Chapter 12: Ticking Clocks and Turning Calendar

CONTENTS 7 exercises · 29 questions

12.1	Let Us Do — Calendar	9 Q
12.2	Let Us Explore — Community Calendars	5 Q
12.3	How Many Hours in a Day — Doctor's Schedule	1 Q
12.4	AM/PM and Digital Clock — Fill in the Blanks	5 Q
12.5	Hours and Minutes — Raghav & Time Calculations	1 Q
12.6	Let Us Do — Show Time on Clock	5 Q
12.7	Let Us Check — Reading the Clock	3 Q

Exercise 12.1 — Let Us Do — Calendar

Q1 Notice the number of days in February in the years 2024 and 2025. Number of days in Feb 2024 = _____. Number of days in Feb 2025 = _____.

SOLUTION

2024 is a leap year because 2024 ÷ 4 = 506 exactly (no remainder).
A leap year has 29 days in February.
2025 ÷ 4 = 506 remainder 1, so 2025 is NOT a leap year.
A non-leap year has 28 days in February.
Number of days in Feb 2024 = 29. Number of days in Feb 2025 = 28.

Q2 Fill in the blanks with consecutive leap years before and after 2024. _____, _____, 2024, _____, _____, _____

SOLUTION

Leap years occur every 4 years.
Working backwards from 2024: 2024 − 4 = 2020, 2020 − 4 = 2016.
Working forwards from 2024: 2024 + 4 = 2028, 2028 + 4 = 2032, 2032 + 4 = 2036.
The sequence is: 2016, 2020, 2024, 2028, 2032, 2036.

Q3 We know that most years have 365 days. How many days would a leap year have?

SOLUTION

A leap year has one extra day (29th February) compared to an ordinary year.
365 + 1 = 366.
A leap year has 366 days.

Q4 Write the names of the months when you celebrate your favourite festivals.

SOLUTION

This is a personal activity — answers will vary for each student.

Example: Diwali → October or November; Holi → February or March; Eid → varies by year; Christmas → December.

Write the name of the festival in the first column and its month in the second column of the table.

Q5 Answer the following questions by writing the appropriate days of the week: (a) Today: ___ (b) Yesterday: ___ (c) Tomorrow: ___ (d) Day after tomorrow: ___ (e) Day before yesterday: ___

SOLUTION

This activity depends on the actual day you are doing it.

The days of the week in order are: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday.

Example — if today is Wednesday: Yesterday = Tuesday; Tomorrow = Thursday; Day after tomorrow = Friday; Day before yesterday = Monday.

Fill in based on the current day of the week.

Q6 July 1 is a Monday. Write the dates for the next two Mondays.

SOLUTION

If July 1 is Monday, then the next Monday is 7 days later: 1 + 7 = 8.

The Monday after that is: 8 + 7 = 15.

The next two Mondays are July 8 and July 15.

Q7 Laali is born on 04/07/2014 and Chotu is born on 04/12/2019. Who is older among the two and how much? Laali will turn 5 years old on _____. Chotu's 10th birthday will be celebrated on _____.

SOLUTION

In DD/MM/YYYY format: Laali's birthday = 4 July 2014; Chotu's birthday = 4 December 2019.

Laali was born earlier (2014), so Laali is older.

Difference: from 4 July 2014 to 4 July 2019 = 5 years exactly; from 4 July 2019 to 4 December 2019 = 5 more months.

Laali is older than Chotu by 5 years and 5 months.

Laali will turn 5 years old on 04/07/2019.

Chotu's 10th birthday: 2019 + 10 = 2029, so it falls on 04/12/2029.

Q8 Check the manufacturing and expiry dates on the wrapper of any biscuit packet. (a) How old is the packet of biscuits? Answer: ____ months ____ days. (b) How many more days are the biscuits safe to eat? Answer: ____ months ____ days.

SOLUTION

This is a real-life observation activity — answers depend on the actual packet you pick.
Step 1: Note the Manufacturing Date (MFG) and Expiry Date (EXP) from the wrapper.
Step 2 (a): Count the months and days from the MFG date to today's date.
Step 3 (b): Count the months and days from today's date to the EXP date.
Example: MFG = 01/08/2026, EXP = 31/01/2027, today = 08/10/2026 → Age = 2 months 7 days; Safe for = 3 months 23 days.
Write your own packet's values in the blanks.

Q9 Notice the day on which July 15 falls in your calendar. Now find out what day is August 15, September 15, October 15. What pattern do you notice?

SOLUTION

July has 31 days. From July 15 to August 15 = 31 days.
31 ÷ 7 = 4 weeks remainder 3 days, so August 15 is 3 days later in the week than July 15.
August has 31 days. From August 15 to September 15 = 31 days → again 3 days forward.
September has 30 days. From September 15 to October 15 = 30 days. 30 ÷ 7 = 4 weeks remainder 2 days → October 15 is 2 days forward.
Pattern: The 15th of each month shifts forward by 2 or 3 days in the week depending on how many days the month has (31-day month → +3; 30-day month → +2).
This is an exploration activity — verify by looking at a calendar and share your finding with the class.

