the world around us. Keep thinking about how technology helps us in many areas of life, including weather forecasting.

**Teacher:** Let us now move on to our next activity and recall our learnings in this chapter.

## Recalling better


Recalling better

CING

In this chapter, I have learnt

- the units used for measuring lengths, weights and capacities.
- to change from a bigger unit to a smaller unit, we multiply.
- to change from a smaller unit to a bigger unit, we divide.
- the distance travelled by an object in a period of time is called the speed of that object.

146

**Teacher:** Let us now move on to the 'Recalling better' section. We will quickly review what we have learnt in this chapter.

MUST DO

10 MIN.

**Teacher:** First, we learned about the units used for measuring lengths, weights and capacities. Can you give me an example for each?

**Teacher:** That is right. When we measure length, we use units like centimetres (cm), metres (m) and kilometres (km). For weight, we use grams (g) and kilograms (kg) and for capacity, we use millilitres (mL) and litres (L).

**Teacher:** Next, we discussed how to change from a bigger unit to a smaller unit, we multiply. Can you give me an example of it?

**Teacher:** That is correct. If we want to convert 5 metres into centimetres, we multiply by 100 because there are 100 centimetres in 1 metre. So, 5 metres = 5 × 100 = 500 centimetres.

**Teacher:** On the other hand, to change from a smaller unit to a bigger unit, we divide. Can you give me an example of it?

**Teacher:** Exactly. If we have 500 centimetres and want to convert it into metres, we divide by 100 because 1 metre equals 100 centimetres. So, 500 centimetres ÷ 100 = 5 metres.

**Teacher:** Also, we learnt that the distance travelled by an object in a Period of time is called the speed of that object. Can you give an example of it?

**Teacher:** Great. If a car travels 100 km in 2 hours, its speed is 100 ÷ 2 = 50 km/h. This means the car is travelling 50 kilometres every hour.

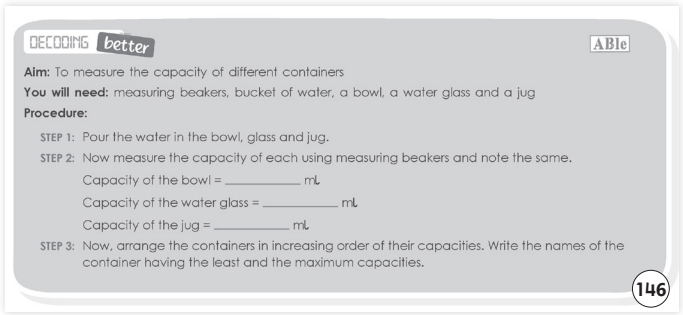
**Teacher:** Excellent. Let us move on to the next activity and measure the capacity of different containers.

## Decoding better

**Teacher:** Look at the decoding better section on page 146. We will be using measuring beakers, a bucket of water, a bowl, a water glass and a jug for this activity.

MUST DO

10 MIN.


DECODING better

ABle

**Aim:** To measure the capacity of different containers

**You will need:** measuring beakers, bucket of water, a bowl, a water glass and a jug

**Procedure:**

STEP 1: Pour the water in the bowl, glass and jug.

STEP 2: Now measure the capacity of each using measuring beakers and note the same.

Capacity of the bowl = _____ mL

Capacity of the water glass = _____ mL

Capacity of the jug = _____ mL

STEP 3: Now, arrange the containers in increasing order of their capacities. Write the names of the container having the least and the maximum capacities.

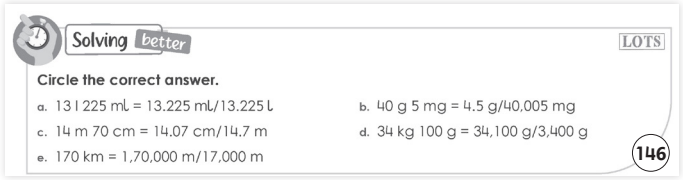
146

(Guide the students in steps to complete the given activity.)

**Teacher:** Great work. Now, write down the names of the containers starting from the one with the least capacity to the one with the maximum capacity.

**Teacher:** This exercise helps us understand how different containers can hold varying amounts of liquid. Let us move on to the next activity.

## Solving better


Solving better

LOTS

**Circle the correct answer.**

a. 13 l 225 mL = 13.225 mL/13.225 L

b. 40 g 5 mg = 4.5 g/40,005 mg

c. 14 m 70 cm = 14.07 cm/14.7 m

d. 34 kg 100 g = 34,100 g/3,400 g

e. 170 km = 1,70,000 m/17,000 m

146

**Teacher:** Look at the 'Solving better' section. You need to circle the correct answer.

MUST DO

10 MIN.

**Teacher:** Let us try the first question together. It is asking us to convert millilitres (mL) into litres (L). How should we do now?

**Teacher:** Yes, to do show. If we have 1,3 225 mL, we divide by 1000 to convert it into litres.

1,3 225 ÷ 1000 = 13.225 L.

**Teacher:** The correct answer is 13.225 L, so we will circle 13.225 L.

**Teacher:** Now, use the same approach and solve the remaining questions and circle the correct answer.

**Teacher:** Well done. Let us clap for everyone's effort and end today's session.

You may show the **Slideshow** given on digital platform.

## Differentiated Question

**110 km/hr**

Convert 5.6 km into metres and then convert it into centimetres. Show all steps clearly.

**80 km/hr**

Convert 2500 mL into litres and millilitres. Write your calculations clearly

**40 km/hr**

Add two measurements of length, such as 4.5 m and 3.2 m and convert the result into centimetres.

## Home Task

Complete Exercises A, B, C, D, E and F from 'Learning better' section (page 147).

# Period 9

SHOULD DO
15 MIN.

**Teacher:** Good morning/ afternoon everyone. How are you all today?

**Teacher:** Wonderful. Before we begin today's lesson, let us quickly warm up with some questions to see what you remember from this lesson. Be ready with pen and paper. Shall we start?

**Teacher:** Great. Let us start with addition. If I have 250 m 15 cm and I add 153 m 35 cm, how much do I get?

**Teacher:** Yes, get 403 m 50 cm. We add the metres and the centimetres separately and then convert if needed. Now, let us try subtraction. If I have 354 kg 586 g and I subtract 64 kg 350 g, what do I get?

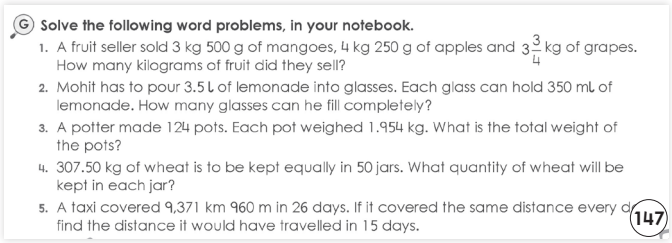
**Teacher:** That is right. We get 290 kg 236 g. We subtract the kilograms and the grams separately. Let us do a multiplication question. If I have 25 kg 36 g and I multiply it by 12, what do we get?

**Teacher:** Exactly. We get 300.432 kg. We multiply the kilograms and grams separately and then convert it into kilograms. Finally, let us try a division question. If I have 15 kg 30 g and I divide it by 15, what is the result?

**Teacher:** That is right. We get 1 kg 2 g. We divide the kilograms and the grams separately. Excellent. We can now move on to the next exercise.

(Ask students about their homework and discuss/answer their doubts.)

**Exercise G**



G Solve the following word problems, in your notebook.

1. A fruit seller sold 3 kg 500 g of mangoes, 4 kg 250 g of apples and $3\frac{3}{4}$ kg of grapes. How many kilograms of fruit did they sell?
2. Mohit has to pour 3.5 L of lemonade into glasses. Each glass can hold 350 mL of lemonade. How many glasses can he fill completely?
3. A potter made 124 pots. Each pot weighed 1.954 kg. What is the total weight of the pots?
4. 307.50 kg of wheat is to be kept equally in 50 jars. What quantity of wheat will be kept in each jar?
5. A taxi covered 9,371 km 960 m in 26 days. If it covered the same distance every d find the distance it would have travelled in 15 days.

147

MUST DO
25 MIN.

**Teacher:** Look at Exercise G on page 147 of your Main Coursebook. Read the given word problems carefully and solve them. Let us solve the first question together. Can anyone read the question for me?

**Teacher:** Excellent reading. What should we do first to solve this question?

**Teacher:** Yes, first, we need to add up the weights of all the fruits. But before we do that, we should make sure that we are using the same unit for all the measurements. Let us note down the given quantities.

**Teacher:** We have 3 kg 500 g of mangoes, 4 kg 250 g of apples and  kg of grapes. What should we do next?

**Teacher:** Exactly. Let us convert them into kilograms to make the addition easier. So, we will have -

- 3 kg 500 g is the same as 3.5 kg (since 1000 g = 1 kg).
- 4 kg 250 g is the same as 4.25 kg.
- $3\frac{3}{4}$ kg is the same as 3.75 kg.

**Teacher:** Now, we can add them together. Can anyone do the calculation for me?

**Teacher:** Excellent. We get, 3.5 kg + 4.25 kg + 3.75 kg = 11.5 kg.

**Teacher:** So, the total weight of the fruits sold is 11.5 kg. Now, solve the remaining questions on your own.

(Discuss every question with the students and help them solve and complete the exercise.)

**Teacher:** Well done everyone. We have completed the exercise. Let us clap for everyone's effort and end today's session.

You may show the **HOTS** given on digital platform.

## Differentiated Question:

**110 km/hr**

A car covers 480 km in 8 hours. Calculate the speed of the car in km/h and then find how far it would travel in 15 hours at the same speed.

**80 km/hr**

Mohit poured 4 L of lemonade into glasses. Each glass can hold 250 mL of lemonade. How many glasses can Mohit fill completely?

**40 km/hr**

A fruit seller sold 2 kg 200 g of mangoes, 1 kg 800 g of apples and 2 kg of grapes. Find the total weight of the fruits sold in kilograms.

## Home Task

Estimate the weight of different items in your grocery bag (e.g., fruits, vegetables, etc.). Then, use a kitchen scale to weigh each item and compare the actual weight with your estimate. Write down your findings and bring them to class tomorrow. Take help of your parents to complete the task.

(Tell the students to bring two paper cups, each with one hole at the bottom and a long piece of thread. Ask parents to help you make the holes in the cups. Make sure the thread is long enough to stretch across the room.)

# Period 10

SHOULD DO
05 MIN.

**Teacher:** Good morning/ afternoon everyone. How are you all today?

**Teacher:** Wonderful. Before we begin today's lesson, let us warm up with a quick activity. I will ask you some simple questions. Try to answer as quickly as you can. Are you ready?

**Teacher:** When you speak, what helps others hear your voice?

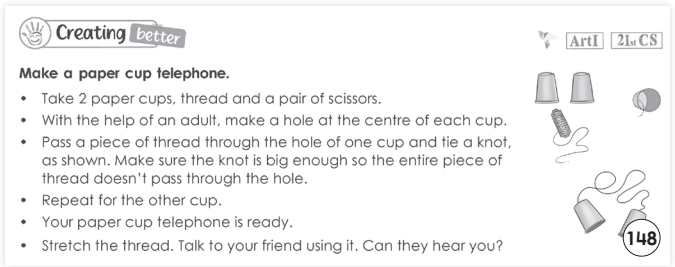
**Teacher:** That is right. Your voice makes sound waves that travel through the air. Can you guess what happens when you shout really loud? How does the sound change?

**Teacher:** Yes, exactly. The louder you shout, the stronger the sound waves become. The sound travels further. What if you tap on a table, can you hear the sound?

**Teacher:** Yes, when you tap, the sound travels through the table too. The vibrations move through the material.

**Teacher:** Today, we will make something fun to know how sound can travel in different ways. We are going to make a paper cup telephone and see how sound travels through the string.

## Creating better


Creating better

ArtI 2LsCS

**Make a paper cup telephone.**

- Take 2 paper cups, thread and a pair of scissors.
- With the help of an adult, make a hole at the centre of each cup.
- Pass a piece of thread through the hole of one cup and tie a knot, as shown. Make sure the knot is big enough so the entire piece of thread doesn't pass through the hole.
- Repeat for the other cup.
- Your paper cup telephone is ready.
- Stretch the thread. Talk to your friend using it. Can they hear you?

148

**Teacher:** Look at the 'Creating better' section on page 148 of your Main Coursebook. We will make the paper cup telephone in pairs.

MUST DO

10 MIN.

**Teacher:** First, take out your two paper cups, each with one hole at the bottom and the piece of thread.

**Teacher:** Now, pass the thread through the hole of one cup and tie a knot so that the thread does not slip through the hole. Repeat the same with the second cup. Your cups should now be connected by the thread.

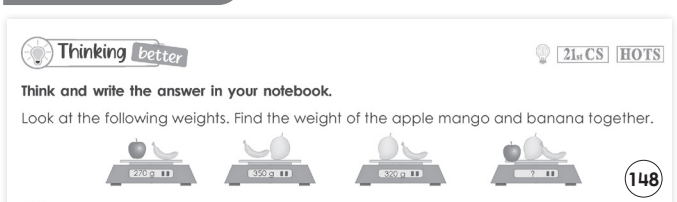
**Teacher:** Great. Now that our paper cup telephones are ready, hold the thread tight from two different corners along with your partner.

**Teacher:** One of you should speak into the cup and the other should listen through the other cup. Can you hear your partner?

**Teacher:** Well done. This shows us how sound travels through the thread. Isn't that amazing?

**Teacher:** Excellent work, everyone. I hope you enjoyed making your paper cup telephones and learning about it. Let us now move on to the next activity.

## Thinking better


Thinking better

2LsCS HOTS

**Think and write the answer in your notebook.**

Look at the following weights. Find the weight of the apple mango and banana together.

148

**Teacher:** Let us look at the 'Thinking better' section. We have a few weights on scales and we need to find the total weight of the apple, mango and banana together.

MUST DO

05 MIN.

**Teacher:** What are the readings on the scales? Write them down.

**Teacher:** Correct.

1. Apple + Banana = 270 g
2. Banana + Mango = 350 g
3. Mango + Apple = 320 g

And we need to find the weight of Apple + Mango + Banana = ?

**Teacher:** Let us now add them together.

(Apple + Banana) + (Banana + Mango) + (Mango + Apple) = 270 + 350 + 320

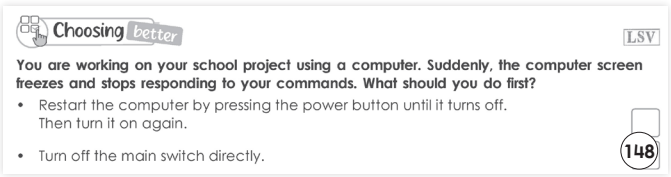
2 (Apple + Mango + Banana) = 940

Apple + Mango + Banana) = 940 ÷ 2 = 470 g

**Teacher:** Therefore, the total weight of the apple, mango and banana together is 470 g.

**Teacher:** Great work. Let us now move on to the next activity.

## Choosing better


Choosing better

LSV

**You are working on your school project using a computer. Suddenly, the computer screen freezes and stops responding to your commands. What should you do first?**

- Restart the computer by pressing the power button until it turns off. Then turn it on again.
- Turn off the main switch directly.

148

**Teacher:** Now, look at the 'Choosing better' section. Imagine you are working on your school project using a computer. Suddenly, the computer screen freezes and stops responding to your commands. What do you think you should do first?

MUST DO

05 MIN.

**Teacher:** Let us think about these options. What do you think would happen if you choose Option 1 and restart the computer by holding the power button?

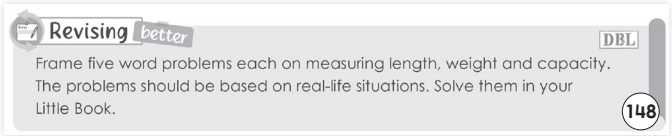
**Teacher:** That is right. Restarting the computer by holding the power button can help resolve small software issues. It is safer and prevents further issues with the computer.

**Teacher:** Now, let us consider Option 2—turning off the main switch directly. Why do you think this might not be the best option?

**Teacher:** Exactly. Turning off the main switch can be a bit too forceful and may cause loss of unsaved work. It is always better to try restarting the computer first.

**Teacher:** Great thinking. This shows us how important it is to make the right choice when dealing with problems. Always try the gentler option first and if that does not work, then look for a stronger solution.

## Revising better




**Teacher:** Now, let us move on to the 'Revising better' section. We are going to frame some word problems based on real-life situations. These problems will be related to measuring length, weight and capacity. Examples -

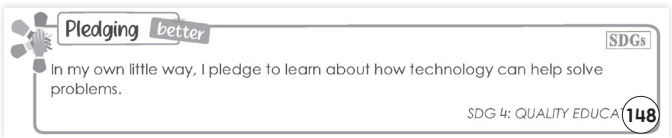
MUST DO
05 MIN.

1. For length: A garden is 15 metres long. How many centimetres is it?
2. For weight: A watermelon weighs 3 kg 500 g. How much do three watermelons weigh?
3. For capacity: A pitcher holds 2.5 litres of lemonade. How much lemonade is there in five pitchers?

**Teacher:** Similarly, you need to frame five word problems each on measuring length, weight and capacity and solve them in your Little Book at home. Be sure to use the correct units for length, weight and capacity.

**Teacher:** We can now move on to the next activity.

## Pledging better




**Teacher:** Now, let us move on to the 'Pledging better' section. We will make a pledge to learn more about how technology can help solve problems.

MUST DO
05 MIN.

**Teacher:** So, I would like everyone to say after me, "In my own little way, I pledge to learn about how technology can help solve problems."

