Lesson-3: HCF and LCM

12 Periods (40 minutes each)

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

Animation, Animated activities, Dictionary, eBook, Explainer video, HOTS, I Explain, Infographic, Maths Lab, Mental Maths, Quiz, Quick Maths

Confirming better: I learn new things every day.

Curricular Goals and Objectives (NCF)

To enable the students:

- to develop a conceptual understanding of factors and multiples.
- to appreciate problem-solving and reasoning skills.
- to foster collaborative learning through group activities, discussions and peer interactions.
- to strengthen numeracy skills using diverse methods.
- to integrate experiential learning through hands-on activities, kinaesthetic learning and digital resources.
- to develop logical thinking and analytical reasoning through pattern recognition in divisibility rules and number relationships.
- to develop confidence in mathematical communication.

Methodology

Period 1

SHOULD DO 05 MIN.

Teacher: Good morning students. How are you today?

Teacher: Let us start with a fun Skip Counting Relay.

Teacher: I will say a number to begin and one student will say the next number in the sequence. Then, the next student will continue.

Teacher: We will start with skip counting by 2. I will say 2, the next student will say 4 and so on. Let us continue up to 50.

Teacher: Ready? 2...

(Allow students to continue the sequence, offering guidance if needed.)

Teacher: Fantastic effort, everyone, Now, let us try skip counting by 5. Let us see how far we can go,

Teacher: Excellent teamwork, keep practising, Let us discuss the positive affirmation.

SHOULD DO 05 MIN.

Confirming better

Teacher: Repeat after me – I learn new things every day.

Teacher: Why do you think learning something new is important?

Teacher: How can we learn new things apart from books?

Teacher: Share one new thing you have learned recently.

Teacher: Great, let us keep learning and growing every day.

Teacher: We will begin a new chapter Addition. 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.

SHOULD DO 10 MIN.

K	W	L

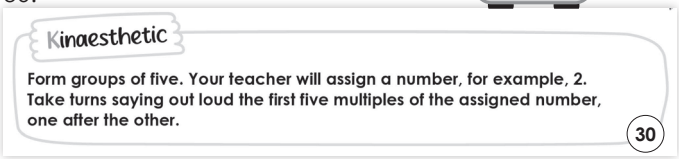
Teacher: Take a few minutes to think and write. If you have any questions, feel free to ask.

Teacher: You all did 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

MUST DO
10 MIN.

Teacher: Open your books to page 30.



Teacher: Let us read and understand the kinaesthetic activity.

Students: Work in groups of five to complete the task as instructed in the book.

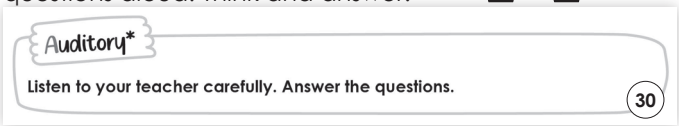
Teacher: Excellent teamwork, Let us proceed to the auditory activity.

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

Auditory

MUST DO
05 MIN.

Teacher: Listen carefully as I read the questions aloud. Think and answer.



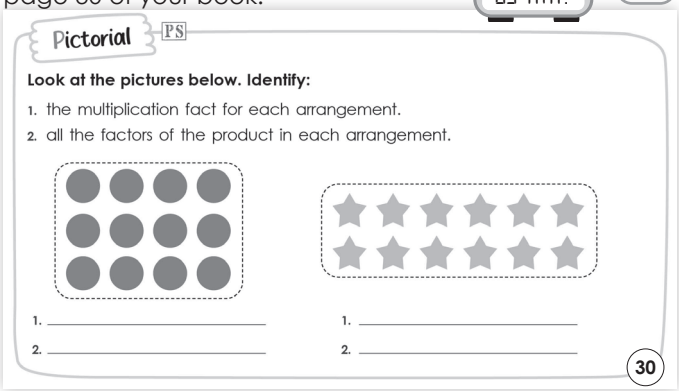
Teacher: Rekha bought candies to distribute among her friends. She wants to give 3 candies to each friend. How many candies does she need if she has 7 friends?

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

Pictorial

MUST DO
05 MIN.

Teacher: Observe the images on page 30 of your book.



Teacher: Identify the multiplication facts and factors from the given arrangements.

Teacher: Excellent, this visualisation helps in better understanding.

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

Teacher: Now, we will explore some new words that are important for this chapter. Let us go through the words given in the dictionary section on the digital platform.

(Explain the words mentioned in the dictionary section on the digital platform. Or write it down on the blackboard and explain it to the students)

Teacher: Let us end the session with a huge round of applause for everyone's effort today,

Differentiated Activities

110 km/hr

Identify and list multiples of 6 and 8 up to 100.

80 km/hr

Identify and list multiples of 3 and 4 up to 50.

40 km/hr

Practise writing the multiples of 2 and 5 up to 20.

Home Task

Observe the numbers on different items at home (such as clocks, books and boxes). Identify which of those numbers are multiples of 2, 3 or 5 and write them in your notebook.

Period 2

SHOULD DO
05 MIN.

Teacher: Good morning, students, Today, we are going to explore an exciting concept called factors. But first, let us play a game.

Teacher: I will give you a number and you will quickly tell me the pairs of numbers that, when multiplied, give this number. For example, if I say 6, the pairs are 1 and 6, 2 and 3. Ready?

Teacher: Let us try with 10, 12 and 15.

Students: Respond with pairs like 1×10, 2×5 for 10 and so on.

COULD DO
05 MIN.

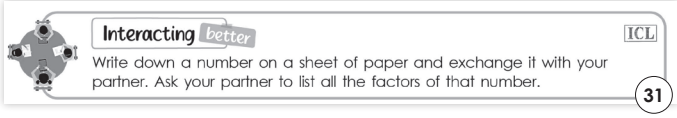
Teacher: Fantastic, You are already starting to understand factors. Let us now dive deeper.

Teacher: Look around the classroom. Let us use real objects to explore factors.

Teacher: For example, if there are 12 chairs, how many different ways can we arrange them into equal rows? Let us try 1 row, 2 rows, 3 rows and so on.

Teacher: Great, These numbers—1, 2, 3, 4, 6 and 12—are factors of 12 because they divide the total evenly

Interacting better



Teacher: Let us now try an exciting activity from 'Interacting Better.'

SHOULD DO
05 MIN.

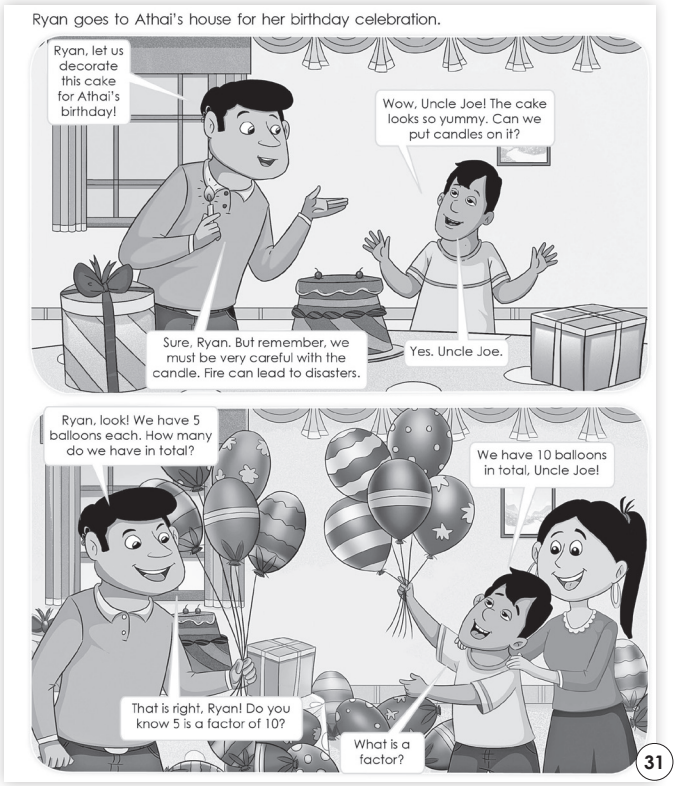
Teacher: Write down any number on a sheet of paper. Exchange it with your partner. Your partner must list all the factors of the number you wrote. For example, if you wrote 24, your partner would list 1, 2, 3, 4, 6, 8, 12 and 24.

Students: Work in pairs, write numbers and list their factors.

Teacher: Discuss your answers with your partner and see if you found all the factors. Great teamwork, everyone.

Teacher: Open your books to the story about Ryan and Uncle Joe decorating for the birthday party (page 31). Who will read the first question aloud?

MUST DO
05 MIN.



Teacher: Ryan noticed that 10 balloons could be grouped in different ways: 1 group of 10, 2 groups of 5 or 5 groups of 2. What do these groupings tell us about the factors of 10?

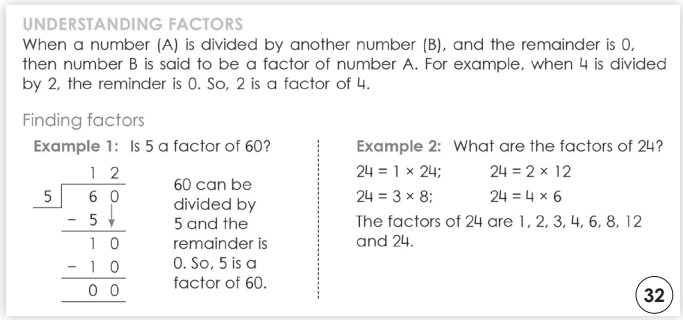
Teacher: Let us think: If we have 15 balloons, what are the possible groupings? What are the factors of 15?

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

Understanding Factors

Teacher: Open the 'Understanding Factors' section in your book. Look at the example where 60 is divided by 5 and the remainder is 0. This means 5 is a factor of 60. Let us try this with the number 24.

MUST DO
10 MIN.



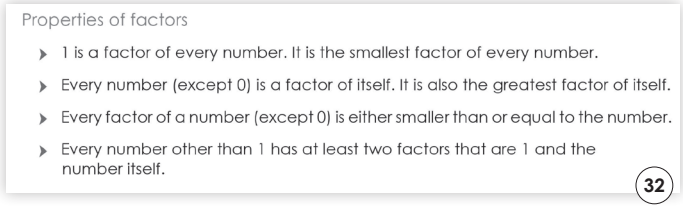
Teacher: Divide 24 by 1, 2, 3, 4 and so on. Write down all the numbers that divide 24 evenly without a remainder.

