Lesson-7: Multiples and Factors

13 Periods (40 minutes each)

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

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

Confirming better

I enjoy watching the night sky.

Curricular Goals and Objectives (NCF)

To enable the students:

- to understand and explore multiples, factors and number patterns.
- to identify and classify numbers using divisibility rules.
- to apply divisibility rules to solve problems.
- to apply LCM to solve real-life problems.
- to use visual tools and correct vocabulary to express mathematical ideas.
- to collaborate in group activities and relate maths to real-world context.

Methodology

Period 1

SHOULD DO
05 MIN.

Teacher: Good morning students. How are you?

Teacher: Today, we will start a new topic, Multiples. Before we begin, let us do a quick warm-up with tables.

Teacher: I will say a number and you will say its table up to 5. Ready?

Teacher: 2?

Teacher: Yes, 2, 4, 6, 8, 10.

Teacher: Now, 5?

Teacher: Well done, 5, 10, 15, 20, 25.

Teacher: Now, 3?

Teacher: Good work, 3, 6, 9, 12, 15.

Teacher: Excellent. Learning tables will help us understand multiples better.

Confirming better

Teacher: Everyone please open page 71 in the Main Coursebook. Look at the 'Confirming better' section. Read the statement.

SHOULD DO
05 MIN.

Confirming better I enjoy watching the night sky. **PLH** 70

Teacher: I enjoy watching the night sky. How many of you have seen the moon change its shape over days?

Teacher: Just like the moon follows a pattern, numbers also follow patterns when we find their multiples.

Teacher: We will begin a new chapter, Multiples and Factors. 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: You all did an amazing work in this activity. Let us 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: Open page 70 in your Main Coursebook. Who will read and explain the Kinaesthetic activity?

MUST DO
10 MIN.

> **Kinaesthetic**
>
> Work in pairs. Make small paper balls. Arrange them into groups so that each group has the same number of paper balls. Count how many groups you have and how many paper balls are in each group. Then, ask your partner to create a different arrangement of the groups! 70

Teacher: Good work. Now, everyone work in pairs and complete this activity.

Teacher: Well done. This activity helped us understand how numbers form groups in multiples.

Auditory

Teacher: Now, listen carefully as I read out a set of questions.

MUST DO
05 MIN.

> Auditory*
>
> **Listen to your teacher carefully. Answer the questions.**
>
> 70

Teacher: Nisha and Paresh are siblings. In the evening, their father takes them to the stadium for a match. Each section in the stadium has 20 rows with 30 seats in each row. There are 3 sections in the stadium.

1. How many seats are there in each section?

2. How many seats are there in the stadium?

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

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

Pictorial

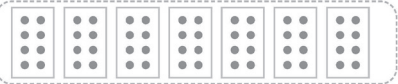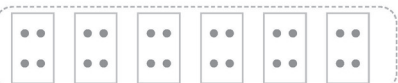**Teacher**: Look at the pictures in your book on page 70. What do you observe?

MUST DO
05 MIN.

> Pictorial PS
>
> **Circle the correct multiplication facts.**
>
> 1. (dot arrangements) 4 × 3   8 × 7   8 × 4   7 × 8
>
> 2. (dot arrangements) 4 × 4   6 × 6   4 × 6   6 × 4
>
> 3. (dot arrangements) 6 × 4   6 × 5   4 × 6   5 × 6
>
> 70

Teacher: Yes, they show dot arrangements in equal groups.

Teacher: Now, circle the correct multiplication facts from the given options.

Teacher: Well done. This helped us connect multiplication with multiples.

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

Differentiated Activities

110 km/hr

Use blocks or draw objects to make groups of 2, 3 and 4. Count how many items in total after each group and write the total.

80 km/hr

Draw 3 boxes. In each box, draw 2 stars. Count all the stars. Repeat with 3 stars in each box.

40 km/hr

Paste or draw 2 identical stickers in each of 3 empty boxes. Count and write how many in total.

Home Task

Look around your home and find 3 objects that come in equal groups (like pairs of socks, sets of plates, rows of chairs). Draw or name them and write how many are there in each group.

Period 2

Teacher: Good morning students. How are you today?

Teacher: Yesterday, we worked with equal groups and repeated tables. Let us revise.

SHOULD DO
05 MIN.

Teacher: If I have 3 boxes and each box has 4 balls, how many balls do I have in total?

Teacher: Yes, 12. That is 4 + 4 + 4 or 3 times 4.

Teacher: Now try this: 5 pencils in each of the 2 pouches. How many pencils?

Teacher: Well done. That is 10. So, when we repeat the same number, we are multiplying.

Interacting better

Teacher: Everyone, please look at the 'Interacting better' section given on page 71.

MUST DO
05 MIN.

> Interacting *better*   ICL
>
> Work in pairs. One student will show a number by air tracing. The other student will guess the number and say its multiplication table aloud.
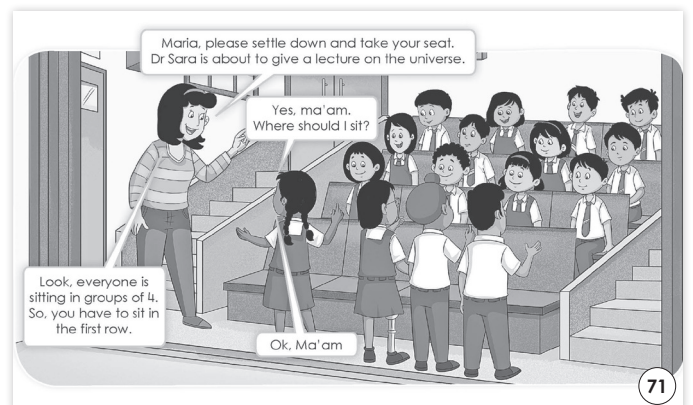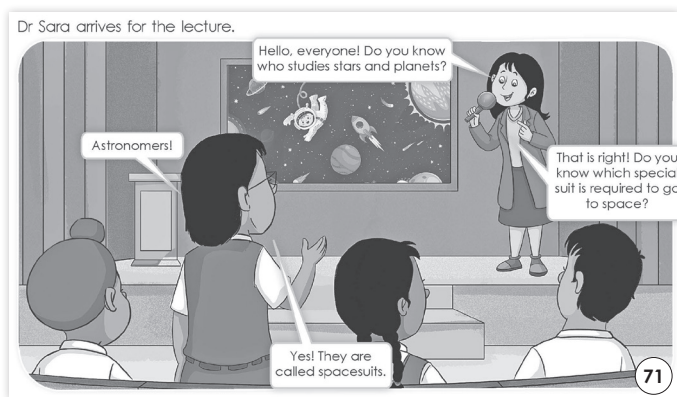>
> 71

Teacher: Work in pairs. One of you will air trace a number. The other person will guess the number and say its table aloud.

MUST DO
15 MIN.

Maria, please settle down and take your seat. Dr Sara is about to give a lecture on the universe.

Yes, ma'am. Where should I sit?

Look, everyone is sitting in groups of 4. So, you have to sit in the first row.

Ok, Ma'am

71

Dr Sara arrives for the lecture.

Hello, everyone! Do you know who studies stars and planets?

Astronomers!

That is right! Do you know which special suit is required to go to space?

Yes! They are called spacesuits.

71

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

Teacher: Everyone please open page 71 in your Main Coursebook.

Teacher: Look at the picture. Where are your friends sitting?

Teacher: Yes, they are in a big hall.

Teacher: Can you guess why they are sitting in groups of 4?

Teacher: What do you think will happen in this story?

Teacher: Now, read the story silently. You have 5 minutes.

Teacher: After that, we will talk about what you have understood.

Teacher: Who came to talk to the students?

Teacher: Yes, Dr. Sara.

Teacher: What did she talk about?

Teacher: Correct, she talked about space and astronomers.

Teacher: Why do you think the students were seated in groups of 4?

Teacher: Yes, to make it easy to count and arrange them.

Teacher: If there are 5 groups of 4 students each, how many students are there?

Teacher: Right, 20. Let us now learn about multiples.

Multiples

Teacher: Look at the image. By what number is the frog jumping each time?

MUST DO
05 MIN.

MULTIPLES

A multiple is a number that can be divided by another number without leaving a remainder.
The frog covers 3 steps in one jump.
The frog jumps on the numbers 3, 6, 9 and 12.
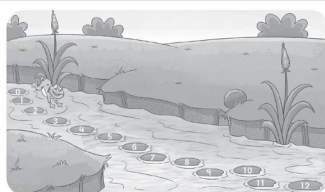These numbers are called the multiples of 3.
Here, 3 is multiplied by 1, 2, 3 and 4.
If we multiply a number (except 0) by 1, 2, 3, 4... we get the multiple of that number.
When two or more numbers are multiplied, the product is called the multiple of each of those numbers.
For example,
$3 \times 1 = 3 \rightarrow 3$ is a multiple of 3 and 1.
$3 \times 2 = 6 \rightarrow 6$ is a multiple of 3 and 2.

72

Teacher: Yes, 3. So from 0 it goes to 3, then to 6, then to 9 and 12.

Teacher: These numbers are coming from 3×1, 3×2, 3×3 and so on.

Teacher: These are multiples of 3.

Teacher: Let us say you start with 5. What will the frog's jumps be if it jumps 5 steps each time?

Teacher: Yes, 5, 10, 15, 20. These are multiples of 5.

Finding multiples

Teacher: Let us look at Example 1 together. It asks for the first five multiples of 8.

MUST DO
05 MIN.

Finding multiples

To find the multiples of a number, multiply it by 1, 2, 3, 4 and so on.

Example 1: Find the first 5 multiples of 8.
$8 \times 1 = 8$ $8 \times 2 = 16$
$8 \times 3 = 24$ $8 \times 4 = 32$
$8 \times 5 = 40$
The first 5 multiples of 8 are 8, 16, 24, 32 and 40.

Example 2: Find the first 5 multiples of 9.
$9 \times 1 = 9$ $9 \times 2 = 18$
$9 \times 3 = 27$ $9 \times 4 = 36$
$9 \times 5 = 45$
The first 5 multiples of 9 are 9, 18, 27, 36 and 45.

Example 3: Is 45 a multiple of 5?
$$\begin{array}{r} 9 \\ 5\overline{)45} \\ -45 \\ \hline 00 \end{array}$$
45 is exactly divisible by 5. So, 45 is a multiple of 5.

Example 4: Is 37 a multiple of 7?
$$\begin{array}{r} 5 \\ 7\overline{)37} \\ -35 \\ \hline 2 \end{array}$$
37 is not exactly divisible by 7. We can see the remainder 2 in this case. So, 37 is not a multiple of 7.

72

Teacher: We will discuss this together:
$8 \times 1 = 8$
$8 \times 2 = 16$
$8 \times 3 = 24$
$8 \times 4 = 32$
$8 \times 5 = 40$

Teacher: So, the first five multiples of 8 are 8, 16, 24, 32 and 40.

Teacher: Now look at Example 3. Is 45 a multiple of 5?

Teacher: Let us divide. $45 \div 5 = 9$. Is there any remainder?

Teacher: No. So, 45 is a multiple of 5.

Teacher: Now turn to your partner. Together, discuss Examples 2 and 4.

Teacher: Raise your hand if you find the answer. Let us check them together.

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

Understanding better

Teacher: Let us move to the 'Understanding better' section.

MUST DO
05 MIN.

Understanding better

Say yes or no.

1. Is 27 a multiple of 4?

2. Is 35 a multiple of 5?

ICL

72

Teacher: Say yes or no.

1. Is 27 a multiple of 4?

Teacher: Let us check. 4 × 6 = 24, 4 × 7 = 28. So, 27 is not in the table. The answer is no.

2. Is 35 a multiple of 5?

Teacher: Yes, because 5 × 7 = 35.

Teacher: Well done, everyone. Let us have a huge round of applause for our hard work today. See you in the next class.

Differentiated Activities

110 km/hr

Choose any two numbers between 2 and 9. Write the first five multiples of both. Then find one multiple that is common to both.

80 km/hr

Use a number line to show the first five jumps of 5. Label each jump and write the total at each point.

40 km/hr

Draw 2 sets of objects. Each set should have 4 items. Count the total number of objects and write a sentence like 2 groups of 4 is 8.

Home Task

Make a list of any three things you do daily (for example: brushing, eating, skipping). Write how many times you do each in a day. Then multiply that number by 7 to find out how many times you do it in a week.

Period 3

Teacher: Good morning students. How are you today?

Teacher: Yesterday we learned how to find multiples and understood which numbers are multiples of others. Let us revise.

SHOULD DO
05 MIN.

Teacher: I will say a number and you will tell me whether it is a multiple of a given number. Ready?

Teacher: Is 18 a multiple of 3?

Teacher: Yes, because 3 × 6 = 18.

Teacher: Is 30 a multiple of 4?

Teacher: No, because 4 does not divide 30 exactly.

Teacher: Is 40 a multiple of 5?

Teacher: Yes, because 5 × 8 = 40.

Properties of multiples

Teacher: Everyone please open page 72 in your Main Coursebook. Let us read the properties of multiples together.

MUST DO
10 MIN.

> Properties of multiples
> ➤ Every number is a multiple of 1, except 0.
> ➤ Every number is a multiple of itself.
> ➤ The smallest (first) multiple of a number the number itself.

72

> ➤ Every multiple of a number is equal to or greater than the number itself.
> ➤ There is no end to multiples of a number as multiples are infinite.
> ➤ Any multiple of a number is divisible by the number.

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Teacher: First, every number is a multiple of 1, except 0.

Teacher: That means 5, 10, 50 — all are multiples of 1.

Teacher: Second, every number is a multiple of itself. For example, 7 × 1 = 7, so 7 is a multiple of 7.

Teacher: Third, the smallest multiple of any number is the number itself.

Teacher: Let us read the next part. Every multiple is equal to or greater than the number.

Teacher: That means multiples do not get smaller.

Teacher: Also, there is no end to multiples — they go on forever.

Teacher: Lastly, any multiple of a number is divisible by that number.

Teacher: Now turn to your partner and take turns saying one multiple and its property.

MUST DO
05 MIN.

> ① Find the first 5 multiples of each of the numbers. Write the answers in your notebook.
> a. 10   b. 12   c. 14   d. 15   e. 20   f. 25

73

Teacher: Let us solve Exercise 1.

Teacher: Find the first five multiples of each number. We will do questions (a) and (b) together.

Teacher: a. 10 → 10, 20, 30, 40, 50

Teacher: b. 12 → 12, 24, 36, 48, 60

Teacher: Now do questions (c), (d), (e), (f) with your partner.

(Students solve while discussing)

Common Multiples

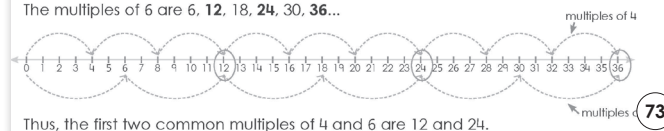**Teacher**: Let us now understand what common multiples are.

MUST DO
10 MIN.

> **COMMON MULTIPLES**
> A number that is a multiple of two or more numbers is called a common multiple of those numbers.
>
> **Example 5:** Find the first two common multiples of 4 and 6.
>
> The multiples of 4 are 4, 8, **12**, 16, 20, **24**, 28, 32, **36**...
>
> The multiples of 6 are 6, **12**, 18, **24**, 30, **36**...
>
>
>
> Thus, the first two common multiples of 4 and 6 are 12 and 24.

73

Teacher: Everyone, open to the section on Common multiples.

Teacher: When a number is multiple of two or more numbers, it is called a common multiple.

Teacher: Let us look at Example 5.

Teacher: The multiples of 4 are 4, 8, 12, 16, 20, 24, 28...

The multiples of 6 are 6, 12, 18, 24, 30, 36...

Teacher: Which numbers appear in both lists?

Teacher: Yes, 12 and 24. These are common multiples.

Teacher: Now let us solve a few questions together.

Teacher: Let us draw a number line and find the common multiples for the following pairs.

MUST DO
05 MIN.

Teacher: We will solve question (a) together:

Teacher: a.) 2 and 4 - Multiples of 2: 2, 4, 6, 8, 10, 12...

Multiples of 4: 4, 8, 12...

Common multiples: 4, 8, 12

(Draw the number line on board and given in Example 5.)

Teacher: Now, complete question (b) and (c) with your partner. Use number lines in your notebook.

Teacher: Let us solve the first three questions from Exercise 3, rest you will complete at your home.

MUST DO
05 MIN.

Teacher: These are simple. Just write the first two common multiples of the given pairs

Teacher: Well done, everyone. Let us have a huge round of applause for our hard work today. See you in the next class.

Differentiated Activities

110 km/hr

Create your own maze where the only way to escape is by following the common multiples of 4 and 6. Swap your maze with a partner and try solving each other's challenge.

80 km/hr

Design your own number bubble path using multiples of 3 and 5. Make sure the correct path leads to the finish line. Give it to a friend to solve.

40 km/hr

Pick any two numbers and write the first three multiples of each.

Home Task

Solve question (d) and (e) of Exercise 3 given on page 73 in the Main Coursebook.

Period 4

Teacher: Good morning students. How are you today?

SHOULD DO
05 MIN.

Teacher: Let us begin our class with a number game.

Teacher: We will count numbers from 1 to 30. Each of you will say one number in order.

Teacher: But here is the twist — if the number is a multiple of 5, you must say Buzz instead of the number.

Teacher: For example, the counting will go like this:

1 – 2 – 3 – 4 – Buzz – 6 – 7 – 8 – 9 – Buzz …

Teacher: Let us start. I will begin with 1, the next student says 2 and we continue from there. Remember to say Buzz at the right numbers.

(Students count till 30 with Buzz at multiples of 5)

Teacher: Now let us make it more challenging. We will again count from 1 to 30, one number per student.

Teacher: This time:

• Say Buzz for multiples of 5
• Say Tuzz for multiples of 3
• Say Fuzz for numbers that are multiples of both 3 and 5

Teacher: For example:

1 – 2 – Tuzz – 4 – Buzz – Tuzz – 7 – 8 – Tuzz – Buzz – 11 – Tuzz – 13 – 14 – Fuzz …

Teacher: Let us begin again. Count carefully and listen to others so you do not miss your turn.

(Students continue counting till 30 with Buzz, Tuzz and Fuzz responses)

Divisibility Rules

Teacher: Let us become number detectives. We will learn 4 divisibility rules in a fun way. I will give clues and you will respond with actions or answers.

MUST DO
10 MIN.

DIVISIBILITY RULES
A number is divisible by another number if the remainder obtained is 0. We use divisibility rules to find whether a number is a factor of another, or not.

A number is divisible by	If	Examples
2	the digit at the ones place is an even number that is 0, 2, 4, 6 or 8.	120, 122, 424, 4426 and 2358
3	the sum of all the digits is divisible by 3.	2346 (2 + 3 + 4 + 6 = 15; 15 ÷ 3 = 5)
5	the digit at the ones place is either 0 or 5.	140, 725 and 1255
10	the digit at the ones place is 0.	100, 120 and 1000

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Teacher: Rule for 2: If a number ends in 0, 2, 4, 6 or 8, it is divisible by 2.

Teacher: I will say numbers. If it ends in an even digit, clap once.