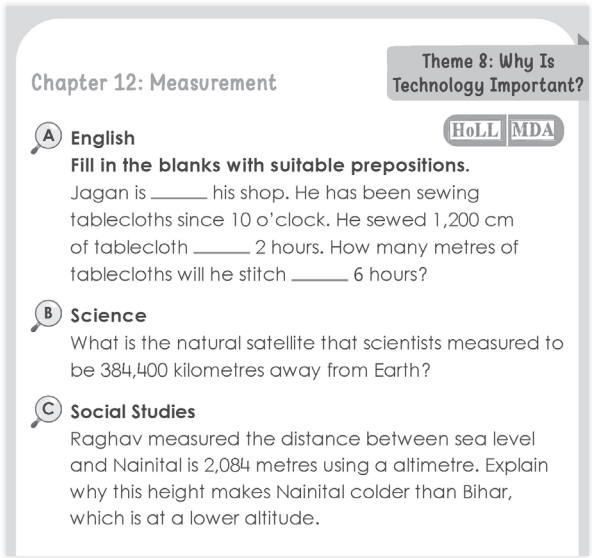
**Teacher:** By making this pledge, we are committing to learning about the amazing ways technology can help us and the world around us. Whether it is using the internet to find information, using apps to help us learn better or using tools to help with health and safety, technology can do so much.

## Book of Holistic Teaching

**Teacher:** Let us open the Book of Holistic Teaching to Chapter 12: Measurement on page 18.

COULD DO
5 MIN.

(Ensure that the mentioned activities are completed by the students. These activities are designed to enhance their holistic understanding and engagement with the topic. Provide any necessary support and/or materials to help them successfully finish the activities.)




**Teacher:** Let us clap for everyone's effort and end today's session. See you in the next class. Have a wonderful day ahead.

You may help students solve the **Quiz** given on digital platform.

## Differentiated Activities

**110 km/hr**

A rope is 8 metres long. You need to cut it into pieces that are each 2 metres long. How many pieces can you cut from the rope?

**80 km/hr**

A watermelon weighs 2 kg 500 g. If you have 4 watermelons, what is their total weight in kilograms and grams?

**40 km/hr**

A jug can hold 2.5 litres of juice. If you fill 6 jugs, how many litres of juice do you have in total?

## Home Task

Frame five word problems each on measuring length, weight and capacity and solve them in your Little Book. Be sure to use the correct units for length, weight and capacity.

# Period 11

SHOULD DO
05 MIN.

**Teacher:** Good morning/ afternoon, everyone. How are you all today?

**Teacher:** Wonderful. Before we start with today's lesson, let us do a fun and quick warm-up. We are going to play a guessing game. I will give you the names of a few objects and you will guess how they are measured. Ready?

**Teacher:** First object – a pencil. How do you think we measure the length of a pencil?

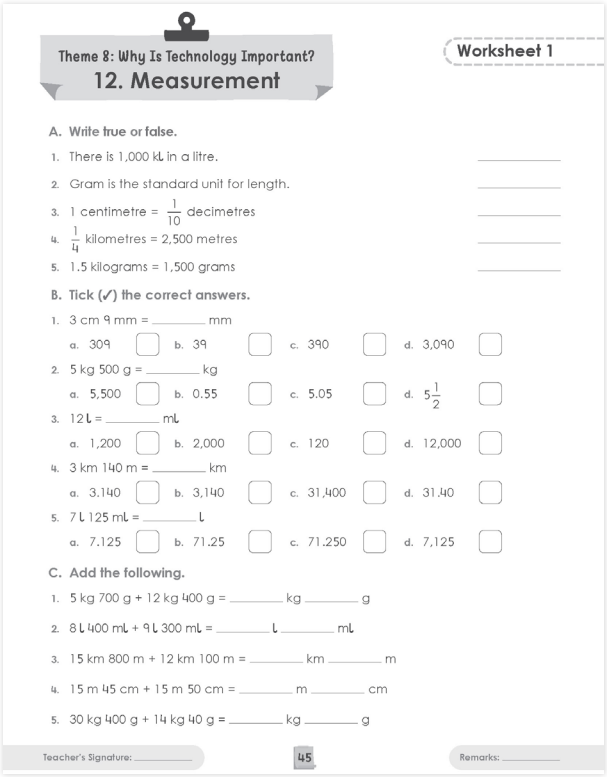
**Teacher:** Yes, we use centimetres. Second object – a bag

of flour. How would we measure the weight of a bag of flour?

**Teacher:** That is right. We use kilograms or grams. What about a bottle of water? What unit do we use to measure the water inside a bottle?

**Teacher:** Exactly, we use litres or millilitres. Let us now move on to the worksheet and practice more questions.

**Worksheet 1**



Theme 8: Why Is Technology Important?

12. Measurement

Worksheet 1

A. Write true or false.

1. There is 1,000 kL in a litre. _____
2. Gram is the standard unit for length. _____
3. 1 centimetre = $\frac{1}{10}$ decimetres _____
4. $\frac{1}{4}$ kilometres = 2,500 metres _____
5. 1.5 kilograms = 1,500 grams _____

B. Tick (✓) the correct answers.

1. 3 cm 9 mm = _____ mm
   a. 309 ☐ b. 39 ☐ c. 390 ☐ d. 3,090 ☐
2. 5 kg 500 g = _____ kg
   a. 5.500 ☐ b. 0.55 ☐ c. 5.05 ☐ d. $5\frac{1}{2}$ ☐
3. 12 L = _____ mL
   a. 1,200 ☐ b. 2,000 ☐ c. 120 ☐ d. 12,000 ☐
4. 3 km 140 m = _____ km
   a. 3.140 ☐ b. 3,140 ☐ c. 31,400 ☐ d. 31.40 ☐
5. 7 L 125 mL = _____ L
   a. 7.125 ☐ b. 71.25 ☐ c. 71.250 ☐ d. 7,125 ☐

C. Add the following.

1. 5 kg 700 g + 12 kg 400 g = _____ kg _____ g
2. 8 L 400 mL + 9 L 300 mL = _____ L _____ mL
3. 15 km 800 m + 12 km 100 m = _____ km _____ m
4. 15 m 45 cm + 15 m 50 cm = _____ m _____ cm
5. 30 kg 400 g + 14 kg 40 g = _____ kg _____ g

Teacher's Signature: _____ 45 Remarks: _____

**Teacher:** Open your Maths Workbook and look at Worksheet 1 on page 45. In Exercise A we need write 'true' or 'false'.

MUST DO 25 MIN. ☐

**Teacher:** Let us begin with the first statement. "There is 1,000 kL in a litre." What do you think? Is it true or false?

**Teacher:** That is right. The answer is false because 1 litre equals 1,000 millilitres, not kilolitres. Now, continue with the rest of the statements. Once you finish, we will review the answers together.

(Give time to the students and let them complete Exercise A.)

**Teacher:** Excellent. We can now move on to Exercise B. It says, Tick (✓) the correct answers.

**Teacher:** Look at the first question: "3 cm 9 mm = _____ mm." What do you think the correct answer is?

**Teacher:** That is right. It is 390 mm. We add 3 cm (which is 30 mm) to 9 mm that gives us 39 mm in total. Now, continue with the remaining questions. Once you finish, we will review the answers together.

(Give time to the students and let them complete Exercise B.)

**Teacher:** Excellent. Let us move on to Exercise C where we need to add the given measurements.

**Teacher:** The first one is 5 kg 700 g + 12 kg 400 g. What do we do first?

**Teacher:** First, we add the kilograms together: 5 kg + 12 kg = 17 kg. Then, we add the grams: 700 g + 400 g = 1,100 g. But since 1,000 g = 1 kg, we can convert 1,100 g into 1 kg 100 g.

**Teacher:** So, the total weight is 18 kg 100 g. Now, you can complete the rest of the additions on your own. Once you finish, we will check the answers together.

(Give time to the students and let them complete Exercise C.)

**Teacher:** Excellent work everyone. Now, take out your project work and have a discussion on it.

## Book of Project Ideas

(Discuss the project assigned in the previous period, focusing on helping students understand the objectives and addressing any challenges they faced.)

COULD DO 10 MIN. ☐

**Teacher:** Excellent participation, everyone. Let us clap for your effort and end today's session.

You may show the **Mental Maths** given on digital platform.

## Differentiated Activities

**110 km/hr**

Create a chart comparing different units of measurement for length, weight and capacity. Include real-life examples for each and explain when to use each unit.

**80 km/hr**

Work with a partner to measure the length, weight and capacity of three objects from around the classroom. Record the measurements and then compare your findings with your partner.

**40 km/hr**

Choose one unit of measurement (length, weight or capacity) and draw pictures of three objects that can be measured with that unit. Write down their approximate measurements next to the pictures.

## Home Task

Complete Worksheet 2 on page 46 of your Maths Workbook.

# Period 12

**Teacher:** Good morning/ afternoon, everyone. How are you all today?

SHOULD DO 05 MIN. ☐

**Teacher:** Wonderful. Before we start with today's lesson, let us do a quick warm-up. I will ask

a few questions and you have to think and answer as quickly as possible. Ready?

**Teacher:** What unit would you use to measure the height of a door?

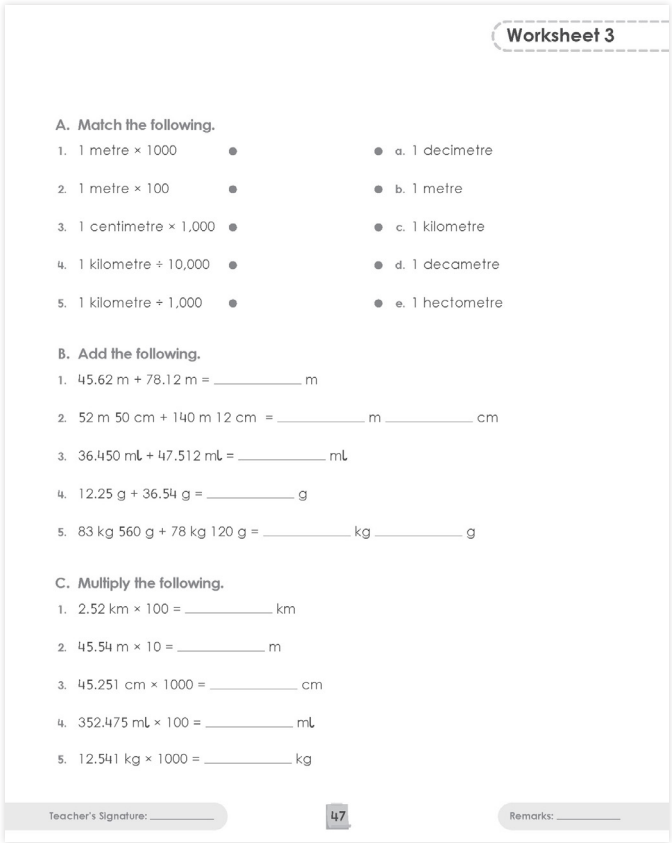
**Teacher:** That is right. We use metres to measure the height of a door. What about the weight of a school bag? How would you measure that?

**Teacher:** Correct. We use kilograms or grams for measuring the weight of a school bag. And, if we want to measure the amount of juice in a cup, what unit would we use?

**Teacher:** Yes, we use millilitres or litres to measure the amount of juice.

**Teacher:** Now, let us move on to the worksheet and practice more questions based on measurements.

**Worksheet 3**



Worksheet 3

A. Match the following.

1. 1 metre × 1000 ● ● a. 1 decimetre
2. 1 metre × 100 ● ● b. 1 metre
3. 1 centimetre × 1,000 ● ● c. 1 kilometre
4. 1 kilometre ÷ 10,000 ● ● d. 1 decametre
5. 1 kilometre ÷ 1,000 ● ● e. 1 hectometre

B. Add the following.

1. 45.62 m + 78.12 m = _____ m
2. 52 m 50 cm + 140 m 12 cm = _____ m _____ cm
3. 36.450 mL + 47.512 mL = _____ mL
4. 12.25 g + 36.54 g = _____ g
5. 83 kg 560 g + 78 kg 120 g = _____ kg _____ g

C. Multiply the following.

1. 2.52 km × 100 = _____ km
2. 45.54 m × 10 = _____ m
3. 45.251 cm × 1000 = _____ cm
4. 352.475 mL × 100 = _____ mL
5. 12.541 kg × 1000 = _____ kg

Teacher's Signature: _____ 47 Remarks: _____

**Teacher:** Open your Maths Workbook and look at Worksheet 3 on page 47. In Exercise A we need match the correct measurements.

MUST DO
30 MIN.

**Teacher:** Let us begin with the first question. It asks, "1 metre × 1,000". What do we get when we multiply 1 metre by 1,000?

**Teacher:** That is right. The answer is 1 kilometre because there are 1,000 metres in a kilometre.

**Teacher:** Now, continue with the rest of the questions. Once you finish, we will review the answers together.

(Give time to the students and let them complete Exercise A.)

**Teacher:** Excellent. We can now move on to Exercise B. It says, add the given measurements.

**Teacher:** Look at the first question: 45.62 m + 78.12 m. Let us add them together.

**Teacher:** Correct. We get 123.74 m. Now, continue with the remaining questions. Once you finish, we will review the answers together.

(Give time to the students and let them complete Exercise B.)

**Teacher:** Fantastic. Let us move on to Exercise C where we need to multiply the given measurements.

**Teacher:** The first one is 2.52 km × 100. What do you get when you multiply?

**Teacher:** That is right. The answer is 252 km. Now, you can complete the rest of the multiplications on your own. Once you finish, we will check the answers together.

(Give time to the students and let them complete Exercise C.)

**Teacher:** Excellent work everyone. Now, take out your project work and have a discussion on it.

**Teacher:** Now, let us fill in the last column of the KWL chart.

SHOULD DO
05 MIN.

**Teacher:** In this column we will write what we have learned in this chapter.

**Teacher:** Think about the topics, have we learnt and write them in the 'L' column of the chart. (Wait for students to fill in the chart.)

**Teacher:** Let us all give a huge round of applause to everyone for their effort. See you in the next class. Have a wonderful day ahead.

You may generate additional practice worksheets using the **Test Generator** given on digital platform.

## Differentiated Activities

**110 km/hr**

You have a 2-litre bottle. You use a 500 mL of cup to fill it. How many times will you need to pour the water to completely fill the bottle?

**80 km/hr**

A box weighs 3 kg 250 g. What is the weight of 6 such boxes?

**40 km/hr**

A car travels 60 km every hour. How far will it travel in 7 hours?

## Home Task

Find three objects in your home that you can measure using different units. For example, find something long, something heavy and something large that holds liquid. Measure and write down their length, weight and capacity.

Also, write down their correct units of measurement and explain why those units are appropriate for them.

## Learning Outcomes

**The students will:**

| Domain | Learning Outcome |
|---|---|
| **Physical Development** | • demonstrate the ability to use measuring tools such as rulers, measuring tapes and scales effectively in hands-on activities. |
| **Socio-Emotional and Ethical Development** | • collaborate with peers during group activities, engaging in respectful discussions and sharing ideas while measuring and converting units. |
| **Cognitive Development** | • apply concepts of unit conversion, estimation and calculation in real-world problems, reinforcing mathematical reasoning and critical thinking skills. |
| **Language and Literacy Development** | • express and explain measurement-related concepts using appropriate vocabulary and language structures, both in written and verbal forms. |
| **Aesthetic and Cultural Development** | • appreciate the role of measurement in various cultural and artistic contexts, such as in design, architecture and daily life. |
| **Positive Learning Habits** | • develop independent learning habits by practicing measurements and conversions at home and using technology to enhance learning and problem-solving skills. |

**Starry Knights**

Did your learners enjoy the acivities on measurement? How do you think hey will use the concepts learnt on estimation and measurement?

Reward yourself with a STAR.

# Lesson-13: Perimeter, Area and Volume



12 Periods (40 minutes each)

Learn Better (Main Coursebook), Stay Ahead (Workbook), Book of Holistic Teaching, Book of Project Ideas, CRM signs, Poster

Animation, Animated Activities, Dictionary, eBook, Explainer Video, HOTs, I Explain, Infographic, Slideshow, Know it right, Maths lab, Mental Maths, Quick Math, Quiz, Test Generator

Confirming better: I stay informed with technology.

## Curricular Goals and Objectives (NCF)

**To enable the students:**

- to understand and apply the concept of perimeter for different shapes, including squares, rectangles and irregular shapes.
- to learn the formulas for calculating the area of squares, rectangles and other simple shapes and apply them in practical situations.
- to explore and understand the concept of volume and the method for calculating the volume of cubes and cuboids using appropriate formulas.
- to develop problem-solving skills through real-life examples and exercises involving perimeter, area and volume.
- to demonstrate effective use of measurement tools such as rulers, grids and measuring tapes to calculate dimensions of various objects.
- to collaborate effectively in group activities and discussions, sharing ideas and learning from peers.
- to develop the ability to apply mathematical concepts to practical life situations, such as designing objects and calculating costs based on measurements.

## Methodology

### Period 1

SHOULD DO — 5 MIN.

**Teacher**: Good morning students. How are you all today?

**Teacher**: Wonderful. Before we begin today's lesson, let us start with a quick game to refresh our minds. I will ask you a few questions and you have to answer them as quickly as you can. Ready?

**Teacher**: Great. How do you find out what is happening in the world around you?

**Teacher**: That is right. We use technology, like the internet, social media, news apps and even the television.

**Teacher**: Now, think about when you need to know something important, like the weather forecast or your homework assignments. How do you usually find out?

**Teacher**: Exactly. We use our smart phones, computers or even smart assistants like Alexa or Google to help us.

**Teacher**: Great. Technology helps us stay connected and up-to-date with everything happening in our lives. Now, let us dive into today's lesson.

### Confirming better

**Teacher**: Look at the 'Confirming better' section on page 149 of your Main Course Book. Can anyone read it aloud for me?

MUST DO — 5 MIN.


**Teacher**: Good reading. It says, "I stay informed with technology." Can anyone tell me how technology helps us stay informed?

**Teacher**: Yes, that is right. Technology allows us to access news, information and updates instantly through websites, social media and applications.

**Teacher**: With technology, we can easily find out what is happening in the world, get weather updates and even follow live events.

**Teacher**: Remember, staying informed with technology is very important as it helps us make better decisions, stay safe and understand what is going on in the world or around us.

**Teacher**: We will begin a new chapter, Time. We are going to use a KWL chart to help us organise our thoughts and learning. I have made a KWL format on the blackboard. Please take out your notebooks and draw the same format in your notebooks.

