

Maths Around the World

Time & Date — Understanding clocks, time zones and calendars

1. Why Time Is Different Around the World

The Earth is divided into different time zones. When it is daytime in one part of the world, another part may be experiencing evening or night. Time zones help people organise travel, school, work and communication.

A time zone is usually described by its difference from Coordinated Universal Time (UTC). For example, a place may be UTC+1 or UTC-5. The plus or minus tells us how the local time compares with UTC.

Quick Idea

If City A is 3 hours ahead of City B, add 3 hours to City B's time to find City A's time.

2. A Simple Time-Zone Table

Example location	UTC difference
UTC reference	UTC+0
India (IST)	UTC+5:30
Dubai (UAE)	UTC+4
New York (example standard time)	UTC-5
London (example standard time)	UTC+0

3. Time Calculations

1. If it is 10:00 a.m. in City A and City B is 2 hours ahead, what time is it in City B?
2. If it is 6:30 p.m. in City A and City B is 4 hours behind, what time is it in City B?
3. A flight leaves at 9:00 a.m. and the journey takes 7 hours. What is the arrival time before considering time-zone changes?
4. If a video call starts at 8:00 p.m. in India and another city is 5 hours behind, what local time is the call there?

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Time & Date — International date changes and calendars

4. When the Date Changes

Crossing a time-zone boundary can sometimes change the date. If you travel east or west across enough time zones, the local calendar date may move forward or backward. This matters when planning flights, meetings and online events.

Example

A flight leaves City A at 10:00 p.m. on Monday. After a long journey, the destination's local time may be Tuesday even though only a few hours have passed on the clock.

5. 12-Hour and 24-Hour Clocks

Many countries and organisations use both clock formats. The 12-hour clock uses a.m. and p.m. The 24-hour clock runs from 00:00 to 23:59 and avoids confusion between morning and evening.

7:15 a.m. = 07:15

12:30 p.m. = 12:30

4:45 p.m. = 16:45

9:05 p.m. = 21:05

6. Dates Around the World

Different countries may write dates in different orders. A common format in many places is day/month/year, while the United States commonly uses month/day/year. When communicating internationally, writing the month as a word can reduce confusion.

Example: 05/06/2026

Could mean 5 June 2026 or May 6, 2026 depending on the date format.

7. Practice — Be a Time Detective

- Convert 18:20 into the 12-hour clock.
- Convert 6:40 a.m. into the 24-hour clock.
- City B is 3 hours ahead of City A. If City A is 11:30 a.m., what time is City B?
- A meeting is at 4:00 p.m. in a city that is 2 hours behind your city. What time is it in your city?
- Why can writing '5 June 2026' be clearer than writing '05/06/2026' in an international message?

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Time & Date — Real-life challenge

8. International Travel Challenge

Riya is planning a video call with a friend in another country. Use the information below and show your working.

The trip

- The flight leaves at 8:30 a.m. on Saturday.
- The journey takes 9 hours.
- The destination is 4 hours behind the departure city.
- Work out the approximate local arrival time.

9. Challenge Questions

10. A school in India starts an online lesson at 5:00 p.m. IST. A partner school is 4 hours behind. What time is the lesson there?
11. A sports event begins at 19:30 local time. Write this in the 12-hour format.
12. A flight leaves at 11:00 p.m. and takes 6 hours. What is the clock time at the end of the journey before considering time zones?
13. Why should travellers check the local time and date before booking a hotel or arranging a pickup?

Maths Connects Us All

People may live in different time zones and use different date formats, but the mathematics of time helps us understand, plan and connect with one another.

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Time & Date — Answer Key

Answer Key

1. 12:00 noon
2. 2:30 p.m.
3. 4:00 p.m.
4. 3:00 p.m.
5. $18:20 = 6:20$ p.m.
6. $6:40$ a.m. = $06:40$
7. 2:30 p.m.
8. 6:00 p.m.
9. Because the order of day and month can differ between countries, while writing the month as a word removes ambiguity.
10. 1:00 p.m.
11. 7:30 p.m.
12. 5:00 a.m. the next day
13. Because the local time and date can differ from the traveler's starting location, affecting bookings, pickups and schedules.