Teacher: 34? (Clap) 47? (No clap) 88? (Clap)

Teacher: Rule for 3: If the sum of digits is divisible by 3, the number is divisible by 3.

Teacher: If it follows the rule, jump.

Teacher: 123 → 1+2+3 = 6 → Jump

Teacher: 422 → 4+2+2 = 8 → No jump

Teacher: Rule for 5: If the number ends in 0 or 5, it is divisible by 5.

Teacher: Say buzz if it ends in 0 or 5.

Teacher: 115? (Buzz) 93? (No) 100? (Buzz)

Teacher: Rule for 10: If the number ends in 0, it is divisible by 10.

Teacher: Make a circle with your hands when you hear such a number.

Teacher: 90? (Circle) 72? (No) 110? (Circle)

Teacher: Now sit with your partner. Choose any number between 100 and 150. Check which rules it follows. Use the table in your book.

Teacher: Great work, detectives. You all cracked the number codes today.

④ Tick (✓) the boxes if the number is divisible by the given numbers. Cross out (✗) if it is not divisible.

	Number	2	3	5	10
a.	72				
b.	36				
c.	75				

(74)

Teacher: Let us solve Exercise 4. Look at the table. We have to check whether each number is divisible by 2, 3, 5 or 10.

MUST DO
05 MIN.

Teacher: Let us solve question (a) together:

72 → ends in 2, so divisible by 2.

7 + 2 = 9, divisible by 3.

Does not end in 5 or 0, so not divisible by 5 or 10.

Teacher: Now complete question (b) and (c) with your partner. Use the divisibility rules.

Factors

FACTORS
When we multiply two or more numbers, the numbers being multiplied are called **factors**. (74)

Teacher: Now let us learn what a factor is.

Teacher: A factor is a number that divides another number exactly with no remainder.

MUST DO
05 MIN.

Teacher: For example, 2 is a factor of 6 because 2 × 3 = 6.

Teacher: But 4 is not a factor of 6 because 4 does not divide 6 evenly.

Teacher: So, if a number divides completely, it is a factor.

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

MUST DO
10 MIN.

Finding factors

Finding factors
We can find the factors of a number using two methods:
i. by multiplication   ii. by division (74)

Using Multiplication

Using multiplication

Example 6: Find the factors of 18.

To list all the factors of 18, follow these steps.

STEP 1: Start the list with 1 and end with the number itself.

1 × 18 = 18

So, 1 and 18 are factors of 18.

1						18

STEP 2: Check with the number 2.

2 × 9 = 18

So, 2 and 9 are factors of 18.

1	2				9	18

STEP 3: Test the number 3 in the same way.

3 × 6 = 18

So, 3 and 6 are factors of 18.

1	2	3		6	9	18

STEP 4: Now, check only the numbers between 3 and 6, that is, 4 and 5.

We will find that there are no such numbers that when multiplied by 4 and 5 give 18 as the product. So, neither 4 nor 5 is a factor of 18.

So, the factors of 18 are 1, 2, 3, 6, 9 and 18. (74)

Teacher: Let us find the factors of 12.

Teacher: Start with 1 × 12 = 12

2 × 6 = 12

3 × 4 = 12

Teacher: These are all factor pairs of 12.

Teacher: So, the factors of 12 are 1, 2, 3, 4, 6 and 12.

Teacher: Turn to your partner and find all the factors of 18 using multiplication facts.

(Discuss the steps in detail.)

COULD DO
05 MIN.

Teacher: Let us play a game called 'Factor Tray'.

Teacher: Imagine you are helping at your home. You need to arrange cups neatly in trays.

Teacher: Each tray must have equal cups in each row. Your task is to find all possible tray arrangements.

Teacher: Each pair will work with one number:

Pair 1 – 16 cups

Pair 2 – 18 cups

Pair 3 – 20 cups

Pair 4 – 24 cups

Pair 5 – 30 cups

Teacher: For example, if you have 16 cups, how many trays can you arrange with equal cups in each?

You can try 1 tray of 16, 2 trays of 8, 4 trays of 4.

Teacher: Write down all such arrangements as multiplication pairs.

Teacher: Then swap your tray plan with another pair and check if their grouping is correct.

Teacher: This shows how factors help us organise things equally in real life.

Teacher: Well done, everyone. Let us have a huge round of applause for our hard work today. See you in the next class.

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

Differentiated Activities

110 km/hr

Create a factor tree craft for 48 using coloured pencils or markers. Draw the branches and label them with factors of 48.

80 km/hr

Draw the branches of a factor tree on a blank sheet for 36. Label each branch with one of the factors of 36.

40 km/hr

Draw 12 stars. Divide them equally into groups. Write how many groups you made and how many were in each group. These are your factors.

Home Task

Write all the factor pairs of the given number using multiplication: 12,18,20

Period 5

Teacher: Good morning students. How are you today?

Teacher: Yesterday we used multiplication to find factors. Today, we will use division. Let us revise a bit.

Teacher: I will say a number and you tell me if 2 is a factor of that number.

Teacher: 18?

Teacher: Yes, divisible. 2 × 9 = 18

Teacher: 25?

Teacher: No. 25 is not divisible by 2.

Teacher: Well done. Let us go deeper into factors.

Finding factors

Using division

> **Using division**
>
> **Example 7:** Find the factors of 24.
>
> Find all the numbers between 1 and 24 that divide 24 exactly. We can use the divisibility rules to check if a number is divisible by 2, 3, 5, and 10.
>
> **STEP 1:** All numbers are divisible by 1.
>
> So, 1 and 24 are factors of 24.
>
> **STEP 2:** 24 is an even number. 24 is divisible by 2.
>
> So, 2 and 12 are factors of 24.
>
> **STEP 3:** 2 + 4 = 6. 6 is divisible by 3. So, 24 is divisible by 3.
>
> Therefore, 3 and 8 are factors of 24.
>
> **STEP 4:** Check if 24 is divisible by 4.
>
> 24 is divisible by 4. So, 4 and 6 are the factors of 24
>
> **STEP 5:** We can see that 24 ÷ 2=12; 24 ÷ 3 = 8; 24 ÷ 4 = 6; 24 ÷ 6 = 4. We need to only check for 7.
>
> 24 is not divisible by 7.
> Therefore, The factors of 24 are 1, 2, 3, 4, 6, 8, 12 and 24.   **75**

Teacher: Everyone, please open to Example 7 given on page 75 in your book.

Teacher: We are going to find the factors of 24 using division.

(Discuss the steps with the students.)

Remembering better

> **Remembering** *better*
>
> **LOTS**
>
> For even numbers, divide the number up to half of its value to find the factors. For odd numbers, check up to the largest divisor.   **75**

Teacher: Let us look at the 'Remembering better' section.

Teacher: For even numbers, we only need to check till half the number.

Teacher: For 24, half is 12. So, we only checked till 12. For odd numbers, we go till the largest divisor.

Teacher: This tip saves time while checking for factors.

Properties of factors

> Therefore, The factors of 24 are 1, 2, 3, 4, 6, 8, 12 and 24.
> Properties of factors
> - 1 is a factor of all numbers.
> - 1 is the smallest factor of a number.
> - A number is a factor of itself.
> - A number is the greatest factor of itself.
> - A factor of a number is smaller than or equal to the number.
>
> 3 × 7 = 21
> Factors   Product or multiple   **74**

Teacher: Let us learn the properties of factors in a fun and meaningful way. We will play Factor Match-Up.

Teacher: I will write five numbers on the board: 1, 6, 12, 20, 25.

Teacher: Now I will say a property and you and your partner will point to the number that matches it. Then we will discuss it together.

Teacher: Property 1: 1 is a factor of all numbers.

Teacher: Which numbers on the board follow this rule?

Students: All of them.

Teacher: Yes, 1 is a factor of every number.

Teacher: Property 2: The smallest factor of a number is 1.

Teacher: Which number has 1 as the smallest factor?

Students: All of them again.

Teacher: Correct.

Teacher: Property 3: A factor is always smaller than or equal to the number.

Teacher: Can 30 be a factor of 12?

Teacher: Why?

Students: Because 30 is greater than 12.

Teacher: So, factors are always smaller or equal.

Teacher: Property 4: A number is the greatest factor of itself.

Teacher: What is the greatest factor of 20?

Students: 20.

Teacher: Yes, every number is a factor of itself.

Teacher: Property 5: A number is a factor of itself.

Teacher: Look at 6. Is 6 a factor of 6?

Students: Yes.

Teacher: Very good.

Teacher: These properties help us understand what factors really mean. They are not just numbers but tools that help in grouping, sharing and dividing evenly.

Teacher: Turn to your partner and explain one property in your own words with an example.

Understanding better

Teacher: Now, look at the 'Understanding better' section.

Teacher: Discuss your answers with your partner first. You have 2 minutes.

Understanding better

Say yes or no.

1. Maria said if 2 and 3 are factors of a number, then 6 is a factor of the number. Is she correct?

2. A factor of a number divides the number evenly.

75

Teacher: After 2 minutes, each pair will share their answers with the class.

Teacher: Please begin now and ask me if you need any help.

(Students discuss and share responses)

Teacher: Well explained. Remember, factors divide evenly and just because two numbers are factors, it does not mean their product is also a factor.

MUST DO
05 MIN.

5 Find the factors of the following numbers. Write the answers in your notebook.

a. 18   b. 21   c. 27
d. 30   e. 50

76

Teacher: Now, let us solve some questions to check our understanding.

Teacher: Work in pairs. Solve questions (a), (b) and (c) together.

Teacher: Help each other, but do not copy. Explain your steps.

MUST DO
05 MIN.

6 Find out whether the first number is a factor of the second number. Write the answers in your notebook.

a. 5, 80   b. 10, 150   c. 7, 75
d. 12, 132   e. 15, 180

76

Teacher: Let us look at question (a) from Exercise 6. The numbers given are 5 and 80.

Teacher: We have to find out whether 5 is a factor of 80.

Teacher: What does it mean to be a factor?

Teacher: Yes, it means the number should divide the other number exactly, with no remainder.

Teacher: So, let us divide 80 by 5. What is 80 ÷ 5?

Teacher: Yes, 16. And is there any remainder?

Teacher: No. That means 5 is a factor of 80.

Teacher: So, what is our answer?

Teacher: Yes, 5 is a factor of 80. Well done.

Teacher: Well done, everyone. Let us have a huge round of applause for our hard work today. See you in the next class.

110 km/hr

Sort a list of 15 numbers (from 1 to 50) into prime and composite categories. For each composite number, list all its factors. After sorting, present your findings and explain why each number is prime or composite.

80 km/hr

Sort 10 numbers between 1 and 30 into prime and composite categories. For composite numbers, list at least two factors. Discuss with a partner why the numbers belong to their categories.

40 km/hr

Sort 5 numbers between 1 and 20 into prime and composite categories. Circle the prime numbers and draw a line through the composite ones.

Home Task

Solve question (d) and (e) of Exercise 5 and 6 given on page 76 in the Main Coursebook.

Period 6

Teacher: Good morning students. How are you today?

Teacher: Let us play a quick game. I will say two numbers and you will think of their common factors.

SHOULD DO
05 MIN.

Teacher: 6 and 12?

Teacher: Yes, good. The common factors are 1, 2, 3 and 6.

Teacher: 8 and 10?

Teacher: Well done. The common factors are 1 and 2.

Teacher: 15 and 30?

Teacher: Great. The common factors are 1, 3, 5 and 15.

Common Factors

COMMON FACTORS
Factors shared by two or more numbers are called common factors.

Example 8: Find the common factors of 12 and 20.

Factors of 12
1 × 12
2 × 6
3 × 4

Factors of 20
1 × 20
2 × 10
4 × 5

Commmon factors of 12 and 20

The factors of 12 are 1, 2, 3, 4, 6, and 12.
The factors of 20 are 1, 2, 4, 5, 10 and 20.
The common factors of 12 and 20 are 1, 2 and 4.

76

Teacher: Everyone, open to Example 8. Look at the factors of 12 and 20.

MUST DO
10 MIN.

Teacher: The factors of 12 are 1, 2, 3, 4, 6 and 12.

Teacher: The factors of 20 are 1, 2, 4, 5, 10 and 20.

Teacher: Good. The common factors of 12 and 20 are 1, 2 and 4.

Teacher: These are numbers that divide both 12 and 20 exactly.

Teacher: Now let us understand this using the Venn

diagram. The overlapping section shows 1, 2 and 4 are common factors.

Teacher: Now turn to your partner and use this method to find common factors of 10 and 15.

Teacher: Yes, good. The common factors of 10 and 15 are 1 and 5.

Teacher: Let us read the 'Processing better' section together.

Processing better

The same factors in a different order should be counted only once. For example, 3 × 4 and 4 × 3 are the same factor pair.

CL

76

Teacher: The same factor pair in different orders should be counted only once.

Teacher: Great. That means 3 × 4 and 4 × 3 both make 12, but we only count them once.

MUST DO

05 MIN.

7 Write all the factors of the following numbers in each pair. Write the answers in your notebook. Also, find their common factors.

a. 3 and 4   b. 5 and 6   c. 6 and 8

d. 8 and 10   e. 12 and 15   f. 30 and 45

g. 21 and 24   h. 28 and 35

76

Teacher: Let us solve question (a) of Exercise 7.

Teacher: Factors of 3 are 1 and 3.

Teacher: Factors of 4 are 1, 2 and 4.

Teacher: Common factor is 1. Good. Now try to solve question(b) to (e) on your own.

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

Prime and Composite Numbers

PRIME AND COMPOSITE NUMBERS

We have learnt that 1 is a factor of every number.

Also, every number is a factor of itself.

Any number that has only two factors, such as 1 and the number itself, is called a **prime number**.

2, 3, 5, 7, 11, 13, 17, 19 and so on are prime numbers because they have only two factors 1 and the number itself.

Numbers that have more than 2 factors are called **composite numbers**.

4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20 and so on are the composite numbers because they have more than two factors.

76

Teacher: Now we will learn about prime and composite numbers.

MUST DO

10 MIN.

Teacher: A prime number has only two factors – 1 and itself.

Teacher: For example, 2 has only 1 and 2 as factors. Good.

Teacher: A composite number has more than two factors.

Teacher: For example, 6 has 1, 2, 3 and 6. Well done.

Teacher: Look at numbers 2 to 20 on page 76. Read them carefully.

Teacher: Numbers like 2, 3, 5, 7, 11, 13 and 17 are prime.

Teacher: Numbers like 4, 6, 8, 9, 10, 12, 14 and 15 are composite.

Teacher: Now with your partner, pick one number and decide if it is prime or composite.

Teacher: Yes, great. 18 is composite. 19 is prime.

Teacher: Let us read the next 'Processing better' section, given on page 76.

Teacher: It says that 1 is neither a prime nor a composite number.

Processing better

1 is neither a prime nor a composite number.

CL

76

Teacher: Yes, this is an important exception to remember.

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

Teacher: Let us play a sorting race with numbers. I will give each group a set of number cards from 1 to 30.

COULD DO

10 MIN.

Teacher: Your task is to work together and sort the cards into two trays – one for prime numbers and one for composite numbers.

Teacher: Discuss within your group and use the number rules we learned to decide.

Teacher: You have 3 minutes. After that, we will check as a class.

Teacher: Time is up. Let us review.

Teacher: Prime numbers are 2, 3, 5, 7, 11, 13, 17, 19, 23, 29. Good.

Teacher: Composite numbers are 4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, 24, 25, 26, 27, 28, 30. Well done.

Teacher: Number 1 is neither prime nor composite. Excellent observation.

Teacher: This activity helped us sort and reason through each number as a team. Great work.

Teacher: Well done, everyone. Let us have a huge round of applause for our hard work today. See you in the next class.

Differentiated Activities

110 km/hr

Create a footstep trail on a large chart paper, where each footstep represents a factor of 36. Write each factor on a step and draw a line connecting it to its pair (e.g., 1 and 36, 2 and 18, 3 and 12, etc.). Once the footstep trail is completed, explain the concept of factor pairs and how they work together to make up the original number.

80 km/hr

Write the numbers from 1 to 20 on the board. As a group, take turns choosing a number and identifying its factor pair (e.g., 4 pairs with 5 to make 20). Continue until all factor pairs are matched, discussing how each pair multiplies to form the original number.

40 km/hr

Use number cards from 1 to 20. Sort into two piles – prime and composite – with a partner

Period 7

Teacher: Good morning students. How are you?

Teacher: Let us begin with a quick recap. I will say two numbers and we will revise their common factors or identify if they are prime or composite.

SHOULD DO
05 MIN.

Teacher: 6 and 8

Teacher: Good. Both are composite. Their common factors are 1 and 2.

Teacher: 5 and 7

Teacher: Yes. Both are prime numbers.

Teacher: 9 and 12

Teacher: Well done. Both are composite and the common factor is 3

Lowest Common Multiple (LCM)

LOWEST COMMON MULTIPLE (LCM)
The lowest common multiple of two numbers is the smallest common number which is a multiple of both the numbers.

Example 9: Find the LCM of 3 and 4.
First, we find the common multiples of 3 and 4.
Multiples of 3 are 3, 6, 9, 12, 15, 18, 21, 24, 27.
Multiples of 4 are 4, 8, 12, 16, 20, 24, 28, 32.
Common multiples of 3 and 4 are 12, 24.
Now, 12 is the smallest common multiple among the common multiples of 3 and 4. So, the LCM of 3 and 4 is 12.

77

Teacher: Open to Example 9 in your book. We are learning about the lowest common multiple or LCM.

MUST DO
05 MIN.

Teacher: LCM is the smallest number that is a multiple of both numbers.

Teacher: What are the multiples of 3?

Teacher: Yes, 3, 6, 9, 12, 15, 18, 21, 24, 27. Good.

Teacher: Now the multiples of 4?

Teacher: Yes, 4, 8, 12, 16, 20, 24, 28, 32. Well done.

Teacher: What are the common multiples?

Teacher: Yes, 12 and 24. Great.

Teacher: Which is the smallest?

MUST DO
05 MIN.

Teacher: 12. So the LCM of 3 and 4 is 12. Excellent thinking.

Understanding **better**

Answer the following questions.

1. Is the product of two prime numbers prime or composite?

2. Which is the smallest even composite number?

77

Teacher: Let us move to the 'Understanding better' section.

Teacher: Is the product of two prime numbers a prime or composite number?

Teacher: Yes, composite. Good.

Teacher: Which is the smallest even composite number?

Teacher: Yes, 4. Great.

8 Find the LCM of the following numbers. Write the answers in your notebook.   77
   a. 3, 5   b. 2, 6   c. 4, 5   d. 6, 9

Teacher: Let us solve question (a) together. Find the LCM of 3 and 5.

MUST DO
05 MIN.

Teacher: Multiples of 3 are 3, 6, 9, 12, 15.

Teacher: Multiples of 5 are 5, 10, 15, 20.

Teacher: So, the common multiple is 15.

Teacher: Yes, so the LCM of 3 and 5 is 15. Well done.

Teacher: Now solve (b), (c) and (d) with your partner.

Prime Factorisation

PRIME FACTORISATION
A factor that is a prime number is called a **prime factor**.
Every composite number can be written as the product of prime factors. This process is called **prime factorisation**.

