Time

Topic	Algebra
Learning objectives	Understand the concept of time and its different units Apply mathematical skills to solve real-life time-related problems
Age group	10-14 years
Estimated duration	2 hours
Activities	Time and schedule calculations
Related visits	Mons, Namur, Tournai, Gand, Agrinio, Amiens, Boulogne sur Mer, Warsaw, Beaumont de Lomagne, Agen, Toulouse

Previous knowledge required

Understanding of units of time (seconds, minutes, hours, days, etc.).

Understanding of time zones.

Step by step: the sequence in the classroom

Step 1: Introducing the topic

The Significance of Time and its Connection to Mathematics

Time is a fundamental aspect of our lives, influencing everything from daily routines to scientific exploration. The relationship between time and mathematics is integral, as math provides the tools to measure, calculate, and understand time-related phenomena.

Units like seconds, minutes, and hours structure our daily activities, helping us with scheduling and time management.

In science, precise units such as milliseconds and nanoseconds help measure rapid events, shedding light on intricate processes.

In essence, the connection between time and mathematics empowers us to navigate our routines, explore scientific frontiers, and unravel the mysteries of existence. From the precision of scientific calculations to the rhythm of our lives, mathematics provides the tools that allow us to grasp the profound significance of time in all its dimensions.

Step 2: Class activities

Movies

You are a true film-lover. The local cinema hosts a film festival next week, and you plan to attend.

The film festival runs for 7 days. On average each day there are screenings for 4 hours and 15 minutes.

If you attend all the sessions, how many minutes of movies will you see?

Answer:

4h15 = 255 minutes

7 days x 255 minutes = 1785 minutes

Pedestrian Crossing

Visualize yourself observing a bustling pedestrian crossing during a green light. As you keenly observe, you notice a delightful variety in crossing speeds among different individuals. You meticulously record the crossing times of different people.

Here are your observations:

An older man: 12 seconds to cross the road

A teenager: 8 seconds to cross the road

A young woman running: 4 seconds to cross the road

A father with a stroller: 18 seconds to cross the road

A couple with 2 kids walking: 25 seconds to cross the road

Now, calculate the average time it takes for all those people to cross the pedestrian crossing.

Answer:

Total time for all groups = 67 seconds

Total number of people = 8 people

Average time per person = 67 / 8 = **8,375 seconds**

Counting Cars

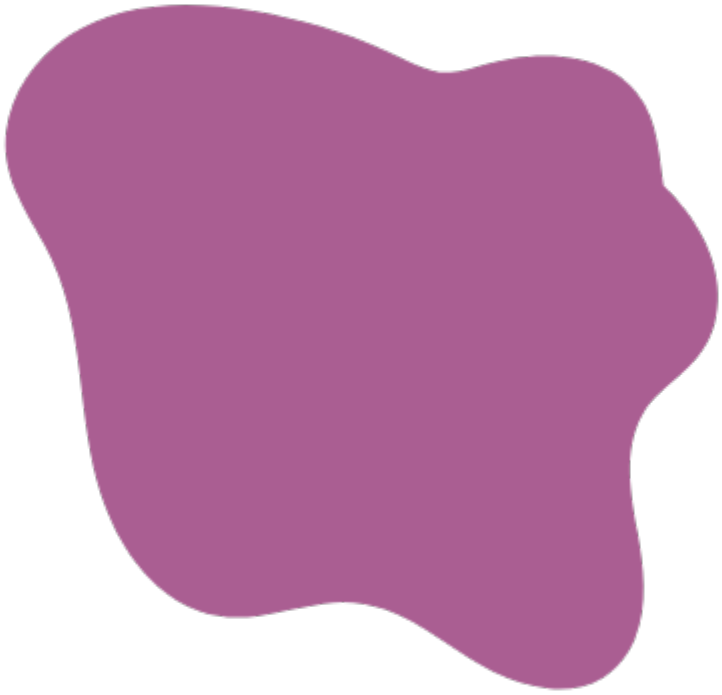
Imagine you are standing on the side of a road, hitchhiking on a sunny day. As you wait for a ride, you find yourself counting the cars passing by.

Over the course of an hour, you meticulously count 236 cars that pass by.