Exercise 12.2 — Let Us Explore — Community Calendars

Q1 Find out when the year begins in the Hindu, Islamic, Sikh or any other community calendar.

SOLUTION

This is an exploration activity to be done with parents and teachers.

Hindu calendar (Vikram Samvat): the new year typically begins in March or April (on Chaitra Shukla Pratipada / Gudi Padwa / Ugadi).

Islamic calendar (Hijri): the new year begins on 1 Muharram, which shifts every year in the Gregorian calendar because the Islamic calendar is lunar.

Sikh calendar (Nanakshahi): the new year begins on 1 Chet, which falls around 14 March every year.

Discuss and note the new year dates for the calendars you explore.

Q2 Check how the names of the months in these calendars correspond to the months in the English calendar.

SOLUTION

This is an exploration and discussion activity.

Example correspondences: Hindu month Chaitra ≈ March–April; Vaishakh ≈ April–May; Ashadha ≈ June–July; Kartik ≈ October–November.

Islamic months (Muharram, Safar, … Dhul Hijjah) shift each year relative to the Gregorian calendar because the Hijri year is about 11 days shorter.

Make a table pairing each community month with the rough Gregorian month(s) it overlaps.

Q3 Identify the months from the Hindu, Islamic, Sikh or any other calendar in which some important festivals of the community fall.

SOLUTION

This is a community-based exploration activity.

Examples: Diwali falls in the Hindu month of Kartik; Eid-ul-Fitr falls in the Islamic month of Shawwal; Baisakhi falls in the Sikh/Hindu month of Vaishakh (April).

List the festivals celebrated in your family or community and find out which month of that community's calendar they fall in.

Q4 Identify the dates of the new moon and full moon in your community's calendar every month. Do you notice any pattern?

SOLUTION

The new moon (Amavasya in Hindi) and full moon (Purnima) occur approximately once every 29.5 days.

In the Hindu calendar every month starts on a new moon or full moon day, so the pattern is

regular: Purnima is on the 15th day of each lunar fortnight (Purnima = 15th tithi of Shukla Paksha).

Pattern: New moon and full moon each repeat roughly every 29–30 days, which is one lunar month.

Look at a panchang (Hindu almanac) or ask your teacher to find exact dates for the current month.

Q5 How are the full moon or new moon days named in your community's calendar?

SOLUTION

In the Hindu calendar: full moon = Purnima; new moon = Amavasya.

In the Islamic calendar: the crescent new moon marks the start of each month; the full moon falls around the 14th–15th of the Hijri month.

In the Sikh Nanakshahi calendar: Puranmashi = full moon; Masya = new moon.

Ask your parents or grandparents for the names used in your family's tradition and share with the class.

Exercise 12.3 — How Many Hours in a Day — Doctor's Schedule

Q1 Look at the picture showing the time spent on different activities by a doctor. Write the number of hours spent on each activity. Then find the total number of hours between 6 o'clock morning to 6 o'clock evening, and from 6 o'clock morning to 6 o'clock morning of the next day.

SOLUTION

The circular diagram shows the doctor's day starting and ending at 6 AM. Reading each labelled sector: Cooks and gets ready to go to Hospital: 6:00 AM to 8:00 AM = 2 hours. Leaves for hospital (travel): 8:00 AM to 9:00 AM = 1 hour. Stays at Hospital: 9:00 AM to 2:00 PM = 5 hours. Leaves for home (travel): 2:00 PM to 3:00 PM = 1 hour. Reaches home; Resting time: 3:00 PM to 5:00 PM = 2 hours. Cooking (evening): 5:00 PM to 6:00 PM = 1 hour. Spending time with children: 6:00 PM to 8:00 PM = 2 hours. Dinner and TV: 8:00 PM to 10:00 PM = 2 hours. Sleeps: 10:00 PM to 6:00 AM = 8 hours. Total hours from 6:00 AM to 6:00 PM = 12 hours (this is half a day). Total hours from 6:00 AM to 6:00 AM the next day = 24 hours (this is one full day). There are 24 hours in a day.

Exercise 12.4 — AM/PM and Digital Clock — Fill in the Blanks

Q1 Fill in the blanks: 9:45 AM = _____ hours (digital).

SOLUTION

AM times before 12:00 noon use the same digits in the 24-hour clock.
9:45 AM = 09:45 hours.

Q2 Fill in the blanks: _____ (AM/PM) = 11:20 hours (digital).

SOLUTION

11:20 hours in the 24-hour clock is before 12:00 noon.
Times from 00:00 to 11:59 hours are AM.
11:20 hours = 11:20 AM.

Q3 Fill in the blanks: 3:00 PM = _____ hours (digital).

SOLUTION

For PM times after 12:00 noon, add 12 to the hour to get the 24-hour time.
3:00 PM → 3 + 12 = 15.
3:00 PM = 15:00 hours.