Teacher: Did you notice any patterns? Factors always come in pairs and they are always smaller than or equal to the number itself. Let us see more properties of Factors.

MUST DO
10 MIN.

Properties of factors

Teacher: Open your books to the 'Properties of Factors' activity. Let us discuss the following:



1 is a factor of every number. For example, 1 divides 10, 15 and 24.

A number is always a factor of itself. For example, 10 is a factor of 10.

Factors are always less than or equal to the number.

Every number has at least two factors: 1 and itself.

Teacher: Let us try an example. Find the factors of 30. What do you observe?

(Discuss the concepts with students.)

Teacher: Great effort today. Let us end the session with a huge round of applause for everyone's hard work. See you next time

Differentiated Activities

110 km/hr

Solve and list all the factors of a three-digit number like 120. Discuss how these factors might help organise objects or arrange things.

80 km/hr

Solve and list all the factors of a two-digit number like 56. Use objects like pencils or erasers to demonstrate grouping.

40 km/hr

Write the factors of a single-digit number like 8 using toys or counters to visualise groupings.

Home Task

Write down a number between 1 and 50 and list all its factors. Include a real-life example of how these factors might be useful, such as organising rows of chairs, grouping balloons or arranging toys.

Period 3

SHOULD DO — 05 MIN.

Teacher: Good morning, students. Let us start today with a quick game.

Teacher: I will say a number and you will quickly give me the first five multiples of that number. For example, if I say 4, you will say 4, 8, 12, 16, 20. Ready?

Teacher: Let us try with 3, 5 and 7.

MUST DO — 05 MIN.

Teacher: Well done. Now, let us explore multiples in detail.

Understanding Multiples

UNDERSTANDING MULTIPLES

A multiple is the product obtained when a number is multiplied by another number. For example, 6 × 5 = 30. Here, 30 is a multiple of 5 and 6.

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Teacher: Open your books to the 'Understanding Multiples' activity on page 32 in your Main course book.

Teacher: A multiple is the product when a number is multiplied by another.

Teacher: For example, 6 × 5 = 30. So, 30 is a multiple of 5 and 6.

Teacher: What are the first five multiples of 8?

MUST DO — 05 MIN.

Teacher: Yes,the multiples are 8, 16, 24, 32 and 40.

Teacher: Now let us move to finding multiples

Finding multiples

Finding multiples

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

Example 3: What are the first five multiples of 7?

1st multiple: 1 × 7 = 7

2nd multiple: 2 × 7 = 14

3rd multiple: 3 × 7 = 21

4th multiple: 4 × 7 = 28

5th multiple: 5 × 7 = 35

The first five multiples of 7 are 7, 14, 21, 28 and 35.

Example 4: Is 71 a multiple of 6?

$$\begin{array}{r|l} & 11 \\ 6 & 71 \\ -\,6\downarrow & \\ \hline & 11 \\ -\,6 & \\ \hline & 5 \end{array}$$

Dividing 71 by 6 leaves 5 as the remainder. So, 6 is not a factor of 71.

Therefore, 71 is not a multiple of 6.

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Teacher: Turn to the example in your book.

Teacher: What are the first five multiples of 7? They are 7, 14, 21, 28 and 35.

Teacher: Try finding the multiples of 9. The multiples are 9, 18, 27, 36 and 45.

Teacher: Well done. Let us now learn about their properties.

Properties of Multiples

MUST DO — 10 MIN.

Teacher: Multiples follow some special properties. Let us discuss them one by one.

Teacher: The first property states that every number is a multiple of 1, except 0. This means that when any number is multiplied by 1, the result is the number itself. For example, 7 × 1 = 7 and 12 × 1 = 12.

Properties of multiples

- Every number is a multiple of 1, except 0.
- Every number is a multiple of itself.
- The smallest multiple of a number is the number itself.
- Every multiple of a number is either equal to or greater than the number.
- There are infinite multiples of a number. The more numbers you multiply with, the more multiples you will ge

33

Teacher: The second property tells us that every number is a multiple of itself. This means that when a number is multiplied by 1, it remains unchanged. For example, 9 × 1 = 9 and 15 × 1 = 15.

Teacher: The third property explains that the smallest multiple of a number is the number itself. This is because the first multiple of any number is when it is multiplied by 1. For example, the smallest multiple of 6 is 6 and the smallest multiple of 10 is 10.

Teacher: The fourth property states that every multiple of a number is either equal to or greater than the number. This means that as we multiply a number by increasing values, its multiples always grow. For example, the multiples of 4 are 4, 8, 12, 16 and 20. All these numbers are either equal to or greater than 4.

Teacher: The fifth property tells us that there are infinite multiples of a number. Since we can multiply a number by any value, we can keep generating multiples endlessly. For example, the multiples of 5 are 5, 10, 15, 20 and so on. The sequence never stops.

Teacher: Let us check these properties with the number 12. The multiples of 12 are 12, 24, 36, 48 and 60. Yes, they follow all the properties.

MUST DO — 05 MIN.

Teacher: Well done. Now let us explore how multiples relate to odd and even numbers.

Processing better

Processing better

CL

The multiples of even numbers are always even. The multiples of odd numbers can be either odd or even.

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Teacher: Open the 'Processing better' section in your book.

Teacher: It says multiples of even numbers are always even.

Teacher: Odd numbers can have both odd and even multiples.

Teacher: Find the multiples of 4.

Teacher: They are 4, 8, 12, 16 and 20—all even.

Teacher: Find the multiples of 5.

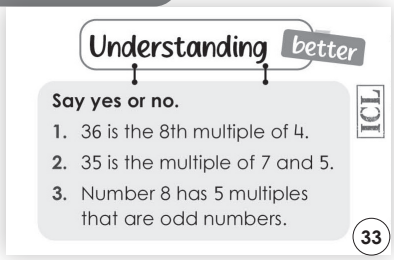
Teacher: They are 5, 10, 15, 20 and 25—both odd and even.

Teacher: What do we observe? Even numbers have only even multiples.

Teacher: Well done. Let us move to an Exercise.

MUST DO
10 MIN.

Understanding better



Teacher: Open your books to the 'Understanding better' activity.

Teacher: Read the statements carefully and answer 'yes' or 'no'.

Teacher: The first statement says, '36 is the 9th multiple of 4.' Yes, because 4 × 9 = 36.

(Discuss the questions in a similar way.)

Teacher: Well done. Now let us apply this learning to solve the Exercise.

Teacher: Let us work in pairs for this Exercise.

Teacher: One student in the pair will ask the question and the other will solve it. Then switch roles.

Teacher: Look at question 1. 'List all the factors of the given numbers.'

Teacher: Ask your partner to find the factors of 15. The factors of 15 are 1, 3, 5 and 15.

Teacher: Now, switch roles. Ask your partner to find the factors of 30. The factors of 30 are 1, 2, 3, 5, 6, 10, 15 and 30.

Teacher: Continue this way for 40, 55, 100 and 125.

Teacher: Now move to question 2. 'Write the first five multiples of the given numbers.'

Teacher: Find the multiples of 6. The multiples are 6, 12, 18, 24 and 30.

Teacher: Switch roles and find the multiples of 12. The multiples are 12, 24, 36, 48 and 60.

Teacher: Now continue with 15, 17, 25 and 30.

Teacher: Compare answers with your partner.

Teacher: Well done, everyone. Great effort today. See you in the next period.

Differentiated Activities

110 km/hr

Find the first ten multiples of 125.

(The multiples are 125, 250, 375, 500, 625, 750, 875, 1000, 1125 and 1250.)

80 km/hr

Find the first eight multiples of 36.

(The multiples are 36, 72, 108, 144, 180, 216, 252 and 288.)

40 km/hr

Find the first five multiples of 7.

(The multiples are 36, 72, 108, 144, 180, 216, 252 and 288.)

Home Task

Write a number between 1 and 50. List its first five multiples. Explain how multiples help in real life.

Period 4

Teacher: Good morning, students. Today, we will play an exciting game to warm up our minds.

SHOULD DO
05 MIN.

Teacher: We will count from 1 to 50, but with a twist. If the number is a multiple of 5, say *Buzz* instead of the number.

Teacher: If the number is a multiple of 7, say *Jazz* instead of the number.

Teacher: If the number is a multiple of 9, say *Fizz* instead of the number.

Teacher: If a number is a common multiple of two rules, say both sounds. For example, 35 is a multiple of both 5 and 7, so you say *Buzz-Jazz*.

Teacher: If a number is a common multiple of 5, 7 and 9, say *Super-Buzz-Jazz-Fizz*.

Teacher: Let us start. I will say 1, then the next student will say 2 and so on.

Teacher: Great work. Now, let us move on to understanding divisibility rules.

MUST DO
20 MIN.

Divisibility Rules

DIVISIBILITY RULES

Divisibility rules help us find if a number is completely divisible by another number without doing the actual division.

We can check the divisibility of numbers through the following divisibility rules.

Divisibility by 2, 5 and 10 by observing the digit at ones place

Divisible by	Divisibility rule	Example
2	if the digit at ones place is 0, 2, 4, 6 or 8	1,210; 2,552; 3,554 and so on
5	if the digit at ones place is 0 or 5	1,305; 1,360; 4,555 and so on
10	if the digit at ones place is 0	1,000; 1,560; 36,520 and so on

Divisibility by 3 and 9 by finding the sum

Divisible by	Divisibility rule	Example
3	if the sum of the digits of the number is divisible by 3	3,522 → 3 + 5 + 2 + 2 = 12 12 is divisible by 3. So, 3,522 is divisible by 3.
9	if the sum of the digits of the number is divisible by 9	7,263 → 7 + 2 + 6 + 3 = 18 18 is divisible by 9. So, 7,263 is divisible by 9.

33

Divisibility by 2, 5 and 10 by observing the digit at ones place

(Discuss the divisibility rule with reference of the explanation given on page 33 in the Main course book.)

Divisibility by 3 and 9 by finding sum

(Discuss the divisibility rule with reference of the explanation given on page 33 in the Main course book.)

You may show the **Math lab** activity given on digital platform to practise the questions.