SHOULD DO
5 MIN.

| K | W | L |
|---|---|---|
| | | |

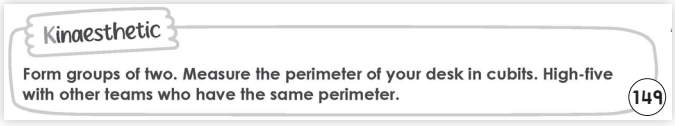
**Teacher**: Take a few minutes to think and write. If you have any questions, feel free to ask.

**Teacher**: You all did an amazing job in this activity. We can now move to Re-KAP activities. We will use Kinaesthetic, Auditory and Pictorial activities today to make our learning exciting. Let us start with the Kinaesthetic activity.

## Kinaesthetic

**Teacher**: Look at the 'Kinaesthetic' activity. It will help us understand measurements in a fun way.

MUST DO
10 MIN.




**Teacher**: First, I want you to form groups of two with your partner. You will need to measure the perimeter of your desk. We will be using cubits for this activity. Can anyone tell me what a cubit is?

**Teacher**: That is right. A cubit is the length of your arm from your elbow to your fingertip. So, you will use your arm to measure the perimeter of your desk.

**Teacher**: Start at one corner of your desk and measure each side, using your cubit. Count how many cubits it takes to go all the way around the desk.

**Teacher**: Once you have measured the perimeter, compare your result with other teams. If you find another team with the same perimeter, high-five them.

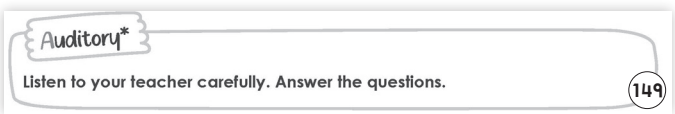
**Teacher**: Remember, this is all about working together and having fun while learning. Let us see which teams have the same perimeter.

**Teacher**: Excellent participation, everyone. We can now move on to the next activity.

## Auditory

**Teacher**: Now, look at the 'Auditory' activity. Listen to me carefully as I read the question aloud. Think and answer.

MUST DO
5 MIN.



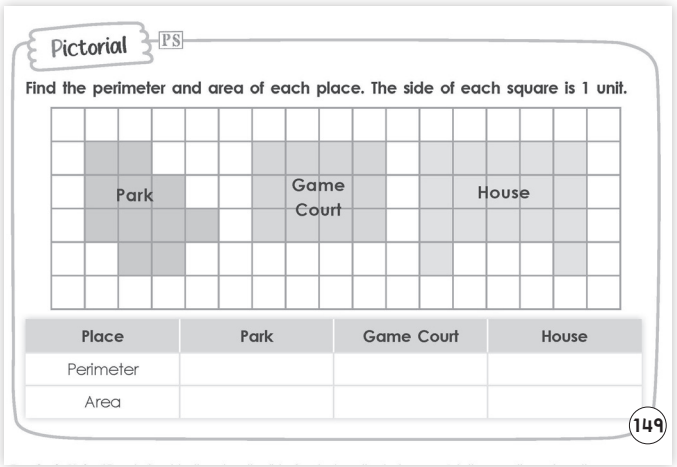

**Teacher**: Mohit runs around a square park with sides that are 100 metres long. What is the distance Mohit runs if he goes around the park once?"

**Teacher**: Great work, everyone. Now, let us explore the pictorial activity.

## Pictorial

**Teacher**: Look at the image/ question given in 'Pictorial' section on page 149. We need to find the perimeter and area of each place.

MUST DO
10 MIN.




**Teacher**: As you can see, there are three places shown here: the Park, the Game Court and the House. Each square in the grid represents one unit, so we can use this grid to help us measure the perimeter and area.

**Teacher**: Let us start by measuring the perimeter of the park. The perimeter is the total length of the boundary. Can anyone tell me how we can find the perimeter of the park?

**Teacher**: Yes, that is right. We count the number of squares along the outer edge of the park.

**Teacher**: Now, look at the area of the park. The area is the total space inside the boundary. Can anyone tell me how we find the area?

**Teacher**: Exactly. We count how many squares are inside the boundary of the park. The area is simply the total number of unit squares that fill the space.

**Teacher**: Now, I want you to do the same for the Game Court and the House. Measure their perimeters and areas just like we did for the park.

**Teacher**: Write down your answers in the table below each place. Once you are done, compare your results with your partner and see if they match.

(Give time to the students to complete the table. Guide/ help them wherever required.)

**Teacher**: Excellent. Let us clap for everyone's effort and end today's session.

You may show the **eBook** and **Animation** given on digital platform.

## Differentiated Activities

**110 km/hr**

Create a mini-map of the classroom using grid paper. Mark and measure the perimeter and area of different objects in the classroom (like table, board, etc.). Write down the measurements in your notebook and calculate the total area of the space.

**80 km/hr**

Find objects around the classroom and measure their lengths and perimeters using a measuring tape or ruler. Record your findings and compare them with a classmate's. Discuss how the measurements differ and why?

**40 km/hr**

Use a piece of string to measure the perimeter of your desk or a table in the classroom. Then, count how many small unit squares (like 1 cm or 1 inch) fit along the string to calculate the perimeter. Write down your results in your notebook.

## Home Task

Create a mini-map of your room or house using grid paper. Mark and measure the perimeter and area of different objects in your room (like the bed, table and wardrobe). Write down the measurements in your notebook and calculate the total area of the space.

## Period 2

SHOULD DO

5 MIN.

**Teacher**: Good morning/ afternoon everyone. How are you all today?

**Teacher**: Wonderful. Before we start our lesson, let us warm up with a quick game. I will ask you a few questions related to shapes and measurements. Try to answer them quickly. Ready?

**Teacher**: First question, which shape has all four sides of equal length?

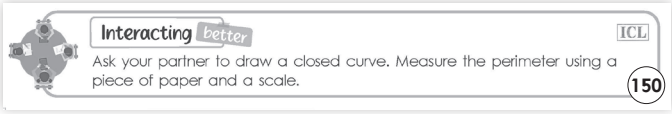
**Teacher**: Yes, that is right. A square. Now, what shape has opposite sides that are equal in length and four right angles?

**Teacher**: Correct. A rectangle. Next, if the length of a rectangle is 5 cm and the width is 3 cm, can anyone guess how to find the perimeter of this rectangle?

**Teacher**: Well done. The perimeter of a rectangle is calculated by adding up all four sides. Let us do one more. If a square has a side length of 4 cm, what is the perimeter of the square?

**Teacher**: Fantastic. Now, let us dive into today's lesson on perimeter of a rectangle and a square.

## Interacting better




**Teacher**: Look at the 'Interacting better' section on page 150 of your Main Coursebook. We are going to do a fun activity along with a partner.

MUST DO

10 MIN.

**Teacher**: Ask your partner to draw a closed curve on a piece of paper. It could be any shape, like a circle or an oval, as long as it is a closed curve. Make sure the shape is not too big or small, just enough to measure the perimeter.

**Teacher**: Now, you will need to measure the perimeter of the shape. Take a piece of paper and a scale. Start by placing the piece of paper along the curve and carefully trace around the entire curve with the scale. Keep track of the distance as you go along.

**Teacher**: After measuring, write down the length of the perimeter in your notebook. Discuss with your partner and compare how you measured and what your results are.

(Give time to the students to perform the activity and guide/ help them wherever required.)

**Teacher**: Excellent work everyone. Let us move on to the next activity.

MUST DO

10 MIN.

**Teacher**: Now, let us look at the story given on page 150.


**Teacher**: In the story, Ryan is using an app to measure the length and breadth of a shoe box. He is comparing the measurements with those of a scale.

**Teacher**: Technology has improved so much that now we can measure things with just an app. Isn't that fascinating?

**Teacher**: Let us focus on the shape of the top of the shoe box. Can anyone tell me what shape it is?

**Teacher**: Yes. The top of the shoe box is in the shape of a rectangle. Do you remember how we find the perimeter of a rectangle?

**Teacher**: That is right. Ryan also tells the formula to his mother. He says, "The formula for the perimeter of a rectangle is 2 times the length plus 2 times the width."

**Teacher**: Let us say we have a rectangle with a length of 5 units and a width of 3 units. What would the perimeter be?

**Teacher**: Fantastic. It would be 2 × 5 + 2 × 3 = 10 × 6 = 16 units.

**Teacher**: It is true that technology can help us measure everything, but at the same time we should also know the formula to calculate measurements on our own.

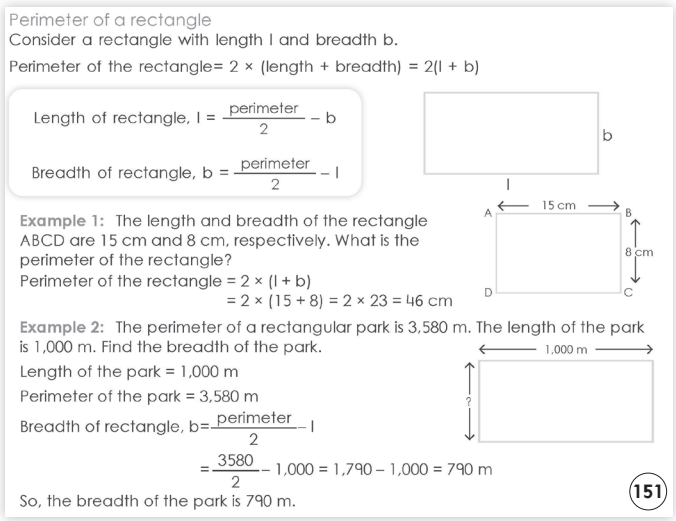
**Teacher**: Let us understand the perimeter in detail in the next activity.

**Perimeter of rectangle**

**Teacher**: Look at the 'Perimeter of a rectangle' section on page 151. Can anyone tell me what 'perimeter' is?

MUST DO

8 MIN.



Perimeter of a rectangle

Consider a rectangle with length l and breadth b.

Perimeter of the rectangle= 2 × (length + breadth) = 2(l + b)

Length of rectangle, $l = \frac{\text{perimeter}}{2} - b$

Breadth of rectangle, $b = \frac{\text{perimeter}}{2} - l$

b

l

**Example 1:** The length and breadth of the rectangle ABCD are 15 cm and 8 cm, respectively. What is the perimeter of the rectangle?

Perimeter of the rectangle = 2 × (l + b)

= 2 × (15 + 8) = 2 × 23 = 46 cm

A 15 cm B

8 cm

D C

**Example 2:** The perimeter of a rectangular park is 3,580 m. The length of the park is 1,000 m. Find the breadth of the park.

Length of the park = 1,000 m

Perimeter of the park = 3,580 m

Breadth of rectangle, $b = \frac{\text{perimeter}}{2} - l$

$= \frac{3580}{2} - 1{,}000 = 1{,}790 - 1{,}000 = 790$ m

So, the breadth of the park is 790 m.

1,000 m

?

151

**Teacher**: That is right. The length of the boundary of a simple closed figure is called its perimeter. Let us talk about the perimeter of a rectangle.

**Teacher**: The perimeter of a rectangle is calculated by adding up all the sides. The formula is, perimeter = 2 × (length + breadth)

So, we multiply the sum of the length and breadth by 2 to get the perimeter. Let us take an example to understand it better.

**Teacher**: Look at Example 1 and find the perimeter of the rectangle. To solve this, we will use the formula, perimeter = 2 × (length + breadth)

Perimeter = 2 × (15 + 8)

Perimeter = 2 × 23 = 46 cm.

**Teacher**: So, the perimeter of this rectangle is 46 cm. Now, let us try Example 2 and find the breadth of the park.

**Teacher**: We will use the same formula. We are given the perimeter (3,580 m) and the length (1,000 m), so we can rearrange the formula to find the breadth:

perimeter = 2 × (length + breadth)

perimeter ÷ 2 = length + breadth

breadth = (perimeter ÷ 2) – length

breadth = (3,580 ÷ 2) – 1,000

breadth = 1,790 – 1,000

breadth = 790 m.

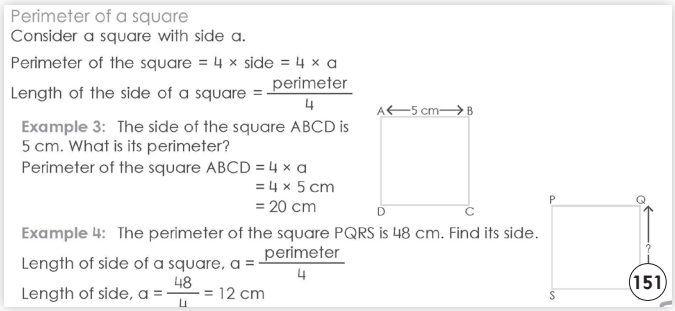
**Teacher**: So, the breadth of the park is 790 metres. Let us now move see how to find perimeter of square.

**Perimeter of square**

**Teacher**: The perimeter of a square is calculated by adding all four equal sides. The formula for the perimeter of a square is, perimeter = 4 × side

MUST DO

7 MIN.



Perimeter of a square

Consider a square with side a.

Perimeter of the square = 4 × side = 4 × a

Length of the side of a square = $\frac{\text{perimeter}}{4}$

**Example 3:** The side of the square ABCD is 5 cm. What is its perimeter?

Perimeter of the square ABCD = 4 × a

= 4 × 5 cm

= 20 cm

A 5 cm B

D C

**Example 4:** The perimeter of the square PQRS is 48 cm. Find its side.

Length of side of a square, $a = \frac{\text{perimeter}}{4}$

Length of side, $a = \frac{48}{4} = 12$ cm

P Q

S ?

151

**Teacher**: Look at Example 3 and find out the perimeter of the square.

**Teacher**: We can use the formula: Perimeter = 4 × side

Therefore, the perimeter of the square = 4 × 5 = 20 cm. Let us move on to Example 4 and find the side of this square?

**Teacher**: To find the side of the square, we rearrange the formula, perimeter = 4 × side

**side** = perimeter ÷ 4 = 48 ÷ 4 = 12 cm. So, the length of the side of the square is 12 cm.

**Teacher**: Great work, everyone. You have done well with both the perimeter of a rectangle and a square. Let us clap for everyone's effort and end today's session.

You may show the **Animated Activities** and **Infographic** given on digital platform.

## Differentiated Activities

**110 km/hr**

Find the perimeter and area of an irregular shape (using grids on a piece of paper). Draw the shape, measure each side and calculate the perimeter. Then, count the number of squares inside the shape to find the area. Write the perimeter and area in your notebook.

**80 km/hr**

Choose three rectangles with different lengths and widths from your surroundings. Measure the length and width of each rectangle using a ruler. Calculate the perimeter of each rectangle using the formula Perimeter = 2 × (length + width) and write it in your notebook.

**40 km/hr**

Draw a rectangle on a piece of paper. Label the length and width. Use a ruler to measure each side of the rectangle. Write down the measurements in your notebook and calculate the perimeter using the formula Perimeter = 2 × (length + width). Ask for help from a classmate if you need assistance.

## Home Task

Complete Exercises 1, 2, 3 and 4 given on page 152 of your Main Coursebook.

## Period 3

SHOULD DO
5 MIN.

**Teacher**: Good morning/ afternoon everyone. How are you all today?

**Teacher**: Wonderful. Before we start our lesson, let us warm up with a quick activity. I will ask you a few questions and you need to answer them as quickly as you can. Ready?

**Teacher**: Can anyone tell me what the perimeter of a square is?

**Teacher**: Yes, that is right. The perimeter of a square is found by adding up all four sides or in other words, multiplying the side by 4. What about rectangles? What do we do to find the perimeter of a rectangle? Anyone?

**Teacher**: Exactly. We add up the length and breadth and then multiply the result by 2. That is the formula for the perimeter of a rectangle.

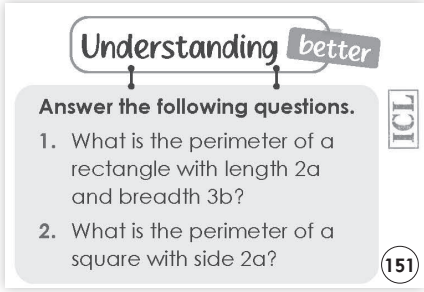
**Teacher**: Now, think about this - If I tell you the length of a rectangle is 10 metres and the breadth is 5 metres, can anyone quickly tell me what the perimeter will be?

**Teacher**: Great. You are on the right track. The perimeter will be 2 × (10 + 5) = 2 × 15 = 30 metres.

**Teacher**: Well done, everyone. Let us move on today's lesson.

MUST DO
10 MIN.

## Understanding better




**Teacher**: Look at the 'Understanding better' section given on page 151 of your Main Coursebook. We are going to answer two questions related to the perimeter of shapes.

**Teacher**: The first question says, "What is the perimeter of a rectangle with length 2a and breadth 3b?"

**Teacher**: To find the perimeter of a rectangle, we use the formula,

perimeter = 2 × (length + breadth).

**Teacher**: So, for this rectangle, the length is 2a and the breadth is 3b. Let us substitute these values into the formula. Perimeter = 2 × (2a + 3b)

**Teacher**: Now, let's simplify it by multiplying 2 by (2a + 3b). And, we get the '4a + 6b'. So, the perimeter of the rectangle is 4a + 6b. Well done.

**Teacher**: Now, let us move on to the second question, "What is the perimeter of a square with side 2a?"

**Teacher**: We know that the perimeter of a square is found by multiplying the length of one side by 4 because all sides of a square are equal. So, for this square, the side is 2a. The formula for the perimeter of a square is, perimeter = 4 × side.

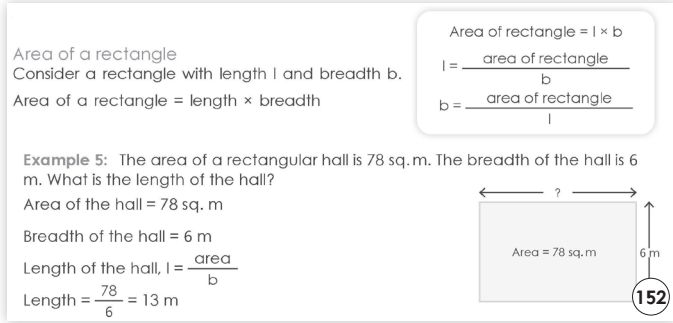
**Teacher**: Now let us substitute 2a for the side. Perimeter = 4 × 2a = 8a. So, the perimeter of the square is 8a.