Example 10: Find the prime factors of 24.
Follow the steps to find the prime factors of 24.
STEP 1: Write a pair of factors.
   $24 = 2 \times 12$
STEP 2: Check for the composite factor. In this case, it is 12.
STEP 3: Factorise the composite factor completely.
   $24 = 2 \times 12 = 2 \times 3 \times 4 = 2 \times 3 \times 2 \times 2$
STEP 4: Write the factors in increasing order.
   $24 = 2 \times 2 \times 2 \times 3$
So, the prime factors of 24 are $2 \times 2 \times 2 \times 3$.

77

Teacher: Let us now learn about prime factorisation.

Teacher: We start with a pair of factors. What is a pair for 24?

MUST DO
10 MIN.

Teacher: 2 × 12. Yes, good.

Teacher: Now check for the composite. Is 12 a prime number?

Teacher: No. So, we break it again. 12 = 2 × 6.

Teacher: And 6 = 2 × 3.

Teacher: So, 24 = 2 × 2 × 2 × 3.

Teacher: Great. These are all prime factors.

(Discuss the steps with the students in detail.)

Laughing better

Teacher: Now look at the 'Laughing better' section.

Teacher: Elphy says 4, 6, 8 and 9 have been stolen.

Teacher: Diley says 2, 3, 5 and 7 are the prime suspects.

Laughing **better** PLH

Elphy: 4, 6, 8 and 9 have all been stolen.

Diley: 2, 3, 5, and 7 are the prime suspects.

77

Teacher: Yes, good observation. All the suspects are prime numbers.

Factor tree method

Teacher: Another way to find prime factors is the factor tree method.
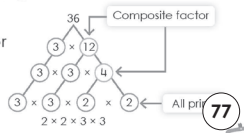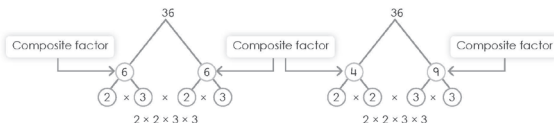
Factor tree method

In this method, the number is factorised repeatedly into a pairs of factors until all the factors become prime.

Example 11: Find the prime factors of 36 by the factor tree method.

Prime factors of 36 = 2 × 2 × 3 × 3

Composite factor

All prime (77)

No matter which 2 factors we start with, the prime factors will always be the same.

(78)

Teacher: Look at the example of 36. One way is:

Teacher: 36 = 3 × 12 → 3 × (3 × 4) → 3 × 3 × (2 × 2)

Teacher: So, 36 = 2 × 2 × 3 × 3. Yes, well done.

Teacher: Try starting with a different pair like 6 × 6. You will still get the same answer.

Teacher: Great. The prime factors remain the same.

Teacher: Let us do a quick Prime Factorisation Sprint. I will write a number on the board. You will do the prime factorisation in your notebook.

Teacher: First number is 30. Start now.

Teacher: Good. 30 = 2 × 3 × 5.

Teacher: Next number is 18. Begin.

Teacher: Yes, 18 = 2 × 3 × 3. Well done.

Teacher: Last one, 40. Write quickly.

Teacher: Great. 40 = 2 × 2 × 2 × 5.

Teacher: This sprint helped us practise how to break numbers into prime factors quickly. Excellent work, everyone.

Differentiated Activities

110 km/hr

Choose any number from 30 to 50. Find prime factors using both division and tree methods.

80 km/hr

Write prime factors of 24 and 36. Compare which prime numbers are common.

40 km/hr

Draw a factor tree of 20 with the help of your partner.

Home Task

Find the prime factors of 40 using the factor tree method and write them in order.

Period 8

Teacher: Good morning students. How are you?

Teacher: Let us revise yesterday's prime factorisation activity. I will write

a number on the board. You will write the prime factors in your notebook.

Teacher: First number is 36.

Teacher: Yes, 2 × 2 × 3 × 3. Great.

Teacher: Now 30.

Teacher: Good. 2 × 3 × 5.

Teacher: Let us solve one more, the number is 40.

Teacher: Well done. 2 × 2 × 2 × 5.

Division Method

Division Method

Prime factorisation is also possible by repeated division by prime numbers. This method is known as the **division method**.

Example 12: Find the prime factors of 18 by the division method.

STEP 1: Divide 18 by 2. Write the quotient 9 below 18.

STEP 2: Divide 9 by 3. Write the quotient 3 below 9.

STEP 3: Stop, as the quotient 3 is a prime number.

2	18
3	9
3	3

Prime factorisation of 18 = 2 × 3 × 3

(78)

Teacher: Open page 78 in your book. Let us understand the division method of prime factorisation.

Teacher: In Example 12, we are finding the prime factors of 18 using division.

Teacher: Step 1: Divide 18 by 2. Quotient is 9.

Teacher: Good.

Teacher: Step 2: Divide 9 by 3. Quotient is 3.

Teacher: Yes.

Teacher: Step 3: Divide 3 by 3. Quotient is 1.

Teacher: Excellent.

Teacher: So, 18 = 2 × 3 × 3. This is how we use the division method.

Poster

MATHS   Theme 5: How Do We Evolve?

Find the factors of these numbers:
12, 17, 18, 20, 22, 30, 40, 60

Find the multiples of these numbers:
5, 6, 7, 14, 15, 18, 19

6 2 1 4 5 7

10 3 95 28 12 36

13 14 9 38 48 24

17 18 54 42 11 26

20 16 15 8 21 45

Teacher: Now look at this colourful poster on the wall. Let us practise factors and multiples.

Teacher: I will call out a number from the poster. You will tell whether it is a factor or multiple of the given number.

Teacher: 24 – Is it a factor of 12?

Teacher: No. Good. 24 is a multiple of 12, not a factor.

Teacher: 15 – Is it a multiple of 5?

Teacher: Yes. Well done.

Teacher: 10 – Is it a factor of 40?

Teacher: Yes. Excellent thinking.

Teacher: Let us continue this activity with your partner. One will call out the number. The other will identify the given number is factor or multiple.

(9) Make a factor tree for each of the following to find the prime factors. Write the answers in your notebook.
a. 96   b. 27   c. 51   d. 72   e. 62   **(78)**

Teacher: Let us solve the first three questions from Exercise 9 using factor trees.

MUST DO
05 MIN.

Teacher: Draw a factor tree. What are the prime factors? (a) 96

(Guide the students to complete the exercise.)

(10) Find the prime factors of each of the following numbers by the division method. Write the answers in your notebook.
a. 72   b. 96   c. 56   d. 78   e. 90   **(78)**

Teacher: Now let us solve Exercise 10. These questions are based on the division method.

MUST DO
05 MIN.

Teacher: We will solve question (a) together.

Teacher: Start with the smallest prime number.

Teacher: $72 \div 2 = 36$

Teacher: $36 \div 2 = 18$

Teacher: $18 \div 2 = 9$

Teacher: $9 \div 3 = 3$

Teacher: $3 \div 3 = 1$

Teacher: So, $72 = 2 \times 2 \times 2 \times 3 \times 3$.

Teacher: Very good.

Teacher: Now, solve question (b) independently.

Teacher: Then solve (c) with a partner. Compare your answers when done.

Connecting better

Teacher: Let us read the 'Connecting better' section on page 78.

MUST DO
05 MIN.

Connecting *better*

Social Studies

Dr Sara tells the students about the satellites of the Earth. She says that the Moon is the only natural satellite of the Earth. There are many artificial satellites as well. Maria asks, "Who sends artificial satellites into space?" She replies, "Different countries have their space agencies to send artificial satellites into space. Our space agency, ISRO (Indian Space Research Organisation), made a record by sending 104 satellites into space at the same time."

HoLL **(78)**

Teacher: Dr Sara tells the students about satellites. Did you know ISRO once launched 104 satellites at once?

Teacher: This shows how science and maths connect. Multiples help us count, measure and understand large quantities, just like scientists do.

Teacher: Excellent connection between maths and the real world.

Teacher: Well done, everyone. Let us have a huge round of applause for our hard work today. See you in the next class.

Differentiated Activities

110 km/hr

Find the prime factors of 84 and 100 using both the division and factor tree method.

80 km/hr

Draw factor trees for 60 and 32. Check if they have common prime factors.

40 km/hr

Use the division method to find the prime factors of 30 with your partner.

Home Task

Solve questions (d) and (e) of Exercise 9 and 10 given on page 78 in the Main Coursebook.

Period 9

Teacher: Good morning students. How are you today?

Teacher: Let us play a quick game to revise multiples, factors, prime and composite numbers.

SHOULD DO
05 MIN.

Teacher: I will say a number. If it is a multiple of 5, tap your desk once.

Teacher: If it is a factor of 24, raise your hand.

Teacher: If it is a prime number, stand up.

Teacher: Ready? Let us begin.

Teacher: 2?

Teacher: Yes, it is a factor of 24 and a prime number. Good.

Teacher: 5?

Teacher: Yes, it is a multiple of 5 and a prime number. Well done.

Teacher: 8?

Teacher: Correct, it is a factor of 24.

Teacher: 15?

Teacher: Right, it is a multiple of 5 and a composite number.

Teacher: 7?

Teacher: Yes, it is a prime number. Great thinking.

Teacher: Let us now move to the 'Recalling better' section. You may show the **Quiz** given on the digital platform.

Recalling better

Teacher: Everyone please open page 78. Look at the 'Recalling better' box.

MUST DO
15 MIN.

Teacher: Let us recall what we have learnt in this chapter.

Teacher: Can anyone tell me how we find the multiples of a number?

Teacher: Yes, by multiplying the number with 1, 2, 3 and so on. Good work.

Teacher: How do we find common multiples of two numbers?

Teacher: Right, by writing multiples of both numbers and finding the ones that are common. Well done.

Teacher: Now, how can we find factors of a number?

Teacher: Excellent, by checking which numbers divide it exactly.

Teacher: What are prime numbers?

Teacher: Great, numbers with only two factors – 1 and the number itself.

Teacher: Let us quickly revise how to do prime factorisation.

Decoding better

Teacher: Now open to the 'Decoding better' section.

Teacher: We are going to use the Sieve of Eratosthenes to find all the prime numbers less than 100.

MUST DO
10 MIN.

DECODING better

ABle

Aim: To find the prime numbers using the Sieve of Eratosthene
You will need: a piece of chart paper, pencil, scale and colours
Procedure:
Eratosthenes was a Greek mathematician, who invented a method of finding prime numbers, which is now called the Sieve of Eratosthenes. Follow the steps given below to find all prime numbers less than 100.

STEP 1: Draw a 10 × 10 grid using a scale. Write numbers from 1 to 100, as shown.
STEP 2: Leave 1, as 1 is neither a prime nor a composite number.
STEP 3: Circle 2, as it is prime. Cross out all other numbers that are multiples of 2.
STEP 4: Circle 3, as it is prime. Cross out all the multiples of 3.
STEP 5: Repeat the previous step until every number is either circled or crossed out.
STEP 6: All the numbers that are circled are prime numbers. Make a list of prime numbers that you find through this activity.

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	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

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(Guide students to complete the activity.)

Solving better

Teacher: Let us now solve Exercise 1 in the 'Solving better' section.

MUST DO
05 MIN.

Solving better

LOTS

1. Circle the numbers that are divisible by the given numbers.
   a. 2 → 12, 17, 111, 225, 7520
   b. 3 → 36, 45, 167, 209, 651
   c. 5 → 415, 238, 540, 654, 1245
   d. 10 → 220, 335, 710, 955, 1870

2. Colour the box red if the number is divisible by 2. Colour the box yellow if the number is divisible by 3. Then, answer the questions below.
   a. How many red boxes are there?
   b. How many yellow boxes are there?
   c. How many boxes have both the colours?

30	15	75	14	69
36	38	52	39	32
62	51	18	78	96
76	57	93	48	86
84	87	68	20	60

79

Teacher: We will go step by step.

Teacher: In question (a), circle the numbers divisible by 2. Who will tell me if 12 is divisible by 2?

Teacher: Yes, it is. Well done.

Teacher: What about 111?

Teacher: No, it is not divisible by 2. Good thinking.

Teacher: Continue this for questions (b), (c) and (d).

Learning better

Teacher: Let us do the Exercise A from the 'Learning better'.

MUST DO
05 MIN.

Learning better

CBA

A Tick (✓) the correct answer.

1. Which of the following is a multiple of 7?
   a. 14   b. 17   c. 18   d. 19

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2. Which of the following is the third multiple of 5?
   a. 15   b. 10   c. 20   d. 5

3. Which of the following is a composite number?
   a. 3   b. 5   c. 9   d. 11

4. Which of the following is a prime number?
   a. 12   b. 24   c. 29   d. 30

5. Which of the following is the prime factor of 23?
   a. 1   b. 12   c. 23   d. 17

80

Teacher: Read each question carefully and tick the correct answer.

Teacher: I will help you with the first one. Which of these is a multiple of 7 ?

Teacher: Yes, 14 is correct. Good thinking.

Teacher: Now complete the rest of the questions.

Teacher: Well done, everyone. You all did fantastic work today. I am so proud of how well you participated in the activities. Keep practising your numbers and I will see you in the next class. Give yourselves a big round of applause

Differentiated Activities

110 km/hr

Choose any two numbers between 10 and 30. Find the LCM of both. Also state whether each number is prime or composite.

80 km/hr

Write all the prime numbers between 1 and 50. Then, select any one prime number and list 3 of its multiples.

40 km/hr

Write five numbers between 20 and 50. Use divisibility rules to check whether each number is divisible by 2, 3 or 5. Write your observations.

Home Task

Solve Exercise 2 of Solving better, given on page 79 in the Main Coursebook.

Period 10

Teacher: Good morning students. How are you today?

Teacher: Let us start with a quick mental warm-up. I will say a number and you will tell me whether it is a multiple of 2, 3 or both.

Teacher: 6?

Teacher: Yes, good. It is a multiple of both 2 and 3.

Teacher: 9?

Teacher: Yes, great. It is a multiple of 3 only.

Teacher: 10?

Teacher: Correct, it is a multiple of 2 only.

Teacher: 12?

Teacher: Well done, it is a multiple of both 2 and 3

B Fill in the blanks.

1. _____ is the factor of all numbers.
2. The smallest multiple of a number is the _____.
3. Every number (except 1) has at least _____ factors.
4. The second multiple of 14 is _____.
5. Common factors of 20 and 30 are _____, _____ and _____. **80**

Teacher: Let us solve question 1 of Exercise B together. What is the factor of all numbers?

Teacher: Yes, it is 1. Good work.

Teacher: Now try questions 2 to 5 independently. Raise your hands, if you need any help?

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

C Circle the correct options.

1. Factors of 78	1	2	3	11	13
2. Factors of 77	1	5	7	11	77
3. Common factors of 18 and 33	1	3	6	18	33
4. Common factors of 28 and 42	1	3	7	14	28
5. Common factors of 35 and 55	1	3	5	7	15

80

(Guide students to solve Exercise C).

D Solve the following word problems in your notebook.

1. Write the first five numbers that are divisible by both 2 and 3.
2. A fuitseller has 118 fruits. He has 22 apples, 34 oranges, 42 mangoes and 20 litchis. Which fruit can be divided evenly among 10 people?
3. Maria bought a jar of marbles. The number of marbles in the jar she bought is the third common multiple of 5 and 10. How many marbles are there in the jar? **80**

Teacher: Let us do question 1 of Exercise D.

Teacher: What are the first five numbers divisible by both 2 and 3?

Teacher: Yes, 6, 12, 18, 24, 30. Well done.

Teacher: Now work in pairs to solve questions 2 and 3. Read the question, underline the numbers and use the method we have learned.

Teacher: Let us play 'Factor–Multiple Detectives'.

Teacher: I will write a number on the board like 36. One student will write all its factors, another will write its multiples up to 100.

Teacher: Now exchange notebooks with a partner and check each other's answers. Mark any missed or incorrect ones.

Teacher: Well done, everyone. You all did fantastic work today. I am so proud of how well you participated in the activities. Keep practising and I will see you in the next class. Give yourselves a big round of applause.

Differentiated Activities

110 km/hr

Find the smallest common multiple of 8 and 12 and list all the prime factors of 60.

80 km/hr

Write all the factors of 36. Find which ones are also factors of 18.

40 km/hr

List all the multiples of 6 up to 36. Circle the common ones with the multiples of 3.

Home Task

Create a word problem using either multiples, factors or prime numbers. Use real-life objects like marbles, books or chairs in your story. Write it neatly in your notebook.

For the next period's Creating better activity, bring a black-coloured paper, a sponge, a paint brush and white paint. We will be making a night sky in class. Bing your Little book for 'Revising better' activity.

Period 11

Teacher: Good morning students. How are you?

Teacher: Let us begin with some number riddles. I will give you clues. You will guess the number and write it in your notebook.

Teacher: I am a multiple of 3 and a factor of 18. I am less than 10. What number am I?

Teacher: Yes, the correct answer is 6. Good.

Teacher: I am between 10 and 20. I am divisible by 2, 3 and 6. What number am I?

Teacher: Yes, the correct answer is 12. Well done.

Teacher: I give a remainder of 1 when divided by 2. I am also a multiple of 3. I am less than 10. What could I be?

Teacher: The answer is 9. Great work.

Teacher: I am a common multiple of 4 and 5. I am less than 30. What number am I?

Teacher: Yes, it is 20. Very good.

Teacher: Excellent work, everyone. You are ready to start today's lesson. Let us move ahead.

Creating better

Creating better

Make a Night Sky   ArtI   21st CS

- Take a piece of black coloured paper, a sponge, a paint brush and white paint.
- Draw a night sky with the moon.
- Use the sponge to apply white paint and colour the moon. Colour the stars using the paint brush.
- Your night sky is ready!

(81)

Teacher: Everyone, please open page 78 of your book.

Teacher: Look at the 'Creating better' section. We are going to create a beautiful night sky.

MUST DO | 15 MIN.

(Guide the students to complete the activity.)

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

Thinking better

Teacher: Now let us turn to the 'Thinking better' section. Read the question carefully.

MUST DO | 05 MIN.

Thinking better   21st CS   HOTS

Think and write the answer in your notebook.
What is the smallest number that gives a remainder of 5 when divided by 4, 5 and 6?

(81)

Teacher: What is the smallest number that gives a remainder of 5 when divided by 4, 5 and 6?

Teacher: Think about the LCM of 4, 5 and 6. Add 5 to it. Write your answer in your notebook.

Teacher: Great thinking. This helped you apply your knowledge of LCM.

Choosing better

Teacher: Now let us go to the 'Choosing better' section.

MUST DO | 05 MIN.

Teacher: Maya has a chance to attend a space camp where she can learn about rockets and planets. What should Maya do?

Choosing better   LSV

Maya has the chance to attend a space camp where she can learn about rockets and planets. What should Maya do?

- Join the camp and participate in the activities to learn about space
- Decides not to go because she is afraid of asking questions

(81)

Teacher: Should she join the camp and participate or avoid going due to fear of asking questions?

Teacher: Discuss this with your partner and tick the correct choice.

MUST DO | 05 MIN.

Revising better

Teacher: Now, let us move to the 'Revising better' section.

Teacher: Revise the prime factorisation method from this lesson in your Little Book.

Revising better   DBL

Revise the prime factorisation method from this lesson in your Little Book.

