

Working internationally

Global time



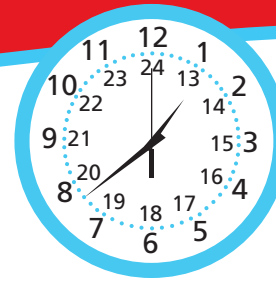
Use the time information to locate these places on the world map.

Berlin and Warsaw are both a long way east of Paris but share the same time. Why?

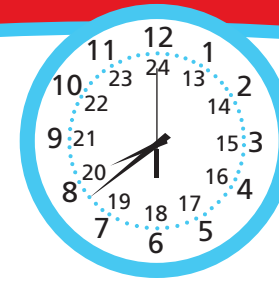
Sharing time is a problem for large countries. **Why?**

The United States uses **five** time zones. China uses only **one**.

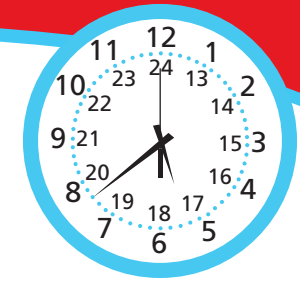
What are the advantages and disadvantages of the two systems?



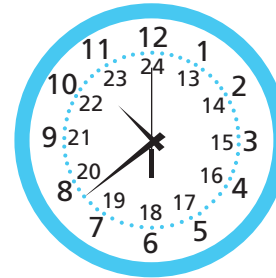
London 13.38



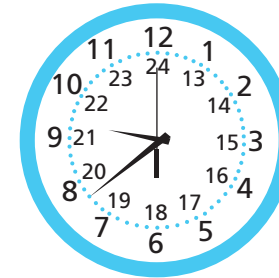
Montreal 8.38



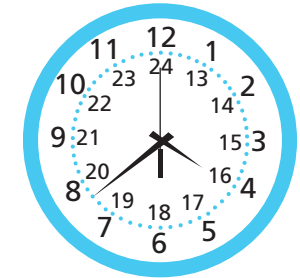
Seattle 5.38



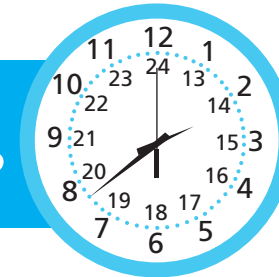
Tokyo 22.38



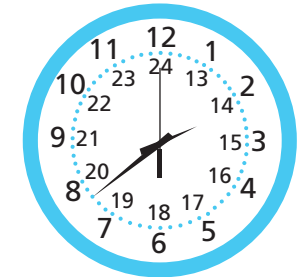
Beijing 21.38



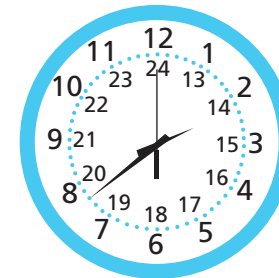
Moscow 16.38



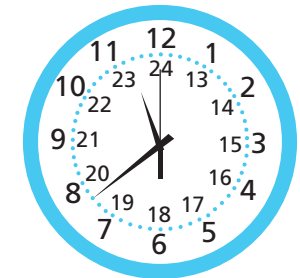
Warsaw 14.38



Berlin 14.38



Paris 14.38



Vladivostok 23.38



Working internationally Global time worksheet



Working internationally Working around the world

An international company has branches in Montreal, Tokyo, Moscow and London. All the branches are open from 9.00am – 5.00pm local time.

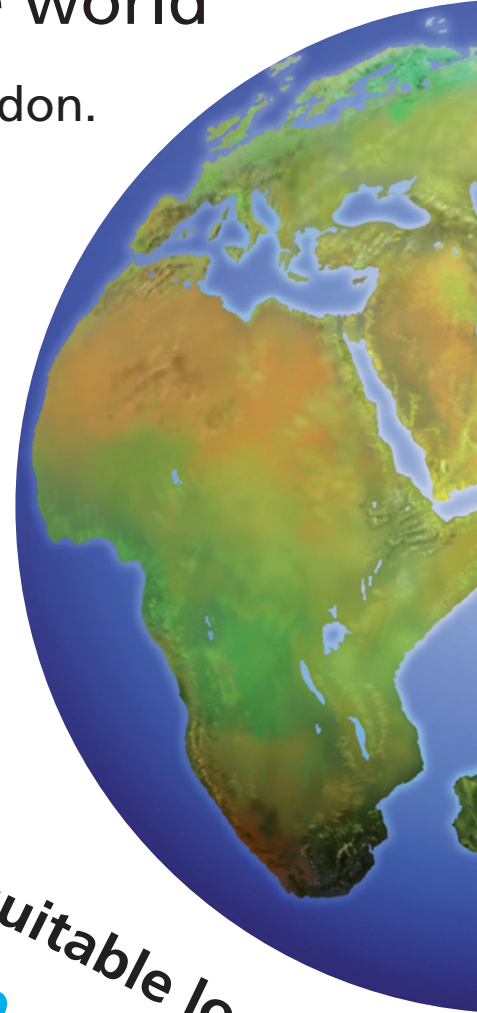
How many hours each day can you be in touch with the others from London?