**Teacher**: Excellent work. We can now move on to the next activity.

**Area of Rectangle**

MUST DO
7 MIN.

**Teacher**: Look at the 'Area of rectangle' section given on page 152. We are going to learn about the area of a rectangle. Can anyone tell me what the word area means?




**Teacher**: Yes, that is right. The area is the amount of space inside a shape. Now, let us talk about rectangles. The area of a rectangle is calculated by multiplying its length by its breadth. We can write it as, area of a rectangle = length × breadth

**Teacher**: It also gives us the formulae of

$$\text{length} = \frac{\text{area of rectangle}}{\text{breadth}}$$

$$\text{breadth} = \frac{\text{area of rectangle}}{\text{leangth}}$$

**Teacher**: Let us look at Example 5 to understand it better. Take a look at the rectangular hall in the image. The area of the hall is given as 78 square metres and the breadth is 6 metres. We need to find the length of the hall.

**Teacher**: To find the length, we use the formula. We know that area = length × breadth. So, we can rearrange the formula to find the length and get, length = area ÷ breadth

**Teacher**: Now, let us plug in the numbers. We know that the area is 78 square metres and the breadth is 6 metres. So, Length = 78 ÷ 6 = 13 metres. Therefore, the length of the hall is 13 metres.

**Teacher**: Isn't that simple? You can always use this formula to find the area of any rectangle, as long as you know the length and breadth.

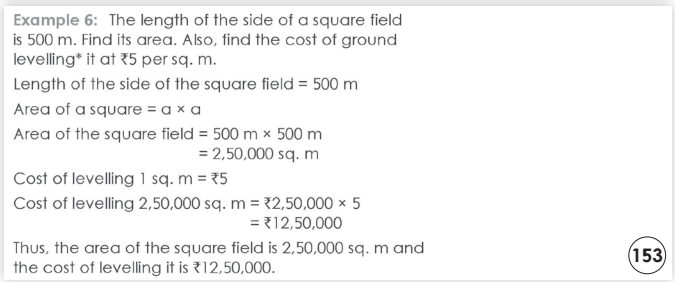
**Teacher**: Let us now move on to how to find area of square.

**Area of square**

**Teacher**: Look at the 'Area of square' section. Does anyone know how to find the area of a square?

MUST DO
8 MIN.


Area of a square
Consider a square with side a.
Area of a square = side × side
Area of square = a × a
a
152


**Example 6:** The length of the side of a square field is 500 m. Find its area. Also, find the cost of ground levelling* it at ₹5 per sq. m.
Length of the side of the square field = 500 m
Area of a square = a × a
Area of the square field = 500 m × 500 m
= 2,50,000 sq. m
Cost of levelling 1 sq. m = ₹5
Cost of levelling 2,50,000 sq. m = ₹2,50,000 × 5
= ₹12,50,000
Thus, the area of the square field is 2,50,000 sq. m and the cost of levelling it is ₹12,50,000.
153

**Teacher**: That is right. To find the area of a square, we need to multiply the length of one side by itself. So, the formula is:

Area of a square = side × side

**Teacher**: Let us look at the Example 6 to understand it better. The length of the side of a square field is given as 500 metres. We need to find its area.

**Teacher**: To calculate the area of the square field, we use the formula. Since the length of the side is 500 metres, we multiply 500 by 500.

**Teacher**: So, the area of the square field is 500 × 500 = 250,000 square metres.

**Teacher**: Now, we can easily find the cost of ground levelling the field. The cost to level 1 square metre of land is ₹5. To find the total cost, we multiply the area of the field by the cost per square metre.

**Teacher**: So, the total cost of levelling the field will be 250,000 × ₹5 = ₹12,50,000

**Teacher**: Therefore, the area of the square field is 250,000 square metres and the total cost of levelling the field is ₹12,50,000.

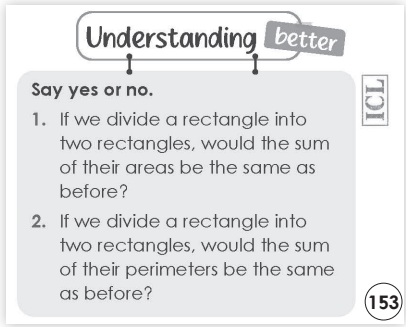
**Teacher**: This is how we calculate the area of a square and use it in real-life situations, such as for land measurement and cost calculations.

**Teacher**: Let us now move on to the next activity for better understanding of it.

## Understanding better

**Teacher**: Look at the 'Understanding better' section given on page 153 of your Main Coursebook. We will be exploring some concepts about the area and perimeter of rectangles with the help of the two questions. Can anyone read the first question for me?

MUST DO
5 MIN.


Understanding better
Say yes or no.
1. If we divide a rectangle into two rectangles, would the sum of their areas be the same as before?
2. If we divide a rectangle into two rectangles, would the sum of their perimeters be the same as before?
ICL
153

**Teacher**: Excellent reading. Now, think about this. If we divide the rectangle into two parts, are we still working with the same total area? what do you think?

**Teacher**: Yes, that is right. The sum of the areas of the two smaller rectangles will always be equal to the area of the original rectangle. The area does not change when we divide it.

**Teacher**: Let us now move on to the second question. It is about the perimeter. Remember, the perimeter is the total distance around the figure and when we divide the rectangle, the new smaller rectangles will have different sides. So, do you think the perimeter will stay the same?

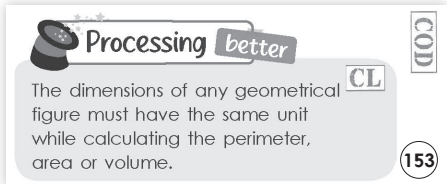
**Teacher**: No, that is right. The sum of the perimeters of the two smaller rectangles is generally not the same as the perimeter of the original rectangle. When we divide the rectangle, the sides change and therefore, the perimeter changes too.

**Teacher**: Great thinking, everyone. Let us now move on to the next activity.

## Processing better

MUST DO
5 MIN.

**Teacher**: Now, let us focus on the 'Processing better' section. It says, "The dimensions of any geometrical figure must have the same unit while calculating the perimeter, area or volume."


Processing better
The dimensions of any geometrical figure must have the same unit while calculating the perimeter, area or volume.
CL
COD
153

**Teacher**: What do you think this means?

**Teacher**: Yes, that is correct. When we measure the sides of any shape, all the dimensions such as length, width and height – must be in the same unit. This ensures that our calculations for the perimeter, area or volume are accurate.

(If asked, tell them that we will study about volume in coming periods.)

**Teacher**: Let us understand if with an example. If we are calculating the perimeter of a rectangle and we have the length as 5 cm and the breadth as 3 m, we first need to convert one of the measurements to the same unit before adding them together. We could convert the length to metres, so it becomes 0.05 m or convert the breadth to centimetres, so it becomes 300 cm.

**Teacher**: Does anyone know why it is important to use the same unit?

**Teacher**: Exactly. If the units are not the same, the calculation would not be correct and we would get the wrong perimeter, area or volume.

**Teacher**: Great work everyone. Let us clap for everyone's effort and end today's session.

You may show the **Explainer Video** and **Quick Math** given on digital platform.

## Differentiated Activities

**110 km/hr**

Create a word problem involving the perimeter and area of a rectangle and square. Solve the problem and then create a similar problem for your classmates to solve. Present your problem and solution in a creative way, using visual aids or drawings.

**80km/hr**

Measure the length and breadth of different rectangular objects around your classroom. Calculate the perimeter and area of each object. Compare your results with your classmates and discuss any differences you find.

**40 km/hr**

Use a piece of string to measure the perimeter of different shapes around the classroom (like a book, a desk, etc.). After measuring, compare your result with the actual dimensions given in the class. Write down your findings in your notebook.

## Home Task

Complete Exercises 5, 6 and 7 given on page 153 of your Main Coursebook.

## Period 4

**Teacher**: Good morning/ afternoon everyone. How are you all today?

SHOULD DO — 5 MIN.

**Teacher**: Great. Before we start our lesson, let us quickly warm up with a fun activity. I will ask you a few questions and you need to answer as fast as you can. Ready?

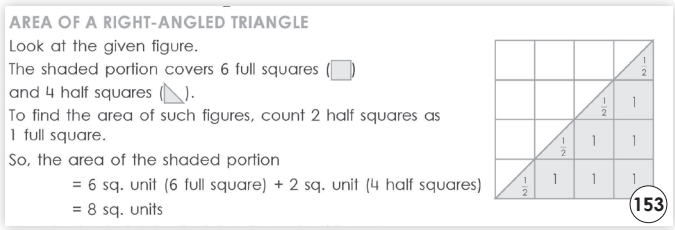
**Teacher**: First question, "Can anyone tell me what a triangle is?"

**Teacher**: Yes, that's correct. A triangle is a shape with three sides. Now, do you know what makes a triangle a right-angled triangle?

**Teacher**: Exactly. A right-angled triangle has one angle that is 90 degrees, like the corner of a square. Now think about this, "What happens when you take a rectangle and cut it in half along the diagonal? What do you get?"

**Teacher**: Yes, that is right. You get two right-angled triangles. Let us dive into today's lesson, where we will understand how to find the area of a right-angled triangle.

**Area of Right-Angled Triangle**


AREA OF A RIGHT-ANGLED TRIANGLE

Look at the given figure.

The shaded portion covers 6 full squares ( ) and 4 half squares ( ).

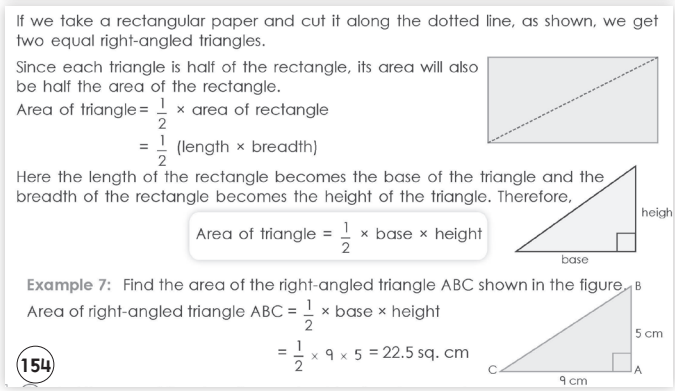
To find the area of such figures, count 2 half squares as 1 full square.

So, the area of the shaded portion

= 6 sq. unit (6 full square) + 2 sq. unit (4 half squares)

= 8 sq. units

153


If we take a rectangular paper and cut it along the dotted line, as shown, we get two equal right-angled triangles.

Since each triangle is half of the rectangle, its area will also be half the area of the rectangle.

Area of triangle = $\frac{1}{2}$ × area of rectangle

= $\frac{1}{2}$ (length × breadth)

Here the length of the rectangle becomes the base of the triangle and the breadth of the rectangle becomes the height of the triangle. Therefore,

Area of triangle = $\frac{1}{2}$ × base × height

**Example 7:** Find the area of the right-angled triangle ABC shown in the figure.

Area of right-angled triangle ABC = $\frac{1}{2}$ × base × height

= $\frac{1}{2}$ × 9 × 5 = 22.5 sq. cm

154

**Teacher**: Look at the figure in the 'Area of a Right-Angled Triangle' section on page 153. We can see a right-angled triangle and it is divided into squares. How do we calculate the area of this triangle?

MUST DO — 10 MIN.

**Teacher**: Notice that the shaded portion covers 6 full squares and 4 half squares. To find the area of such figures, we count 2 half squares as 1 full square. So, what will the area be?

**Teacher**: That is right. The area of the shaded portion is 6 square units from the full squares and we add 2 square units from the half squares. This gives us a total of 8 square units for the area of this triangle.

**Teacher**: Now, let us move on to a different example. Suppose we take a rectangular paper and cut it along the dotted line. What happens when we do this?

**Teacher**: Correct. We get two equal right-angled triangles. Since each triangle is half of the rectangle and its area will also be half the area of the rectangle.

**Teacher**: Can anyone remind me of the formula to find the area of a rectangle?

**Teacher**: Yes, it is length × breadth. So, since each triangle is half the area of the rectangle, we can say, area of triangle = $\frac{1}{2}$ × area of rectangle = $\frac{1}{2}$ (length × breadth)

**Teacher**: Now, if the length of the rectangle becomes the base of the triangle and the breadth becomes the height of the triangle, we can calculate the area of the triangle using this formula, area of triangle = $\frac{1}{2}$ × base × height.

**Teacher**: Let us move on to Example 7. Look at the right-angled triangle ABC. The base of the triangle is 9 cm and the height is 5 cm. Let us find the area of this triangle.

**Teacher**: We will use the formula:

Area of triangle ABC = $\frac{1}{2}$ × base × height.

Substituting the values, we get

Area of triangle ABC = $\frac{1}{2}$ × 9 × 5 = 22.5 square centimetres.

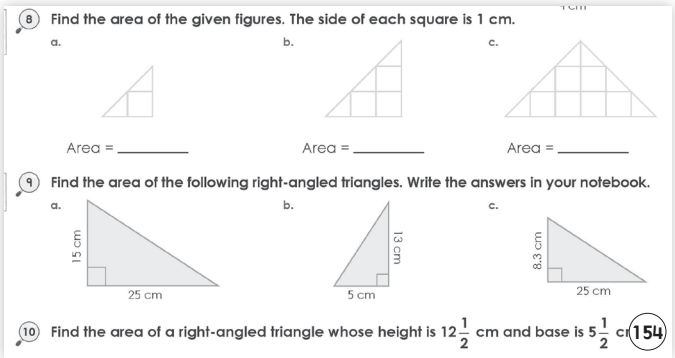
**Teacher**: Fantastic. We have now learnt how to calculate the area of a right-angled triangle. Let us practice some more questions in Exercises 8 and 10 for better understanding.

**Exercises 8 and 10**

MUST DO

10 MIN.

**Teacher**: Look at Exercise 8 on page 154. We have three triangles here and we need to find the area of each figure. The side of each square is 1 cm.


8 Find the area of the given figures. The side of each square is 1 cm.

a. b. c.

Area = _____ Area = _____ Area = _____

9 Find the area of the following right-angled triangles. Write the answers in your notebook.

a. 15 cm, 25 cm b. 13 cm, 5 cm c. 8.3 cm, 25 cm

10 Find the area of a right-angled triangle whose height is $12\frac{1}{2}$ cm and base is $5\frac{1}{2}$ cm

154

**Teacher**: Let us start with question 8(a). Here we have a right-angled triangle with squares inside. What do we do to find the area of this triangle?

**Teacher**: That is correct. We need to count how many squares are inside the triangle. There are 1 full square and 2 half squares. So, in total there are 2 full squares. Since the side of each square is 1 cm, the area of the triangle will be 2 square cm i.e. 2 cm².

**Teacher**: Similarly, you can solve the other two questions 8(b) and 8(c). If you have any doubts, raise your hand and we will discuss them together.

(Guide/help students to solve the questions and complete the exercise.)

**Teacher**: Excellent. Now, let us move on to the next question, Exercise 10. We need to find the area of a right-angled triangle. The height is $12\frac{1}{2}$ cm and the base is $5\frac{1}{2}$.

**Teacher**: Can anyone recall the formula for the area of a triangle?

**Teacher**: Yes, that is right. The formula is, area = $\frac{1}{2}$ × base × height. Now, substitute the values from the question. Before that let us convert these mixed numbers into improper fractions. $5\frac{1}{2} = \frac{11}{2}$ and $12\frac{1}{2} = \frac{25}{2}$.

**Teacher**: Now, using the formula, we get

Area = $\frac{1}{2} \times \left(\frac{11}{2}\right) \times \left(\frac{25}{2}\right)$

Area = $\frac{1}{2}$ × (11 × 25) ÷ 4

Area = $\frac{1}{2}$ × 275 ÷ 4

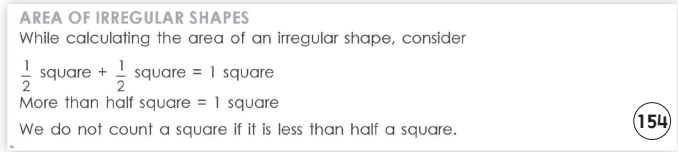
Area = 275 ÷ 8

Area = 34.375 cm².

So, the area of the triangle is 34.375 cm².

**Teacher**: Well done, everyone. Let us now learn to find area of irregular shapes.

**Area of Irregular Shapes**


AREA OF IRREGULAR SHAPES

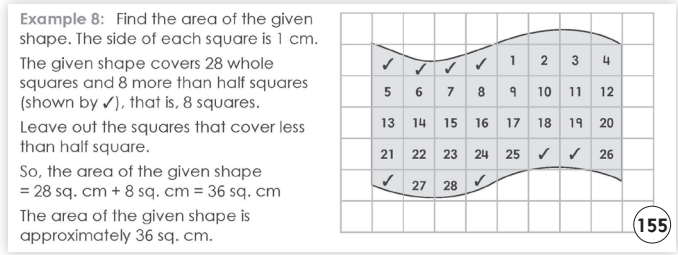
While calculating the area of an irregular shape, consider

$\frac{1}{2}$ square + $\frac{1}{2}$ square = 1 square

More than half square = 1 square

We do not count a square if it is less than half a square.

154


Example 8: Find the area of the given shape. The side of each square is 1 cm.

The given shape covers 28 whole squares and 8 more than half squares (shown by ✓), that is, 8 squares.

Leave out the squares that cover less than half square.

So, the area of the given shape = 28 sq. cm + 8 sq. cm = 36 sq. cm

The area of the given shape is approximately 36 sq. cm.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | ✓ | ✓ | ✓ | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | ✓ | ✓ | 26 |
| ✓ | 27 | 28 | ✓ | | | | |

155

MUST DO

10 MIN.

**Teacher**: Now, we are going to learn how to find the area of an irregular shape. Let us start by looking at the shape shown in the image on page 155.

**Teacher**: When we calculate the area of an irregular shape, we follow a simple rule. If we have a half square and another half square, we can count them as one whole square. If the area covers more than half of a square, we count it as a whole square, but if it is less than half, we do not count it.