Divisibility by 4, 8 and 11

Divisibility by 4, 8 and 11

Divisible by	Divisibility rule	Example
4	if the number formed by the last two digits is divisible by 4 or last two digits are zeros	54,2**12** is divisible by 4 as 12 is divisible by 4.
8	if the number formed by the last three digits is divisible by 8 or last three digits are zeros	62,**544** is divisible by 8 as 544 is divisible by 8.
11	if the difference between the sum of the digits at odd places (1st, 3rd, 5th ... numbers when counted from the left) and the sum of the digits at even places (2nd, 4th, 6th ... numbers when counted from the left) is 0 or a multiple of 11	40,172 Sum of the digits at odd places is 2 + 1 + 4 = 7 Sum of the digits at even places is 7 + 0 = 7 Difference = 7 – 7 = 0 So, 40,172 is divisible by 11.

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(Discuss the divisibility rule with reference of the explanation given on page 34 in the Main course book.)

Divisibility by 6, 12 and 15

Divisibility by 6, 12 and 15

Divisible by	Divisibility rule	Example
6	if the number is divisible by both 2 and 3	46,824 is divisible by 6 as it is divisible by both 2 and 3.
12	if the number is divisible by both 3 and 4	25,848 is divisible by 12 as it is divisible by both 3 and 4.
15	if the number is divisible by both 3 and 5	38,040 is divisible by 15 as it is divisible by both 3 and 5.

34

(Discuss the divisibility rule with reference of the explanation given on page 34 in the Main course book.)

Poster

Teacher: Look at the poster titled 'The Rule of Divisibility'.

MUST DO 05 MIN.

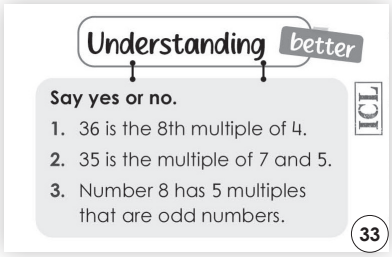
Teacher: This poster summarises all the divisibility rules we just discussed.

Teacher: Let us review it together. Notice how each rule highlights specific digits or sums for divisibility.

Teacher: Keep this poster in mind as we move to the next activity.

Understanding better

MUST DO 05 MIN.



Teacher: Open the 'Understanding better' section in your book.

Teacher: Read the first question: 'Is 242 a multiple of 3?' No, because the sum of its digits is 8, which is not divisible by 3.

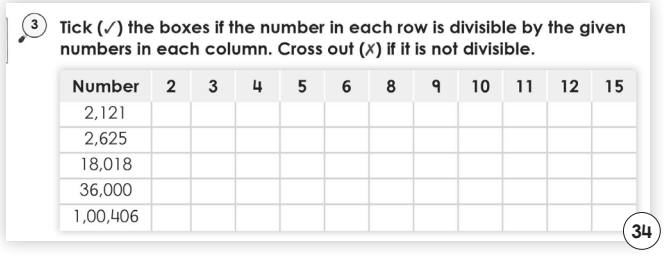
(Discuss the next Exercise in a similar way.)

Teacher: Excellent effort today, everyone. Let us end the session with a huge round of applause.

MUST DO 05 MIN.

See you in the next period.

Teacher: Everyone please solve Exercise 3 given on page 34.



3 **Tick (✓) the boxes if the number in each row is divisible by the given numbers in each column. Cross out (✗) if it is not divisible.**

Number	2	3	4	5	6	8	9	10	11	12	15
2,121											
2,625											
18,018											
36,000											
1,00,406											

34

Teacher: Discuss the answers with your partner.

Teacher: Well done, everyone. Great effort today. See you in the next period.

Differentiated Activities

110 km/hr

Identify and list all numbers between 100 and 500 that are divisible by both 6 and 15.

80 km/hr

Identify numbers between 1 and 300 that are divisible by 12 and explain why.

40 km/hr

Write the divisibility rules for 2, 5 and 10 in your own words with examples.

Home Task

Complete Exercise 4 given on page 34 in the Main course book.

Period 5

Teacher: Good morning, students. Today, we will do a quick challenge.

SHOULD DO 05 MIN.

Teacher: I will say a number and you must quickly tell me if it has only two factors or more.

Teacher: Let us start with 2.

Teacher: Yes, it has only two factors, 1 and 2.

Teacher: Now, try with 6. Correct,

Teacher: It has more than two factors.

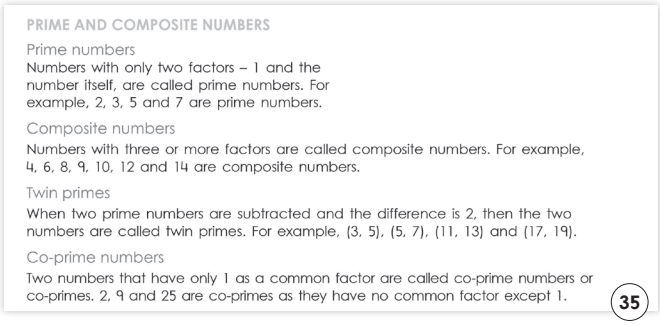
(Continue with 3, 8, 11, 15, 17, 20 and 23.)

Teacher: Well done. Now, let us explore prime and composite numbers.

MUST DO 05 MIN.

You may show the **Mental Maths** given on digital platform to revise the divisibility rules.

Prime And Composite Numbers



PRIME AND COMPOSITE NUMBERS

Prime numbers

Numbers with only two factors – 1 and the number itself, are called prime numbers. For example, 2, 3, 5 and 7 are prime numbers.

Composite numbers

Numbers with three or more factors are called composite numbers. For example, 4, 6, 8, 9, 10, 12 and 14 are composite numbers.

Twin primes

When two prime numbers are subtracted and the difference is 2, then the two numbers are called twin primes. For example, (3, 5), (5, 7), (11, 13) and (17, 19).

Co-prime numbers

Two numbers that have only 1 as a common factor are called co-prime numbers or co-primes. 2, 9 and 25 are co-primes as they have no common factor except 1.

35

Prime numbers

Teacher: Prime numbers have only two factors – 1 and the number itself. Examples are 2, 3, 5 and 7.

Teacher: Can you find more prime numbers up to 20?

Teacher: Yes, they are 11, 13, 17 and 19.

Composite numbers

Teacher: Composite numbers have more than two factors. Examples are 4, 6, 8, 10 and 12.

Teacher: What about 9 and 15? Yes, they are composite too.

Twin primes

Teacher: Twin primes are pairs of prime numbers that differ by 2. Examples are (3,5), (5,7), (11,13) and (17,19).

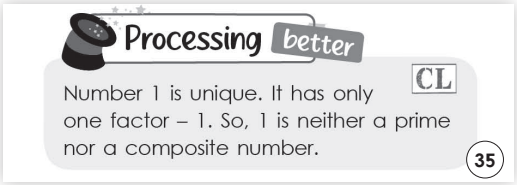
Co-prime numbers

Teacher: Co-prime numbers have only 1 as their common factor. Examples are (2,9) and (7,25).

Teacher: Even though these numbers are not prime, they do not share any common factors except 1.

Processing better

MUST DO 05 MIN.



Processing better

CL

Number 1 is unique. It has only one factor – 1. So, 1 is neither a prime nor a composite number.

35

Teacher: Open your book to the 'Processing better' activity.

Teacher: Number 1 is unique because it has only one factor – 1. So, it is neither prime nor composite.

Teacher: Think about it. Why is 1 not prime or composite?

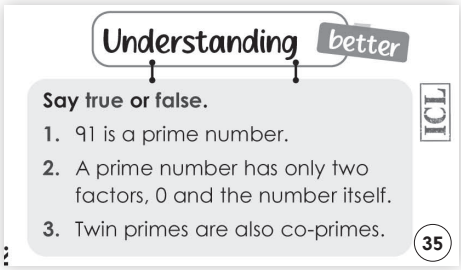
Teacher: Discuss with your partner and share your reasoning.

Teacher: The answer is that a prime number must have exactly two factors, but 1 has only one factor. A composite number must have more than two factors, but 1 has only one factor. So, it does not fit into either category.

Teacher: Great. Now, let us move on to an understanding check.

Understanding better

MUST DO 05 MIN.



Understanding better

ICL

Say true or false.

1. 91 is a prime number.
2. A prime number has only two factors, 0 and the number itself.
3. Twin primes are also co-primes.

35

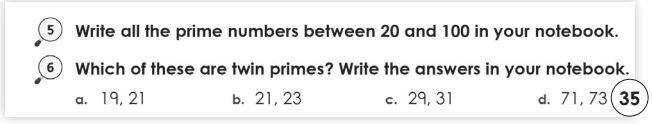
Teacher: Open your book to the 'Understanding better' activity.

Teacher: Read the first statement: '91 is a prime number.' False, because 91 has factors 1, 7, 13 and 91.

(Discuss the other questions in a similar way.)

Teacher: Solve Exercises 5 and 6 in your notebook.

MUST DO 05 MIN.



5. Write all the prime numbers between 20 and 100 in your notebook.
6. Which of these are twin primes? Write the answers in your notebook.

a. 19, 21 b. 21, 23 c. 29, 31 d. 71, 73

35

Teacher: Write all the prime numbers between 20 and 100.

Teacher: Identify the twin primes from the given list.

Teacher: Check your answers with a partner.

Prime Factors

Teacher: Factors of a number may include prime numbers. These are called prime factors.

Teacher: For example, the factors of 12 are 1, 2, 3, 4, 6 and 12. The prime factors are 2 and 3.

Prime factorization

Teacher: Factorisation means breaking a number into smaller numbers that multiply to give the original number.

Teacher: For example, 12 can be factored as 2×6 or 3×4.

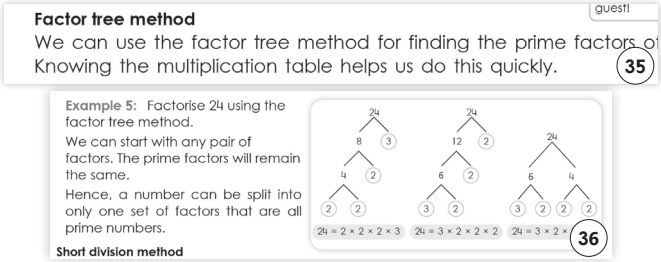
Teacher: If we break it down completely into prime numbers, we get $12 = 2 \times 2 \times 3$.

(Explain further with reference to the given explanation on page 35 in the Main course book.)

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

MUST DO 15 MIN.

Factor tree method



Teacher: Open your book to the factor tree method, example 5.

Teacher: Look at how 24 is broken down into 2 × 12, then further into prime numbers.

(Discuss further with reference to the given explanation on page 36 in the Main course book.)