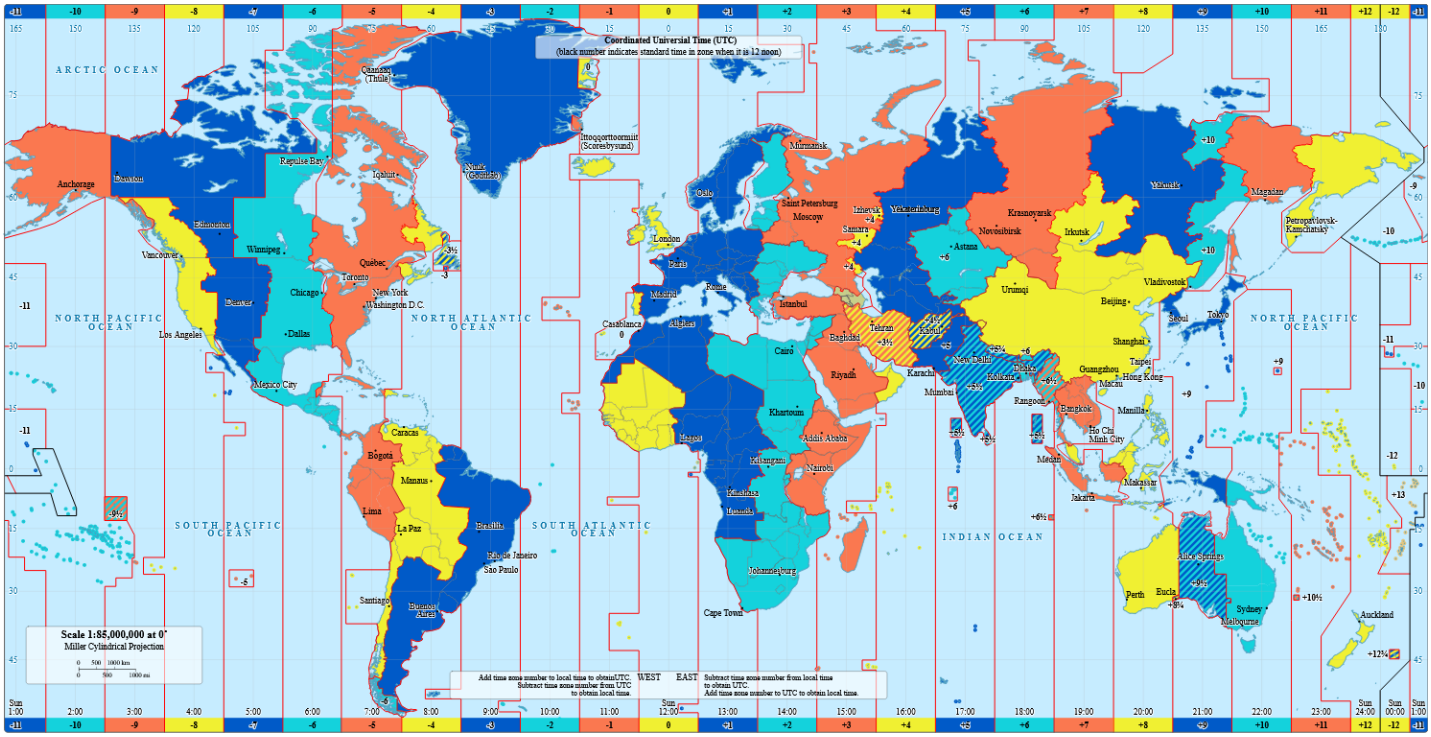
Calculate the number of cars that would pass by this point in a year.

Answer:

Cars passing per year = 236 cars/hour × 24 hours/day × 365 days/year = **2,067,360 cars/year**



For the following exercise, here is an image of the time zones to help you:



Time Zones 1

Imagine you're planning an international virtual conference, bringing together participants from across the globe. As the event organizer, you need to schedule a session that suits everyone's time zone. You are in New York (GMT-5), and your participants include colleagues from London (GMT+0), Moscow (GMT+3), and Buenos Aires (GMT-4). You decide to hold the conference call at 10AM your time.

Calculate the corresponding local times for your colleagues in London, Moscow, and Buenos Aires.

Answer:

Time in London = 10:00 + 5 hours = **15:00**

Time in Moscow = 10:00 + 8 hours = **18:00**

Time in Buenos Aires = 10:00 + 11 hours = **21:00**

Trains

You are planning a shopping trip with your friends in Paris. You are taking the train together and have three options to get there:

- The train from Brussels to Paris travels at 200 km/h and leaves at 09:10. Brussels is 300 km away from Paris.
- The train from Lille to Paris travels at 100 km/h and leaves at 09h30. Lille is 120 km away from Paris.
- The train from Valenciennes to Paris travels at 170 km/h and leaves at 09:40. Valenciennes is 110 km away from Paris.

As you want to make the most of the day, you want to arrive as soon as possible in Paris.

Which train arrives first in Paris?