Q4 Fill in the blanks: 5:20 PM = _____ hours (digital).

SOLUTION

5:20 PM → hour part: 5 + 12 = 17; minutes stay the same.
5:20 PM = 17:20 hours.

Q5 Fill in the blanks: _____ (AM/PM) = 20:00 hours (digital).

SOLUTION

20:00 hours is after 12:00 noon, so it is a PM time.
Subtract 12 from the hour: 20 − 12 = 8.
20:00 hours = 8:00 PM.

Exercise 12.5 — Hours and Minutes — Raghav & Time Calculations

Q1 Raghav leaves home at 8:20 AM and returns back at 8:35 AM. How much time has he taken?

SOLUTION

Start time = 8:20 AM. End time = 8:35 AM.
Time taken = 35 − 20 = 15 minutes.
Raghav has taken 15 minutes.

Exercise 12.6 — Let Us Do — Show Time on Clock

Q1 (a) Raghav started doing his homework at 10:20 AM. He took 25 minutes to finish it. Show the time that he finished his homework.

SOLUTION

Start time = 10:20 AM.
Add 25 minutes: 20 + 25 = 45.
Finish time = 10:45 AM.
Draw the clock with the hour hand just past 10 and the minute hand pointing to 9 (the 45-minute mark).

Q2 (b) Muneera starts reading a story at 4:15 PM. She finishes reading it in 45 minutes. Show the time that she finished reading the story.

SOLUTION

Start time = 4:15 PM.
Add 45 minutes: 15 + 45 = 60 minutes = 1 hour.
Finish time = 4:15 PM + 45 min = 5:00 PM.
Draw the clock with the hour hand pointing exactly to 5 and the minute hand pointing to 12 (the 0-minute mark).

Q3 Akira leaves for school at 8:00 AM. She reaches school in 15 minutes. What time does she reach school?

SOLUTION

Start time = 8:00 AM. Travel time = 15 minutes.
8:00 + 15 minutes = 8:15 AM.
Akira reaches school at 8:15 AM.

Q4 (c) Akira reaches school at 8:15 AM. School assembly takes 20 minutes. Then there is a 10-minute dance break. Find when assembly ends and when the dance break ends.

SOLUTION

Assembly starts at 8:15 AM (when Akira reaches).
Assembly ends: 8:15 + 20 minutes = 8:35 AM.
Dance break ends: 8:35 + 10 minutes = 8:45 AM.
Assembly ends at 8:35 AM; dance break ends at 8:45 AM.

Q5 1 hour = 60 minutes. What is half an hour in minutes? What is a quarter of an hour in minutes? What is three quarters of an hour in minutes?

SOLUTION

1 hour = 60 minutes.

Half hour = 60 ÷ 2 = 30 minutes.

Quarter hour (1/4 of an hour) = 60 ÷ 4 = 15 minutes.

Three quarters of an hour = 3 × 15 = 45 minutes.

Exercise 12.7 — Let Us Check — Reading the Clock

Q1 Three friends — Raghu, Raghav and Rani — read three clocks. Their answers for the first clock are: Raghu: 12:04, Raghav: 12:20, Rani: 04:00. Who is right? Discuss the error.

SOLUTION

The clock figure shows the minute hand pointing to 4 and the hour hand just past 12. To read minutes: multiply the number the minute hand points to by 5 → 4 × 5 = 20 minutes. The hour hand is just past 12, so the hour is 12. The correct time is 12:20. Raghav is right. Raghu's error (12:04): he read the minute-hand's number (4) directly as 4 minutes instead of multiplying by 5. Rani's error (04:00): she mistook the minute hand for the hour hand and read 4 as the hour.

Q2 For the second clock, the three friends give: Raghu: 07:07, Raghav: 07:25, Rani: 05:35. Who is right?

SOLUTION

The clock figure shows the minute hand pointing to 5 and the hour hand between 7 and 8, closer to 7. To read minutes: 5 × 5 = 25 minutes. The hour hand is near 7, so the hour is 7. The correct time is 7:25. Raghav is right (07:25). Raghu's error (07:07): he read the minute-hand's position number (5) as if it were the hour hand too, writing 7 for both. Rani's error (05:35): she swapped the hands — read the minute hand as the hour (5) and tried to derive 35 minutes from the hour hand side.

Q3 For the third clock, the three friends give: Raghu: 03:07, Raghav: 03:35, Rani: 07:15. Who is right?

SOLUTION

The clock figure shows the minute hand pointing to 7 and the hour hand between 3 and 4, closer to 3. To read minutes: 7 × 5 = 35 minutes. The hour hand is near 3, so the hour is 3. The correct time is 3:35. Raghav is right (03:35). Raghu's error (03:07): he read the minute-hand's number (7) directly as 7 minutes instead of multiplying by 5. Rani's error (07:15): she swapped the hands — read the minute hand's number (7) as the hour and computed 3 × 5 = 15 minutes from the hour hand.