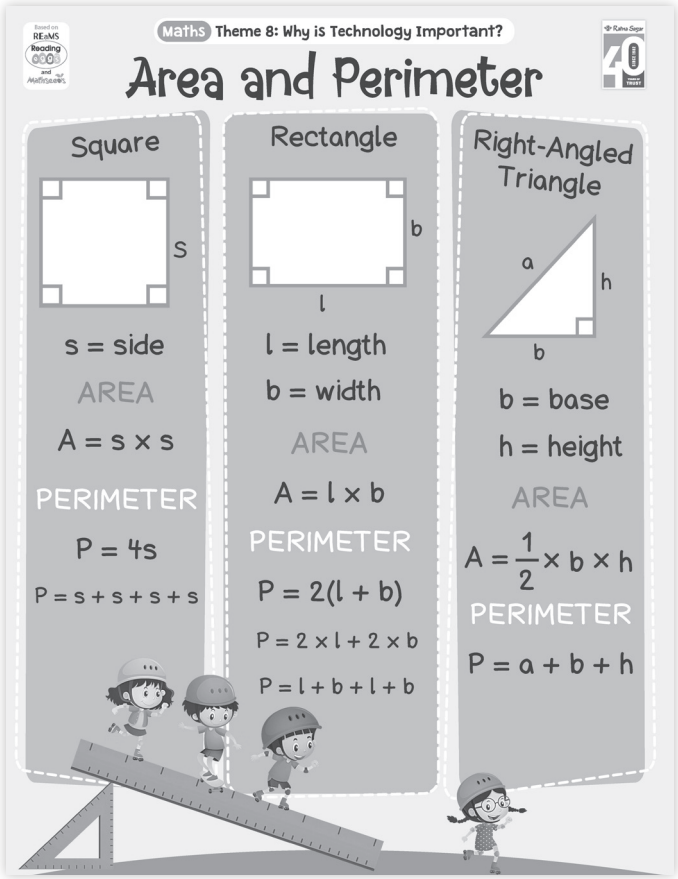
**Teacher**: Look at this shape. Can anyone tell me how many whole squares it covers?

**Teacher**: Yes, that is right. The shape covers 28 whole squares, as we can see in the grid. Now, we also have some squares that are more than half full. How many of these squares are there?

**Teacher**: Great. There are 8 squares that are more than half filled, as shown by the check marks. So, we add these to the 28 whole squares which means the area of this irregular shape is, 28 sq. cm + 8 sq. cm = 36 sq. cm.

**Teacher**: So, the shape is approximately 36 square cm. Well done. Remember, we leave out squares that cover less than half a square. Let us now move on to the next activity.

## Poster




**Teacher**: (Display and discuss the poster prominently in the classroom to reinforce the learning about area and perimeter.)

SHOULD DO
5 MIN.

**Teacher**: Great observation everyone. You all did a fantastic work today. Give yourselves a huge round of applause. See you in the next class.

You may show the **Know it Right** and **Dictionary** given on digital platform.

## Differentiated Activities

**110 km/hr**

A rectangular garden has a length of 12 m and a breadth of 8 m. Calculate the perimeter and area of the garden.

**80 km/hr**

A square field has a side of 7 m. What is the perimeter and area of the field?

**40 km/hr**

A rectangular table has a length of 5 cm and a breadth of 3 cm. Calculate the perimeter and area of the table.

## Home Task

Complete Exercises 9 and 11 given on page 154 – 155 in the Main Coursebook.

## Period 5

**Teacher**: Good morning/ afternoon everyone. How are you all today?

SHOULD DO
5 MIN.

**Teacher**: Fantastic. Before we start today's topic, let us do a quick warm-up activity. I will show you a simple shape made up of two smaller parts. Can you identify how to find the area of each part?

**Teacher**: First, look at this shape on the board (show a shape made up of two rectangles or squares). How do we find the area of this figure? Let us think about it.

**Teacher**: Here is a hint, if we divide this shape into two rectangles, we can find the area of each one separately and then add them together. Does that make sense?

**Teacher**: Great. This is how we will approach composite figures. We divide the figure into smaller parts, calculate their areas and then add them up.

## Laughing better

MUST DO
5 MIN.

**Teacher**: Look at the 'Laughing better' section on page 154 of your Main Coursebook. Before we dive into our lesson, let us have a quick laugh with a joke. Are you ready?

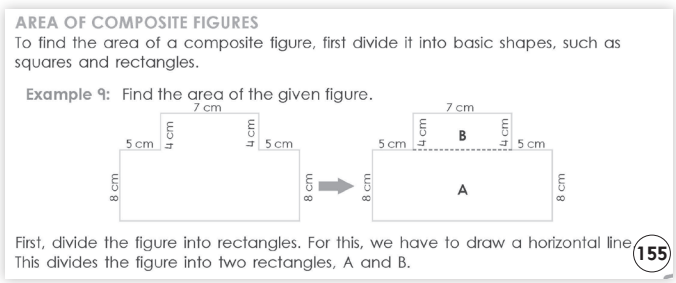

**Teacher**: Hopper asks Elphy, "Why did the square go to the doctor?"

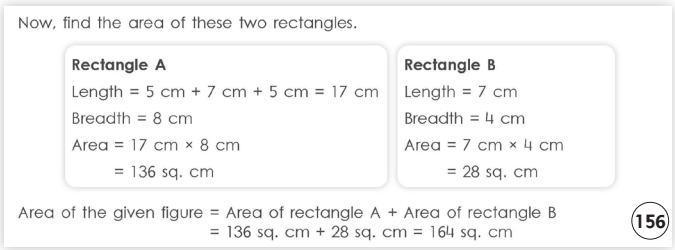
**Teacher**: Can anyone guess why?

**Teacher**: Great guesses. The answer is, "To check its area of concern." Haha, that is a funny one, isn't it? A square going to the doctor for its area.

**Teacher**: Now, let us see if you are all ready to learn how we calculate areas of different shapes, just like checking the area of concern in our funny joke.

**Area of Composite Figures**




Now, find the area of these two rectangles.

**Rectangle A**
Length = 5 cm + 7 cm + 5 cm = 17 cm
Breadth = 8 cm
Area = 17 cm × 8 cm
= 136 sq. cm

**Rectangle B**
Length = 7 cm
Breadth = 4 cm
Area = 7 cm × 4 cm
= 28 sq. cm

Area of the given figure = Area of rectangle A + Area of rectangle B
= 136 sq. cm + 28 sq. cm = 164 sq. cm

156

**Teacher**: Look at the image of the figure on page 155 of your Main Coursebook. We are going to learn how to find the area of a composite figure. Can anyone tell me what a composite figure is?

MUST DO
10 MIN.

**Teacher**: Correct. A composite figure is simply a shape made up of two or more simple shapes, like rectangles, squares or triangles. To find its area, we need to break it down into smaller or easier-to-measure parts.

**Teacher**: Let us understand with Example 9. We have a figure made up of two rectangles, A and B. Our first task is to divide the figure into these basic shapes.

**Teacher**: Now, let us start with Rectangle A. The length of Rectangle A is not directly given. We know one part of the length is 5 cm, another part is 7 cm and the last part is also 5 cm. Can anyone tell me how to find the total length of Rectangle A?

**Teacher**: That is right. We add these three lengths together and get 5 cm + 7 cm + 5 cm = 17 cm. So, the length of Rectangle A is 17 cm and the breadth is 8 cm.

**Teacher**: Therefore, the area of Rectangle A = length × breadth = 17 cm × 8 cm = 136 square cm.

**Teacher**: Now, let us move on to Rectangle B. The length of Rectangle B is 7 cm and the breadth is 4 cm. Can anyone tell me the area of Rectangle B?

**Teacher**: Correct. Using the formula, we get

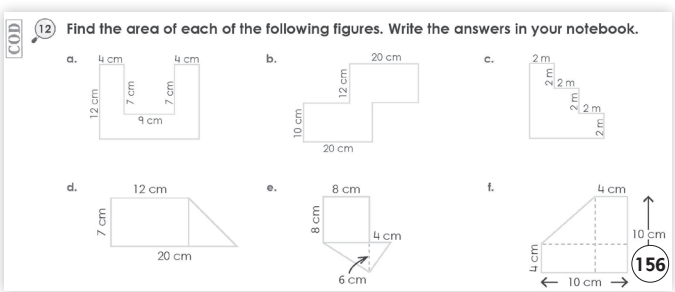
**Area** of Rectangle B = 7 cm × 4 cm = 28 square cm.

**Teacher**: Now, we can easily find the area of the entire composite figure. We simply add the areas of Rectangle A and Rectangle B together.

Area of the composite figure = 136 square cm + 28 square cm = 164 square cm.

**Teacher**: This is how we calculate the area of composite figures by breaking them down into simpler shapes. Great work, everyone. Let us move on to the exercise and practice more questions based on this concept.

**Exercise 12**


COD 12 Find the area of each of the following figures. Write the answers in your notebook.

a. 4 cm, 4 cm, 12 cm, 7 cm, 7 cm, 9 cm
b. 20 cm, 12 cm, 10 cm, 20 cm
c. 2 m, 2 m, 2 m, 2 m, 2 m
d. 12 cm, 7 cm, 20 cm
e. 8 cm, 8 cm, 4 cm, 6 cm
f. 4 cm, 10 cm, 4 cm, 10 cm

156

**Teacher**: Look at Exercise 12 on page 156 of your Main Coursebook. We will be working on the areas of different shapes.

MUST DO
20 MIN.

**Teacher**: Each figure in the exercise is in composite shape. We will calculate the area of each of these figure step by step.

(Give time to the students to solve questions and complete the exercise. Walk around and guide them where required.)

**Teacher**: Great work, everyone. Let us clap for everyone's effort and end today's session.

You may show the **Slideshow** and **Maths Lab** given on digital platform.

## Differentiated Activities

**110 km/hr**

Create a composite figure that includes at least three different shapes (e.g., a rectangle, triangle and square). Calculate the area of each shape and then find the total area of the composite figure.

**80 km/hr**

Find the area of three simple composite figures from your textbook. For each figure, divide it into basic shapes like rectangles and squares. Calculate the area of each shape, then add them up to find the total area of the composite figure.

**40 km/hr**

Identify a simple composite figure in your textbook or classroom. Break the figure into two simple shapes (e.g., a rectangle and square). Calculate the area of each shape and then find the total area of the composite figure.

## Home Task

Find an object in your house that has a complex shape, like a picture frame, a rug or a table. Break the shape into smaller, simple shapes like rectangles or squares. Write down the areas of all the individual sections and then add them up to find the total area of the object.

## Period 6

**Teacher**: Good morning/afternoon everyone. How are you all today?

SHOULD DO
5 MIN.

**Teacher**: Wonderful. Before we begin our lesson, let us do a quick activity. I will ask you a few questions and you need to answer them as quickly as you can. Ready?

**Teacher**: Can anyone tell me what happens when we place a stone (little big) in water?

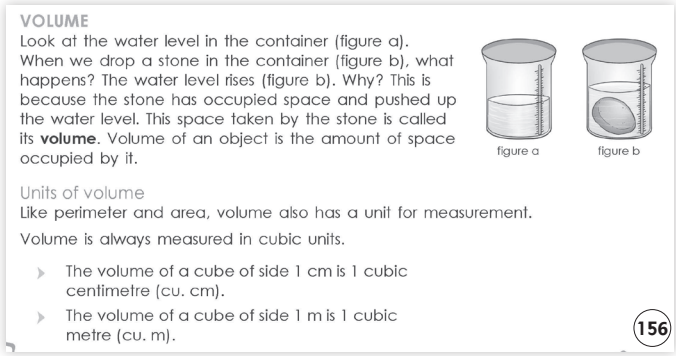
**Teacher**: Yes, that is right. The water level rises. Why do you think this happens?

**Teacher**: Excellent. It happens because the stone takes up space in the water and this pushes the water up. So,

what do you think is the best way to measure the space that something takes up? Any ideas?

**Teacher**: Yes, we measure this space using something called volume. Volume is the amount of space an object takes up. We will study about it in detail today. Let us look at the images on page 156 of your Main Coursebook.

**Volume**


VOLUME

Look at the water level in the container (figure a). When we drop a stone in the container (figure b), what happens? The water level rises (figure b). Why? This is because the stone has occupied space and pushed up the water level. This space taken by the stone is called its **volume**. Volume of an object is the amount of space occupied by it.

figure a figure b

Units of volume

Like perimeter and area, volume also has a unit for measurement.

Volume is always measured in cubic units.

- The volume of a cube of side 1 cm is 1 cubic centimetre (cu. cm).
- The volume of a cube of side 1 m is 1 cubic metre (cu. m).

156

**Teacher**: Look at the images in your book. In figure (a), we have a container with water and in figure (b), we drop a stone into the container. What happens to the water level?

MUST DO 5 MIN.

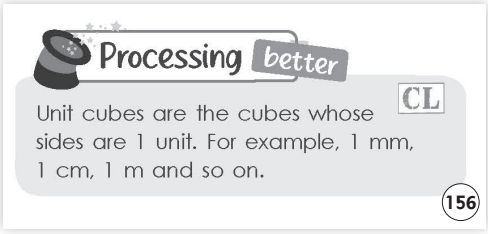
**Teacher**: Yes, the water level rises. This happens because the stone has taken up space in the container and has displaced the water. The amount of space that the stone takes up is called its volume. Volume tells us how much space an object occupies.

**Teacher**: Let us look at the next part which is about its units. Like perimeter and area, volume also has units for measurement. Can anyone guess what unit is used to measure volume?

**Teacher**: Exactly. Volume is measured in cubic units. For example – The volume of a cube with side 1 cm is 1 cubic centimetre (cu. cm) and the volume of a cube with side 1 m is 1 cubic metre (cu. m).

**Teacher**: So, when we measure the volume of something, we are finding out how many cubic units fit into that object.

## Processing better


Processing better

CL

Unit cubes are the cubes whose sides are 1 unit. For example, 1 mm, 1 cm, 1 m and so on.

156

**Teacher**: Let us focus on the 'Processing better' section. It says, "Unit cubes are the cubes whose sides are 1 unit. For example, 1 mm, 1 cm, 1 m and so on."

MUST DO 5 MIN.

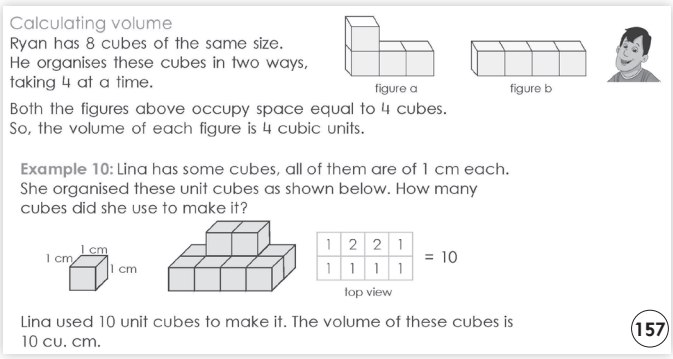
**Teacher**: Can anyone tell me what a unit cube is?

**Teacher**: That is right. A unit cube is a small cube where each side measures exactly 1 unit. The unit can be any measurement, such as 1 millimetre (mm), 1 centimetre (cm) or 1 metre (m).

**Teacher**: So, when we talk about the volume of an object, we are measuring how much space it occupies in terms of these unit cubes. For example, if the volume of a shape is 10 cubic centimetres, it means that the shape can hold 10 unit cubes, each with a side of 1 cm.

**Teacher**: Now that we have understood unit cubes, let us move on to the next activity.

**Calculating volume**


Calculating volume

Ryan has 8 cubes of the same size. He organises these cubes in two ways, taking 4 at a time.

figure a figure b

Both the figures above occupy space equal to 4 cubes. So, the volume of each figure is 4 cubic units.

**Example 10:** Lina has some cubes, all of them are of 1 cm each. She organised these unit cubes as shown below. How many cubes did she use to make it?

1 cm 1 cm 1 cm

| | | | |
|---|---|---|---|
| 1 | 2 | 2 | 1 |
| 1 | 1 | 1 | 1 |

= 10

top view

Lina used 10 unit cubes to make it. The volume of these cubes is 10 cu. cm.

157

**Teacher**: Now let us move on to calculating volume. Look at figure (a) and figure (b). These are two different ways Ryan has arranged his cubes. Can anyone see how many cubes are in each figure?

MUST DO 10 MIN.

**Teacher**: That is right. Both figures contain 4 cubes each. So, the volume of each figure is 4 cubic units.

**Teacher**: The volume is just the number of unit cubes that fill up the space. In this case, each cube has a side of 1 cm. So, each cube is 1 cubic unit.

**Teacher**: Let us look at Example 10. Lina has some cubes. Each cube is 1 cm by 1 cm by 1 cm. She arranges these cubes in a shape like this (as shown in the book).

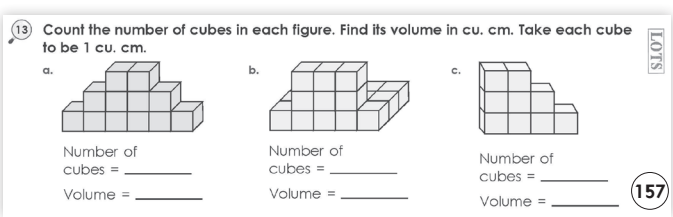
**Teacher**: Can anyone tell me how many cubes Lina has used?

**Teacher**: Excellent. If you count the cubes, Lina has used 10 unit cubes. So, the volume of Lina's shape is 10 cubic centimetres (10 cu. cm).

**Teacher**: Remember, to find the volume, we just count the number of unit cubes used to fill up the space.

**Teacher**: Great work, everyone. Now that we know how to calculate volume, let us work on some more shapes and calculate their volumes.

**Exercise 13**


13 **Count the number of cubes in each figure. Find its volume in cu. cm. Take each cube to be 1 cu. cm.**

LOTS

a. Number of cubes = _____ Volume = _____

b. Number of cubes = _____ Volume = _____

c. Number of cubes = _____ Volume = _____

157

MUST DO 10 MIN.