Teacher: Try creating a factor tree for 30 in your notebook.

Teacher: Now, share your answers with a partner and compare your trees.

Laughing better

Teacher: Let us end with a joke. Why was 2 the only number invited to the party? Because it was a prime guest.

Teacher: Well done, everyone. Great effort today. See you in the next period.

Differentiated Activities

110 km/hr

Write all the prime numbers between 50 and 150. Identify and list at least three twin prime pairs from them.

80 km/hr

Find the prime factorisation of 72, 90 and 108 using the factor tree method. Explain the steps in your notebook.

40 km/hr

Identify whether the given numbers (15, 23, 36, 41, 50) are prime or composite. If composite, list their factors.

Home Task

Factorise 36 and 54 using the factor tree method in your notebook.

Period 6

SHOULD DO 05 MIN.

Teacher: Good morning, students. Let us start with a quick game.

Teacher: I will give you a number and you must quickly tell me if it is divisible by 2, 3 or 5.

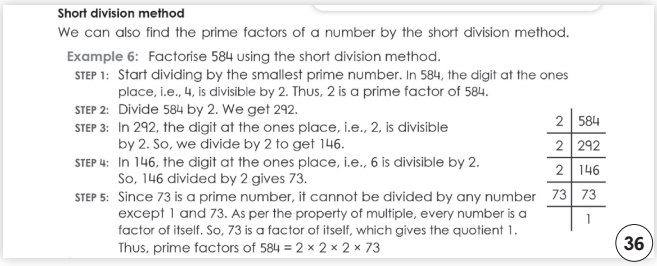
Teacher: Let us start with 36. Yes, it is divisible by 2 and 3.

Teacher: Now, try 55. Correct, it is divisible by 5 but not by 2 or 3.

Teacher: Let us continue with 48, 75, 84 and 91.

Teacher: Well done. Now, let us learn the short division method.

Short division method



Teacher: Open your book to the short division method example.

MUST DO 05 MIN.

Teacher: Let us factorise 584 using the short division method.

Teacher: First, divide by the smallest prime number. The last digit is 4, so it is divisible by 2.

Teacher: 584 ÷ 2 = 292. Again, 292 ends in 2, so divide by 2.

Teacher: 292 ÷ 2 = 146. The last digit is 6, so divide by 2 again.

Teacher: 146 ÷ 2 = 73. Now, 73 is a prime number, so it cannot be divided further.

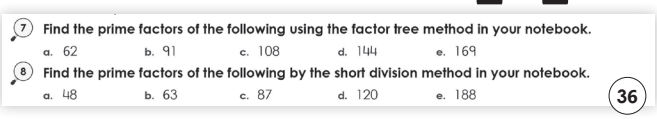
Teacher: The prime factors of 584 are 2 × 2 × 2 × 73.

Teacher: Do you have any doubts so far?

Teacher: Let us now apply this method to solve the Exercise.

Teacher: Solve questions a and b of Exercises 7 and 8 in your notebook.

MUST DO 10 MIN.



Teacher: For Exercise 7, use the factor tree method.

(Demonstrate one question on board to make sure students understand the concept.)

Teacher: For Exercise 8, use the short division method.

(Demonstrate one question on board to make sure students understand the concept.)

Teacher: Compare your answers with your partner.

Teacher: Do you have any doubts about solving these?

Teacher: Great work. Now, let us move to an important concept—HCF.

SHOULD DO 05 MIN.

Processing better

Teacher: Open your book to the 'Processing better' activity.

Teacher: HCF is also called the Greatest Common Divisor (GCD).

Teacher: It is the highest number that divides all given numbers exactly.

Teacher: Think about it: Why do we need the HCF?

Teacher: Discuss with your partner and share your thoughts.

Teacher: If you have any doubts, feel free to ask.

Teacher: Great. Now, let us find HCF using prime factorisation.

MUST DO

10 MIN.

Highest Common Factor (HCF)

HIGHEST COMMON FACTOR (HCF)

The **highest common factor (HCF)** of two or more numbers is the greatest common number that divides all the numbers without leaving any remainder. To find the HCF of two or more numbers, we find the common factors of all the numbers. The greatest of these common factors is the HCF.

Example 7: Find the HCF of 12, 16 and 24.

Let us first find all the factors of 12, 16 and 24.

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

The factors of 16 are **1**, **2**, **4**, 8 and 16.

The factors of 24 are **1**, **2**, 3, **4**, 6, 8, 12 and 24.

Now, common factors of 12, 16 and 24 are 1, 2 and 4.

Among these factors, 4 is the highest common factor.

So, the HCF of 12, 16 and 24 is 4.

37

Teacher: The Highest Common Factor (HCF) of two or more numbers is the greatest number that divides all the given numbers exactly without leaving a remainder.

Teacher: To find the HCF, we first list the factors of the given numbers and find the highest common factor among them.

Teacher: Let us find the HCF of 12, 16 and 24.

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

Teacher: The factors of 16 are 1, 2, 4, 8 and 16.

Teacher: The factors of 24 are 1, 2, 3, 4, 6, 8, 12 and 24.

Teacher: The common factors are 1, 2 and 4. The highest among them is 4.

Teacher: So, the HCF of 12, 16 and 24 is 4.

Teacher: Now, let us check another method to find the HCF using prime factorisation.

HCF by the prime factorization method

MUST DO

05 MIN.

HCF by the prime factorisation method

Example 8: Find the HCF of 22 and 56 by using the factorisation method.

STEP 1: First find the prime factors of the given numbers, 22 and 56.

2	22
11	11
	1

2	56
2	28
2	14
7	7
	1

STEP 2: Circle the common factors of both the numbers.

$22 = (2) \times 11$

$56 = (2) \times 2 \times 2 \times 7$

STEP 3: Find the product of the common factors to get the HCF of 22 and 56.

HCF = 2

Thus, the HCF of 22 and 56 is 2.

37

Teacher: Open your book to the example of HCF using the prime factorisation method.

Teacher: Let us find the HCF of 22 and 56

(Discuss further with reference to the given explanation on page 37 in the Main course book.)

You may show the **Know it right** given on digital platform to discuss the right way of finding HCF.

Teacher: Well done today. Let us end the session with a huge round of applause. See you in the next period.

Differentiated Activities

110 km/hr

Find the HCF of 144 and 180 using the prime factorisation method.

80 km/hr

Find the HCF of 24 and 48 using the prime factorisation method.

40 km/hr

List the factors of 18 and 30. Identify the common factors and determine the HCF.

Home Task

Solve questions d, e and f of Exercises 7 and 8 given on page 36 in the Main course book. Write your answers neatly in your notebook.

Period 7

SHOULD DO

05 MIN.

Teacher: Good morning, students. Let us start with a quick challenge.

Teacher: I will say two numbers and you will quickly tell me one of their common factors.

Teacher: Let us try with 12 and 18. Yes, 6 is a common factor.

Teacher: Now, try 20 and 25. Correct, 5 is a common factor.

Teacher: Let us continue with 16 and 24, 30 and 45 and 14 and 21.

Teacher: Well done. Now, let us learn how to find the HCF using the long-division method.

MUST DO

10 MIN.

HCF by long division method

HCF by long division method

The factorisation of large numbers may not be easy. Sometimes, we do not know the factors of a large number. In such cases, we use another method called the **long division** or **continued division method**.

Example 9: Find the HCF of 2344 and 7024 by the long division method.

STEP 1: Divide the larger number by the smaller number. Hence, 7024 ÷ 2344.

STEP 2: The first divisor 2344 becomes the new dividend and the remainder 2336 becomes the new divisor.

STEP 3: The divisor 2336 in the second step is divided by the new remainder 8. Continue until we get 0 as the remainder.

2336 divided by 8 gives 0 as the remainder.

Thus, the HCF of 2344 and 7024 is 8.

$$\begin{array}{r} 2344\overline{)\,7024\,(2} \\ -\,4688 \\ \hline 2336\overline{)\,2344\,(1} \\ -\,2336 \\ \hline 8\overline{)\,2336\,(292} \\ -\,16\downarrow \\ \hline 73 \\ -\,72\downarrow \\ \hline 16 \\ -\,16 \\ \hline 0 \end{array}$$

Properties of HCF

37

Teacher: Open your book to the example of HCF using the long division method on page 37.

Teacher: Yesterday, we found the HCF of 22 and 56 using prime factorisation. Today, let us find the HCF of 2344 and 7024 using the long division method.

((Discuss further with reference to the given explanation on page 37 in the Main course book.)

Properties of HCF

Properties of HCF

- The HCF of two or more numbers cannot be greater than the numbers themselves.
- The HCF of two numbers, when one of them is a factor of the other, is the smaller number itself.
- The HCF of two co-primes is 1.

37

Teacher: Now that we know two methods to find HCF, let us quickly review some properties.

Teacher: Let us discuss some important properties of HCF.

Teacher: The first property says that the HCF of two numbers is always a factor of their LCM.

Teacher: This means that the HCF will always divide the LCM exactly.

Teacher: For example, the HCF of 12 and 18 is 6. Their LCM is 36.

Teacher: Since 6 divides 36 exactly, this property is correct. (Explain other properties in a similar way.)

Teacher: Let us practise these concepts with Exercises 9 and 10 (questions a and b).

MUST DO

10 MIN.

(Guide students to solve the Exercises.)

9 **Find the HCF of the following sets of numbers using the prime factorisation method. Write the answers in your notebook.**

a. 91, 169 b. 45, 72 c. 37, 40, 89 d. 72, 80, 64

37

10 **Find the HCF of the following pairs of numbers using the long division method. Write the answers in your notebook.**

a. 14, 35 b. 21, 63 c. 1025, 8050 d. 2565, 4510

38

Teacher: Compare your answers with a partner.

MUST DO

15 MIN.

Teacher: Do you have any doubts so far?

Lowest Common Multiple (LCM)

LOWEST COMMON MULTIPLE (LCM)

The **lowest common multiple (LCM)** of two or more numbers is the smallest multiple that can be divided by all the given numbers without leaving any remainder.

To find the LCM of given numbers, we find their common multiples. The lowest of these common multiples is the LCM.

Example 10: Find the LCM of 4 and 6.

Let us first write the multiples of 4 and 6.

The multiples of 4 = 4, 8, **12**, 16, 20, **24**, 28, 32, **36**, 40 . . .

The multiples of 6 = 6, **12**, 18, **24**, 30, **36**, 42 . . .

The common multiples are 12, 24, 36 ...