Answer:

Valenciennes

Train from Brussels to Paris:

- Travel time: 01:30
- Arrival time: 09:10 + 01:30 = 10:40

Train from Lille to Paris:

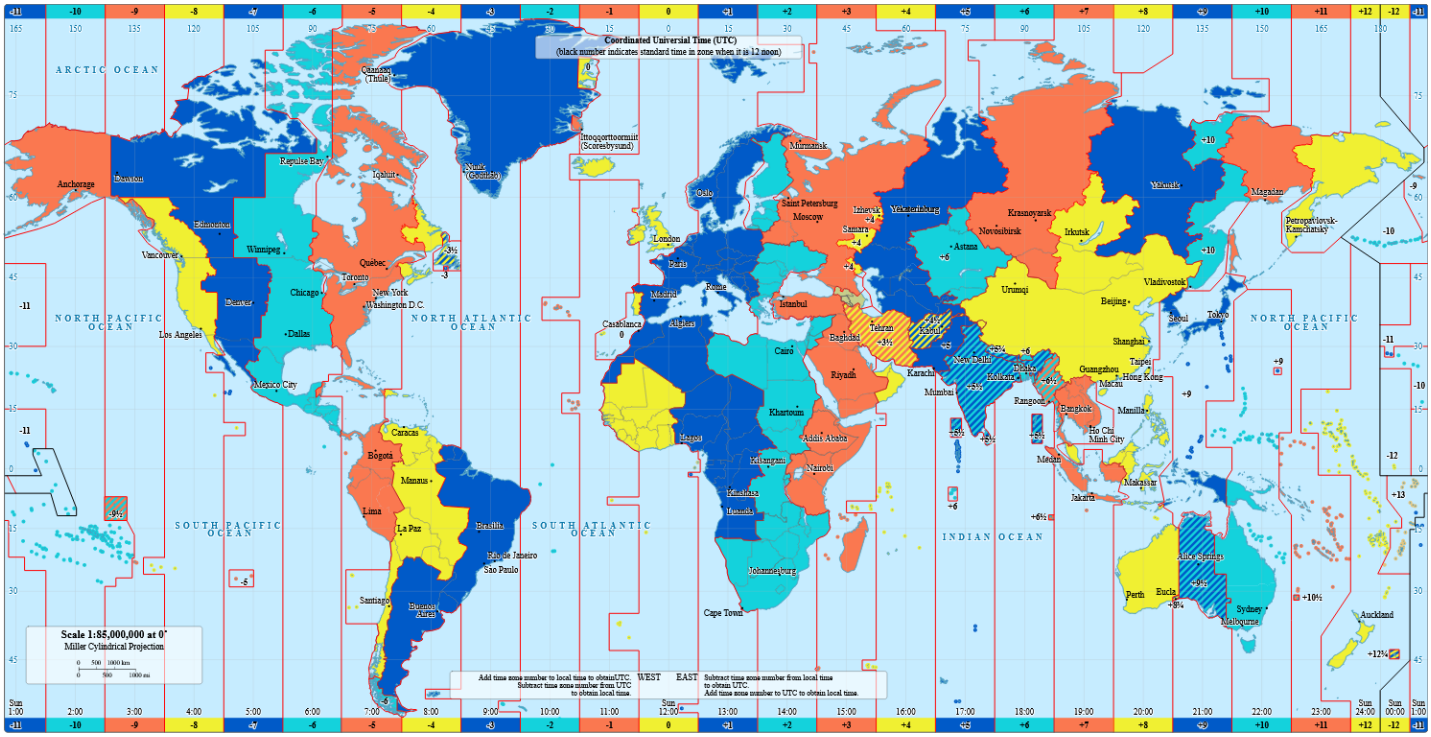
- Travel time: 01:12
- Arrival time: 09:30 + 01:12 = 10:42

Train from Valenciennes to Paris:

- Travel time: 00:38
- Arrival time: 09:40 + 00:38= 10:18

Step 3: Homework and development ideas

For the following exercise, here is an image of the time zones to help you:



Time Zones 2

You and your friends from around the world are excitedly coordinating a virtual hangout. The group comprises people from Chicago (GMT-6), Jakarta (GMT+7), Rome (GMT+1), Bamako (GMT+0), and Rio de Janeiro (GMT-3).

You live in Brazil and are available anytime on Saturday, the day of the meeting.

Here are your friends' schedules:

- Chicago friend is available between 7 AM and 11 AM (GMT-6).
- Jakarta friend is available between 9 PM and 12 AM (GMT+7).
- Rome friend is available between 12 PM and 4 PM (GMT+1).
- Bamako friend is available between 11 AM and 3 PM (GMT+0).

Choose the most suitable time for a one-hour meeting.

Your challenge is to calculate the time in Rio de Janeiro when the virtual gathering should begin, ensuring it matches the schedules of participants dispersed across multiple time zones.

Answer:

11AM - 12 PM (GMT-3)

Availability hour GMT-3 (in Brazil):

Chicago: 10h – 14h

Jakarta: 11h – 14h

Rome: 8h – 12h

Bamako: 8 h – 12h

Practical experience

Here is a practical experience about time that you can easily do at home.

Choose a journey you are used to: from your house to the school, bakery, library, cinema, family member's house, sport, music, etc.

Next time you make that journey, clock how long it takes you to go there.

Compare the time it takes to go there by foot, car, bus, tram, etc.

What means of transport takes the least time and the longest time?

Calculate the average time of that specific journey by using the data you collected.

VISIT MATH

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