(81)

Teacher: Go back to the example shown in your book and rewrite the steps in your own words in your notebook.

Pledging better

Teacher: Everyone, please look at the 'Pledging better' section.

MUST DO | 05 MIN.

Pledging better   SDGs

In my own little way, I pledge to stay curious and ask questions about the world around me.

SDG 4: QUALITY EDUCATION

(81)

Teacher: Read the pledge together – 'In my own little way, I pledge to stay curious and ask questions about the world around me.'

Teacher: Wonderful. Let us all take this pledge and remind ourselves to keep learning and exploring.

Teacher: Well done, everyone. You all did fantastic work today. I am so proud of how well you participated in the activities. Keep practising your numbers and I will see you in the next class. Give yourselves a big round of applause.

Differentiated Activities

110 km/hr

Make a hopscotch grid. Jump only on numbers that are multiples of both 4 and 6 up to 100.

80 km/hr

Use coloured chalks or sticky notes. Mark all multiples of 5 between 1 and 50. Hop on them and say the number aloud.

40 km/hr

Jump and shout out the next multiple of 2 each time the teacher claps.

Home Task

Project

Browse the Internet with the help of an adult and find five real-life situations where we use LCM and HCF. For example, if you exercise every 3 days and practice a hobby every 4 days, the LCM helps you find out how many days it will take for both activities to happen on the same day. Create an online presentation. Use the information you found to make a presentation. Present your findings in the next period.

Period 12

Teacher: Good morning students. How are you?

Teacher: Let us begin with a quick warm-up to recall what we learnt in the last period.

SHOULD DO | 05 MIN.

Teacher: If two activities are done every 3 days and every 4 days, what concept helps us find when they will happen on the same day?

Teacher: Yes, the Least Common Multiple or LCM.

Teacher: Now, if you have a number and you want to find all the numbers that divide it exactly, what are you looking for?

Teacher: Correct, you are finding its factors.

Teacher: Great. Let us now solve a worksheet to revise multiples and factors.

Worksheet 1

Theme 5: How Does the Universe Work?

7. Multiples and Factors

Worksheet 1

A. Write **true** or **false**.

1. Every number is a multiple of 0. _____
2. Every number is a multiple of itself. _____
3. The smallest multiple of a number is 1. _____
4. Every multiple of a number is equal to or smaller than the number itself. _____
5. There is no end to multiples of a number as multiples are infinite. _____

B. Write **yes** or **no**.

1. Is 10 a multiple of 2? _____
2. Is 25 a multiple of 3? _____
3. Is 21 a multiple of 3? _____
4. Is 50 a multiple of 5? _____
5. Is 30 a multiple of 4? _____

C. Match the following.

1. 3rd multiple of 7 •   • a. 48
2. 4th multiple of 5 •   • b. 36
3. 7th multiple of 6 •   • c. 20
4. 6th multiple of 8 •   • d. 21
5. 9th multiple of 4 •   • e. 42

30

Teacher: Open your worksheets to page 30. Let us solve Worksheet 1 together.

MUST DO
15 MIN.

Teacher: We will begin with Exercise A : Write true or false.

Teacher: Read the first statement and think carefully before answering.

Teacher: Now, move to Exercise B: Write yes or no. Try to solve these mentally using your knowledge of multiplication tables.

Teacher: Finally, let us solve Exercise C: Match the following. Think of the multiples and connect the correct answers.

Teacher: Complete all questions . I will walk around to assist if anyone needs help.

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

Book of Holistic Teaching

Theme 5: How Does the Universe Work?

Chapter 7: Multiples and Factors

(A) **English**   HoLL MDA

Identify the pronouns in the given paragraph.

Anil and Rohit are studying together. Anil has some confusion about multiples and factors. He asks Rohit about those. Rohit tells him that when we multiply a number by 1, 2, 3, 4 and so on, we get the multiples of that number. He further says that when we multiply two or more numbers, the numbers being multiplied are called factors.

(B) **Science**

Name the largest planet in the solar system, which has moons that are multiples of 19.

(C) **Social Studies**

Name the Indian rocket that successfully carried and deployed a record number of satellites which is also a multiple of 13.

14

(Refer to the Book of Holistic Teaching, page 14 under the title 'Multiplies and Factors.' Complete the activities mentioned in this section and ensure that the students complete them. These activities are designed to enhance their holistic understanding and engagement with the topic. Provide any necessary support and materials to help the students successfully finish the activities.)

COULD DO
10 MIN.

Book of Project Ideas

Chapter 7: Multiples and Factors

Theme 5: How Does the Universe Work?

• Browse the Internet* with the help of an adult and find five real-life situations where we use LCM and HCF. For example, if you exercise every 3 days and practice a hobby

ICT PRO 21st CS

9

every 4 days, the LCM helps you find out how many days it will take for both activities to happen on the same day.

• Create an online presentation. Use the information you found to make a presentation.

• Present your findings in the class.

10

(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.

Differentiated Activities

110 km/hr

You are a detective. Choose a number between 30 and 60. List all its factors. Then find another number with the same number of factors.

80 km/hr

Write down the factors of 18 and 24. Use circles to show the common factors.

40 km/hr

Match numbers to their factors using picture cards or paper slips in a memory game format.

Home Task

Think of two activities you do on different days of the week. Use the concept of LCM to find out when both will happen together. Write your answer in your notebook.

Period 13

Teacher: Good morning students. How are you?

Teacher: Let us begin with a quick warm-up to revise what we did yesterday.

Teacher: Tell me, what is the difference between a multiple and a factor?

Teacher: Yes, a multiple is the result of multiplying a number and a factor is a number that divides another number exactly.

Teacher: Good. Let us now solve Worksheet 2.

Worksheet 2

Worksheet 2

A. **Fill in the blanks.**

1. A number is a factor of _____.
2. There is no end to _____ of a number.
3. A number is the greatest factor of _____.
4. A factor of a number is either _____ or _____ then the number itself.
5. Every _____ of a number is equal to or greater than the number itself.

B. **Tick (✓) the correct answer.**

1. Which of the following is the smallest multiple of 7?
   a. 1   b. 0   c. 7   d. 14

2. Which of the following is the smallest factor of 8?
   a. 0   b. 1   c. 2   d. 4

3. Which of the following is not a multiple of 5?
   a. 1   b. 5   c. 10   d. 20

4. Which of the following is the greatest factor of 18?
   a. 3   b. 9   c. 18   d. 36

5. Which of the following is not a factor of 21?
   a. 1   b. 3   c. 9   d. 21

C. The numbers in columns A and C are the factors of the numbers in column B. Match the columns **correctly.**

A	B	C
1. 7	48	8
2. 4	21	11
3. 6	40	3
4. 5	54	12
5. 2	22	9

31

Teacher: Open your books to Worksheet 2 on page 31.

Teacher: Let us start with Exercise A: Fill in the blanks. Read the statements carefully and fill in the correct words.

Teacher: Next, move to Exercise B: Tick the correct answer. Read each question and select the correct option.

Teacher: Now, complete Exercise C: Match the columns. Use your knowledge of factors and multiples to match Columns A and C with B correctly.

Teacher: You may discuss with a partner. I will be moving around to support you.

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

Worksheet 3

Worksheet 3

A. Write **true** or **false.**

1. A number is divisible by 2 if the digit at the ones place is an even number. _____
2. A number is divisible by 10, then it also divisible by 5. _____
3. A number is divisible by 3 if the sum of all the digits is divisible by 3. _____
4. A number is divisible by 5 if the digit at the ones place is either 0 or 5. _____
5. A number is divisible by 10 if the digit at the ones place is an even number. _____

B. **Fill in the blanks.**

1. The greatest factor of 13 is _____.
2. _____ is the smallest multiple of 45.
3. 13 × 7 = 91. Therefore, 13 and 7 are _____ of 91.
4. 9 × 8 = 72. Therefore, 9 and 8 are factors of _____.
5. 8 × 7 = 56. Therefore, the factors of 56 are _____ and _____.

C. **Answer the following questions.**

1. Write the even prime number. _____
2. Write the smallest odd prime number. _____
3. Write the smallest odd composite number. _____
4. Write the largest prime number less than 50. _____
5. Write the prime number between 90 and 100. _____

32

Teacher: Now turn to Worksheet 3.

Teacher: Let us solve this one individually. Use everything we have learnt in this chapter to complete all the exercise.

Teacher: Think carefully and attempt each part. I will help you if you face any difficulty.

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

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 hard work and creativity. Great work, everyone. See you in the next class. Have a wonderful day ahead.

Differentiated Activities

110 km/hr

Create 3 riddles using clues related to multiples. For example, 'I am a multiple of 4 and 6 and I come before 30. Who am I?'

80 km/hr

Choose one number between 15 and 30. List all its factors and then circle only the prime factors.

40 km/hr

Colour all the multiples of 2 in a 1 to 50 number grid. Use a different colour for each multiple.

Home Task

Revise all the key terms from this chapter: LCM , factor, multiple and common multiples. Write one example for each in your notebook.

Learning Outcomes

The students will:

Domain	Learning Outcome
Physical Development	• perform skip counting, grouping with objects and movement-based activities to demonstrate understanding of multiples and factors.
Socio-Emotional and Ethical Development	• take turns, share materials and complete group tasks respectfully during partner and team-based maths activities.
Cognitive Development	• identify, list and compare multiples, factors, common multiples and prime numbers accurately using number patterns and operations.
Language and Literacy Development	• read and interpret word problems, explain mathematical reasoning using correct terms like 'multiple', 'factor' and 'LCM'.
Aesthetic and Cultural Development	• create a visual representation that shows understanding of number concepts through art.
Positive Learning Habits	• follow classroom routines and instructions attentively, ask questions confidently to clarify doubts, engage actively in activities

Starry Knights

Could you teach the learners to corelate multiples and factors to real-life situations? Which activity did they enjoy the most?

_____

Reward yourself with a STAR.

Theme 5: How Does the Universe Work?
Lesson-7: Multiples and Factors

Main Coursebook

Kinaesthetic
Accept all relevant responses.

Auditory
1. 600   2. 1800

Pictorial
1. 8 × 7   2. 4 × 6   3. 6 × 4

Interacting better
Accept all the relevant responses.

Understanding better (page 72)
1. no   2. yes
1. a. 10, 20, 30, 40, 50   b. 12, 24, 36, 48, 60
   c. 14, 28, 42, 56, 70   d. 15, 30, 45, 60, 75
   e. 20, 40, 60, 80, 100   f. 25, 50, 75, 100, 125
2. a. 4, 8, 12   b. 6, 12, 18   c. 6, 12, 18
3. a. 12 and 24   b. 10 and 20   c. 12 and 24
   d. 8 and 16   e. 30 and 60
4.

	Number	2	3	5	10
a.	72	✓	✓	✗	✗
b.	36	✓	✓	✗	✗
c.	75	✗	✓	✓	✗

Understanding better (page 76)
1. yes   2. yes
5. a. 1, 2, 3, 6, 9, 18
   b. 1, 3, 7, 21
   c. 1, 3, 9, 27
   d. 1, 2, 3, 5, 6, 10, 15, 30
   e. 1, 2, 5, 10, 25, 50
6. a. Yes   b. Yes   c. No   d. Yes   e. Yes
7. a. The factors of 3 are: 1, 3
      The factors of 4 are: 1, 2, 4
      The common factor is: 1
   b. The factors of 5 are: 1, 5
      The factors of 6 are: 1, 2, 3, 6
      The common factor is: 1
   c. The factors of 6 are: 1, 2, 3, 6
      The factors of 8 are: 1, 2, 4, 8
      The common factors are: 1, 2

   d. The factors of 8 are: 1, 2, 4, 8
      The factors of 10 are: 1, 2, 5, 10
      The common factors are: 1, 2
   e. The factors of 12 are: 1, 2, 3, 4, 6, 12
      The factors of 15 are: 1, 3, 5, 15
      The common factors are: 1, 3
   f. The factors of 30 are: 1, 2, 3, 5, 6, 10, 15, 30
      The factors of 45 are: 1, 3, 5, 9, 15, 45
      The common factors are: 1, 3, 5, 15
   g. The factors of 21 are: 1, 3, 7, 21
      The factors of 24 are: 1, 2, 3, 4, 6, 8, 12, 24
      The common factors are: 1, 3
   h. The factors of 28 are: 1, 2, 4, 7, 14, 28
      The factors of 35 are: 1, 5, 7, 35
      The common factors are: 1, 7

Understanding better (page 77)
1. composite   2. 4
8. a. 15   b. 6   c. 20   d. 18
9. a.
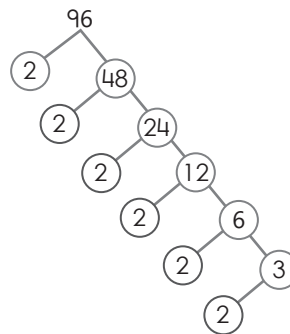
   Prime factors of 96
   = 2 × 2 × 2 × 2 × 2 × 3

   b.
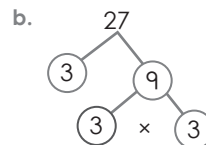
   Prime factors of 27
   = 3 × 3 × 3

10. a.

2	72
2	36
2	18
3	9
3	3
	1

b.

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

	c.	2	56	d.	2	78	e.	2	90
		2	28		3	39		3	45
		2	14		13	13		13	15
		7	7			1			5
			1						

Solving better

1. **a.** 12, 7520 **b.** 36, 45, 651
   c. 415, 540, 1245 **d.** 220, 710, 1870

2.

30	15	75	14	69
36	38	52	39	32
62	51	18	78	96
76	57	93	48	86
84	87	68	20	60

a. 17 **b.** 8 **c.** 7

Learning better

A. 1. a 2. a 3. c 4. c 5. c

B. 1. 1 2. number itself
   3. two 4. 28 5. 2, 5 and 10

C. 1. 1, 3 and 13 2. 1, 7, 11 and 77
   3. 1 and 3 4. 1, 7 and 14
   5. 1 and 5

D. 1. 6, 12, 18, 24, 30 2. Litchis
   3. 30

Thinking better

65

Choosing better

• Join the camp and participate in the activities to learn about space ☑

Lesson-8: Fractions

13 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, Concept Map, Dictionary, eBook, HOTS, I Explain, Infographic, Know it Right, Mental Maths, Quiz, Slideshow, Explainer Video, Test Generator

Affirming better

I love to share food with my friends.

Curricular Goals and Objectives (NCF)

To enable the students:
- to understand fractions as parts of a whole in real-life contexts.
- to represent and compare fractions using hands-on and visual methods.
- to identify different types of fractions through exploration.
- to convert between improper and mixed fractions.
- to add and subtract like and unlike fractions.
- to order and simplify fractions using reasoning.
- to apply fractions in real-life situations involving sharing and fairness.

Methodology

Period 1

Teacher: Good morning students. How are you?

SHOULD DO | 5 MIN.

Teacher: Let us start our class with a quick energiser. I will say a number and you have to show that number using your fingers.

Teacher: Now, I will say a fraction and you have to try to show it using your hands or arms. For example, show me half.

Teacher: Well done. Now show me one-fourth.

Teacher: Excellent. Fractions are parts of a whole. Let us learn more about them today.

Affirming better

Affirming *better* I love to share food with my friends. PLB **82**

Teacher: Today, our affirmation is 'I love to share food with my friends.'

SHOULD DO | 5 MIN.

Teacher: Why is sharing food a good habit?

Teacher: Yes, it shows kindness, friendship and helps us connect with others.

Teacher: Imagine if we have one big cake. How do we share it equally among friends?

Teacher: Correct, we cut it into equal parts. That is how fractions help us in real life.

SHOULD DO | 10 MIN.

Teacher: We will begin a new chapter, Fractions. 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.

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 work in this activity. Let us 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

Kinaesthetic

Form groups of three. One student will represent the numerator and another will represent the denominator. Both students will show the numbers on their fingers. The third student will guess the fraction. **82**

Teacher: Everybody, please open page 82 in your Main course book. Who will read and explain the activity?

MUST DO | 10 MIN.

(Scaffold the students to complete the activity.)

Teacher: Excellent teamwork. This activity helped us understand fraction through movement.

Draw any two shapes in your notebook. Divide each shape into equal parts. Shade $\frac{1}{2}$ in the first shape and $\frac{1}{4}$ in the second. Write the fractions clearly below them.

Auditory*

Listen to your teacher carefully. Answer the questions. **82**

Teacher: Now, listen carefully as I read out a set of questions.

MUST DO 5 MIN.

Teacher: Jessica ate three fifths of the vegetable paratha and Niharika ate two fifths of the vegetable paratha. Who ate more?

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

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

Pictorial

Pictorial PS

Write the fractions represented by the given figures. Solve them and shade the portion corresponding to the answers.

a.

b.

82

Teacher: Look at the pictures in your book on page 82. Who will read and explain the activity?

MUST DO 5 MIN.

Teacher: Write the fractions shown in the figures. Then add the fractions and shade the portion in the third shape to show your answer.

Teacher: Well done, everyone. You all worked hard today. Let us end the session with a big round of applause for your efforts. See you in the next period. Keep practicing.

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

Differentiated Activities

110 km/hr

Draw a circle. Shade $\frac{2}{3}$ in one colour and $\frac{1}{3}$ in another. What does the whole circle show?

80 km/hr

Use blocks or cut-outs to show $\frac{1}{4}$ and $\frac{2}{4}$. Put them together and write the total.

40 km/hr

Colour 1 out of 2 equal parts of a shape. Write the fraction shown.

Period 2

Teacher: Good morning students. How are you today?

SHOULD DO 5 MIN.

Teacher: I have a simple question. If I draw one big circle on the board and colour only half of it, is the circle complete or only a part of it?

Teacher: Yes, it is only a part of it.

Teacher: If I colour just one part out of four equal parts of a roti, what fraction have I coloured?

Teacher: That is right. It is one-fourth or $\frac{1}{4}$.

Teacher: Fractions help us talk about parts of a whole. Let us explore more.

Interacting better

Interacting better ICL

Work with your partner. Count the number of books you have. What fraction will be Maths book. **83**

Teacher: Open your books to page 83. Everyone please look at the 'Interacting better' section.

MUST DO 5 MIN.

Teacher: Work with your partner. Count how many books you have.

Teacher: Now count how many of them are Maths books.

Teacher: What part or fraction of your books are Maths books?

Teacher: Yes, that is how we understand fractions in real life. Good thinking.

MUST DO 15 MIN.
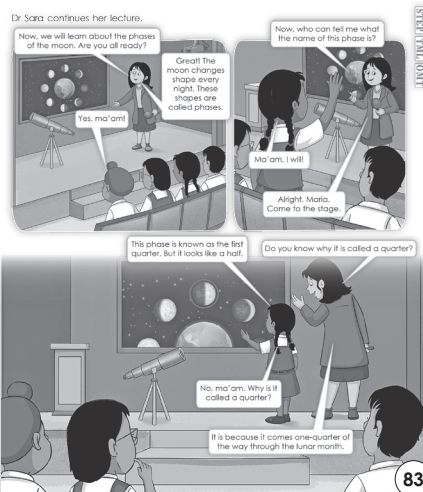
📖 You may show the **Animation** given on the digital platform.

MUST DO 5 MIN.