12 is the smallest or the lowest of these common multiples.

So, LCM of 4 and 6 is 12.

38

You may show the **Animation** given on digital platform to discuss the concept.

Teacher: Now, let us move from HCF to LCM (Lowest Common Multiple).

Teacher: While HCF finds the greatest common factor, LCM finds the smallest common multiple of two or more numbers.

Teacher: Why do we need LCM? How is it useful in daily life?

Teacher: LCM is useful when we need to find the next common occurrence of two events happening at different intervals.

Teacher: Let us discuss some examples from real life.

Teacher: Traffic Lights: If one traffic light changes every 30 seconds and another every 45 seconds, when will they change together? We find the LCM of 30 and 45.

Teacher: Bus Timings: If one bus arrives every 20 minutes and another every 25 minutes, when will they arrive together? We find the LCM of 20 and 25.

Teacher: School Timetable: If two subjects have tests every 3 days and 4 days, when will the tests fall on the same day? We find the LCM of 3 and 4.

Teacher: Lining up Bricks or Tiles: If bricks of length 8 cm and 12 cm need to be aligned evenly at both ends, we find the LCM of 8 and 12.

Teacher: Now, let us find LCM .

LCM by the prime factorisation method

LCM by the prime factorisation method

Example 11: Find the LCM of 20, 30 and 40 by the prime factorisation method.

Write the prime factors of 20, 30 and 40. Circle the common factors. Multiply the common factors and the factors that are not common.

$20 = \boxed{2} \times \boxed{2} \times 5$

$30 = \boxed{2} \times 3 \times \boxed{5}$

$40 = \boxed{2} \times \boxed{2} \times 2 \times \boxed{5}$

LCM = 2 × 2 × 2 × 3 × 5 = 120 (Multiply the common factors)

The LCM of 20, 30 and 40 is 120.

38

Teacher: Just like we used prime factorisation for HCF, we can use it for LCM as well.

Teacher: Let us find the LCM of 20, 30 and 40 using the prime factorisation method.

(Discuss further with reference to the given explanation on page 38 in the Main course book.)

Understanding better

Understanding better

Say true or false.

1. LCM of two or more numbers is the smallest common multiple of the numbers.
2. LCM of two consecutive numbers is their multiplication.

ICL

38

Teacher: Open your book to the 'Understanding better' activity on page 38. Read the statements and discuss are they true or False.

Teacher: Fantastic students. Let us have a huge round of applause for our work. See you in the next period.

Differentiated Activities

110 km/hr

Find the HCF and LCM of 50, 75 and 100 using the prime factorisation method.

80 km/hr

Find the LCM of 18 and 24 using the prime factorisation method.

40 km/hr

List the first 10 multiples of 5 and 7. Identify their common multiples and determine the LCM.

Home Task

Solve questions (c) and (d) of Exercises 9 and 10 given on page 37. Write your answers neatly in your notebook.

Period 8

Teacher: Good morning, students. Let us recall what we learned in the last class.

SHOULD DO — 05 MIN.

Teacher: Yesterday, we discussed the LCM by the prime factorisation method and saw how LCM helps us find the smallest number that is a multiple of given numbers.

Teacher: Can anyone quickly recall how we found the LCM of 20, 30 and 40 using prime factorisation? Yes, we listed their prime factors, multiplied the highest powers of all factors and found that the LCM was 120.

Teacher: Well done. Today, we will learn another method to find LCM—the short division method—which is often quicker.

MUST DO — 10 MIN.

LCM by the short division method

LCM by the short division method

Example 12: Find the LCM of 8, 12 and 18 by the short division method.

STEP 1: Arrange the given numbers in a row, as shown.

STEP 2: Using divisibility rule, find a prime number that divides at least one of the given numbers exactly.

STEP 3: Divide the numbers by the prime number obtained in step 2. Write the quotients below each one of them. Write the number as it is, if it is not divisible by the divisor.

2	8, 12, 18
2	4, 6, 9
2	2, 3, 9
3	1, 3, 9
3	1, 1, 3
	1, 1, 1

38

Teacher: Open your book to the example of LCM by the short division method.

Teacher: Yesterday, we found LCM using prime factorisation. Today, let us find the LCM of 8, 12 and 18 using short division.

Teacher: Step 1: Arrange the numbers in a row: 8, 12, 18

(Discuss further with reference to the given explanation on page 39 in the Main course book.)

Teacher: Now, let us discuss the properties of LCM.

Properties of LCM

MUST DO — 10 MIN.

Properties of LCM

- The LCM of two or more numbers is the smallest number that is completely divisible by each of the numbers.
- The LCM of two or more numbers cannot be less than the numbers themselves.
- If one number is a factor of the other, the greatest number is the LCM.
- The LCM of co-prime numbers is their product.

39

Teacher: Now that we have learned how to find LCM, let us understand its important properties.

Teacher: Property 1: The LCM of two or more numbers is the smallest number that is completely divisible by all of them.

Teacher: Imagine two bells ringing—one every 4 minutes and the other every 6 minutes. When will they ring together? We find the LCM of 4 and 6. What is it? Yes, it is 12 minutes. This means they will ring together after every 12 minutes.

Teacher: Property 2: The LCM of two or more numbers cannot be smaller than the numbers themselves.

Teacher: Let us think about why. Can you find an LCM of 5 and 10 that is smaller than 5? No, because LCM is a multiple and multiples are always equal to or greater than the numbers.

Teacher: Property 3: If one number is a factor of another, the greater number is the LCM.

Teacher: For example, what is the LCM of 5 and 10? Yes, it is 10 because 10 is already a multiple of 5.

Teacher: Property 4: The LCM of co-prime numbers is their product.

Teacher: Co-prime numbers have only 1 as their common factor. What is the LCM of 7 and 9? Since they do not have any common multiples except their product, the LCM is $7 \times 9 = 63$.

Teacher: Can you give another example of two co-prime numbers? Yes, 11 and 13. Their LCM is $11 \times 13 = 143$.

Teacher: These properties help us understand why LCM is useful in real life.

Teacher: Now, let us apply these properties in some Exercises.

Teacher: Open your book to Exercise 11 and 12, which is on page 39.

MUST DO — 10 MIN.

11 **Find the LCM of the following using the prime factorisation method. Write the answers in your notebook.**

a. 14, 56 b. 15, 20 c. 6, 12, 18 d. 12, 32, 64

12 **Find the LCM of the following using the long division method. Write the answers in your notebook.**

a. 25, 45 b. 21, 63 c. 45, 55, 70 d. 144, 27, 30

39

Teacher: Solve only questions a and b for now.

Teacher: Exercise 11, which we learned in the last class.

Teacher: Exercise 12, which we learned today.

Teacher: Compare your answers with a partner.

Teacher: If you have any doubts, note them down for discussion.

Doubt session

Teacher: If you have any doubts, ask them now.

COULD DO — 05 MIN.

Teacher: Do you find prime factorisation or short division easier? Why?

Teacher: Do you need help with arranging numbers in short division?

Teacher: Let us clarify any confusion before moving to the next topic.

Teacher: Excellent effort today. Let us end the session with a huge round of applause.

Differentiated Activities

110 km/hr

Find the LCM of 36, 48 and 72 using both the short division and prime factorisation methods. Compare the results.

80 km/hr

Find the LCM of 15, 25 and 50 using the short division method.

40 km/hr

List the first 10 multiples of 6 and 8. Identify their common multiples and determine the LCM.

Home Task

Solve questions c and d of Exercises 11 and 12. Write your answers neatly in your notebook.

Period 9

Teacher: Good morning, students. Before we begin, let us quickly recall what we learned in the last class.

SHOULD DO
05 MIN.

Teacher: Yesterday, we discussed the LCM by the short division method and understood its properties.

Teacher: Can anyone remind me why we use LCM in real life?

Teacher: Yes, to find the next common occurrence of events, like scheduling bus arrivals or school tests.

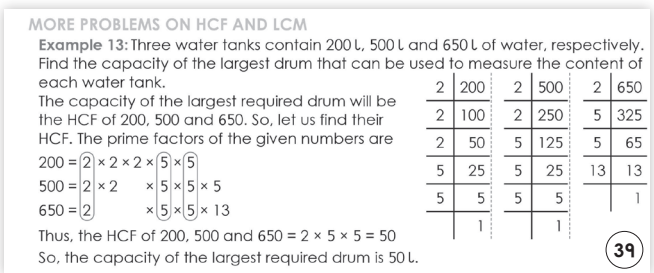
Teacher: What about HCF? When do we use it?

Teacher: Correct, HCF helps in finding the largest possible grouping, such as dividing items equally into boxes.

Teacher: Great, Today, we will solve more problems using both HCF and LCM.

MUST DO
10 MIN.

More Problems on LCM and HCF



MORE PROBLEMS ON HCF AND LCM

Example 13: Three water tanks contain 200 L, 500 L and 650 L of water, respectively. Find the capacity of the largest drum that can be used to measure the content of each water tank.

The capacity of the largest required drum will be the HCF of 200, 500 and 650. So, let us find their HCF. The prime factors of the given numbers are

200 = 2 × 2 × 2 × 5 × 5
500 = 2 × 2 × 5 × 5 × 5
650 = 2 × 5 × 5 × 13

2	200
2	100
2	50
5	25
5	5
	1

2	500
2	250
5	125
5	25
5	5
	1

2	650
5	325
5	65
13	13
	1

Thus, the HCF of 200, 500 and 650 = 2 × 5 × 5 = 50

So, the capacity of the largest required drum is 50 L.

39

Teacher: Open your book to the activity on more problems related to HCF and LCM on page 39.

Teacher: Example 13: There are three water tanks containing 200 L, 500 L and 650 L of water. What is the capacity of the largest drum that can be used to measure the water exactly?

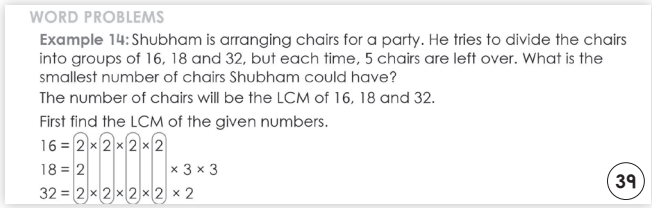
Teacher: Since we are looking for the largest capacity that divides all three amounts exactly, we need to find the HCF of 200, 500 and 650.

(Discuss further with reference to the given explanation on page 39 in the Main course book.)