**Teacher**: Now, let us move on to Exercise 13. Here, we need to count the number of cubes in each figure and then find its volume. Remember, each cube is 1 cubic centimetre (1 cu. cm), so the volume will be equal to the number of cubes.

**Teacher**: Let us start with the first figure (a). Take a look at the cubes in the figure. Can anyone count how many cubes there are?

**Teacher**: Yes, that's right. There are 12 cubes in total. So, the volume of this figure will also be 12 cu. cm because each cube has a volume of 1 cu. cm.

**Teacher**: So, for figure (a), we have number of cubes = 12. Therefore, volume = 12 cu. cm

**Teacher**: Now, I want you to look at figure (b) and count the number of cubes there. Once you have the total number, let me know what the volume is.

**Teacher**: After that, try doing the same for figure (c). Count the cubes and find the volume.

**Teacher**: Remember, take your time to count the cubes carefully. Once you are done, we will discuss your answers.

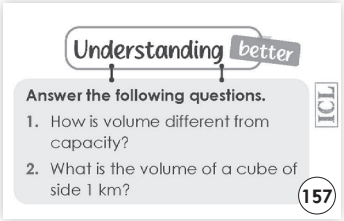
**Teacher**: Excellent work everyone. Let us now move on to the next activity.

## Understanding better

MUST DO

5 MIN.

**Teacher**: Look at the 'Understanding better' section. We have two questions to discuss. The first question asks, "How is volume different from capacity?"


Understanding better

Answer the following questions.

1. How is volume different from capacity?
2. What is the volume of a cube of side 1 km?

ICL

157

**Teacher**: Does anyone know the difference between volume and capacity?

**Teacher**: That is right. Volume refers to the amount of space occupied by a three-dimensional object, like a cube or a sphere. It is measured in cubic units, such as cubic centimetres ($cm^3$) or cubic metres ($m^3$).

**Teacher**: Capacity, on the other hand, is the amount of liquid or substance that a container can hold. Capacity is usually measured in units like litres (L) or millilitres (mL) and it is used to measure liquids or gases rather than solid objects.

**Teacher**: So, while volume refers to the space an object occupies, capacity refers to how much liquid or substance a container can hold.

**Teacher**: Let us move to the second question, "What is the volume of a cube of side 1 km?"

**Teacher**: To calculate the volume of a cube, we use

**Volume** = side × side × side.

**Teacher**: In this case, the side of the cube is 1 kilometre. So, we would calculate

**Volume** = 1 km × 1 km × 1 km = 1 cubic kilometre ($km^3$).

**Teacher**: So, the volume of a cube with a side length of 1 kilometre is 1 cubic kilometre ($km^3$). Isn't that interesting?

**Teacher**: Yes, great work, everyone. Let us clap for everyone's effort and end today's session.

You may show the **Toys from Trash** given on digital platform.

## Differentiated Activities

**110 km/hr**

Create a complex shape using unit cubes and then calculate its volume. After that, write a detailed explanation of how you would find the volume of a more complicated geometric shapes.

**80 km/hr**

Use unit cubes to build simple shapes like a cube, cuboid and a pyramid. Count the number of cubes to find the volume of each shape. Write the volume for each figure.

**40 km/hr**

Use grid paper and small cubes to create simple shapes. Count how many cubes fit into the shape and write down the total number of cubes. This will help you calculate the volume. Focus on one simple shape at a time.

## Home Task

Find three different objects in your house that you can measure. They should be simple shapes like a box, a small book or a bottle. For objects like boxes or books, count the number of cubes that fit along the length, width and height. Each cube should be 1 cubic unit.

Write down your results in your notebook and calculate the total volume by counting the number of cubes that fit into each object.

## Period 7

SHOULD DO

5 MIN.

**Teacher**: Good morning/afternoon everyone. How are you all today?

**Teacher**: Wonderful. Before we start learning about the volume of cubes and cuboids, let us do a quick warm-up.

**Teacher**: Can anyone tell me the difference between a cube and a cuboid?

**Teacher**: Yes. A cube is a 3D shape where all sides are equal. It has six square faces. However, a cuboid has rectangular faces and its length, width and height may all be different.

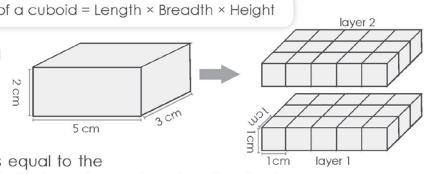
**Teacher**: Great. Now that we know the difference between cubes and cuboids, we are ready to learn how to find their volumes in detail. Let us get started.

## Volume of a cuboid

Volume of a cuboid

Volume of a cuboid = Length × Breadth × Height

A cuboid is a 3-dimensional geometrical figure that has 6 rectangular faces, 8 vertices and 12 edges.




Look at the cuboid shown. The volume of this cuboid is equal to the total number of unit cubes in it. The volume of each unit cube is 1 cu. cm.

Number of cubes in 1 layer = 5 × 3 = 15

157

There are 15 cubes in each layer. This cuboid has 2 layers.

So, there are 15 × 2 = 30 cubes altogether.

Volume of this cuboid = 5 cm × 3 cm × 2 cm = 30 cu. cm

158

**Teacher**: Let us look at the 'Volume of a cuboid' section on page 157. First, we will talk about what a cuboid is.

MUST DO

10 MIN.

**Teacher**: A cuboid is a 3-dimensional shape that has 6 rectangular faces, 8 vertices and 12 edges. You can think of it as a box, like a book or a brick. Can anyone think of other examples of cuboids?

**Teacher**: That is right. A cuboid has length, breadth and height. We can calculate the volume of a cuboid by multiplying these three dimensions together. So, the formula of the volume of a cuboid = Length × Breadth × Height.

**Teacher**: Now, look at the cuboid shown in the image. The length is 5 cm, the breadth is 3 cm and the height is 2 cm.

**Teacher**: To find the volume of this cuboid, we can count the number of unit cubes inside it. Each cube has a volume of 1 cubic centimetre. So, let us count the cubes in each layer.

**Teacher**: We can see that there are 15 cubes in each layer. This cuboid has 2 layers. So, the total number of cubes is, 15 cubes in one layer × 2 layers = 30 cubes.

**Teacher**: Therefore, the volume of the cuboid is 30 cubic centimetres. We can also use the formula to check this. Volume = 5 cm × 3 cm × 2 cm = 30 cubic centimetres.

**Teacher**: Great. Now you understand how to calculate the volume of a cuboid by counting cubes or using the formula. Let us now move on how to find the volume of a cube.

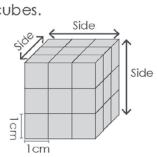
## Volume of a cube

Volume of a cube

Volume of a cube = Side × Side × Side

A cube is a cuboid whose length, breadth and height are the same.

Look at the cube shown on the right. It is made by 1 cu. cm. cubes.




Length of cube = (1 + 1 + 1) cm = 3 cm

Breadth of cube = (1 + 1 + 1) cm = 3 cm

Height of cube = (1 + 1 + 1) cm = 3 cm

Number of cubes in 1 layer = 3 × 3 = 9

Number of cubes in 3 layers = 9 × 3 = 27

Volume of this cube = 3 cm × 3 cm × 3 cm = 27 cu. cm

**Example 11:** A cuboidal box of colours is 6 cm long, 3 cm broad and 8 cm high. How many such boxes can be packed in a carton of length 1 m, breadth 72 cm and height 45 cm?

Volume of one cuboidal box = length × breadth × height

= 6 cm × 3 cm × 8 cm

= (6 × 3 × 8) cu. cm = 144 cu. cm

158

Volume of the carton = length × breadth × height

= 1 m × 72 cm × 45 cm

= 100 cm × 72 cm × 45 cm

= (100 × 72 × 45) cu. cm = 3,24,000 cu. cm

Number of boxes that can be packed = $\frac{\text{Volume of the carton}}{\text{Volume of one box}}$

= $\frac{3,24,000}{144}$ = 2,250

Thus, the number of cuboidal boxes that can be packed in the carton are 2,250.

158

**Teacher**: Let us now look at the 'Volume of a cube' section. Can anyone tell me what a cube is?

MUST DO

10 MIN.

**Teacher**: Yes, a cube is a special type of cuboid where the length, breadth and height are all the same. Look at the cube shown here. Each side of the cube is 1 cm and the cube is made up of smaller 1 cubic centimetre cubes. Can anyone tell me how we can calculate the volume of a cube?

**Teacher**: That is correct. To calculate the volume of a cube, we use

Volume of a cube = Side × Side × Side.

**Teacher**: Now, let us look at the cube shown in the image. The length, breadth and height of this cube are all 3 cm. So, the volume of this cube would be

Volume = 3 cm × 3 cm × 3 cm = 27 cubic centimetres (cu. cm).

**Teacher**: In this case, if we count the number of cubes inside the larger cube, we will find there are 9 cubes in one layer and since there are 3 layers, the total number of cubes is 9 × 3 = 27.

**Teacher**: Let us move on to Example 11 now, where we are asked to calculate how many cuboidal boxes can be packed into a larger carton.

**Teacher**: So, let us calculate the volume of one box, 6 cm × 3 cm × 8 cm = 144 cubic centimetres. However, the carton has dimensions of 1 m × 72 cm × 45 cm. To make the calculation easier, we need to convert the 1 m length into centimetres.

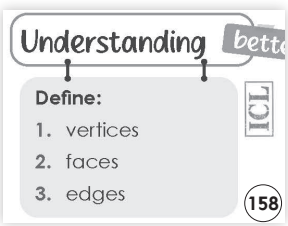
**Teacher**: So, the volume of the carton is: 100 cm × 72 cm × 45 cm = 3,24,000 cubic centimetres.

**Teacher**: Now, we can find out how many cuboidal boxes will fit into the carton. To do that, we divide the volume of the carton by the volume of one box.

Number of boxes = Volume of the carton ÷ Volume of one box = 3,24,000 ÷ 144 = 2,250.

**Teacher**: Therefore, the number of cuboidal boxes that can be packed into the carton is 2,250. Well done, everyone. Let us now move on to the next activity.

## Understanding better




MUST DO

5 MIN.

**Teacher**: Now, look at the 'Understanding better' section. We are going to define three important terms related to three-dimensional shapes: vertices, faces and edges.

**Teacher**: Can anyone tell me what vertices are?

**Teacher**: That is right. Vertices (singular: vertex) are the corners of a shape where two or more edges meet. So, for example, a cube has 8 vertices, where each of the 8 corners is the meeting point of three edges.

**Teacher**: Now, what about faces. Who can tell me what faces are?

**Teacher**: Correct. Faces are the flat surfaces of a three-dimensional shape. A cube, for example, has 6 square faces. Each of these faces is a flat surface that makes up the cube's outer layer.

**Teacher**: Finally, let us define edges. What do you think edges are?

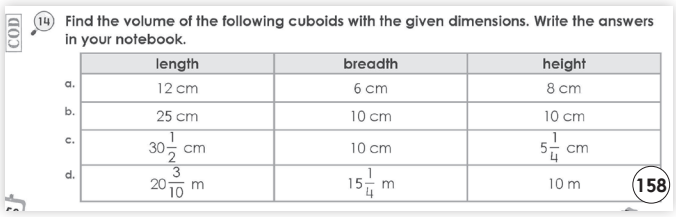
**Teacher**: Yes, well done. Edges are the straight lines where two faces of a shape meet. So, in a cube, each of the 12 edges is the line where two square faces join.

**Teacher**: So, in summary:

- Vertices are the corners where edges meet.
- Faces are the flat surfaces of the shape.
- Edges are the straight lines where two faces meet.

**Teacher**: Now, let us move on to exercise and practice some questions based on finding volumes of cuboids with different dimensions.

**Exercise 14**



14 Find the volume of the following cuboids with the given dimensions. Write the answers in your notebook.

| | length | breadth | height |
|---|---|---|---|
| a. | 12 cm | 6 cm | 8 cm |
| b. | 25 cm | 10 cm | 10 cm |
| c. | $30\frac{1}{2}$ cm | 10 cm | $5\frac{1}{4}$ cm |
| d. | $20\frac{3}{10}$ m | $15\frac{1}{4}$ m | 10 m |

158

**Teacher**: Look at the table in Exercise 14. We have given different dimensions of cuboid and need to find their volumes.

MUST DO — 10 MIN.

**Teacher**: We will use the formula of the volume of a cuboid = Length × Breadth × Height.

(Guide/help students to solve the questions and complete the exercise.)

**Teacher**: Great work. We have competed the Exercise 14. Let us clap for everyone's effort and end today's session.

You may show the **I Explain** given on digital platform.

## Differentiated Activities

**110 km/hr**

Create a word problem involving the volume of a cube and cuboid. Use real-life examples such as the volume of a toy box (cuboid) or the volume of a gift box (cube). Solve the problem step by step and create a similar problem for your classmates to solve.

**80 km/hr**

Measure the dimensions (length, width and height) of a rectangular object around your house, like a book or a box and calculate its volume using the formula for a cuboid. Measure a small cube, like a dice or block and calculate its volume.

**40 km/hr**

Use unit cubes (or any small objects) to build a cube and a cuboid. Count the number of unit cubes you have used to form each shape. Write down the number of cubes used for each shape and what the volume is.

## Home Task

Complete Exercises 15 and 16 given on page 159 in the Main Coursebook.

## Period 8

**Teacher**: Good morning/afternoon everyone. How are you all today?

SHOULD DO — 5 MIN.

**Teacher**: Wonderful. Before we begin our lesson, let us warm up with a quick activity to help you recall what we have learnt so far. Ready?

**Teacher**: I will ask you a few questions based on what we have learnt in this chapter. Answer as quickly as you can. Let us begin.

**Teacher**: First question, "Can anyone tell me what the formula is to find the perimeter of a rectangle and a square?"

**Teacher**: That is correct. The perimeter of a rectangle is 2 × (length + breadth). The perimeter of a square is 4 × side.

**Teacher**: Moving on, let us talk about the area of rectangle and square. What are the formulae for that?

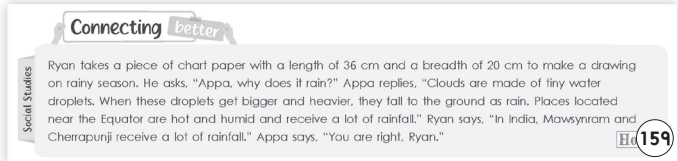
**Teacher**: Yes. The area of a rectangle is length × breadth and the area of a square is side × side.

**Teacher**: Next question, "Can anyone tell me how to calculate the volume of a cuboid and cube?"

**Teacher**: Excellent. The volume of a cuboid is length × breadth × height and the volume of a cube is side × side × side.

**Teacher**: Well done, everyone. You have done a fantastic job in recalling these formulas. Let us move on with today's lesson.

## Creating better



Connecting better

Social Studies

Ryan takes a piece of chart paper with a length of 36 cm and a breadth of 20 cm to make a drawing on rainy season. He asks, "Appa, why does it rain?" Appa replies, "Clouds are made of tiny water droplets. When these droplets get bigger and heavier, they fall to the ground as rain. Places located near the Equator are hot and humid and receive a lot of rainfall." Ryan says, "In India, Mawsynram and Cherrapunji receive a lot of rainfall." Appa says, "You are right, Ryan."

159

**Teacher**: Look at the 'Creating better' section on the page 159. Ryan is drawing a picture on a chart paper.

MUST DO — 5 MIN.

The length of his chart paper is 36 cm and the breadth is 20 cm. Can anyone tell me how we would find the area of this chart paper?

**Teacher**: Yes, that is right. To find the area of the chart paper, we multiply the length by the breadth. So, it would be 36 cm × 20 cm, which equals 720 square cm. This is the area of the chart paper Ryan is using for his drawing.

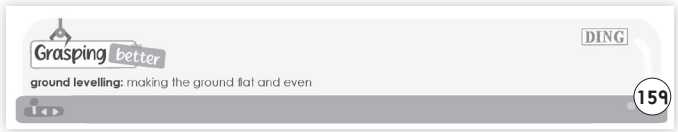
**Teacher**: Now, think about the rainfall. Why do you think places near the Equator receive more rainfall? Ryan says places like Mawsynram and Cherrapunji in India receive a lot of rainfall. Can anyone share why?

**Teacher**: That is correct. Places near the Equator are hot and humid, which leads to a higher rate of evaporation. This causes more water vapour in the air and when it cools, it falls as rain. Now, let us all think about how we can incorporate this into our drawings. What can we add to represent the rainfall or cloud formation in your own drawing?

**Teacher**: Great ideas, everyone. I am excited to see how you can use this information to create your own drawings and show us how rainfall works. Keep going and remember to use the space on your chart paper wisely. You are doing an excellent work.

**Teacher**: Let us move on to the next part and understand the word 'ground levelling'.

## Grasping better




**Teacher**: Let us look at the 'Grasping better' section. Can anyone tell me what ground levelling is?

SHOULD DO
5 MIN.

**Teacher**: That is correct. Ground levelling means making the ground flat and even. It is like smoothing out bumps and making sure the surface is level.

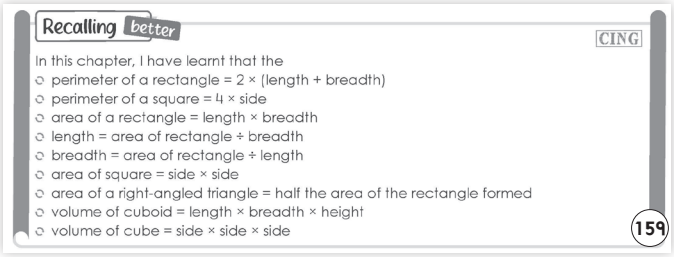
**Teacher**: Why do you think ground levelling is important? Can anyone think of an example where ground levelling is necessary?

**Teacher**: Yes, great examples. Ground levelling is often done before building houses, roads or fields for farming. By making the surface even, we ensure that water does not collect in low areas and buildings or roads are stable.

**Teacher**: If the ground is uneven, water might collect in some places and crops might not grow properly or the foundation of a building might be weak. Ground levelling helps prevent these issues.