Teacher: Everyone please open your books to page 83. We will read a short story together.

Teacher: Before we begin, let me ask you a few questions.

Teacher: Have you ever seen the moon changing shape at night?

Teacher: What do you think those different shapes are called?

Teacher: Now, let us read the story together. Who would like to start reading?

(Students take turns reading the story aloud)

Teacher: Thank you for reading. Now let us discuss the story.

Teacher: What are the changing shapes of the moon called?

Teacher: Yes, phases.

Teacher: What is the name of the phase that looks like half but is called a quarter?

Teacher: Why do you think it is called a quarter, even if it looks like a half?

Teacher: That is correct. It is one-fourth of the moon's cycle.

Teacher: Well done. This story helped us connect fractions to something we see in the sky.

Whole And Fractions

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

Teacher: Open your books to page 84. Everyone please look at the 'Whole and Fractions' section.

Teacher: A fraction is a part of a whole or part of a collection.

Teacher: See the rotis divided into equal parts. Two halves make one whole. Three one-thirds make one whole. Four one-fourths make one whole.

(Discuss in detail with reference of explanation given on page 84 in the Main Coursebook.)

Teacher: Everyone, please open page 84 in your Main Coursebook.

Teacher: We will solve Exercise 1 question (a) and (b).

Teacher: Question a shows a box over 5. What should go in the box to make a whole?

Teacher: Yes, 5 out of 5 makes a whole. So the answer is 5.

Teacher: Now let us solve Exercise 1 question (b). The denominator is 10. What should be the numerator?

Teacher: Correct, 10 out of 10 makes a whole. So the answer is 10.

Teacher: Very good. Let us continue this in the Home Task.

Teacher: Well done, everyone. Let us have a huge round of applause for our hard work today. See you in the next class.

Differentiated Activities

110 km/hr

Draw a circle. Divide it into 6 parts. Colour 5 parts. Write the fraction.

80 km/hr

Draw a square and divide it into 4 equal parts. Colour 3 parts. What fraction is shaded?

40 km/hr

Draw a rectangle. Divide it into 2 equal parts. Shade 1 part and write the fraction.

Home Task

Solve questions (c) and (d) of Exercise 1 on page 84 in the Main Coursebook.

Period 3

Teacher: Good morning students. How are you?

Teacher: Let us start with a fun question. Imagine you have 6 flower pots on your balcony. You water 3 of them. What fraction of the pots have you watered?

Teacher: Yes, 3 out of 6. That is $\frac{3}{6}$.

Teacher: Can you simplify that?

Teacher: Correct, it is $\frac{1}{2}$. Well done.

Teacher: Let us explore more types of fractions today.

Types of Fractions

Teacher: Everyone please look at the 'Types of Fractions' section. Open your books to page 84.

Teacher: There are three types of fractions – proper, improper and mixed.

(Discuss in detail)

Proper, improper and mixed fractions

Teacher: A proper fraction has a numerator smaller than the denominator.

Teacher: An improper fraction has a numerator equal to or greater than the denominator.

Teacher: A mixed fraction has a whole number and a fraction together.

Teacher: Let us read the examples given in your book and observe the shapes.

(Discuss in detail)

Laughing better

Elphy: Fractions make great friends because they always share!

85

Teacher: Everyone please look at the 'Laughing better' section on page 85.

Teacher: Elphy says, Fractions make great friends because they always share.

Teacher: Why do you think this is true?

Teacher: Yes, because fractions always divide and share parts equally. It teaches us to share with others too.

Converting improper fractions into mixed fractions

Converting improper fractions into mixed fractions

An improper fraction can be converted into a mixed fraction by following the given steps:

STEP 1: Divide the numerator by the denominator.

STEP 2: Write the quotient as the whole number of the mixed fraction. The remainder as the new numerator. The denominator remains the same.

$$\frac{\text{Numerator}}{\text{Denominator}} = \text{Whole number} \frac{\text{New numerator}}{\text{Denominator}}$$

Example 2: Convert $\frac{17}{2}$ into a mixed fraction.

STEP 1: Divide 17 by 2.

STEP 2: Quotient = 8, Remainder = 1 and Divisor = 2

```
                    8   ← Quotient or
Divisor or    2) 1 7       whole number
denominator      − 1 6
                     1  ← Remainder or
                          new numerator
```

85   Thus, $\frac{17}{2} = 8\frac{1}{2}$.

Teacher: Everyone please look at the example for converting improper fractions on page 85.

Teacher: To convert an improper fraction into a mixed one, divide the numerator by the denominator.

Teacher: The quotient becomes the whole number. The remainder is the new numerator.

Teacher: Let us look at the example 2, the fraction is $\frac{17}{2}$. When we divide 17 by 2, we get 8 as the quotient and 1 as remainder.

Teacher: So $\frac{17}{2}$ becomes $8\frac{1}{2}$. We will do more practice.

Converting mixed fractions into improper fractions

Converting mixed fractions into improper fractions

To convert mixed fractions into improper fractions, follow the given steps:

STEP 1: Multiply the whole number and the denominator.

STEP 2: Add numerator to the product obtained in the first step. The sum is the numerator.

STEP 3: The denominator remains the same.

$$\text{Whole number} \frac{\text{Numerator}}{\text{Denominator}} = \frac{(\text{Whole number} \times \text{Denominator}) + \text{Numerator}}{\text{Denominator}}$$

Example 3: Convert $7\frac{2}{9}$ into an improper fraction.

STEP 1: $7 \times 9 = 63$

STEP 2: $63 + 2 = 65$

STEP 3: Improper fraction is $\frac{65}{9}$.

85-86   Thus, $7\frac{2}{9} = \frac{65}{9}$.

Giving *better*   Seva

In your nearby park, plant various plants with the help of your friends. Ask an adult to help you.

Teacher: Now we will convert mixed fractions into improper fractions.

Teacher: First, multiply the whole number with the denominator. Then add the numerator.

Teacher: For example, $7\frac{2}{9}$. Multiply 7 by 9 to get 63. Add 2 to get 65. So the answer is $\frac{65}{9}$.

Teacher: The denominator stays the same. Well done.

Giving better

Giving *better*   Seva

In your nearby park, plant various plants with the help of your friends. Ask an adult to help you.

85

Teacher: Everyone please look at the 'Giving better' section on page 85.

Teacher: It says, In your nearby park, plant various plants with the help of your friends.

Teacher: This is a lovely way to learn sharing and caring.

Teacher: You will complete this task at home. Visit a park with your friends and plant something. Ask an adult to help you.

LOTS ② Classify the following fractions in the table given below.

a. $\frac{15}{14}$ b. $\frac{9}{7}$ c. $\frac{3}{8}$ d. $4\frac{1}{8}$ e. $\frac{6}{17}$

f. $\frac{11}{9}$ g. $2\frac{3}{4}$ h. $\frac{5}{2}$ i. $\frac{10}{4}$ j. $9\frac{1}{2}$

Proper fractions	Improper fractions	Mixed fractions

86

Teacher: Let us solve Exercise 2. Work with your partner to classify each fraction as proper, improper or mixed.

Teacher: Use the table given in your book and write the answers together. I will check your work after you finish.

LOTS **3** Convert the following improper fractions into mixed fractions. Write the answers in your notebook.

a. $\frac{8}{3}$ b. $\frac{17}{8}$ c. $\frac{22}{3}$ d. $\frac{25}{4}$ e. $\frac{41}{6}$ f. $\frac{33}{5}$ **86**

Teacher: Let us solve Exercise 3 questions (a) to (d).

Teacher: Work in pairs and convert the improper fractions into mixed fractions.

MUST DO
5 MIN.

Teacher: Use the steps we discussed and help each other.

LOTS **4** Convert the following mixed fractions into improper fractions. Write the answers in your notebook.

a. $4\frac{2}{9}$ b. $11\frac{1}{3}$ c. $5\frac{2}{5}$ d. $6\frac{4}{5}$ e. $7\frac{1}{2}$ f. $8\frac{1}{4}$ **86**

Teacher: Let us move to Exercise 4. Solve questions (a) to (d).

MUST DO
5 MIN.

Teacher: Work with your partner and convert the mixed fractions into improper fractions.

Teacher: Try your best and discuss each step with your partner.

Teacher: Well done, everyone. Let us have a huge round of applause for our hard work today. See you in the next class.

Differentiated Activities

110 km/hr

Convert $\frac{38}{5}$ and $\frac{64}{9}$ into mixed fractions and explain each step in your notebook.

80 km/hr

Convert $7\frac{2}{3}$ and $4\frac{1}{4}$ into improper fractions.

40 km/hr

Identify if the following are proper or improper: $\frac{1}{2}$, $\frac{5}{5}$, $\frac{4}{3}$.

Home Task

Solve questions (e) and (f) of Exercise 3 and 4 given on page 86 in the Main Coursebook.

Period 4

Teacher: Good morning students. How are you today?

SHOULD DO
5 MIN.

Teacher: Let us play a quick game. I will say a number and you give me a fraction with that number as the denominator.

Teacher: Ready? Denominator is 4.

Teacher: Yes, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$. Now try with denominator 5.

Teacher: Excellent. Now let us learn how some of these fractions can be equal, even if they look different.
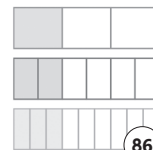
Equivalent Fractions

EQUIVALENT FRACTIONS
Fractions that have the same value or that represent equal parts of the same whole are called **equivalent** fractions.

For example,
All the figures have the same shaded portions and their values are also the same.

Or, $\frac{1}{3} = \frac{2}{6} = \frac{3}{9}$ $\left[\frac{2}{6} = \frac{1}{3}; \frac{3}{9} = \frac{1}{3}\right]$

So, $\frac{1}{3}$, $\frac{2}{6}$ and $\frac{3}{9}$ are equivalent fractions.   **86**

Teacher: Open your books to page 86. Everyone, please look at the 'Equivalent Fractions' section.

MUST DO
10 MIN.

Teacher: Fractions that show the same value or equal parts of the same whole are called equivalent fractions.

Teacher: Look at the diagrams and discuss with your partner why all three figures show the same fraction.

Teacher: Yes, they all show the same amount shaded, just divided differently.

Teacher: Equivalent fractions have different numerators and denominators but represent the same portion of whole.

Teacher: Look at the first example. The shaded parts in all figures are the same, even though the number of divisions is different.

Teacher: $\frac{1}{3}$, $\frac{2}{6}$ and $\frac{3}{9}$ all show the same amount. That is why they are equivalent.

Teacher: This is an important idea. When both the numerator and denominator are multiplied or divided by the same number, the fraction stays equal in value.

Teacher: So, $\frac{1}{3}$, $\frac{2}{6}$ and $\frac{3}{9}$ are equivalent fractions.

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

Finding Equivalent fractions

Finding equivalent fractions
We can find equivalent fractions of any fraction either by multiplying or dividing the numerator as well as the denominator by the same number. The larger number should be exactly divisible by the smaller number.

Example 4: Find any two equivalent fractions of the following.

a. $\frac{3}{5}$
By multiplying

$\times 2 \quad \times 3$

$\frac{3}{5} = \frac{6}{10} = \frac{18}{30}$

$\times 2 \quad \times 3$

Thus, $\frac{6}{10}$ and $\frac{18}{30}$ are two equivalent fractions of $\frac{3}{5}$.

b. $\frac{36}{60}$
By dividing

$\div 2 \quad \div 3$

$\frac{36}{60} = \frac{18}{30} = \frac{6}{10}$

$\div 2 \quad \div 3$

Thus, $\frac{18}{30}$ and $\frac{6}{10}$ are two equivalent fractions of $\frac{36}{60}$.   **87**

Teacher: Now let us learn how to find equivalent fractions.

MUST DO
5 MIN.

Teacher: Everyone please look at the next example on page 86.

Teacher: We can multiply or divide the numerator and denominator by the same number.

Teacher: Read the example with your partner and try to find two equivalent fractions for $\frac{3}{5}$ and $\frac{36}{60}$.

MUST DO
10 MIN.

Teacher: Help each other understand the steps.

> **5** Answer the questions by counting the shaded parts in the following shapes.
>
> a. b. c.
>
> $\frac{2 \times 2}{2 \times 2} = \frac{\boxed{4}}{4}$ $\frac{2}{6} = \frac{\boxed{}}{3}$ $\frac{3}{4} = \frac{\boxed{}}{8}$ **87**

Teacher: Let us solve Exercise 5. Everyone open your books to page 87.

MUST DO
5 MIN.

Teacher: Look at question a. What do you see in the picture?

Teacher: How many parts are shaded?

Teacher: How was the equivalent fraction formed?

Teacher: Very good. Now work with your partner to solve question (b).

Teacher: Count the shaded parts carefully and find the fraction.

Teacher: Now look at question (c) and follow the same steps.

MUST DO
10 MIN.

Teacher: Excellent teamwork.

> **6** Find any 3 equivalent fractions of the following. Write the answers in your notebook.
>
> a. $\frac{3}{4}$ b. $\frac{5}{6}$ c. $\frac{6}{7}$ d. $\frac{18}{30}$ e. $\frac{9}{10}$ f. $\frac{2}{9}$ **87**

Teacher: Let us solve Exercise 6 now.

Teacher: You have to find three equivalent fractions for each given fraction.

Teacher: Work with your partner. Use multiplication or division.

Teacher: Start with question (a). What can you multiply both numerator and denominator by?

Teacher: Try question (b) next and help each other. I will walk around to assist.

(Scaffold students to complete the exercise.)

Teacher: Well done, everyone. Let us have a huge round of applause for our hard work today. See you in the next class.

You may show the **Concept Map** given on the digital platform.

Differentiated Activities

110 km/hr

Find two equivalent fractions for $\frac{7}{8}$ and $\frac{5}{6}$. Simplify them and write your steps.

80 km/hr

Match the equivalent fractions: $\frac{1}{2}, \frac{2}{4}, \frac{2}{6}, \frac{4}{12}$. Write the matched pairs.

40 km/hr

Draw and colour shapes showing $\frac{1}{2}$ and $\frac{2}{4}$. Are they equal? Write yes or no and one reason.

Home Task

Choose any two proper fractions and any one improper fraction of your choice. Find two equivalent fractions for each using multiplication. Show your steps and explain how you found them in your notebook.

Period 5

SHOULD DO
5 MIN.

Teacher: Good morning students. How are you today?

Teacher: In the last class, we learnt about equivalent fractions. Let us recall that.

Teacher: What do we do to get an equivalent fraction?

Teacher: Yes, we multiply or divide the numerator and denominator by the same number.

Teacher: Can someone give me an equivalent fraction of $\frac{2}{3}$?

Teacher: Very good. Now let us use this knowledge to learn how to reduce fractions to their simplest form.

Fractions In Their Simplest Form (Lowest Terms)

> **FRACTIONS IN THEIR SIMPLEST FORM (LOWEST TERMS)**
>
> Any fraction is said to be in its simplest form if the numerator and denominator have only 1 as the common factor. To find the fractions in their simplest form, keep dividing the numerator and denominator by one of their common factors until no further division is possible.
>
> **Example 5:** Reduce the fraction $\frac{64}{48}$ to its simplest form.
>
> $\frac{64}{48} \div \frac{2}{2} = \frac{32}{24} \div \frac{2}{2} = \frac{16}{12}$ = $\frac{16}{12} \div \frac{2}{2} = \frac{8}{6} \div \frac{2}{2} = \frac{4}{3}$
>
> Here, common factor of 4 and 3 is 1. Thus, $\frac{4}{3}$ is the simplest form of $\frac{64}{48}$.   **87**

Teacher: Everyone please open page 87 and look at the 'Fractions in Their Simplest Form' section.

MUST DO
5 MIN.

Teacher: A fraction is in its simplest form when the numerator and denominator cannot be divided further except by 1.

Teacher: Let us look at example 5, the fraction is $\frac{64}{48}$.

Teacher: We keep dividing by common factors until we cannot go further.

Teacher: What is the final answer we get?

Teacher: Yes, $\frac{4}{3}$. Let us try some more together.

> **7** Simplify the following fractions to the lowest term. Write the answers in your notebook.
>
> a. $\frac{44}{45}$ b. $\frac{10}{60}$ c. $\frac{56}{63}$ d. $\frac{8}{24}$ e. $\frac{9}{15}$ f. $\frac{32}{20}$ **87**

Teacher: Let us solve Exercise 7.

MUST DO
10 MIN.

Teacher: Question a: $\frac{44}{45}$. What are the common factors of 44 and 45?

Teacher: Since they have no common factor except 1, $\frac{44}{45}$ is already in the simplest form.

Teacher: Now try question b with your partner.

Teacher: Divide both 10 and 60 by their common factor.

Teacher: Continue with questions c to f in pairs. Help each other with factor checking.

Teacher: Remember, the answer must not be divisible by any common factor except 1.

Like And Unlike Fractions

ORDERING AND COMPARING LIKE FRACTIONS
Compare the numerators of like fractions.

$\frac{2}{5} < \frac{5}{5}$

The smaller the numerator, the smaller the fraction.

$\frac{1}{4} < \frac{3}{4}$

The greater the numerator, the greater the fraction.

Example 7: Compare the following fractions.

a. $\frac{9}{12}$ and $\frac{7}{12}$ b. $\frac{2}{5}$ and $\frac{4}{5}$

a. Here, 9 (numerator of $\frac{9}{12}$) > 7 (numerator of $\frac{7}{12}$)

Thus, $\frac{9}{12}$ is greater than $\frac{7}{12}$ or $\frac{9}{12} > \frac{7}{12}$.

b. Here, 2 (numerator of $\frac{2}{5}$) < 4 (numerator of $\frac{4}{5}$)

Thus, $\frac{2}{5}$ is smaller than $\frac{4}{5}$ or $\frac{2}{5} < \frac{4}{5}$.

Example 8: Arrange $\frac{7}{13}, \frac{5}{13}, \frac{11}{13}$ in ascending order.

As, 5 < 7 < 11 (Compare the numerators of the given fractions.)

Thus, the fractions in ascending order are $\frac{5}{13} < \frac{7}{13} < \frac{11}{13}$.

(88-89)

Teacher: Everyone please open page 88 and look at the 'Like and Unlike Fractions' section.

MUST DO | 5 MIN.

Teacher: Look at the first set of images. All the rectangles are divided into four equal parts. That means they have the same denominator.

Teacher: What do we call such fractions?

Teacher: Yes, like fractions.

Teacher: Now look at the second set. These rectangles are divided differently – one has 4 parts, one has 2 and one has 3.

Teacher: That means their denominators are different. What are these called?

Teacher: Correct, they are unlike fractions.

Teacher: Let us now understand how to change unlike fractions to like fractions. Please look at Example 6 (Discuss the example 6 with students.)

LOTS **8** Circle the odd one out in the following groups.
a. $\frac{1}{11}, \frac{5}{11}, \frac{5}{7}, \frac{7}{11}$ b. $\frac{3}{19}, \frac{5}{19}, \frac{1}{19}, \frac{8}{18}$ c. $\frac{2}{3}, \frac{2}{5}, \frac{1}{3}, \frac{5}{3}$ **88**

Teacher: Let us solve Exercise 8.

Teacher: Question (a) Look at the denominators. Which one is different from the rest?

MUST DO | 5 MIN.