Word Problems

Teacher: Let us now look at a word problem involving LCM. Who will read and explain example 14?

MUST DO
05 MIN.



WORD PROBLEMS

Example 14: Shubham is arranging chairs for a party. He tries to divide the chairs into groups of 16, 18 and 32, but each time, 5 chairs are left over. What is the smallest number of chairs Shubham could have?

The number of chairs will be the LCM of 16, 18 and 32.

First find the LCM of the given numbers.

16 = 2 × 2 × 2 × 2 × 2
18 = 2 × 3 × 3
32 = 2 × 2 × 2 × 2 × 2 × 2

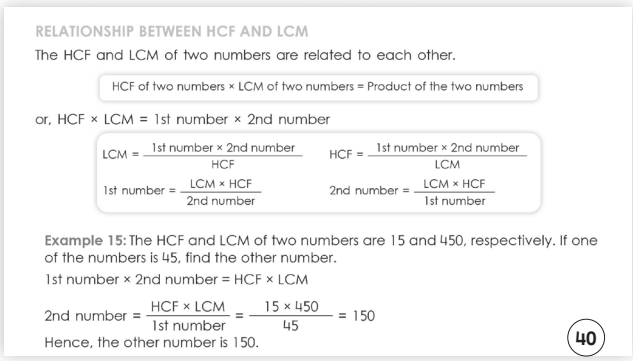
39

Teacher: Since the chairs need to be grouped equally, we must find the LCM of 16, 18 and 32.

(Discuss further with reference to the given explanation on page 39 in the Main course book.)

MUST DO
05 MIN.

Relationship Between HCF And LCM



RELATIONSHIP BETWEEN HCF AND LCM

The HCF and LCM of two numbers are related to each other.

HCF of two numbers × LCM of two numbers = Product of the two numbers

or, HCF × LCM = 1st number × 2nd number

$$\text{LCM} = \frac{\text{1st number} \times \text{2nd number}}{\text{HCF}} \qquad \text{HCF} = \frac{\text{1st number} \times \text{2nd number}}{\text{LCM}}$$

$$\text{1st number} = \frac{\text{LCM} \times \text{HCF}}{\text{2nd number}} \qquad \text{2nd number} = \frac{\text{LCM} \times \text{HCF}}{\text{1st number}}$$

Example 15: The HCF and LCM of two numbers are 15 and 450, respectively. If one of the numbers is 45, find the other number.

1st number × 2nd number = HCF × LCM

$$\text{2nd number} = \frac{\text{HCF} \times \text{LCM}}{\text{1st number}} = \frac{15 \times 450}{45} = 150$$

Hence, the other number is 150.

40

Teacher: The HCF and LCM of two numbers are connected by a special relationship.

Teacher: HCF × LCM = Product of the two numbers.

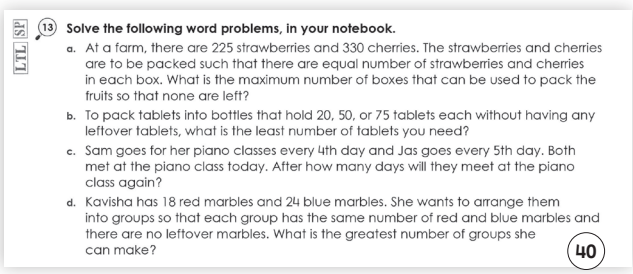
Teacher: Let us understand this with an example.

(Discuss further with reference to the given explanation on page 40 in the Main course book.)

MUST DO
15 MIN.

Exercise 13

Teacher: Open your book to Exercise 13. Let us solve the questions.



LTL SP 13 **Solve the following word problems, in your notebook.**

a. At a farm, there are 225 strawberries and 330 cherries. The strawberries and cherries are to be packed such that there are equal number of strawberries and cherries in each box. What is the maximum number of boxes that can be used to pack the fruits so that none are left?

b. To pack tablets into bottles that hold 20, 50, or 75 tablets each without having any leftover tablets, what is the least number of tablets you need?

c. Sam goes for her piano classes every 4th day and Jas goes every 5th day. Both met at the piano class today. After how many days will they meet at the piano class again?

d. Kavisha has 18 red marbles and 24 blue marbles. She wants to arrange them into groups so that each group has the same number of red and blue marbles and there are no leftover marbles. What is the greatest number of groups she can make?

40

Teacher: Who will read and explain the first question?

Teacher: What do we need to find here? Yes, we need to divide the fruits into the largest possible number of equal groups. Quickly solve the sum in your notebook.

(Guide students to solve following question in a similar way.)

You may show the **HOTS** given on the digital platform to practise the concept.

Differentiated Activities

110 km/hr

Find the HCF and LCM of 84, 108 and 144.

80 km/hr

Find the missing number in HCF × LCM = Product of two numbers for three different cases.

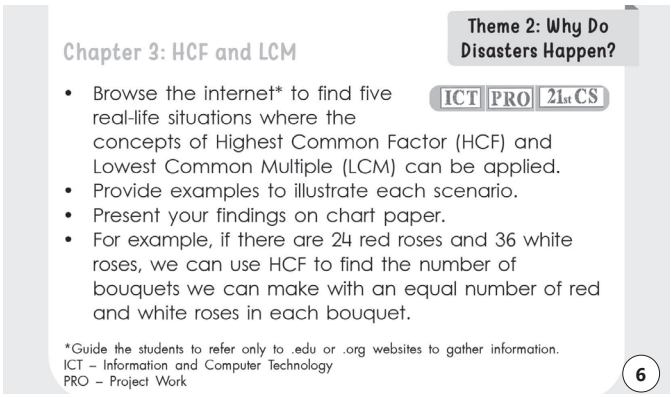
40 km/hr

Identify real-life scenarios where HCF or LCM is required and explain how to solve them.

Teacher: Let us end the session with a huge round of applause. See you in the next period,

Home Task

Book of Project Ideas



Theme 2: Why Do Disasters Happen?

Chapter 3: HCF and LCM

ICT PRO 21st CS

- Browse the internet* to find five real-life situations where the concepts of Highest Common Factor (HCF) and Lowest Common Multiple (LCM) can be applied.
- Provide examples to illustrate each scenario.
- Present your findings on chart paper.
- For example, if there are 24 red roses and 36 white roses, we can use HCF to find the number of bouquets we can make with an equal number of red and white roses in each bouquet.

*Guide the students to refer only to .edu or .org websites to gather information.
ICT – Information and Computer Technology
PRO – Project Work

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Browse the internet to find five real-life situations where the concepts of Highest Common Factor (HCF) and Lowest Common Multiple (LCM) can be applied. Provide examples to illustrate each scenario. Present your findings on chart paper period and submit in the school. For example, if there are 24 red roses and 36 white roses, we can use HCF to find the number of bouquets we can make with an equal number of red and white roses in each bouquet.

Period 10

Teacher: Good morning, students, Let us start with a fun number chain game.

SHOULD DO 05 MIN.

Teacher: I will say a number and the next person has to say either its factor or a multiple. The game continues until someone makes a mistake or repeats a number.

Teacher: Let us start with 6.

Teacher: Yes, you said 3, which is a factor of 6. Great, Now, someone else can say a multiple of 3.

Teacher: Well done, 9 is a multiple of 3, Let us continue.

Teacher: Excellent, This game helps us recall our understanding of factors and multiples, which are essential for finding HCF and LCM.

Teacher: Now, let us move on to understanding how HCF and LCM connect to real-life situations.

Connecting better

MUST DO 05 MIN.

Connecting better

Earthquakes are sudden shaking of the ground. Scientists measure how strong an earthquake is using a special recording device called the Richter scale. A magnitude 3 earthquake is less severe than a magnitude 7 earthquake.

Art Studies

HoLL

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Teacher: Earthquakes cause sudden shaking of the ground. Scientists measure the strength of earthquakes using the Richter scale.

Teacher: If one earthquake has a magnitude of 3 and another has a magnitude of 7, do they have any common multiples?

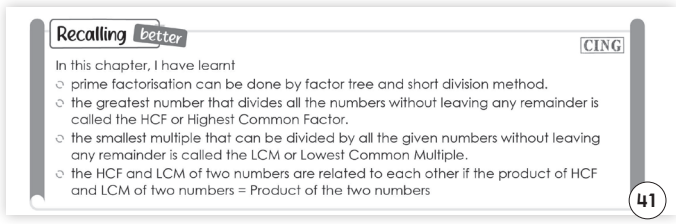
Teacher: Yes, they do, If we list their multiples, we get 3, 6, 9, 12… and 7, 14, 21, 28…

Teacher: Finding LCM in such situations can help us predict cycles of natural disasters.

Teacher: Can you think of other examples where HCF and LCM might be used? Yes, scheduling bus arrivals, packaging goods and organising sports teams.

Teacher: Excellent thinking, Now, let us revise our key learnings.

Recalling better



Recalling better

CING

In this chapter, I have learnt

- prime factorisation can be done by factor tree and short division method.
- the greatest number that divides all the numbers without leaving any remainder is called the HCF or Highest Common Factor.
- the smallest multiple that can be divided by all the given numbers without leaving any remainder is called the LCM or Lowest Common Multiple.
- the HCF and LCM of two numbers are related to each other if the product of HCF and LCM of two numbers = Product of the two numbers

41

Teacher: Let us quickly revise what we have learned about HCF and LCM.

MUST DO 05 MIN.

Teacher: What is the greatest number that divides two or more numbers exactly without leaving a remainder? Yes, it is the HCF.

Teacher: What do we call the smallest number that can be divided by given numbers without leaving a remainder? Correct, the LCM.

Teacher: If we multiply the HCF and LCM of two numbers, what do we get? Yes, we get the product of the two numbers.

Teacher: Can you find the HCF of 12 and 18? Yes, the common factors are 1, 2, 3, 6, so the HCF is 6.

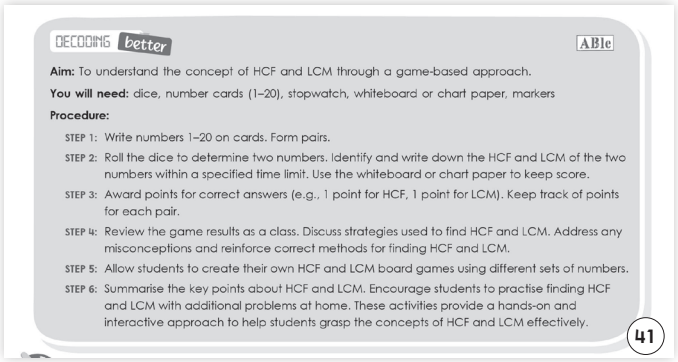
Teacher: What is the LCM of 4 and 5? Yes, it is 20 because 4 and 5 have no common multiples until 20.