**Teacher**: Well done, everyone. Now, we can move on to the next activity.

## Recalling better




**Teacher**: Now, let us look at the 'Recalling better' section. We are going to recall some of the important formulae we have learnt in this chapter. Can anyone read the first point on this list?

MUST DO
10 MIN.

**Teacher**: Great. Yes, the perimeter of a rectangle is found by adding up the length and breadth, then multiplying the result by 2.

**Teacher**: Now, let us move to the next one. The perimeter of a square is 4 times the side. Can anyone explain why?

**Teacher**: Correct. Since all the sides of a square are equal, we simply multiply the side by 4.

**Teacher**: Let us now look at the area of a rectangle. What is the formula for finding the area?

**Teacher**: That is right. The area is found by multiplying the length by the breadth.

**Teacher**: Next, we have the area of a square. What is the formula for this?

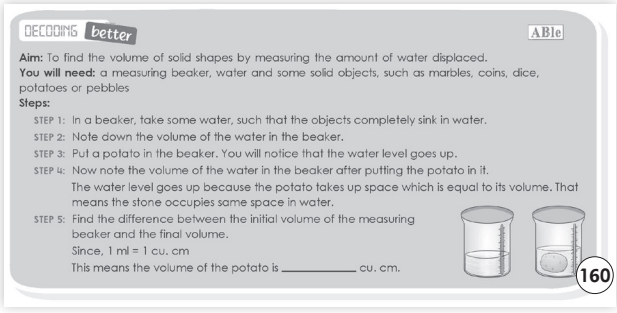
**Teacher**: Yes, the area of a square is found by multiplying the side by itself or side × side.

**Teacher**: Moving on to the volume of a cuboid and a cube. What is the formula to find the volume of a cuboid?

**Teacher**: Correct. The volume is found by multiplying the length, breadth and height of the cuboid. And the volume of a cube is found by multiplying the side by itself three times or side × side × side.

**Teacher**: Excellent work. You have recalled all the important formulas we have learnt so far. Let us move on to our next activity now.

## Decoding better




**Teacher**: Now, look at the 'Decoding better' section. We will learn how to find the volume of an object by measuring the amount of water displaced.

MUST DO
15 MIN.

**Teacher**: Can anyone tell me what we will need for this experiment?

**Teacher**: Exactly. We will need a measuring beaker, some water and a solid object like a potato, marble or coin.

**Teacher**: Let us follow the steps. In Step 1, we will take some water in a beaker. We want enough water so that the object can completely sink in it. What should we do next?

**Teacher**: Correct. In Step 2, we will note down the volume of the water in the beaker. This will be our starting point. In Step 3, we will put a potato into the beaker. What do you think will happen to the water level?

**Teacher**: Yes, the water level will rise because the potato takes up space in the water. This is known as displacement. What should we do next?

**Teacher**: In Step 4, we will note down the volume of the water in the beaker after the potato is put in. In Step 5, we will find the difference between the initial and final volumes. This will tell us how much space the potato has taken up, which is equal to its volume.

**Teacher**: Since 1 millilitre (ml) is equal to 1 cubic centimetre (cu. cm), we will find the volume of the potato in cubic centimetres.

**Teacher**: Can anyone tell me what we will do after we get the difference between the initial and final volume?

**Teacher**: Exactly. We will write the volume of the potato in cubic centimetres, which will be the amount of water it displaced.

**Teacher**: This method can be used to find the volume of other objects too, by measuring the amount of water they displace when submerged.

**Teacher**: Great. Let us clap for everyone's effort and end today's session.

You may show the **Mental Maths** given on digital platform.

## Differentiated Activities

**110 km/hr**

You have a rectangular notebook with a length of 10 cm and a breadth of 6 cm. Calculate the perimeter of the notebook. You also have a box with a height of 3 cm. The base of the box is a rectangle with dimensions 6 cm × 10 cm. Calculate the volume of the box.

**80 km/hr**

You have a rectangular table with a length of 8 cm and a breadth of 5 cm. Calculate the area of the table. Also, find the perimeter of the table.

**40 km/hr**

A garden is shaped like a composite figure. The garden consists of a rectangle and a square. The length of the rectangle is 12 m and the breadth is 6 m. The side of the square is 5 m. Find the total area of the garden.

## Home Task

## Book of Project Ideas

**Chapter 13: Perimeter, Area and Volume**

- Take a measuring tape and identify objects near you that are cuboid or cube-shaped.
- Measure the length, breadth and height of each object and note down these measurements.
- Calculate the volume of each object using the formula for volume.
- Present your findings in the classroom. (11)

Complete this project at home with the help of your parents. Take a measuring tape and identify objects near you that are cuboid or cubeshaped. Measure the length, breadth and height of each object and note down these measurements. Then, calculate the volume of each object using the formula for volume. After calculating, present your findings in the classroom. Be prepared to explain the method you used for measuring and calculating the volume.

(Encourage reflection by asking what they learnt and enjoyed in this activity. Remind them to review their work and practise presenting. Each student will get 3-5 minutes to present. Ensure they understand deadlines and provide assistance as needed.)

## Period 9

SHOULD DO 5 MIN.

**Teacher**: Good morning/afternoon everyone. How are you all today?

**Teacher**: Wonderful. Before we begin our lesson, let us warm up with a quick exercise. I will ask a few questions and I want you to answer them as quickly as possible.

**Teacher**: Can anyone tell me the formula for finding the perimeter of a square?

**Teacher**: That is right. The perimeter of a square is 4 times the length of one side. So, if the side of a square is 12 cm, what would be the perimeter of the square?

**Teacher**: Excellent. The perimeter would be 12 × 4 = 48 cm. What do you think is the formula to find the volume of a cube?

**Teacher**: Yes, it is, volume = side × side × side. So, if each cube has a side of 1 cm and we have 15 cubes, how do we find the volume?

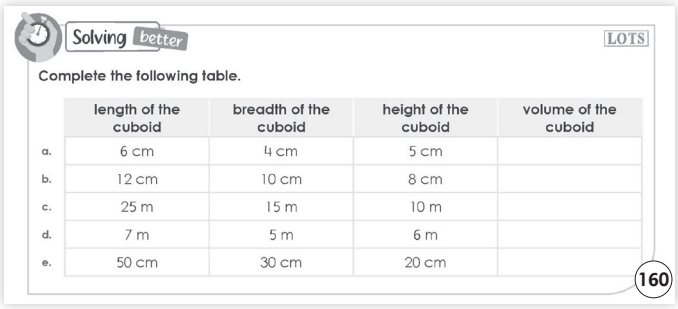
**Teacher**: Correct. The volume would be 1 × 1 × 1 × 15 = 15 cubic cm.

**Teacher**: Well done, everyone. Let us move on to the main lesson now.

## Solving better

MUST DO 10 MIN.

**Teacher**: Look at the 'Solving better' section given on page 160. Let us find the volume of the cuboid and complete the table.



Solving better LOTS

Complete the following table.

| | length of the cuboid | breadth of the cuboid | height of the cuboid | volume of the cuboid |
|---|---|---|---|---|
| a. | 6 cm | 4 cm | 5 cm | |
| b. | 12 cm | 10 cm | 8 cm | |
| c. | 25 m | 15 m | 10 m | |
| d. | 7 m | 5 m | 6 m | |
| e. | 50 cm | 30 cm | 20 cm | |

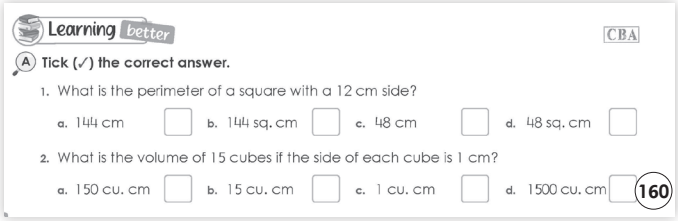
160

**Teacher**: Solve each question carefully and fill in the blanks one by one.

(Discuss every question with the students and guide them solve where required.)

**Teacher**: Great work. Now let us move on to the next activity.

## Learning better



Learning better CBA

A Tick (✓) the correct answer.

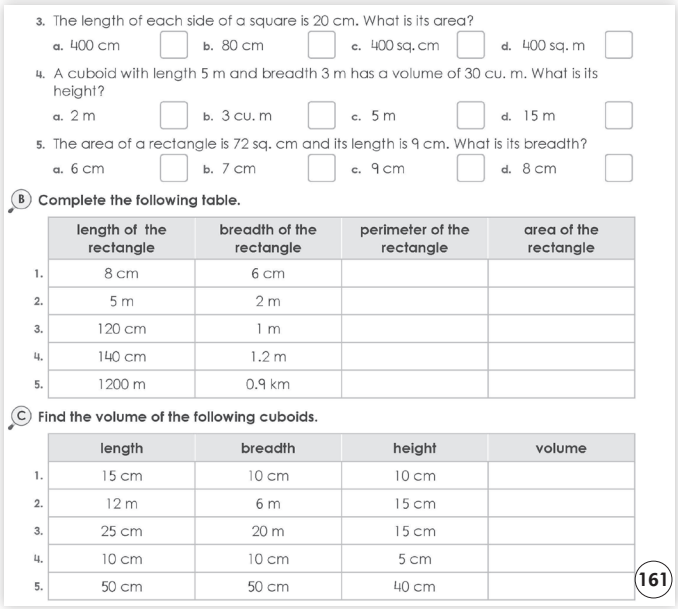
1. What is the perimeter of a square with a 12 cm side?

a. 144 cm ☐ b. 144 sq. cm ☐ c. 48 cm ☐ d. 48 sq. cm ☐

2. What is the volume of 15 cubes if the side of each cube is 1 cm?

a. 150 cu. cm ☐ b. 15 cu. cm ☐ c. 1 cu. cm ☐ d. 1500 cu. cm ☐

160



3. The length of each side of a square is 20 cm. What is its area?

a. 400 cm ☐ b. 80 cm ☐ c. 400 sq. cm ☐ d. 400 sq. m ☐

4. A cuboid with length 5 m and breadth 3 m has a volume of 30 cu. m. What is its height?

a. 2 m ☐ b. 3 cu. m ☐ c. 5 m ☐ d. 15 m ☐

5. The area of a rectangle is 72 sq. cm and its length is 9 cm. What is its breadth?

a. 6 cm ☐ b. 7 cm ☐ c. 9 cm ☐ d. 8 cm ☐

B Complete the following table.

| | length of the rectangle | breadth of the rectangle | perimeter of the rectangle | area of the rectangle |
|---|---|---|---|---|
| 1. | 8 cm | 6 cm | | |
| 2. | 5 m | 2 m | | |
| 3. | 120 cm | 1 m | | |
| 4. | 140 cm | 1.2 m | | |
| 5. | 1200 m | 0.9 km | | |

C Find the volume of the following cuboids.

| | length | breadth | height | volume |
|---|---|---|---|---|
| 1. | 15 cm | 10 cm | 10 cm | |
| 2. | 12 m | 6 m | 15 cm | |
| 3. | 25 cm | 20 m | 15 cm | |
| 4. | 10 cm | 10 cm | 5 cm | |
| 5. | 50 cm | 50 cm | 40 cm | |

161

**Teacher**: Look at Exercise A under the 'Learning better' section. Read the questions carefully and tick the correct answer accordingly.

MUST DO 25 MIN. ☐

(Discuss every question with the students and guide them solve where required.)

**Teacher**: Now, look at Exercise B. We need to complete the given table by finding perimeter and area of rectangles.

(Discuss every question with the students and guide them solve where required.)

**Teacher**: Now, look at Exercise C. We need to complete the given table by finding volume of cuboids.

(Discuss every question with the students and guide them solve where required.)

**Teacher**: Great work. Let us clap for everyone's effort and end today's session.

You may show the **Quiz** given on digital platform.

## Differentiated Activities

**110 km/hr**

Solve a challenging word problem involving perimeter and volume of cubes and cuboids. Create your own problem using real-life objects and present it with a sketch.

**80 km/hr**

Measure the length, breadth and height of two objects (like a book and a box). Calculate their perimeter and volume, then write down your results.

**40 km/hr**

Pick a simple object, measure one side and calculate its perimeter or volume. Write down your results and practice with at least two objects.

## Home Task

Complete Exercises D and E from 'Learning better' section on page 161 in the Main Course Book.

## Period 10

SHOULD DO 5 MIN. ☐

**Teacher**: Good morning/afternoon everyone. How are you all today?

**Teacher**: Wonderful. Before we start creating our robots, let us do a quick warm-up activity.

**Teacher**: We are going to think about shapes and how we can use them to create a robot. Can anyone tell me what shapes we can see in the robot's body, head, arms and legs?

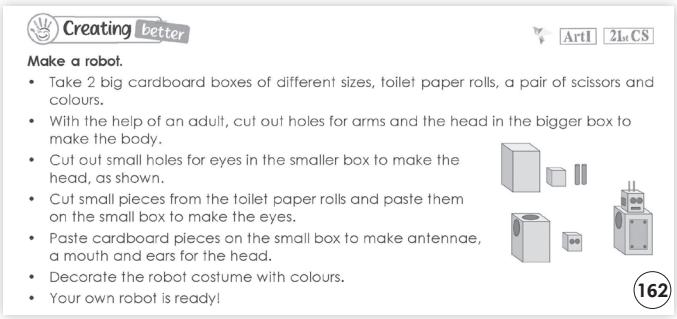
**Teacher**: Yes. We can use squares, rectangles and circles to make different parts of the robot. For example, we can use a rectangle for the body, a square for the head and circles for the eyes.

**Teacher**: Now, can you think of any other objects that are shaped like a robot's parts? Maybe a box for the body or a bottle for the legs?

**Teacher**: Great thinking. Now that we have got some ideas, let us get ready to make our own robots using cardboard and other materials. Are you excited?

**Teacher**: Let's begin by gathering our materials and following the steps to make our robots just like we discussed.

## Creating better


Creating better

ArtI 2LwCS

Make a robot.

- Take 2 big cardboard boxes of different sizes, toilet paper rolls, a pair of scissors and colours.
- With the help of an adult, cut out holes for arms and the head in the bigger box to make the body.
- Cut out small holes for eyes in the smaller box to make the head, as shown.
- Cut small pieces from the toilet paper rolls and paste them on the small box to make the eyes.
- Paste cardboard pieces on the small box to make antennae, a mouth and ears for the head.
- Decorate the robot costume with colours.
- Your own robot is ready!

162

**Teacher**: Look at the 'Creating better' section on page 162. Today, we are going to create a robot. Are you ready?

MUST DO

15 MIN.

(Ask students to follow the steps as you do to make the robot.)

**Teacher**: First, you will need two big cardboard boxes of different sizes. You will also need toilet paper rolls, scissors and some colours.

**Teacher**: With the help of an adult, cut holes in the bigger box for the arms and the head. This will be the body of your robot.

**Teacher**: Now, take the smaller box for the head. Cut out small holes for the eyes.

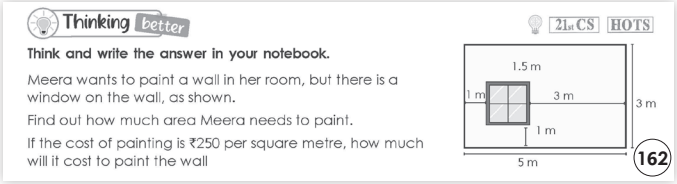
**Teacher**: Take the toilet paper rolls and cut small pieces. Paste these pieces onto the smaller box to create the eyes of your robot.

**Teacher**: Next, use some more cardboard pieces and attach them to make the antennae, mouth and ears for the head.

**Teacher**: Finally, decorate your robot with colours and make it as creative as you like.

**Teacher**: Your robot is now ready to be shown. Let us now move on to the next activity.

## Thinking better


Thinking better

2LwCS HOTS

Think and write the answer in your notebook.

Meera wants to paint a wall in her room, but there is a window on the wall, as shown.

Find out how much area Meera needs to paint.

If the cost of painting is ₹250 per square metre, how much will it cost to paint the wall

1.5 m
1 m
3 m
3 m
1 m
5 m

162

**Teacher**: Look at the 'Thinking better' section and read the real-life problem carefully.

MUST DO

5 MIN.

**Teacher**: Meera wants to paint a wall in her room, but there is a window on the wall. Let us look at the image of the wall. Can anyone tell me the total area of the wall? The length of the wall is 5 metres and the height is 3 metres. How do we calculate the area of the whole wall?

**Teacher**: Yes, the area of the wall = Length × Height = 5 m × 3 m = 15 square metres.

**Teacher**: Now, there is a window on the wall and its dimensions are 1.5 m by 1 m. So, the area of the window will be 1.5 m × 1 m = 1.5 square metres.

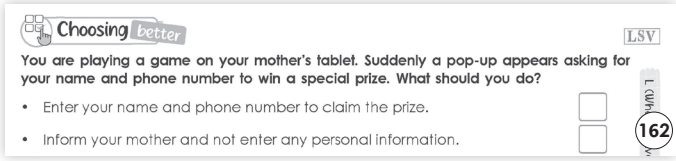
**Teacher**: Now, to find the area that Meera needs to paint, we subtract the area of the window from the total area of the wall. Can anyone do the calculation for me?

**Teacher**: Yes, the area Meera needs to paint is, 15 square metres - 1.5 square metres = 13.5 square metres.

**Teacher**: Next, we know that the cost of painting is ₹250 per square metre. So, the cost will be: 13.5 square metres × ₹250 = ₹3,375.

**Teacher**: So, Meera will need ₹3,375 to paint the wall. Well done, everyone. Let us now move on to the next activity.

## Choosing better


Choosing better

LSV

You are playing a game on your mother's tablet. Suddenly a pop-up appears asking for your name and phone number to win a special prize. What should you do?

- Enter your name and phone number to claim the prize.
- Inform your mother and not enter any personal information.

162

**Teacher**: Look at the 'Choosing better' section. We are going to discuss a situation that might happen when we are using digital devices. Imagine you are playing a game on your mother's tablet and suddenly, a pop-up appears asking for your name and phone number to win a special prize.