Teacher: Yes, $\frac{5}{7}$ has a different denominator than the others. That is the odd one.

Teacher: Now solve questions (b) and (c) with your partner. Discuss and circle the odd one in each group.

COD **9** Change the following unlike fractions into like fractions. Write the answers in your notebook.
a. $\frac{2}{3}$ and $\frac{5}{7}$ b. $\frac{8}{5}$ and $\frac{2}{25}$ c. $\frac{2}{7}$ and $\frac{4}{8}$ d. $\frac{3}{14}$ and $\frac{1}{7}$ **88**

Teacher: Let us solve Exercise 9.

Teacher: When two fractions have different denominators, we need to change them so both have the same number at the bottom.

MUST DO | 10 MIN.

Teacher: Look at question (a) $\frac{2}{3}$ and $\frac{5}{7}$. What is the smallest number both 3 and 7 can be changed into?

Teacher: Yes, 21. So we change both fractions so that their denominator is 21.

Teacher: $\frac{2}{3}$ becomes $\frac{14}{21}$ and $\frac{5}{7}$ becomes $\frac{15}{21}$.

Teacher: Now they are like fractions.

Teacher: Solve questions (b), (c) and (d) in the same way with your partner.

Teacher: Well done, everyone. Let us have a huge round of applause for our hard work today. See you in the next class.

Differentiated Activities

110 km/hr

Simplify $\frac{84}{108}$ and $\frac{45}{60}$. Show all steps.

80 km/hr

Write down three pairs of unlike fractions.

Convert them into like fractions using the method discussed in class.

40 km/hr

Look at the fractions $\frac{6}{8}$ and $\frac{3}{4}$.

1. Simplify both if possible.

2. Colour shapes to show that they are like or unlike fractions.

Home Task

Draw any two unlike fractions using shapes. Convert them into like fractions using the method discussed in the class.

Period 6

Teacher: Good morning students. How are you today?

SHOULD DO | 5 MIN.

Teacher: Let us play a fraction guessing game.

Teacher: I will say two fractions. You will say which is greater and why.

Teacher: Ready? First: $\frac{3}{5}$ and $\frac{2}{5}$

Teacher: Yes, $\frac{3}{5}$ is greater because the denominator is same and numerator is bigger.
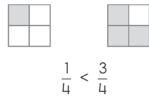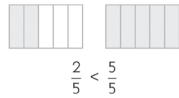
Teacher: Next: $\frac{1}{4}$ and $\frac{3}{4}$

Teacher: Well done. Let us learn how to compare and order such fractions.

Ordering And Comparing Like Fractions

ORDERING AND COMPARING LIKE FRACTIONS
Compare the numerators of like fractions.

$\frac{2}{5} < \frac{5}{5}$

The smaller the numerator, the smaller the fraction.

$\frac{1}{4} < \frac{3}{4}$

The greater the numerator, the greater the fraction.

Example 7: Compare the following fractions.

a. $\frac{9}{12}$ and $\frac{7}{12}$

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

a. Here, 9 (numerator of $\frac{9}{12}$) > 7 (numerator of $\frac{7}{12}$)

Thus, $\frac{9}{12}$ is greater than $\frac{7}{12}$ or $\frac{9}{12} > \frac{7}{12}$.

b. Here, 2 (numerator of $\frac{2}{5}$) < 4 (numerator of $\frac{4}{5}$)

Thus, $\frac{2}{5}$ is smaller than $\frac{4}{5}$ or $\frac{2}{5} < \frac{4}{5}$.

Example 8: Arrange $\frac{7}{13}$, $\frac{5}{13}$, $\frac{11}{13}$ in ascending order.

As, 5 < 7 < 11 (Compare the numerators of the given fractions.)

Thus, the fractions in ascending order are $\frac{5}{13} < \frac{7}{13} < \frac{11}{13}$.

Example 9: Arrange $\frac{4}{21}$, $\frac{18}{21}$, $\frac{20}{21}$ in descending order.

As, 20 > 18 > 4 (Compare the numerators of the given fractions.)

Thus, the fractions in descending order are $\frac{20}{21} > \frac{18}{21} > \frac{4}{21}$.

88-89

Teacher: Everyone please open page 88 and look at the coloured blocks in the 'Ordering and Comparing Like Fractions' section.

MUST DO — 10 MIN.

Teacher: Look at the first two green blocks. What do you notice?

Teacher: Yes, both have 5 equal parts. But one has 2 parts shaded and the other has 5.

Teacher: Since the denominators are the same, the one with the larger numerator is the greater fraction.

Teacher: Look at the pink blocks $\frac{1}{4}$ and $\frac{3}{4}$. Which is greater?

Teacher: $\frac{3}{4}$ is greater because more parts are shaded.

(10) Compare the following fractions using <, > or =.

a. $\frac{2}{3} \square \frac{1}{3}$ b. $\frac{5}{13} \square \frac{8}{13}$ c. $\frac{7}{11} \square \frac{5}{11}$ d. $\frac{1}{12} \square \frac{1}{12}$ **88**

Teacher: Let us solve Exercise 10.

MUST DO — 5 MIN.

Teacher: Look at question (a) $\frac{2}{3}$ and $\frac{1}{3}$. Which is greater?

Teacher: Yes, $\frac{2}{3}$ is greater. Compare the numerators since the denominators are same.

Teacher: Now solve questions (b), (c) and (d) with your partner. Read each carefully and use <, > or =.

(11) Arrange the following fractions in ascending order. Write the answers in your notebook.

a. $\frac{3}{12}$, $\frac{5}{12}$, $\frac{7}{12}$ b. $\frac{8}{25}$, $\frac{1}{25}$, $\frac{11}{25}$ c. $\frac{22}{47}$, $\frac{11}{47}$, $\frac{9}{47}$ d. $\frac{5}{17}$, $\frac{11}{17}$, $\frac{2}{17}$ **88**

Teacher: Let us solve Exercise 11.

MUST DO — 5 MIN.

Teacher: Arrange the fractions in ascending order. Start with question a.

Teacher: What are the denominators in question (a)?

Teacher: Yes, they are same. Now compare the numerators.

---

(12) Arrange the following fractions in descending order. Write the answers in your notebook.

a. $\frac{3}{10}$, $\frac{7}{10}$, $\frac{1}{10}$ b. $\frac{5}{21}$, $\frac{11}{21}$, $\frac{9}{21}$ c. $\frac{7}{20}$, $\frac{11}{20}$, $\frac{17}{20}$ d. $\frac{5}{14}$, $\frac{9}{14}$, $\frac{3}{14}$ **88**

Teacher: Work with your partner to solve questions (a) and (b).

MUST DO — 5 MIN.

Teacher: Now open Exercise 12. We will solve question (a) first.

Teacher: All denominators are same, so let us arrange numerators from biggest to smallest.

Teacher: Now solve question (b) in the same way with your partner.

You may discuss the answers with the help of **eBook**.

COULD DO — 10 MIN.

Teacher: Let us try a standing challenge.

Teacher: I will give you a list of like fractions. You will stand up and arrange yourselves in ascending order.

Teacher: The fractions are $\frac{1}{6}$, $\frac{3}{6}$, $\frac{2}{6}$, $\frac{5}{6}$.

Teacher: Talk with your group and stand in the correct order.

(Give more questions in the similar manner.)

Teacher: Well done, everyone. Let us have a huge round of applause for our hard work today. See you in the next class.

Differentiated Activities

110 km/hr

Compare and arrange the fractions $\frac{4}{9}$, $\frac{7}{9}$, $\frac{2}{9}$ and $\frac{5}{9}$ in ascending order.

80 km/hr

Write four like fractions and compare them using < or >.

40 km/hr

Draw and colour $\frac{1}{5}$ and $\frac{4}{5}$. Which one is greater? Write your answer in one sentence

Home Task

Solve questions (c) and (d) of Exercise 11 and 12 given on page 88 in the Main Coursebook.

Make a fraction ladder using coloured strips of paper.

1. Write four like fractions.
2. Arrange them from smallest to largest.
3. Paste them in your notebook in order.

Period 7

SHOULD DO — 5 MIN.

Teacher: Good morning students. How are you today?

Teacher: Yesterday we learnt about simplifying fractions and changing unlike fractions to like fractions.

Teacher: If I say $\frac{2}{3}$ and $\frac{5}{7}$, can we add them directly?

Teacher: No, because they are unlike fractions. What can we do to make their denominators same?

Teacher: Great. Today, we will learn how to compare fractions when denominators are already same.

Adding Like Fractions

ADDING LIKE FRACTIONS

To add like fractions, follow the given steps:

STEP 1: Add the numerators of the given like fractions.

STEP 2: The denominators will remain the same.

$$\frac{2}{6} + \frac{2}{6} = \frac{4}{6}$$

$$\frac{2}{6} \qquad \frac{2}{6}$$

Example 10: Add $\frac{5}{7}$ and $\frac{8}{7}$.

$$\frac{5}{7} + \frac{8}{7} = \frac{5+8}{7} = \frac{13}{7}$$

Example 11: Add $\frac{6}{8}$ and $\frac{1}{8}$.

$$\frac{6}{8} + \frac{1}{8} = \frac{6+1}{8} = \frac{7}{8}$$

89-90

Teacher: Everyone please open page 89 and look at the pink boxes.

MUST DO 5 MIN.

Teacher: How many total boxes are shaded?

Teacher: 2 + 2 = 4, so $\frac{2}{6} + \frac{2}{6} = \frac{4}{6}$. Denominators remain the same.

Teacher: Let us look at example 10 now. What is $\frac{5}{7} + \frac{8}{7}$?

Teacher: Yes, we get $\frac{13}{7}$. Excellent.

Adding mixed fractions (with like fractions)

Adding mixed fractions (with like fractions)

To add mixed fractions with the same denominators, follow the given steps:

STEP 1: Convert mixed fractions into improper fractions.

STEP 2: Add the numerators of the like fractions obtained in the first step.

STEP 3: Again, the denominators will remain the same.

Example 12: Add $1\frac{2}{5} + 1\frac{3}{5}$

$$1\frac{2}{5} = \frac{1 \times 5 + 2}{5} = \frac{7}{5} \qquad 1\frac{3}{5} = \frac{1 \times 5 + 3}{5} = \frac{8}{5}$$

So, $\frac{7}{5} + \frac{8}{5} = \frac{7+8}{5} = \frac{15}{5}$

90

Teacher: Look at the two mixed fractions in the example.

MUST DO 10 MIN.

Teacher: First, we change both to improper fractions. $1\frac{2}{5}$ becomes $\frac{7}{5}$ and $1\frac{3}{5}$ becomes $\frac{8}{5}$.

Teacher: Then we add the numerators: 7 + 8 = 15. So, $\frac{15}{5}$ is the answer.

Teacher: Let us now apply this understanding to your textbook questions.

MUST DO 5 MIN.

13 Find the sums of the following fractions. Write the answers in your notebook.

a. $\frac{7}{14} + \frac{1}{14}$ b. $\frac{16}{23} + \frac{5}{23}$ c. $1\frac{1}{8} + 2\frac{3}{8}$ d. $3\frac{2}{5} + 2\frac{1}{5}$ **90**

Teacher: Let us solve Exercise 13.

Teacher: Question (a): $\frac{7}{14} + \frac{1}{14} = \frac{8}{14}$. Simple addition of numerators.

MUST DO 10 MIN.

Teacher: Now solve question (c) with your partner. Remember to convert the mixed fractions first.

Subtracting Like Fractions

SUBTRACTING LIKE FRACTIONS

To subtract like fractions, follow the given steps:

STEP 1: Subtract the numerators of the given like fractions.

STEP 2: The denominators will remain the same.

$$\frac{3}{5} - \frac{2}{5} = \frac{3-2}{5} = \frac{1}{5}$$

Example 13: Subtract $\frac{4}{23}$ from $\frac{18}{23}$.

$$\frac{18}{23} - \frac{4}{23} = \frac{18-4}{23} = \frac{14}{23}$$

Example 14: Subtract $\frac{13}{21}$ from $\frac{28}{21}$.

$$\frac{28}{21} - \frac{13}{21} = \frac{28-13}{21} = \frac{15}{21}$$

90

Teacher: Everyone please turn to page 90.

MUST DO 5 MIN.

Teacher: Look at the example: $\frac{3}{5} - \frac{2}{5}$. What do we subtract?

Teacher: Yes, just the numerators. So 3 − 2 = 1. The result is $\frac{1}{5}$.

Teacher: Discuss the next examples with your partner.

Subtraction of mixed fractions (with like fractions)

Subtraction of mixed fractions (with like fractions)

To subtract mixed fractions with same denominators, follow the given steps:

STEP 1: Convert mixed fractions into improper fractions.

STEP 2: Subtract the numerators of the like fractions obtained in the first step.

STEP 3: Again, the denominators will remain the same.

Example 15: Subtract $1\frac{3}{7}$ from $4\frac{1}{7}$

$$1\frac{3}{7} = \frac{1 \times 7 + 3}{7} = \frac{10}{7} \qquad 4\frac{1}{7} = \frac{4 \times 7 + 1}{7} = \frac{29}{7}$$

So, $\frac{29}{7} - \frac{10}{7} = \frac{19}{7}$

90

Teacher: Everyone, let us now learn how to subtract when both numbers are mixed fractions.

MUST DO 5 MIN.

Teacher: Open your books to page 90 and look at the example shown under 'Subtraction of mixed fractions'.

Teacher: What do we see? Yes, we need to subtract $1\frac{3}{7}$ from $4\frac{1}{7}$.

Teacher: Can we subtract directly? No. First, we must convert both to improper fractions.

Teacher: Let us do it together. What is $4\frac{1}{7}$ as an improper fraction?

Teacher: Yes, 4 times 7 is 28 plus 1 is 29. So we get $\frac{29}{7}$.

Teacher: What about $1\frac{3}{7}$? That becomes $\frac{10}{7}$.

Teacher: Now we subtract $\frac{29}{7} - \frac{10}{7}$. What do we get?

Teacher: Yes, 29 − 10 = 19, so the answer is $\frac{19}{7}$.

Teacher: Well done. That is how we subtract mixed fractions when the denominators are same.

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

14 Find the difference of the following fractions. Write the answers in your notebook.

a. $\frac{3}{4} - \frac{2}{4}$ b. $\frac{13}{32} - \frac{8}{32}$ c. $7\frac{1}{4} - 4\frac{3}{4}$ d. $4\frac{1}{9} - 2\frac{3}{9}$ **91** COD

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

MUST DO 5 MIN.

Teacher: Let us solve Exercise 14 together. Please open your books and look at question (a).

Teacher: The question is $\frac{3}{4} - \frac{2}{4}$. Are the denominators the same?

Teacher: Yes, they are. So what do we do next?

Teacher: We subtract the numerators: 3 − 2 equals 1. The answer is $\frac{1}{4}$.

Teacher: Good work. That was a simple subtraction of like fractions.

Teacher: Now let us look at question (c). We need to subtract $7\frac{1}{4}$ from $4\frac{3}{4}$.

Teacher: Can we subtract a bigger number from a smaller one directly? No, we need to change both mixed fractions to improper fractions first.

Teacher: Let us do the first one together. What is $7\frac{1}{4}$ as an improper fraction?

Teacher: Yes, it is $\frac{29}{4}$. And $4\frac{3}{4}$ becomes $\frac{19}{4}$.

Teacher: Now subtract $\frac{29}{4} - \frac{19}{4}$. What is the answer?

Teacher: That is $\frac{10}{4}$. You can simplify if possible.

Teacher: Now solve it again with your partner and discuss each step. Make sure your steps are neat and clear.

Differentiated Activities

110 km/hr

Add the following: $3\frac{2}{5} + 2\frac{4}{5}$ and $5\frac{1}{4} + 3\frac{3}{8}$.

80 km/hr

Solve $\frac{5}{6} + \frac{1}{6}$ and $4\frac{2}{9} - 3\frac{1}{9}$.

40 km/hr

Colour and solve $\frac{2}{5} + \frac{2}{5}$ and $\frac{3}{4} - \frac{1}{4}$ using rectangles.

Home Task

Solve question (b) and (d) of Exercise 13 and 14 given on page 91 in the Main Coursebook.

Period 8

Teacher: Good morning students. How are you?

Teacher: Yesterday, we learnt how to add and subtract like fractions and mixed fractions.

Teacher: If I have $\frac{5}{8}$ and $\frac{3}{8}$, what do I do to add them?

Teacher: Yes, we add the numerators. What if I have $\frac{7}{9}$ and $\frac{2}{9}$?

Teacher: Very good. You subtract the numerators since the denominators are already same.

Teacher: Today, we will combine addition and subtraction of like fractions in a single problem.

Adding and Subtracting Fractions Together

ADDING AND SUBTRACTING FRACTIONS TOGETHER

Follow the given steps, while adding and subtracting fractions together.

STEP 1: Add all the like fractions with '+' sign.

STEP 2: Add all the like fractions with '−' sign.

STEP 3: Subtract the sum obtained in the second step from the sum obtained in the first step.

Example 16: Simplify $\frac{10}{12} + \frac{3}{12} - \frac{10}{12} + \frac{1}{12}$

STEP 1: Add the first fraction with the fraction with '+' sign.

$\frac{10}{12} + \frac{3}{12} = \frac{10+3}{12} = \frac{13}{12}$;

STEP 2: Add all the like fraction with '−' signs.

$\frac{10}{12} + \frac{1}{12} = \frac{11}{12}$

STEP 3: Subtract the answer obtained in step 2 from the answer obtained in step 1.

$\frac{13}{12} - \frac{11}{12} = \frac{2}{12}$

(91)

Teacher: Everyone, please open your book to page 91 and look at the example.

Teacher: Let us say I have 10 pencils, I buy 3 more and then give away 2 to my friend. How many do I have?

Teacher: Yes, we add and then subtract. Just like that, we do the same in fractions.

Teacher: First add $\frac{10}{12} + \frac{2}{12} = \frac{13}{12}$. Then subtract $\frac{2}{12}$. That gives $\frac{11}{12}$.

Teacher: We do not change the denominator because it is the same in all three fractions.

(Discuss the topic in detail.)

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

Understanding better

Understanding *better*

Say yes or no.

1. While adding like fractions, only the denominators are added.

2. Is $\frac{1}{5}$ an example of a proper fraction?

(91)

Teacher: Everyone please look at the 'Understanding better' section.

Teacher: Question 1: While adding like fractions, only the denominators are added. Yes or No?

Teacher: No, we add only numerators. Denominators remain the same.

Teacher: Question 2: Is $\frac{1}{5}$ a proper fraction?

Teacher: Yes, because the numerator is smaller than the denominator.

(15) **Simplify the following fractions. Write the answers in your notebook.**

a. $\frac{2}{8} - \frac{1}{8} + \frac{6}{8}$ b. $\frac{5}{15} - \frac{3}{15} + \frac{4}{15}$ c. $\frac{7}{9} + \frac{3}{9} - \frac{1}{9}$ d. $\frac{2}{11} - \frac{1}{11} + \frac{7}{11}$ (91)

Teacher: Let us solve Exercise 15.

Teacher: Question (a): $\frac{2}{8} - \frac{1}{8} + \frac{6}{8}$. Think of it as slices of cake. If you eat 2 slices, then give away 1 and later take 6 more, how many do you have?