What problems do time differences cause:

- if you are trying to buy and sell things
- or working for a travel agent
- or reporting the local news and sport?

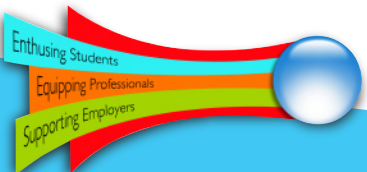
Can four offices be placed so that there is at least a 'four-hour open' overlap between offices as you move around the world?

If not, where would you open new offices?



Use an atlas or the website www.timeanddate.com to find suitable locations.

What other solutions do companies find to the time difference problem?





Working internationally Meeting up

Estimated flying time in hours
Flying distance in Kilometres
750



London			
3,239	Montreal		
1,557	4,382	Moscow	
5,939	6,451	4,644	Tokyo
Flying distance in miles			

With offices in **London, Montreal and Tokyo**, which is the best place to meet?

More offices are opened to provide a 'four-hour open' overlap.

Use <http://www.etn.nl/distanc4.htm> to extend the **Flying distance in miles** chart.

Which is now the **best place to meet**?





Working internationally What careers?

Which careers need you to:

- think globally?
- work internationally?
- understand global time?

Choose *one* of those careers.

Visit <http://www.futuremorph.org/> to find out how this career uses maths.

Produce a poster to show the *maths link*.





Working internationally

Topic

This topic is designed to help develop the realisation that an understanding of time and its relative nature is essential to working in an international environment.

Careers link-up

What careers?

Oldus Marcus sat with his army exactly 500km due west from Rufus Brutus. Oldus Marcus sent a message to Rufus Brutus.

"On Thursday send a messenger on your best horse with the peace treaty and I will do the same. Let them both leave at sunrise. Then they will meet exactly halfway between us. The treaties can be exchanged and there will be peace."

Both messengers travelled at exactly the same speed for the same distance. But on Friday the messenger for Marcus arrived back with no treaty!

"I waited fifteen minutes but no one came."

There was war!

What went wrong?

Planning for teaching

Some pupils will find understanding the concept of relative time challenging. Thinking about this in a more local context provides an introduction to the basic ideas. A fun fictional introduction can be used.

Mathematical activities

Global time

Working round the world

Meeting up

Looking at sunrise times from around the UK provides another local introduction that may surprise some students. Data is available in the daily newspaper or on the BBC Weather website <http://news.bbc.co.uk/weather/> by searching on your desired locations, and provides the opportunity to discuss both east-west and north-south discrepancies.

Global time asks you to record on the worksheet provided the time as you travel across the world. You are then asked to think about some of the consequences of having one time zone stretching across a considerable geographic space (Paris to Warsaw or the single state of China) or having different time zones within one country (the US uses five different time zones). A particularly good website for looking at time in the US is www.time.gov/. This site allows an immediate view of the time zones and also has a variety of options for further developing a broader understanding of the history and issues around shared time.

Working around the world highlights some of the issues that arise for international companies. Pupils will probably find the time calculations a challenge. Once they have attempted to work on the problem themselves, you may want to suggest that a good way to tackle the problem of 'how many hours' is to list the time data from Global time with two extra columns. Pupils can work out how much earlier London offices open and how much later they close. They then use the same time shifts for Montreal, Tokyo and Moscow. The solution to the four hour problem can be found by placing an extra office in the Caribbean region or Newfoundland.



Working internationally

Meeting up is an exploration aimed at developing geographical awareness as well as mathematical knowledge. Care needs to be taken not to confuse miles and kilometres.

Very many careers now entail thinking globally and working internationally. So a brainstorming session with students on the sort of careers that need to consider these issues will prove rewarding here. As well as the world of business and international finance, many jobs involve international communication and the organisation of international events – journalist, pop star, Olympic sports person all need to cope with working internationally.

What careers? invites pupils to list the wide variety of such careers, and to share these with the class. Now ask them, in groups, to choose one career from the list and explore the mathematical link by using the Future Morph website at <http://www.futuremorph.org/>

Want to know more?

Contact STEM Subject Choice and Careers
info@careersinstem.co.uk

The Centre for Science Education
 Sheffield Hallam University
 City Campus, Howard Street
 Sheffield S1 1WB

Tel: 0114 225 4870

or for more information on careers go to Maths careers at www.mathscareers.org.uk/
 or Future Morph at www.futuremorph.org/

A Department for Children, Schools and Families initiative to promote subject choice and careers in Science, Technology, Engineering and Maths (STEM) delivered by the Centre for Science Education at Sheffield Hallam University and VT Enterprise.

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