Teacher: Well done, Let us now decode our learning through an interactive game.

Decoding better

(Guide the students to complete the activity given on page 41 in Main Course Book.)

MUST DO 05 MIN.



DECODING better — ABIc

Aim: To understand the concept of HCF and LCM through a game-based approach.

You will need: dice, number cards (1–20), stopwatch, whiteboard or chart paper, markers

Procedure:

STEP 1: Write numbers 1–20 on cards. Form pairs.

STEP 2: Roll the dice to determine two numbers. Identify and write down the HCF and LCM of the two numbers within a specified time limit. Use the whiteboard or chart paper to keep score.

STEP 3: Award points for correct answers (e.g., 1 point for HCF, 1 point for LCM). Keep track of points for each pair.

STEP 4: Review the game results as a class. Discuss strategies used to find HCF and LCM. Address any misconceptions and reinforce correct methods for finding HCF and LCM.

STEP 5: Allow students to create their own HCF and LCM board games using different sets of numbers.

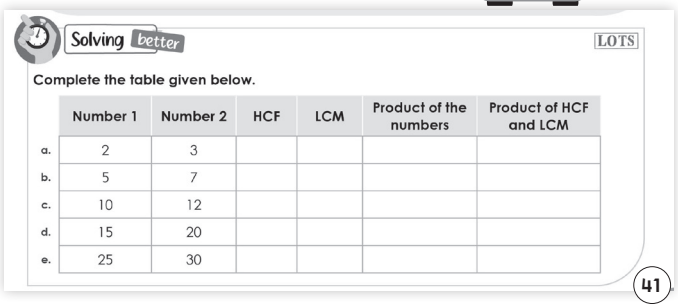
STEP 6: Summarise the key points about HCF and LCM. Encourage students to practise finding HCF and LCM with additional problems at home. These activities provide a hands-on and interactive approach to help students grasp the concepts of HCF and LCM effectively.

41

Solving better

MUST DO

10 MIN.



Solving better — LOTS

Complete the table given below.

	Number 1	Number 2	HCF	LCM	Product of the numbers	Product of HCF and LCM
a.	2	3				
b.	5	7				
c.	10	12				
d.	15	20				
e.	25	30				

41

Teacher: Open your book to the 'Solving better' activity.

Teacher: Complete the given table by finding the HCF and LCM for each pair of numbers.

Teacher: Also, check if the product of the HCF and LCM equals the product of the two numbers.

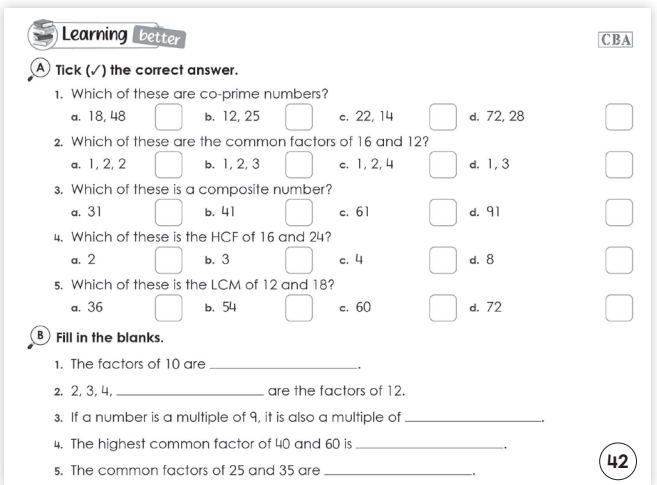
Teacher: Work together and discuss your answers with your partner.

Teacher: If you have any doubts, raise your hand.

MUST DO

10 MIN.

Learning better



Learning better — CBA

A Tick (✓) the correct answer.

1. Which of these are co-prime numbers?
   a. 18, 48 ☐ b. 12, 25 ☐ c. 22, 14 ☐ d. 72, 28 ☐
2. Which of these are the common factors of 16 and 12?
   a. 1, 2, 2 ☐ b. 1, 2, 3 ☐ c. 1, 2, 4 ☐ d. 1, 3 ☐
3. Which of these is a composite number?
   a. 31 ☐ b. 41 ☐ c. 61 ☐ d. 91 ☐
4. Which of these is the HCF of 16 and 24?
   a. 2 ☐ b. 3 ☐ c. 4 ☐ d. 8 ☐
5. Which of these is the LCM of 12 and 18?
   a. 36 ☐ b. 54 ☐ c. 60 ☐ d. 72 ☐

B Fill in the blanks.

1. The factors of 10 are _____.
2. 2, 3, 4, _____ are the factors of 12.
3. If a number is a multiple of 9, it is also a multiple of _____.
4. The highest common factor of 40 and 60 is _____.
5. The common factors of 25 and 35 are _____.

42

Teacher: Now, let us complete Exercise A and B on page 42.

Teacher: Tick the correct answers in Exercise A and fill in the blanks in Exercise B.

Teacher: Take your time and once you are done, compare your answers with a partner.

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

(Discuss the doubts of students and guide them to complete the Exercises)

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

Differentiated Activities

110 km/hr

A music concert is held every 24 days in one city and every 36 days in another city. If both cities hosted a concert on the same day, after how many days will they host it together again?

80 km/hr

A farmer has 84 apples and 108 oranges. What is the maximum number of baskets he can use so that each basket has an equal number of apples and oranges?

40 km/hr

A school has 20 chairs in each row. How many chairs are there in 5 rows?

Home Task

Solve Exercise C of 'Learning better' given on page 42 in the Main course book. Write the answers neatly in your notebook.

Bring a piece of cardboard, two coloured chart papers, a pair of scissors, a marker and a drawing pin for the next class. These materials are needed for the 'Creating better' activity to make an HCF wheel.

Period 11

SHOULD DO

05 MIN.

Teacher: Good morning, students, Let us begin by recalling our last lesson.

Teacher: What is the HCF of 16 and 24?

Teacher: What is the LCM of 6 and 8?

Teacher: Can you give an example where we use HCF in daily life?

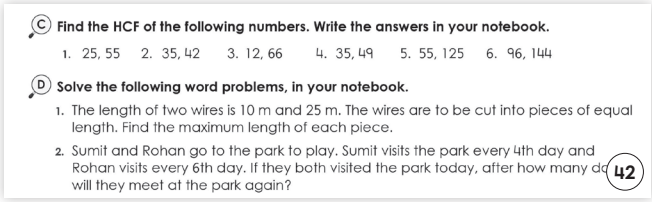
Teacher: How do we use LCM in scheduling events?

Teacher: Great, Let us move forward and complete our exercises.

Teacher: Open your books to Exercise D on page 42.

MUST DO

10 MIN.



C Find the HCF of the following numbers. Write the answers in your notebook.

1. 25, 55 2. 35, 42 3. 12, 66 4. 35, 49 5. 55, 125 6. 96, 144

D Solve the following word problems, in your notebook.

1. The length of two wires is 10 m and 25 m. The wires are to be cut into pieces of equal length. Find the maximum length of each piece.
2. Sumit and Rohan go to the park to play. Sumit visits the park every 4th day and Rohan visits every 6th day. If they both visited the park today, after how many da will they meet at the park again?

42

Teacher: Read each question carefully and solve them in your notebook.

Teacher: Compare your answers with a partner. If you have any doubts, ask me.

Teacher: Once you finish, we will discuss the answers together.

Creating better

Teacher: Now, let us do an engaging hands-on activity.

MUST DO
10 MIN.

Teacher: Take two circles, one large and one small and write the factors of two different numbers on each.

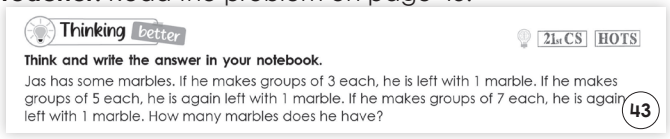
Teacher: The number where the factors match is the HCF of the two numbers.

Teacher: Work in pairs to create different HCF wheels and share your findings with the class.

(Guide the students to complete the creating better activity.)

Thinking better

Teacher: Read the problem on page 43.



Teacher: Jas has some marbles. If he makes groups of 3, he is left with 1. If he makes groups of 5, he is also left with 1. If he makes groups of 7, he is again left with 1. How many marbles does he have?

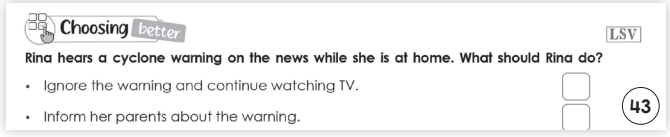
MUST DO
05 MIN.

Teacher: Discuss with your partner. What do you observe about these numbers?

Teacher: Can you think of a number that is one more than a common multiple of 3, 5 and 7?

Teacher: Solve it and write the answer in your notebook.

Choosing better



Teacher: Rina hears a cyclone warning while she is at home. What should Rina do?

MUST DO
05 MIN.

Teacher: Should she ignore it or inform her parents?

Teacher: Why is it important to stay informed about warnings?

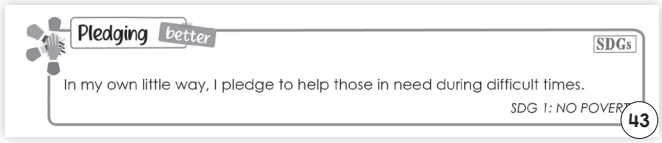
Teacher: Write your response in your notebook and discuss your reasons.

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

Pledging better

Teacher Today, we will talk about how we can help those in need during difficult times.

MUST DO
05 MIN.



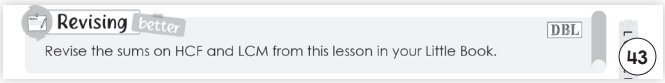
Teacher Poverty means some people do not have enough food, clothes, or a safe place to live. How do you think we can help them?

Teacher In small ways, we can make a big difference. We can share extra food, donate clothes, or help a friend in need. What other ways can we help?

Teacher When we pledge to help, we promise to do our best. Let us all say, 'In my own little way, I pledge to help those in need during difficult times.'

Teacher Always remember, kindness makes the world a better place.