Teacher: Yes, you have $\frac{7}{8}$ of the cake.

Teacher: Now solve question (c) with your partner: $\frac{7}{9} + \frac{3}{9} - \frac{1}{9}$. Add, then subtract.

Word Problems

WORD PROBLEMS

Example 17: Rajiv needs to walk $\frac{9}{10}$ km to school. He has already walked $\frac{4}{10}$ km. How much farther does Rajiv need to walk?

Total distance needs to be covered by Rajiv = $\frac{9}{10}$ km

Distance already walked = $\frac{4}{10}$ km

More distance to walk = $\frac{9}{10} - \frac{4}{10} = \frac{5}{10}$ km

(91)

Teacher: Now let us look at a real-world story problem.

Teacher: Rajiv needs to walk $\frac{9}{10}$ km to school. He has already walked $\frac{4}{10}$ km. How far is left?

Teacher: Yes, subtract $\frac{4}{10}$ from $\frac{9}{10}$. That means $\frac{5}{10}$ km more to go.

Teacher: We use subtraction of fractions even while measuring distances.

⑯ Solve the following word problems, in your notebook.

a. Anu and Jia ordered uttapam that were of the same size. Anu ate $\frac{3}{8}$ of her uttapam. Jia ate $\frac{5}{8}$ of her uttapam. Who ate more uttapam?

b. Reshma brought 11 toffees to school. She ate 3 toffees and her friend ate 2 toffees. What fraction of toffees did they eat in total?

c. Rani spent $\frac{1}{6}$ of her Sunday doing homework and $\frac{3}{6}$ of the day watching cricket. What part of the day was left to do other things?

Teacher: Let us solve Exercise 16.

Teacher: Who will read and explain question (a)?

Teacher: Compare the two and explain your answer.

Teacher: Who will read and explain question (b)?

Teacher: Work with your partner to add the numbers and write the fraction.

Teacher: Who will read and explain question (c)?

Teacher: Add the two fractions and subtract from 1. This tells us how much time she had for other things.

Teacher: Well done, everyone. Let us have a huge round of applause for our hard work today. See you in the next class.

Differentiated Activities

110 km/hr

Write a short word problem involving adding and subtracting fractions. Solve it and explain with steps.

80 km/hr

Show how you would solve $\frac{3}{6} + \frac{2}{6} - \frac{1}{6}$ using coloured paper strips.

40 km/hr

Take three strips of paper. Colour 1 out of 4 parts on the first strip, 2 out of 4 parts on the second and cut 1 out of 4 from the third. Now put them together to show $\frac{1}{4} + \frac{2}{4} - \frac{1}{4}$. Use these to explain how you add and subtract fractions with same denominator.

Home Task

Solve questions (b) and (d) of Exercise 15 given on page 91 in the Main Coursebook.

Period 9

Teacher: Good morning students. How are you today?

Teacher: Before we begin, let us quickly revise with some questions.

Teacher: If you colour 3 parts out of 4 in a square, what fraction is coloured?

Teacher: Yes, the correct answer is $\frac{3}{4}$. Well done.

Teacher: What do we call a fraction where the numerator is more than the denominator?

Teacher: Correct, it is called an improper fraction. Good thinking.

Teacher: Can you name a fraction that is equal to 1?

Teacher: Yes, $\frac{2}{2}$ or $\frac{4}{4}$ or $\frac{10}{10}$ are all equal to 1. Good work.

Teacher: If a watermelon is cut into 8 equal parts and you eat 4, what fraction have you eaten?

Teacher: The answer is $\frac{4}{8}$. Great thinking.

Teacher: You read 5 out of 10 pages of a storybook. What fraction of the book have you read?

Teacher: Yes, it is $\frac{5}{10}$. That is right. Keep it up.

Connecting better

Connecting *better*

Social Studies — Maria points towards the phases of the Moon and says, "Only a fraction of the Moon is visible during each phase. It is a natural satellite." Dr Sara replies, "That's correct! The first Indian artificial satellite is Aryabhatta, named after the great Indian mathematician Aryabhatta."

HoLL **92**

Teacher: Everyone, please look at the 'Connecting better' section on page 92.

Teacher: Maria says that only a fraction of the Moon is visible in each phase. Can you think of something else we only see a part of?

Teacher: Yes, like when we open a window halfway or drink half of a bottle. These are fractions in real life. Well thought

Recalling better

Recalling *better*

CING

In this chapter, I have learnt
- fractions and type of fractions.
- to convert improper fractions into mixed fractions and vice versa.
- to define and find equivalent fractions.
- to reduce fractions into their simplest form.
- to convert unlike fractions into like fractions.
- to compare, add and subtract like fractions.

92

Teacher: Now let us move to the 'Recalling better' section on page 92.

Teacher: What is the difference between proper and improper fractions?

Teacher: A proper fraction has a smaller numerator than denominator. Improper fraction has a numerator that is equal to or greater than the denominator. Very good.

Teacher: How do we convert mixed fractions to improper fractions?

Teacher: Multiply the whole number by the denominator, then add the numerator. Keep the denominator same. That is correct.

Teacher: How do we find equivalent fractions?

Teacher: Multiply or divide both numerator and denominator by the same number. Excellent.

Teacher: What happens to the denominator when we add like fractions?

Teacher: It remains the same. Well answered.

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

Decoding better

DECODING *better*   ABle

Aim: To reduce fractions to their simplest form.

You will need: a piece of chartpaper, scissors and marker

STEP 1: Take a piece of chartpaper and cut it into small rectangles. Write numbers as shown to create number cards.

STEP 2: Shuffle the cards and place them on the table.

STEP 3: Call one student at a time and ask them to pick two cards. They will have to make a fraction with those cards and simplify it on the board.

STEP 4: If the student does it correctly, they can keep both the cards.

12

| 8 | 10 | 6 | 4 | 12 | 5 |
| 7 | 1 | 2 | 9 | 3 | 11 |

92

Teacher: Everyone, please look at the 'Decoding better' section on page 92. (Guide the students to complete the activity.)

MUST DO
10 MIN.

Solving better

Solving *better*   LOTS

1. Fill in the missing numbers to find the equivalent fractions.

   a. $\dfrac{3}{\square} = \dfrac{6}{8}$ b. $\dfrac{2}{4} = \dfrac{10}{\square}$ c. $\dfrac{\square}{5} = \dfrac{30}{50}$

   d. $\dfrac{2}{4} = \dfrac{\square}{16}$ e. $\dfrac{4}{12} = \dfrac{\square}{3}$

2. Solve the following. Write the answers in your notebook.

   a. $\dfrac{9}{28} + \dfrac{12}{28}$ b. $\dfrac{13}{16} - \dfrac{5}{16}$ c. $\dfrac{10}{12} - \dfrac{1}{12}$

   d. $\dfrac{18}{37} + \dfrac{14}{37}$ e. $\dfrac{19}{68} - \dfrac{9}{68}$

93

Teacher: Turn to the 'Solving better' section on page 93.

MUST DO
5 MIN.

Teacher: Let us solve question (a) of Exercise 1 using division. We have $\dfrac{3}{4} = \dfrac{6}{8}$.

Teacher: Look at the numerators. 3 becomes 6, so 6 ÷ 3 = 2. Now divide 8 ÷ 2 = 4.

Teacher: The missing denominator is 4. So, $\dfrac{3}{4} = \dfrac{6}{8}$. Well done.

Teacher: Very good. Now complete questions (b) to (e) on your own.

Teacher: Now let us look at Exercise 2. Solve the following.

Teacher: Question (a): $\dfrac{9}{28} + \dfrac{12}{28}$. These are like fractions, so we add the numerators.

Teacher: 9 + 12 = 21. So the answer is $\dfrac{21}{28}$. Well done.

Teacher: Now solve the rest of the questions (b) to (e) with your partner. Use the same method.

Teacher: Remember, keep the denominators same and add or subtract the numerators as shown.

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

Learning better

Learning *better*   CBA

(A) Tick (✓) the correct answer.

1. Fractions with the numerator smaller than the denominator are called _____.

   a. improper fractions ☐   b. like fractions ☐

   c. proper fractions ☐   d. unlike fractions ☐

2. Which one of the following shows the whole number 1?

   a. ☐   b. ☐   c. ☐   d. ☐

3. Find a fraction that is equivalent to $\dfrac{4}{6}$.

   a. $\dfrac{1}{4}$ ☐   b. $\dfrac{3}{2}$ ☐   c. $\dfrac{2}{6}$ ☐   d. $\dfrac{2}{3}$ ☐

4. Which of the following is not a mixed fraction?

   a. $\dfrac{6}{7}$ ☐   b. $4\dfrac{2}{6}$ ☐   c. $1\dfrac{4}{5}$ ☐   d. $7\dfrac{1}{6}$ ☐

5. What type of fraction is $\dfrac{7}{5}$?

   a. unit fraction ☐   b. proper fraction ☐

   c. mixed fraction ☐   d. improper fraction ☐

93

Teacher: Let us now do Exercise A from the 'Learning better' section on page 93.

MUST DO
5 MIN.

Teacher: I will read out the questions, and you will discuss with your partner and tick the correct answers. (Discuss the answers and their explanation in the end.)

Differentiated Activities

110 km/hr

Write any three real-life examples where you use fractions in your day (e.g., reading part of a book, pouring part of a glass of water, drawing part of a shape).

80 km/hr

Write any three real-life examples where you use fractions in your day (e.g., reading part of a book, pouring part of a glass of water, drawing part of a shape).

40 km/hr

Circle the correct fraction for each situation:

(a) You eat 1 part out of 2 equal parts of a roti.

   Options: $\dfrac{1}{2}$ $\dfrac{1}{4}$ $\dfrac{1}{3}$

(b) You colour 1 part out of 4 equal parts of a square.

   Options: $\dfrac{1}{3}$ $\dfrac{1}{4}$ $\dfrac{1}{2}$

(c) You drink 1 part out of 3 equal parts of a glass of juice.

   Options: $\dfrac{1}{4}$ $\dfrac{1}{3}$ $\dfrac{1}{2}$

Home Task

Think of two real-life situations where you used a part of a whole today.

Write a short sentence for each situation and represent it using a proper fraction.

Example: I read 6 out of 10 pages in my notebook. Fraction: $\dfrac{6}{10}$.

Period 10

Teacher: Good morning students. How are you?

Teacher: Let us revise quickly with a few questions.

Teacher: What do we call the fraction where the numerator is less than the denominator?

Teacher: Yes, it is a proper fraction. Well answered.

Teacher: Which is greater: $\frac{5}{6}$ or $\frac{4}{6}$?

Teacher: $\frac{5}{6}$ is greater. Good work.

Teacher: What is $\frac{1}{3} + \frac{1}{3}$?

Teacher: That is $\frac{2}{3}$. Great thinking.

Teacher: How do we convert $\frac{13}{4}$ into a mixed fraction?

Teacher: Very nice.

Teacher: What is the simplest form of $\frac{6}{12}$?

Teacher: $\frac{1}{2}$. Excellent.

(B) **Fill in the numbers to make each pair of fractions equivalent.**

1. $\frac{2}{5} = \frac{10}{\boxed{}}$
2. $\frac{6}{9} = \frac{\boxed{}}{18}$
3. $\frac{\boxed{}}{8} = \frac{9}{24}$
4. $\frac{4}{7} = \frac{40}{\boxed{}}$
5. $\frac{\boxed{}}{5} = \frac{15}{25}$
6. $\frac{3}{4} = \frac{27}{\boxed{}}$

94

Teacher: Let us begin with Exercise B. Fill in the missing numbers to make each pair of fractions equivalent.

Teacher: Who will try question (1) on the board. $\frac{2}{5} = \frac{10}{\underline{}}$. What do we multiply 2 by to get 10? Multiply 5 by the same number.

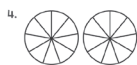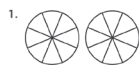**Teacher**: Yes, 2 × 5 = 10, so 5 × 5 = 25. The missing number is 25.

Teacher: Now solve the remaining questions on your own.

(C) **Shade the circles and compare the fractions using >, < or =.**

1. $\frac{7}{8} \bigcirc \frac{8}{8}$
2. $\frac{3}{12} \bigcirc \frac{7}{12}$
3. $\frac{2}{5} \bigcirc \frac{4}{5}$
4. $\frac{1}{9} \bigcirc \frac{1}{9}$

94

Teacher: Let us move to Exercise C Look at the circles. Shade the correct number of parts for each fraction.

Teacher: Then compare them using >, <, or =.

Teacher: Work with a partner to discuss which fraction is greater or if they are equal.

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

(D) **Simplify the fractions to the lowest form. Write the answers in your notebook.**

94 1. $\frac{4}{24}$ 2. $\frac{8}{16}$ 3. $\frac{12}{20}$ 4. $\frac{21}{28}$ 5. $\frac{42}{49}$

Teacher: Now let us do Exercise D. Simplify the given fractions to their lowest form.

Teacher: Let us try question (1) together: $\frac{4}{24}$.

Teacher: The HCF of 4 and 24 is 4. Divide both by 4. 4 ÷ 4 = 1 and 24 ÷ 4 = 6.

Teacher: So, the answer is $\frac{1}{6}$. Very good. Now solve questions (2) to (5) independently.

(E) **Convert the improper fractions into mixed fractions. Write the answers in your notebook.**

94 1. $\frac{7}{3}$ 2. $\frac{13}{2}$ 3. $\frac{20}{7}$ 4. $\frac{36}{5}$ 5. $\frac{44}{6}$

Teacher: Open to Exercise E. Convert the improper fractions to mixed fractions.

Teacher: Let us do question (1) together: $\frac{7}{3}$.

Teacher: 7 ÷ 3 = 2 and remainder is 1. So, the mixed fraction is $2\frac{1}{3}$.

Teacher: Now solve the rest of the questions on your own.

Teacher: Let us solve Exercise F. We will only solve questions (1), (2) and (3) in the class, rest you will do at your home.

(F) **Solve the following. Write the answers in your notebook.**

1. $\frac{1}{13} + \frac{3}{13}$
2. $\frac{5}{21} - \frac{3}{21}$
3. $7\frac{2}{3} + 5\frac{1}{3}$
4. $\frac{6}{5} + \frac{8}{5} - \frac{9}{5}$
5. $\frac{7}{9} + \frac{1}{9} - \frac{8}{9}$
6. $\frac{23}{10} - \frac{4}{10} + \frac{3}{10}$

94

Teacher: Question 1: $\frac{1}{13} + \frac{3}{13} = \frac{4}{13}$. These are like fractions.

Teacher: Now try questions 2 and 3 with your partner.

Teacher: Raise your hand if you face any difficulty. I am here to help you.

Teacher: Well done, everyone. Let us have a huge round of applause for our hard work today. See you in the next class.

Differentiated Activities

110 km/hr

Write your own fraction word problem using addition or subtraction of like fractions. Solve it too. Example: You ate $\frac{2}{5}$ of a chappati in the morning and $\frac{1}{5}$ in the evening. How much did you eat in total?

80 km/hr

Create two equivalent fractions for $\frac{2}{3}$ and $\frac{4}{5}$.

40 km/hr

With your partner find the missing numbers to make these fractions equivalent.

(a) $\frac{3}{5} = \frac{?}{10}$

(b) $\frac{2}{3} = \frac{?}{6}$

Home Task

Solve questions 4,5 and 6 of Exercise F given on page 94 in the Main Coursebook.

Bring one orange sheet, one yellow sheet, glue and a black marker for the 'Creating better' activity.

Period 11

Teacher: Good morning students. How are you?

Teacher: Let us begin with a quick revision.

Teacher: What is the fraction for 6 parts out of 8?

Teacher: Yes, it is $\frac{6}{8}$. Great work.

Teacher: What do we get when we add $\frac{2}{5}$ and $\frac{1}{5}$?

Teacher: Correct, $\frac{3}{5}$. Well done.

Teacher: Can you give an example of a mixed fraction?

Teacher: Yes, $2\frac{1}{4}$ is a mixed fraction. Good thinking.

Teacher: Which is greater: $\frac{7}{9}$ or $\frac{5}{9}$?

Teacher: $\frac{7}{9}$ is greater. Excellent.

Teacher: How do we convert $\frac{15}{4}$ to a mixed fraction?

Teacher: It becomes 3 and $\frac{3}{4}$. Nice work.

Teacher: Open to Exercise G on page 94. These are real-life word problems.

🔍 **Solve the following word problems, in your notebook.**

1. Aparna has 25 marbles. She gives 5 marbles to Mohini. What fraction of the marbles did Mohini receive?

2. There are 24 hours in a day and scientists tell us that we should sleep for $\frac{3}{8}$ of the day. How much time should we spend sleeping?

3. Rohit has completed $\frac{6}{9}$ of his Maths homework. Mayank has completed $\frac{4}{9}$ of his homework. How much more homework has Rohit completed than Mayank?

4. There are $\frac{7}{12}$ kg apples and $\frac{4}{12}$ kg mangoes in a basket. Calculate the total weight of the fruits in the basket.

94

Teacher: Let us solve question 1 together: Aparna has 25 marbles. She gives 5 to Mohini. What fraction of marbles did Mohini receive?

Teacher: 5 out of 25 is $\frac{5}{25}$, which simplifies to $\frac{1}{5}$. Very good.

(Discuss the questions in detail.)

Teacher: Now, solve the remaining questions (2) to (4) with your partner. Raise your hand if you need help.

Creating better

Creating *better* ArtI 21st CS

Make a Sun

- Take an orange sheet of paper, a yellow sheet of paper, a pair of scissors and a marker.
- With the help of an adult, cut out a large circle from the orange sheet of paper and a smaller circle from the yellow sheet.
- Fold the orange circle in half, then fold it again into quarters.
- With the help of an adult, cut a zigzag pattern along the curved edge of the folded orange circle.
- Carefully unfold the orange circle to reveal the zigzag edges.
- Paste the yellow circle onto the orange sheet. Draw a happy face.
- Your happy sun is ready!

95

Teacher: Now everyone look at the 'Creating better' section on page 95.

Teacher: We will make a paper sun using orange and yellow paper.

(Guide the students to complete the activity.)

Thinking better

Thinking *better* 21st CS HOTS

Think and write the answer in your notebook.

Complete the given magic square so that the sum of each row, column and diagonal is the same.

$\frac{4}{19}$	$\frac{9}{19}$	$\frac{2}{19}$
$\frac{8}{19}$		$\frac{6}{19}$

95

Teacher: Now open the 'Thinking better' section. Complete the magic square so that the sum of each row, column and diagonal is the same.

Teacher: You may do it with a partner. Think before placing each number.

Choosing better

Choosing *better* LSV

Dia's class is preparing for a science fair, and she wants to do a project on the phases of the Moon. What should Dia do to make her project informative and engaging?

- Create models of the Moon's phases with the help of her parents and grandparents.
- Decide not to participate because the project seems too difficult.

95

Teacher: Now look at the 'Choosing better' section. Dia is preparing for a science fair. What should she do to make her project engaging?

Teacher: Should she create models of the Moon's phases with her parents? Or decide not to participate because it is difficult?

Revising better

Revising *better* DBL

Visit your neighbourhood park. Count the number of flowers. Write the fraction of each flower colour compared to the total number of flowers in your Little Book.