MUST DO

5 MIN.

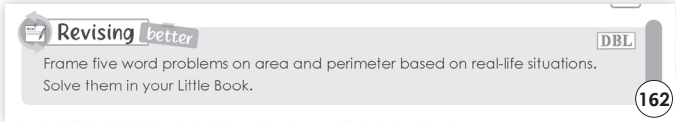
**Teacher**: Now, what should you do? Let us think about it carefully. Should you enter your name and phone number to claim the prize? Or should you inform your mother and not enter any personal information?

**Teacher**: Yes, that is right. The best choice would be to inform your mother and not enter any personal information. This is because pop-ups like these might be trying to get your personal details for the wrong reasons.

**Teacher**: It is important to be cautious when online. Always ask an adult for help before entering any personal information.

**Teacher**: Well done, everyone. Always remember to stay safe while using digital devices. Let us now move on to the next activity.

## Revising better


Revising better

DBL

Frame five word problems on area and perimeter based on real-life situations. Solve them in your Little Book.

162

**Teacher**: Now, look at the 'Revising better' section. We are going to work on real-life situations related to area and perimeter. Your task is to frame 5 word problems on area and perimeter based on what you see around you.

MUST DO

5 MIN.

**Teacher**: For example, you could think about the area

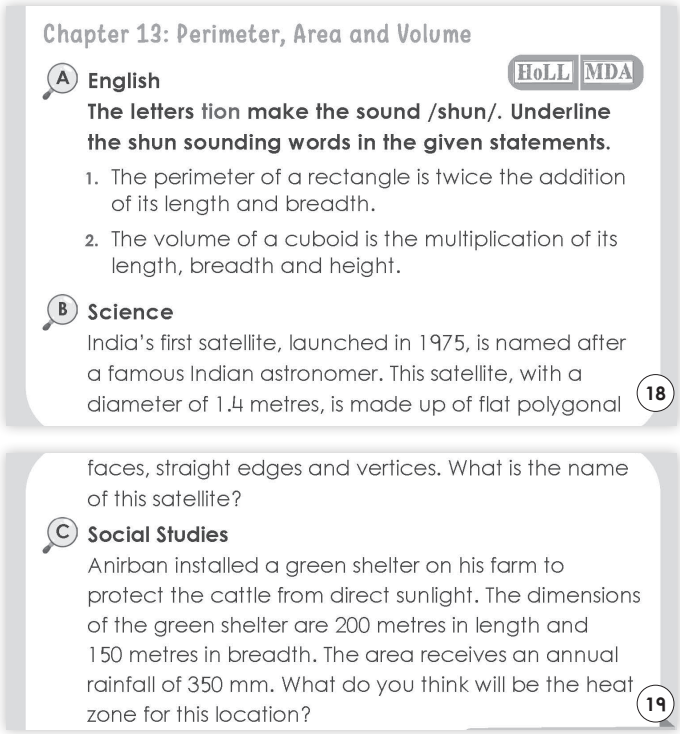
of the garden at your home or the perimeter of the playground in your school. Be more creative.

**Teacher**: Once you have written your word problems, you will then solve them in your Little Book. Do not forget to use the correct formulae for area and perimeter as we discussed.

**Teacher**: This will help you apply what we have learned in class to real-world situations. Take your time and make sure to check your work.

**Teacher**: Let us now move on to the next activity.

## Book of Holistic Teaching



Chapter 13: Perimeter, Area and Volume

HoLL MDA

A **English**

**The letters tion make the sound /shun/. Underline the shun sounding words in the given statements.**

1. The perimeter of a rectangle is twice the addition of its length and breadth.
2. The volume of a cuboid is the multiplication of its length, breadth and height.

B **Science**

India's first satellite, launched in 1975, is named after a famous Indian astronomer. This satellite, with a diameter of 1.4 metres, is made up of flat polygonal

18

faces, straight edges and vertices. What is the name of this satellite?

C **Social Studies**

Anirban installed a green shelter on his farm to protect the cattle from direct sunlight. The dimensions of the green shelter are 200 metres in length and 150 metres in breadth. The area receives an annual rainfall of 350 mm. What do you think will be the heat zone for this location?

19

**Teacher**: Open the Book of Holistic Teaching to Chapter 13: Perimeter, Area and Volume on page 18-19.

COULD DO 5 MIN.

(Ensure that the mentioned activities are completed by the students. These activities are designed to enhance their holistic understanding and engagement with the topic. Provide any necessary support and/ or materials to help them successfully finish the activities.)

**Teacher**: Let us clap for everyone's effort and end today's session. See you in the next class. Have a wonderful day ahead.

You may show the **HOTS** given on digital platform.

## Differentiated Activities

**110 km/hr**

A rectangular swimming pool has a length of 20 m and a breadth of 10 m. How much area of the pool is covered by the water? If the depth of the water is 2 m, what is the volume of water in the pool?

**80 km/hr**

You have a rectangular backyard that measures 6 m in length and 3 m in width. How much fence will you need to go around the backyard?

**40 km/hr**

You have a box with a length of 3 cm, a width of 2 cm and a height of 4 cm. What is the volume of the box?

## Home Task

Go around your house and find one object that is cube-shaped and one object that is cuboid-shaped (e.g., a small box, book or container). Measure the sides of the objects and calculate the area and volume for each object. Write down your findings in your notebook and share them with your parents.

## Period 11

**Teacher**: Good morning/afternoon everyone. How are you all today?

SHOULD DO 5 MIN.

**Teacher**: Wonderful. Before we start creating our robots, let us do a quick warm-up activity. We will review some basic formulae for area, perimeter and volume. I will ask you a few questions and I want you to answer as quickly as possible. Ready?

**Teacher**: What is the formula for the area of a square?

**Teacher**: Yes, that is correct. The area of a square is side × side.

**Teacher**: What is the formula for the area of a rectangle?

**Teacher**: Well done. The area of a rectangle is length × breadth.

**Teacher**: Can anyone tell me the formula for the perimeter of a square?

**Teacher**: Great. The perimeter of a square is 4 × side.

**Teacher**: What is the formula for the volume of a cuboid?

**Teacher**: Correct. The volume of a cuboid is length × breadth × height.

**Teacher**: What about the perimeter of a rectangle? What is the formula for that?

**Teacher**: Yes, exactly. The perimeter of a rectangle is 2 × (length + breadth).

**Teacher**: Well done, everyone. Now, let us move on to workbook and practise more questions based on it.

**Worksheet 1**

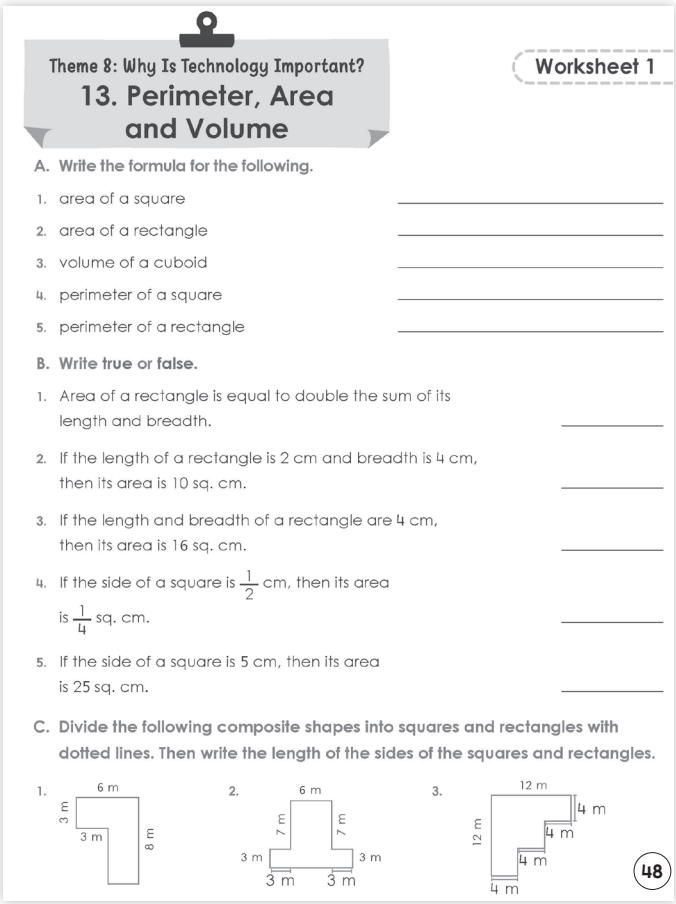
**Teacher**: Open your Maths Workbook to Worksheet 1 on page 48. Solve Exercise A by writing the formula of square, rectangle, cube and cuboid.

MUST DO 25 MIN.

(Give time and let them complete Exercise A.)

**Teacher**: Once done, we will discuss the answers together.

**Teacher**: In Exercise B, write 'true' or 'falls' after reading the statements carefully.



Theme 8: Why Is Technology Important?

Worksheet 1

## 13. Perimeter, Area and Volume

**A. Write the formula for the following.**

1. area of a square _____
2. area of a rectangle _____
3. volume of a cuboid _____
4. perimeter of a square _____
5. perimeter of a rectangle _____

**B. Write true or false.**

1. Area of a rectangle is equal to double the sum of its length and breadth. _____
2. If the length of a rectangle is 2 cm and breadth is 4 cm, then its area is 10 sq. cm. _____
3. If the length and breadth of a rectangle are 4 cm, then its area is 16 sq. cm. _____
4. If the side of a square is $\frac{1}{2}$ cm, then its area is $\frac{1}{4}$ sq. cm. _____
5. If the side of a square is 5 cm, then its area is 25 sq. cm. _____

**C. Divide the following composite shapes into squares and rectangles with dotted lines. Then write the length of the sides of the squares and rectangles.**

1. 6 m, 3 m, 3 m, 8 m
2. 6 m, 7 m, 7 m, 3 m, 3 m, 3 m, 3 m
3. 12 m, 4 m, 12 m, 4 m, 4 m, 4 m

48

(Give time and let them complete Exercise B. Then, discuss the answers together.)

**Teacher**: In Exercise C, divide the composite shapes and then write the length of the sides of the squares and rectangles.

**Teacher**: Work individually and write your answers neatly. If you have any doubts, raise your hand. Once you have completed this, we will discuss the answers together.

(Give time and let them complete Exercise C.)

**Teacher**: Excellent work everyone. Now, take out your project work and have a discussion on it.

## Book of Project Idea

COULD DO

10 MIN.

(Discuss the project assigned in the previous period, focusing on helping students understand the objectives and addressing any challenges they faced.)

**Teacher**: Let us all give a huge round of applause to everyone for their effort. See you in the next class. Have a wonderful day ahead.

You may show the **Quiz** given on digital platform.

## Differentiated Activities

**110 km/hr**

A rectangular garden has a length of 12 m and a breadth of 6 m. Calculate its area and perimeter. Now, imagine you have to build a fence around this garden. If the cost of fencing per metre is ₹50, calculate the total cost of building the fence.

**80 km/hr**

A rectangular table has a length of 10 cm and a breadth of 5 cm. What is the area and perimeter of the table? A cube has a side length of 4 cm. Calculate its volume.

**40 km/hr**

Measure a book's length and width. Find the area and perimeter of the book. Take a small box. Measure its length, width and height. Calculate its volume.

## Home Task

With the help of your parents, find three objects in your house that are cuboid or cube-shaped, such as a small box, a piece of furniture or a container. Measure the length, breadth and height of each object. Calculate the area and perimeter for flat objects like a book or table. For cuboids or cubes, calculate the volume. Write down your findings and share them with your parents.

## Period 12

SHOULD DO

5 MIN.

**Teacher**: Good morning/afternoon everyone. How are you all today?

**Teacher**: Wonderful. Before we begin with today's worksheet, let us do a quick warm-up to refresh our minds on the concepts of area, perimeter and volume. I will ask you a few questions and you can answer by raising your hand.

**Teacher**: What is the formula to find the perimeter of a rectangle?

**Teacher**: Yes, that is right. The perimeter of a rectangle is 2 times the sum of its length and breadth. Now, tell me, if I have a square with a side of 5 cm, what is its area?

**Teacher**: Exactly. The area of a square is side × side. So, in this case, the area will be 5 cm × 5 cm = 25 cm². What about the formula to find the volume of a cube?

**Teacher**: Yes, well done. The volume of a cube is side × side × side. This means we multiply the length, breadth and height (since all sides of a cube are equal).

**Teacher**: Great. Now let us move on to the worksheet and practice more questions based on it.

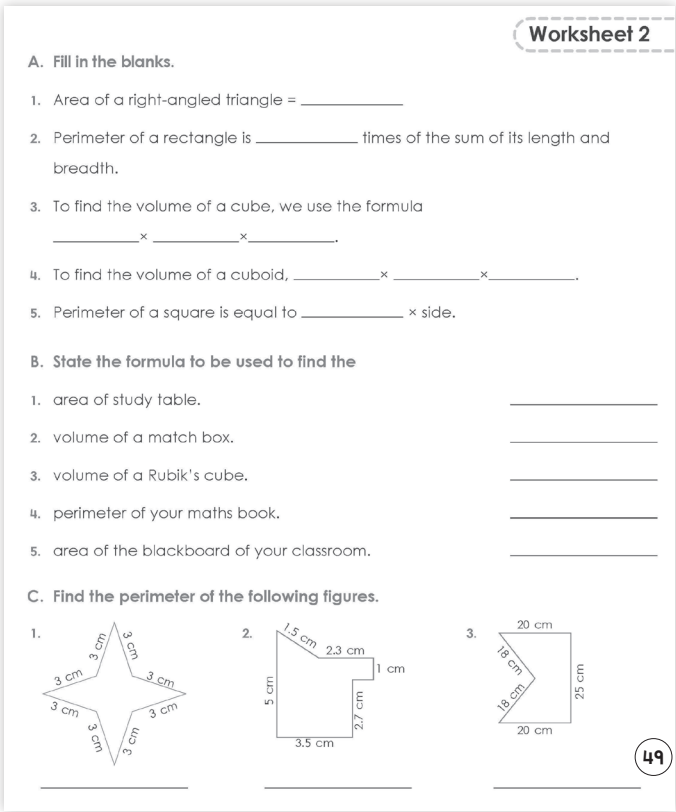
**Worksheet 2**

MUST DO

30 MIN.

**Teacher**: Open your Maths Workbook to Worksheet 2 on page 49. Solve Exercise A by filling in the blanks. Read the questions carefully and write answers accordingly.

(Give time and let them complete Exercise A. Once done, discuss the answers together.)



Worksheet 2

A. Fill in the blanks.

1. Area of a right-angled triangle = _____
2. Perimeter of a rectangle is _____ times of the sum of its length and breadth.
3. To find the volume of a cube, we use the formula _____× _____×_____.
4. To find the volume of a cuboid, _____× _____×_____.
5. Perimeter of a square is equal to _____ × side.

B. State the formula to be used to find the

1. area of study table. _____
2. volume of a match box. _____
3. volume of a Rubik's cube. _____
4. perimeter of your maths book. _____
5. area of the blackboard of your classroom. _____

C. Find the perimeter of the following figures.

1. 3 cm, 3 cm, 3 cm, 3 cm, 3 cm, 3 cm, 3 cm, 3 cm
2. 1.5 cm, 2.3 cm, 1 cm, 5 cm, 2.7 cm, 3.5 cm
3. 20 cm, 18 cm, 18 cm, 25 cm, 20 cm

49

**Teacher**: In Exercise B, state the formulae to be used for the given measurements.

(Give time and let them complete Exercise A. Once done, discuss the answers together.)

**Teacher**: In Exercise C, find the perimeters of the given figures.

**Teacher**: Work individually and write your answers neatly. If you have any doubts, raise your hand.

(Give time and let them complete Exercise A. Once done, discuss the answers together.)

**Teacher**: Excellent work everyone. We have completed the worksheet. Now take a look at the KWL chart.

**Teacher**: Now, let us fill in the last column of the KWL chart.

**Teacher**: In this column we will write what we have learnt in this chapter.


**Teacher**: Think about the topics, have we learnt and write them in the 'L' column of the chart. (Wait for students to fill in the chart.)

**Teacher**: Let us all give a huge round of applause to everyone for their effort. See you in the next class. Have a wonderful day ahead.

You may generate additional practice worksheets using the **Test Generator** given on the digital platform.

## Differentiated Activities

**110 km/hr**

You are given a rectangular swimming pool with the dimensions: Length = 15 m, Breadth = 9 m and Depth = 4 m. After calculating the perimeter volume of the swimming pool, calculate the cost of filling the pool if the cost per cubic metre of water is ₹2.

**80 km/hr**

You are given a rectangular room with the dimensions: Length = 10 m, Breadth = 6 m and Depth = 4 m. Calculate its perimeter, volume and area.

**40 km/hr**

Find the area of a triangular garden. The base of the triangle is 8 m and the height of the triangle is 5 m.

## Home Task

Find three objects at home that are cuboid or cube-shaped, such as a book, a box or a piece of furniture. Measure the length, breadth and height of each object. Then, calculate: Perimeter (if the object is rectangular), Area (if the object is square or rectangular) and Volume (if the object is a cube or cuboid). Make sure you show parents how to measure the objects properly and explain the formulae used.

## Learning Outcomes

**The students will:**

| Domain | Learning Outcome |
|---|---|
| **Physical Development** | • develop skills in measuring and calculating dimensions of various objects, including perimeter, area and volume. |
| **Socio-Emotional and Ethical Development** | • encourage collaboration through group activities and peer interactions in problem-solving tasks and measurements. |
| **Cognitive Development** | • strengthen logical thinking and mathematical reasoning by solving real-life measurement problems and understanding geometric concepts. |
| **Language and Literacy Development** | • enhance communication skills through explaining mathematical concepts and presenting solutions clearly during group discussions and exercises. |
| **Aesthetic and Cultural Development** | • foster creativity in applying measurement skills for projects like designing shapes, calculating areas and constructing models. |
| **Positive Learning Habits** | • encourage independent thinking and responsibility in completing home tasks and improve accuracy in measurements and calculations. |

**Starry Knights**

How do you find the learners' response to the activities? Do you also enjoy explaining through activities or is it unmanageable? Share your experience that made you realise that hands-on activities are at the core of alleviating fear of Maths.

Reward yourself with a STAR.