Revising better



Teacher: Your home task is to revise the content which we have discussed in the class in your little book of Revision. Bring the book in the next period.

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

Differentiated Activities

110 km/hr

Design a real-world scenario where both HCF and LCM are needed together. Write a short problem statement and solve it. Present your scenario to the class.

80 km/hr

You are organising a school event with two activities – one happening every 15 minutes and another every 20 minutes. After how many minutes will both activities happen together again? Explain why LCM is used.

40 km/hr

List two common real-life situations where HCF is useful. Write a sentence explaining why HCF is needed in these cases.

Home Task

Revise the sums on HCF and LCM from this lesson in your Little Book

Bring your project in the next period for Presentation.

Period 12

Teacher: Good morning, students, Let us begin with a quick review of what we have learned so far.

SHOULD DO — 05 MIN.

Teacher: What is the difference between HCF and LCM?

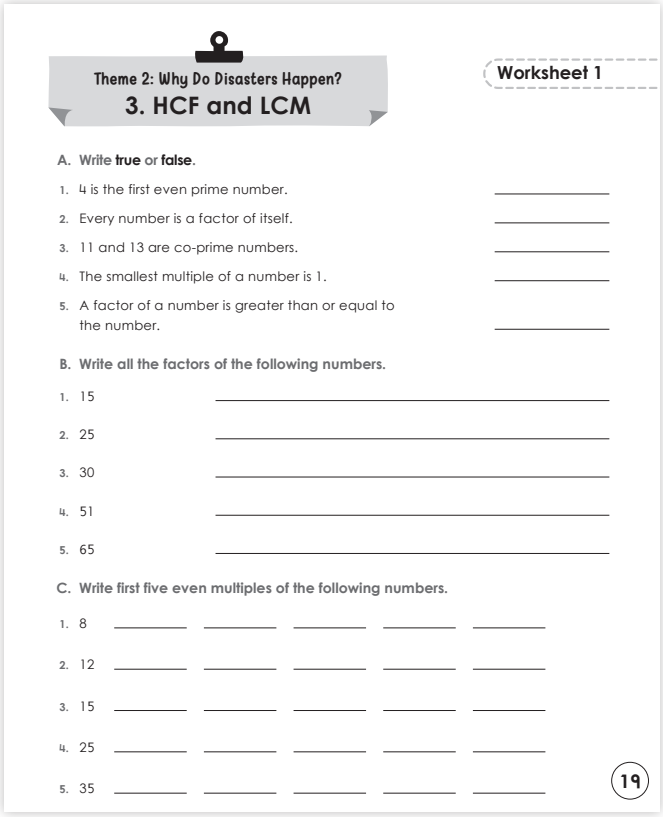
Teacher: Can you give an example where we use HCF in daily life?

Teacher: How do we find the LCM of two numbers?

Teacher: What is the relationship between HCF, LCM and the product of two numbers?

Teacher: Great, Let us now apply our knowledge to solve the worksheets.

Worksheet 1



Theme 2: Why Do Disasters Happen?

3. HCF and LCM

Worksheet 1

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

1. 4 is the first even prime number. _____
2. Every number is a factor of itself. _____
3. 11 and 13 are co-prime numbers. _____
4. The smallest multiple of a number is 1. _____
5. A factor of a number is greater than or equal to the number. _____

B. Write all the factors of the following numbers.

1. 15 _____
2. 25 _____
3. 30 _____
4. 51 _____
5. 65 _____

C. Write first five even multiples of the following numbers.

1. 8 _____ _____ _____ _____ _____
2. 12 _____ _____ _____ _____ _____
3. 15 _____ _____ _____ _____ _____
4. 25 _____ _____ _____ _____ _____
5. 35 _____ _____ _____ _____ _____

19

Teacher: Open your books to Worksheet 1 on page 19.

MUST DO — 15 MIN.

Teacher: Solve Exercise A by marking 'True' or 'False'.

Teacher: In Exercise B, list all the factors of the given numbers.

Teacher: In Exercise C, write the first five even multiples of the given numbers.

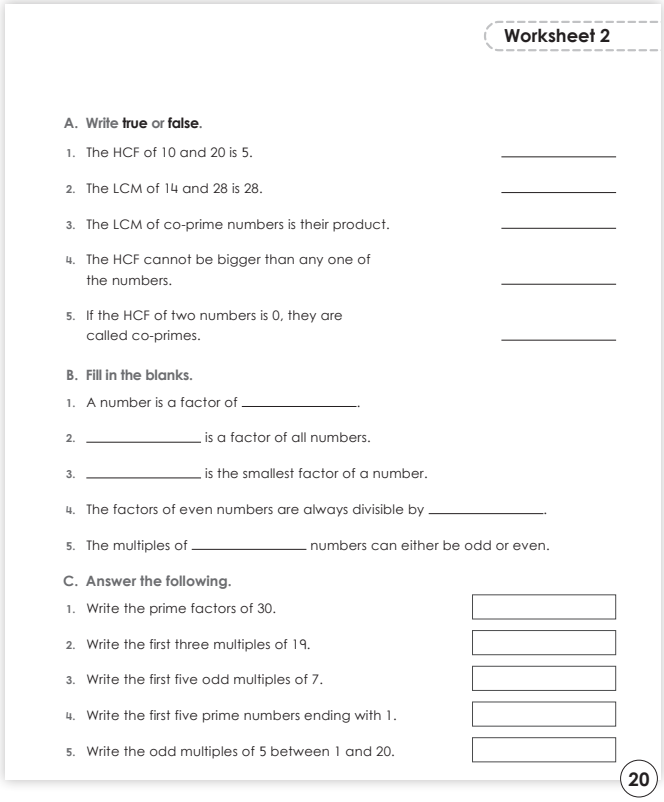
Teacher: Work individually and write your answers neatly. If you have any doubts, raise your hand.

Teacher: Once done, check your answers with a partner. Must do 10 min

Worksheet 2

Teacher: Now, turn to Worksheet 2 on page 20.

MUST DO — 10 MIN.



Worksheet 2

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

1. The HCF of 10 and 20 is 5. _____
2. The LCM of 14 and 28 is 28. _____
3. The LCM of co-prime numbers is their product. _____
4. The HCF cannot be bigger than any one of the numbers. _____
5. If the HCF of two numbers is 0, they are called co-primes. _____

B. Fill in the blanks.

1. A number is a factor of _____.
2. _____ is a factor of all numbers.
3. _____ is the smallest factor of a number.
4. The factors of even numbers are always divisible by _____.
5. The multiples of _____ numbers can either be odd or even.

C. Answer the following.

1. Write the prime factors of 30.
2. Write the first three multiples of 19.
3. Write the first five odd multiples of 7.
4. Write the first five prime numbers ending with 1.
5. Write the odd multiples of 5 between 1 and 20.

20

Teacher: Complete Exercise A by answering true or false.

Teacher: Fill in the blanks in Exercise B carefully.

Teacher: In Exercise C, answer the questions and write your solutions in the given space.

Teacher: Think carefully before writing your answers. If you need help, let me know.

Teacher: Once finished, review your answers with a partner.

Book of Project Ideas

(Discuss the project assigned in the 9th period, focusing on helping students understand the objectives and addressing any challenges they faced.)

You may show the **Quiz** given on digital platform to revisit the concepts.

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

SHOULD DO — 05 MIN.

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

Teacher: Think about the topics, we have learned and write them neatly in the 'L' column of the chart.

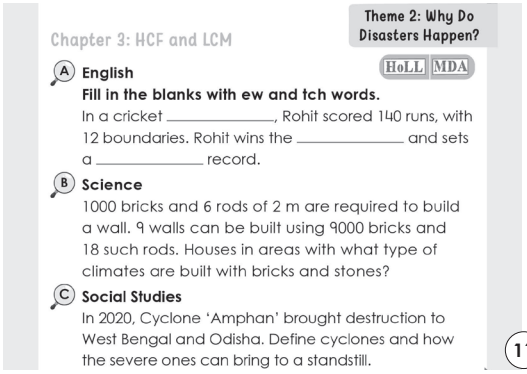
(Wait for students to fill in the chart.)

Book of Holistic Teaching

Refer to the Book of Holistic Teaching, page number 11 under the title 'HCF and LCM.' Complete the activities mentioned in this activity and ensure that the students complete them. These activities are designed to enhance their holistic understanding and engagement with the

COULD DO — 05 MIN.

topic. Provide any necessary support and materials to help the students successfully finish the activities.


Chapter 3: HCF and LCM

Theme 2: Why Do Disasters Happen?

HoLL MDA

A **English**

Fill in the blanks with ew and tch words.

In a cricket _____, Rohit scored 140 runs, with 12 boundaries. Rohit wins the _____ and sets a _____ record.

B **Science**

1000 bricks and 6 rods of 2 m are required to build a wall. 9 walls can be built using 9000 bricks and 18 such rods. Houses in areas with what type of climates are built with bricks and stones?

C **Social Studies**

In 2020, Cyclone 'Amphan' brought destruction to West Bengal and Odisha. Define cyclones and how the severe ones can bring to a standstill.

11

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

A factory produces two types of boxes. One type is packed in bundles of 36 and the other in bundles of 48. The manager wants to arrange them in equal groups without any box left. What is the maximum number of groups he can form?

80 km/hr

Two runners start running around a circular track at the same time. One completes a lap in 12 minutes and the other in 18 minutes. After how many minutes will they meet at the starting point again

40 km/hr

Find the HCF and LCM of 14 and 28.

Home Task

Complete worksheet 3 in your workbook given on page 21.

Learning Outcomes

The students will:

Physical Development	• engage in hands-on activities like factor trees and HCF wheels to reinforce mathematical concepts through physical interaction.
Socio-Emotional and Ethical Development	• develop teamwork and collaboration skills by participating in peer discussions and group problem-solving activities.
Cognitive Development	• apply logical reasoning and problem-solving skills to determine factors, multiples, HCF and LCM using different methods.
Language and Literacy Development	• enhance mathematical vocabulary and comprehension through discussions, guided exercises and written reflections.
Aesthetic and Cultural Development	• appreciate the role of mathematics in cultural and practical contexts, such as arranging events, sharing resources and pattern recognition.
Positive Learning Habits	• develop perseverance and curiosity in problem-solving through engaging activities and real-life applications of HCF and LCM.

Starry Knights

Could you gauge the learners' mood while teaching rules of divisibility - interested or boared? What did you do to engage them? Please share the ideas.

Reward yourself with a STAR for being so fabulous!