95

Teacher: You will complete the 'Revising better' task at home. Who will explain what to do?

Teacher: Yes, you need to visit your neighbourhood park.

Teacher: Count the number of flowers you see. Then write the fraction of each flower colour compared to the total number of flowers.

Teacher: Write your answers in your Little Book. Well explained.

Differentiated Activities

110 km/hr

Make a mini poster showing how fractions are used in real life. For example:

- $\frac{3}{4}$ of the pencils were used
- $\frac{2}{3}$ of the board was written on

80 km/hr

Write three real-life examples using fractions. Example: I read 4 out of 6 pages. I sharpened 2 out of 5 pencils.

40 km/hr

Draw three pictures showing fractions in daily life. Colour the parts and write the fractions. Work with a partner.

Homework

Complete the 'Revising better' task at home: Visit your neighbourhood park. Count the number of flowers. Write the fraction of each flower colour compared to the total number of flowers in your Little Book.

Period 12

Teacher: Good morning students. How are you?

Teacher: Let us warm up with some quick questions.

Teacher: What do we call a fraction where the numerator is greater than the denominator?

Teacher: Yes, an improper fraction. Well done.

Teacher: What is the equivalent fraction of $\frac{1}{2}$ using denominator 6?

Teacher: $\frac{3}{6}$. Very good.

Teacher: If a triangle is divided into 3 equal parts and 2 are shaded, what fraction is shaded?

Teacher: $\frac{2}{3}$. That is correct.

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

Worksheet 1

Teacher: Open Worksheet 1 on page 33.

Teacher: Let us begin with Exercise A. Discuss with your partner what a fraction means and fill in the blanks.

Teacher: For Exercise B, read the statements and write 'True' or 'False'.

Teacher: For Exercise C, observe the shapes carefully and write the shaded fraction.

Worksheet 2

Teacher: Now turn to Worksheet 2 on page 34.

Teacher: Start with Exercise A. You need to fill in the blanks based on what we have learnt about types of fractions.

Teacher: Exercise B has true or false questions. Discuss them with your partner and tick the correct option.

Teacher: Exercise C is about colouring the figures based on given fractions. Shade the figures correctly to match the fractions.

Book of Holistic Development

(Refer to the Book of Holistic Teaching, pages 15 under the title 'Fractions.' Complete the activities mentioned in this section and ensure that the students complete them.

These activities are designed to enhance their holistic understanding and engagement with the topic.

COULD DO
10 MIN.

Provide any necessary support and materials to help the students successfully finish the activities.)

Differentiated Activities

110 km/hr

Create your own symmetrical shape and divide it into 4, 6, or 8 equal parts. Shade and label 3 different fractions.

80 km/hr

Use classroom cut-outs to divide a square, triangle and circle into equal parts and shade the given fraction.

40 km/hr

Take printed shapes and colour the correct parts to show: $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$.

Home Task

Book of Project ideas

Complete the project by following the given instructions:

• Choose a variety of food (for example, fruits, curd, shakes, etc.).

• Determine if the food can be divided into fractional parts. Consider how it can be divided and if the divisions are equal.

• Write down your observations in the table.

• Discuss why certain foods can be divided into fractions and find the reasons behind this.

Food item	Can be cut into fractions?	Fractions

Period 13

Teacher: Good morning students. How are you today?

SHOULD DO
5 MIN.

Teacher: As this is our last class on fractions, let us start with some fun questions to make our brains think.

Teacher: If you fold a square paper into 4 equal parts and colour 1 part, what fraction is coloured?

Teacher: Yes, $\frac{1}{4}$ is coloured. Good work.

Teacher: You have 4 pencils and you give 2 to your friend. What fraction have you given away?

Teacher: That is 2 out of 4, or $\frac{2}{4}$. Very good.

Teacher: A chocolate bar is broken into 8 equal pieces. If you eat 3, what fraction have you eaten?

Teacher: Correct, $\frac{3}{8}$. Well answered.

Teacher: You have 10 puzzle pieces. If 5 are in place and 5 are missing, what fraction of the puzzle is completed?

Teacher: Yes, 5 out of 10 or $\frac{5}{10}$. Great thinking.

Teacher: A garden is divided into 6 equal parts. Flowers are planted in 4 parts. What fraction of the garden has flowers?

Teacher: That is $\frac{4}{6}$. Well done.

Worksheet 3

A. Define the following terms.

1. Proper fractions

2. Improper fractions

3. Mixed fractions

4. Like fractions

5. Unlike fractions

B. Circle the odd one out in the given sets of fractions.

1. $\frac{3}{17}$ $\frac{5}{23}$ $\frac{5}{17}$ $\frac{8}{17}$ 2. $\frac{12}{21}$ $\frac{22}{39}$ $\frac{17}{21}$ $\frac{31}{21}$

3. $\frac{41}{32}$ $\frac{53}{37}$ $\frac{59}{37}$ $\frac{78}{37}$ 4. $\frac{12}{5}$ $\frac{13}{12}$ $\frac{19}{5}$ $\frac{22}{5}$

5. $\frac{14}{19}$ $\frac{19}{19}$ $\frac{21}{19}$ $\frac{23}{23}$

C. Compare the following, using >, < or =.

1. $\frac{3}{15}$ ◯ $\frac{7}{15}$ 2. $\frac{23}{9}$ ◯ $\frac{29}{9}$ 3. $\frac{71}{16}$ ◯ $\frac{71}{16}$

4. $\frac{22}{47}$ ◯ $\frac{21}{47}$ 5. $\frac{1}{10}$ ◯ $\frac{11}{10}$ 6. $\frac{9}{17}$ ◯ $\frac{12}{17}$

Teacher's Signature: _____   **35**   Remarks: _____

Teacher: Let us begin with Worksheet 3.

MUST DO
10 MIN.

Teacher: Let us start with Exercise A. Who will read question 1 aloud for the class?

Teacher: Yes, question 1 is 'Define Proper Fractions.'

Teacher: A proper fraction is a fraction where the numerator is less than the denominator. For example, $\frac{3}{4}$ or $\frac{5}{9}$. Very good. Discuss with your partner and complete the rest by your own.

Teacher: Let us move to Exercise B. Who will explain question 1?

Teacher: We are asked to circle the odd one out: $\frac{3}{17}, \frac{23}{17}, \frac{5}{17}, \frac{8}{17}$.

Teacher: Yes, $\frac{23}{17}$ is an improper fraction, while the others are proper fractions. So, $\frac{23}{17}$ is the odd one. Well done. (Guide them to complete the Exercise in the similar manner.)

Teacher: Now let us look at Exercise C.

Teacher: Question 1: Compare $\frac{3}{15}$ and $\frac{7}{15}$ using greater than, less than, or equal to.

Teacher: Yes, the denominator is the same, so compare the numerators. 3 is less than 7. So, $\frac{3}{15} < \frac{7}{15}$. Good work. (Guide them to complete the Exercise in the similar manner.)

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

Worksheet 4

A. Write five examples for each of the following.
1. Proper fractions
2. Improper fractions
3. Mixed fractions
4. Like fractions
5. Unlike fractions

B. Write **I** for improper fraction and **P** for proper fraction.
1. $\frac{19}{2}$ ☐   2. $\frac{7}{11}$ ☐   3. $\frac{13}{16}$ ☐
4. $\frac{50}{27}$ ☐   5. $\frac{9}{100}$ ☐

C. Compare the following, using **>**, **<** or **=**.
1. $\frac{2}{10} \bigcirc \frac{7}{10}$ 2. $\frac{5}{13} \bigcirc \frac{8}{13}$ 3. $\frac{15}{39} \bigcirc \frac{16}{39}$
4. $\frac{1}{25} \bigcirc \frac{12}{25}$ 5. $\frac{47}{80} \bigcirc \frac{56}{80}$ 6. $\frac{87}{50} \bigcirc \frac{75}{80}$

Teacher's Signature: _____   **36**   Remarks: _____

Teacher: Now let us begin Worksheet 4.

MUST DO
15 MIN.

Teacher: In Exercise A, we need to write five examples. Let us do question 1 together.

Teacher: Can anyone give me an example of a proper fraction?

Teacher: Yes, $\frac{2}{3}$ is a proper fraction. Great. Others can be $\frac{1}{2}, \frac{4}{7}, \frac{3}{5}, \frac{6}{10}$. Now complete the rest on your own. (Guide them to complete the Exercise in the similar manner.)

Teacher: Now let us look at Exercise B. Who will read the first question?

Teacher: $\frac{19}{2}$: Is the numerator bigger than the denominator?

Teacher: Yes, so it is an improper fraction. Write 'I' for it. Well explained. (Guide them to complete the Exercise in the similar manner.)

Teacher: Finally, let us look at Exercise C.

Teacher: Question 1 is Compare $\frac{2}{10}$ and $\frac{7}{10}$.

Teacher: Both have the same denominator and 2 < 7. So, $\frac{2}{10} < \frac{7}{10}$. Very good. Now do the rest with your partner

Book of Project Ideas

Theme 5: How Does the Universe Work?

Chapter 8: Fractions
- Choose a variety of food (for example, PRO 21st CS fruits, curd, shakes, etc.).
- Determine if the food can be divided into fractional parts. Consider how it can be divided and if the divisions are equal.
- Write down your observations in the table.
- Discuss why certain foods can be divided into fractions and find the reasons behind this.

Food item	Can Be Cut into Fractions?	Fractions

10

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

COULD DO
5 MIN.

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 hard work and creativity. Great work, everyone. See you in the next class. Have a wonderful day ahead.

Differentiated Activities

110 km/hr

Write a short story (5–6 sentences) using at least 3 different fractions. Example: In the art class, I used $\frac{2}{3}$ of the paper to draw and $\frac{1}{3}$ to colour.

80 km/hr

Write 3 sentences using different fractions to describe what you did today in class or at home.

40 km/hr

Observe things around the classroom. Create and solve five questions using like fractions.

Example: What fraction of the chalks are white?

Practise the questions discussed in the chapter.

Learning Outcomes

The students will:

Domain	Learning Outcome
Physical Development	• demonstrate fractions such as $\frac{1}{2}$ and $\frac{1}{4}$ using fingers, body movements and physical objects.
Socio-Emotional and Ethical Development	• work cooperatively in pairs or groups to solve fraction problems and complete sharing-based tasks.
Cognitive Development	• identify and classify types of fractions, convert between forms and accurately solve operations like addition and subtraction.
Language and Literacy Development	• read and explain stories and word problems involving fractions, using appropriate mathematical vocabulary.
Aesthetic and Cultural Development	• represent fractions visually by shading, colouring and designing fraction-based charts and diagrams.
Positive Learning Habits	• complete tasks with persistence, follow steps to simplify and solve and participate actively in reflection and revision.

Starry Knights

Teaching fractions must have been an experience of its own kind/ Share how could you make your learners understand fractions without sweating the small stuff.

Reward yourself with a STAR.

Theme 5: How Does the Universe Work?
Lesson-8: Fractions

Main Coursebook

Kinaesthetic

Accept all relevant responses.

Auditory

Jessica

Pictorial

a.

$\dfrac{1}{3}$ + $\dfrac{2}{3}$ = $\dfrac{1}{1}$

b.

$\dfrac{2}{5}$ + $\dfrac{2}{5}$ = $\dfrac{4}{5}$

Interacting better

Accept all the relevant responses.

1. a. 5　　b. 10　　c. 7　　d. 8

2.

Proper fractions	Improper fractions	Mixed fractions
$\dfrac{3}{8}$ $\dfrac{6}{16}$	$\dfrac{15}{14}$ $\dfrac{9}{7}$ $\dfrac{11}{9}$ $\dfrac{5}{2}$ $\dfrac{10}{4}$	$4\dfrac{1}{8}$ $2\dfrac{3}{4}$ $9\dfrac{1}{2}$

3. a. $2\dfrac{2}{3}$　　b. $2\dfrac{1}{8}$　　c. $7\dfrac{1}{3}$

　 d. $6\dfrac{5}{6}$　　f. $6\dfrac{3}{5}$

4. a. $\dfrac{38}{9}$　　b. $\dfrac{34}{3}$　　c. $\dfrac{27}{5}$

　 d. $\dfrac{34}{5}$　　e. $\dfrac{15}{2}$　　f. $\dfrac{33}{4}$

5. d. 1　　　　　c. 6

6. a. $\dfrac{6}{8}, \dfrac{9}{12}, \dfrac{12}{16}$　　b. $\dfrac{10}{12}, \dfrac{15}{18}, \dfrac{20}{24}$

　 c. $\dfrac{12}{14}, \dfrac{18}{21}, \dfrac{24}{28}$　　d. $\dfrac{9}{15}, \dfrac{6}{10}, \dfrac{3}{5}$

e. $\dfrac{18}{20}, \dfrac{27}{30}, \dfrac{36}{40}$　　f. $\dfrac{4}{18}, \dfrac{6}{27}, \dfrac{8}{36}$

7. a. $\dfrac{44}{45}$　　b. $\dfrac{1}{6}$　　c. $\dfrac{8}{9}$

　 d. $\dfrac{1}{3}$　　e. $\dfrac{3}{5}$　　f. $\dfrac{8}{5}$

8. a. $\dfrac{5}{7}$　　b. $\dfrac{8}{18}$　　c. $\dfrac{2}{5}$

9. a. $\dfrac{44}{45}$ and $\dfrac{44}{45}$　　b. $\dfrac{40}{25}$ and $\dfrac{2}{25}$

　 c. $\dfrac{16}{56}$ and $\dfrac{28}{56}$　　d. $\dfrac{3}{14}$ and $\dfrac{2}{14}$

10. a. >　　b. <　　c. >　　d. =

11. a. $\dfrac{3}{12} < \dfrac{5}{12} < \dfrac{7}{12}$　　b. $\dfrac{1}{25} < \dfrac{8}{25} < \dfrac{11}{25}$

　 c. $\dfrac{9}{47} < \dfrac{11}{47} < \dfrac{22}{47}$　　d. $\dfrac{2}{17} < \dfrac{5}{17} < \dfrac{11}{17}$

12. a. $\dfrac{7}{10} > \dfrac{3}{10} > \dfrac{1}{10}$　　b. $\dfrac{11}{21} > \dfrac{9}{21} > \dfrac{5}{21}$

　 c. $\dfrac{17}{20} > \dfrac{11}{20} > \dfrac{7}{20}$　　d. $\dfrac{9}{14} > \dfrac{5}{14} > \dfrac{3}{14}$

13. a. $\dfrac{8}{14}$　　d. $\dfrac{21}{23}$　　c. $\dfrac{28}{8}$　　d. $\dfrac{28}{5}$

14. a. $\dfrac{1}{4}$　　d. $\dfrac{5}{32}$　　c. $\dfrac{10}{4}$　　d. $\dfrac{16}{9}$

Understanding better (page 72)

1. no　　　　　2. yes

15. a. $\dfrac{7}{8}$　　d. $\dfrac{6}{15}$　　c. $\dfrac{9}{9}$　　d. $\dfrac{8}{11}$

16. a. jia　　d. $\dfrac{5}{11}$　　c. $\dfrac{2}{6}$

Solving better

1. a. 4　　b. 20　　c. 3　　d. 8　　e. 1

2. a. $\dfrac{21}{28}$　　d. $\dfrac{8}{16}$　　c. $\dfrac{9}{12}$

　 a. $\dfrac{32}{37}$　　d. $\dfrac{10}{68}$

Learning better

A. **1.** c   **2.** a   **3.** d   **4.** a   **5.** d

B. **1.** 25   **2.** 12   **3.** 3
   4. 70   **5.** 3   **6.** 36

C. **1.** <   **2.** <   **3.** <   **4.** =

D. **1.** $\dfrac{1}{6}$ **2.** $\dfrac{1}{2}$ **3.** $\dfrac{3}{5}$ **4.** $\dfrac{3}{4}$ **5.** $\dfrac{6}{7}$

E. **1.** $2\dfrac{1}{3}$ **2.** $6\dfrac{1}{2}$ **3.** $2\dfrac{6}{7}$ **4.** $7\dfrac{1}{5}$ **5.** $7\dfrac{2}{6}$

F. **1.** $\dfrac{4}{13}$ **2.** $\dfrac{2}{21}$ **3.** $\dfrac{39}{3}$
   4. $\dfrac{5}{5}$ **5.** $\dfrac{0}{9}$ **6.** $\dfrac{22}{10}$

G. **1.** $\dfrac{5}{25}$ **2.** 9 hours   **3.** $\dfrac{2}{9}$ **4.** $\dfrac{11}{12}$ kg

Thinking better

$$\dfrac{3}{19}, \dfrac{5}{19}, \dfrac{7}{15}$$

$$\dfrac{1}{19}$$

Choosing better

- Create models of the Moon's phases
  with the help of her parents and grandparents. ☑

Students' Worksheets

Worksheet 1

A. **1.** fraction   **2.** Four   **3.** improper
   4. like   **5.** 5

B. **1.** false   **2.** true   **3.** false   **4.** true   **5.** true

C. **1.** $\dfrac{1}{4}$ **2.** $\dfrac{6}{8}$ **3.** $\dfrac{3}{5}$
   4. $\dfrac{4}{5}$ **5.** $\dfrac{4}{8}$ **6.** $\dfrac{2}{9}$

Worksheet 2

A. **1.** Denominator   **2.** Less
   3. Mixed   **4.** Unlike fractions
   5. $\dfrac{10}{12}$

B. **1.** false   **2.** true   **3.** false
   4. true   **5.** true

C. **1.**   **2.**

3.   **4.**

5.   **6.**

Worksheet 3

A. **1.** A fraction in which the numerator is less than the denominator is called a proper fraction.

   2. A fraction in which the numerator is greater than or equal to the denominator is called improper fraction.

   3. A combination of a whole number and a proper fraction is called a mixed fraction.

   4. Fractions with the same denominators are called like fractions.

   5. Fractions with different denominators are called unlike fractions.

B. **1.** $\dfrac{5}{23}$ **2.** $\dfrac{22}{39}$ **3.** $\dfrac{41}{32}$ **4.** $\dfrac{13}{12}$ **5.** $\dfrac{23}{23}$

C. **1.** <   **2.** <   **3.** =
   4. >   **5.** <   **6.** <

Worksheet 4

A. Accept all the relevant responses.

B. **1.** I   **2.** P   **3.** P   **4.** I   **5.** P

C. **1.** <   **2.** <   **3.** <
   4. <   **5.** <   **6.** >

Book of Holistic Teaching

Developing better

A. **English**

   Arya has an apple. He cuts it into 6 equal parts and distributes them among Ravi, Vijay, and Tanya. Ravi takes 3 parts, Vijay takes 2 parts, and Tanya takes 1 part. Ravi has $\dfrac{3}{6}$, Vijay has $\dfrac{2}{6}$, and Tanya has $\dfrac{1}{6}$ of the apple.

B. **Science**

   1. Waxing gibbous   **2.** Waxing crescent
   3. Warning gibbous   **4.** Warning crescent

C. **Social studies**

   The weather department predicted rainy days using data from weather satellites like **INSAT** or **GOES**, which track cloud formations, temperature, and atmospheric conditions.

Book of Project Ideas

Making better

Accept all relevant responses.