YEAR 7 SPRING TERM PROJECT – TIME and TIMETABLES

Focus of the Project
The aim of this is to consolidate students’ knowledge of time and their skills in using timetables. There is opportunity to consolidate a number of other topics, especially through the timetabling task set out below. The aim here is to ensure all students feel comfortable in working with time and in applying their problem solving skills to a variety of problems. In particular, in using bus or train timetables students will develop their ability to extract relevant information in complex problems.

How to run this project
Schools are free to run this project in whatever way fits their curriculum and allocation. For example, some schools have “Maths days” where some of the tasks could be used. Others may wish to use lesson time at the beginning or end of half terms to start some tasks and then let the students work through them as homeworks, either as individuals or in small groups. You might want to set aside a regular slot within other lessons to allow students to share their progress so far and discuss other options for continuing the project.

How to mark this project
As ever, we would never impose a system of schools, but this particular project would seem to lend itself very well to peer-assessment. In addition, students could be asked to work in pairs or groups to develop their own marking criteria. If the work is being done during lesson times, then progress can be checked and plenaries could be used to reinforce key findings; perhaps students could be asked to share something they have discovered during that lesson.

Links to MM KS3 Programme of Study
This project has direct links to:
Year 7 Unit 6 – Investigation 3: Time
Year 7 Unit 14 – Fractions of amounts
Year 7 Units 20 and 21 – Percentages
Year 8 Unit 8 - Ratio

Links to National Curriculum KS3 Programme of Study
This project meets the requirements of the develop fluency, reason mathematically and solve problems elements of the new KS3 Curriculum.
Several other elements of the Curriculum are directly met when using these projects:

- Use standard units of time
- Understand and use ratio notation
- Interpret fractions and percentages as operators
Suggested tasks for this Project

**TV scheduling**

Students can be put in charge of programming for a made-up TV station which does not air advertisements. Students are in charge of one day of programming; for example from 6am until midnight. (This can be changed to suit different class’s needs)

Restrictions should be put into place about the programming requirements, they can be given as:

- Specific guidance such as the news must be on at 9pm
- As fractions or percentages, for example:
  - 50% time must be spent on film
  - 10% must be spend on news
  - No more than 20% must be reality TV etc.

Students can then produce a TV guide page for their channel using real TV programmes or making up their own ones.

**Time Travellers**

To begin with some discussion can take place about time zones and GMT as a base from which we can measure time zones. Students could be set a short homework or task to investigate and research time zones.

Students should be given a list of countries and asked to find the time difference when compared to GMT. Include a wide variety of countries from all different time zones.

Students could then be presented with questions and/or challenges to investigate involving flying around the world. For example:

I start my journey in London on January 1\textsuperscript{st} heading to Greece. My flight leaves at 9.30am and last for four hours. What will be the local time when I land?

On January 6\textsuperscript{th}, at 6pm (local time), I leave Greece and fly to India. The flight takes 8 hours. At what local time will I land in India?

On January 20\textsuperscript{th} at 8am (local time), I fly from India to Brazil. The flight takes 20 hours. What will the local time and date be when I arrive in Brazil?

Or students could be asked to plan their own around the world journey! Access to the internet would be really useful for this investigation as students could access flight times (lots of websites offer this service) and also time zones.
**Timetabling**

In this activity students are asked to create a school timetable given a set of restrictions. The restrictions can be presented in a number of ways (ratios, percentages, fractions etc).

One such example is given below.

This activity is an adaptation of one taken from Brian Fillis’ “Main Activity: Problem Solved! Book 1”. [www.badger-publishing.co.uk](http://www.badger-publishing.co.uk). This set of 3 books provides a wealth of problem solving activities and ideas for KS3 pupils.

Y7 pupils at Hill View School have 7 periods per day in their timetables. You are asked to allocate lessons using the information below:

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<thead>
<tr>
<th>Monday</th>
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- 20% of lessons should be Science
- There should be twice as many Technology lessons as Art lessons
- 1/7 of the lessons must be either History or Geography
- The ratio of Art lessons to RS lessons is 1:1
- There should be more History lessons than Geography lessons
- There should be two RS lessons
- Science lessons should be split into Physics, Chemistry and Biology. There should be more Chemistry lessons than Biology or Physics lessons
- There should be 5 Maths lessons
- The number of Maths and English lessons in the same
- The rest of the lessons should be either French or German lessons

**Secret Agent**

This investigation enables students to work with bus and train timetables. The number or complexity of timetables can be varied.

Below is an example of such a task.

**You are a secret agent. You are currently in Edinburgh and receive an email with details of today’s job as follows:**

“Please take the train to Leeds and pick up a parcel from Agent Ford. He will meet you by the coffee stand on platform 3. Then, take then next available train to Manchester to drop off the parcel and collect a package that needs delivering to London. In Manchester you will need to allow an hour make your way to the Rose and Crown bar to meet Agent Vargas and get back to the station.

From Manchester, make your way to London Euston station. At Euston station make your way to the locker storage. Leave the package in locker 263 and pick up the envelope from locker 19. The envelop needs to be taken to France.”
From Euston you have two choices, either make your way to Heathrow and fly to Paris or go to St Pancras and take the Eurostar.

In Paris contact Agent Peraud to arrange for the exchange. His contact number is 0690 458 995.

After you have completed this, contact the office for further instructions.”

Train and flight timetables are readily accessible on the internet or could be printed in preparation for the lesson. Students could be challenged to make up their own stories too!

Every second counts: A Nuffield investigation

http://www.nuffieldfoundation.org/applying-mathematical-processes/every-second-counts

In this investigation pupils determine how far they could travel in one hour. Knowledge of the locality and reference to various maps and timetables is essential in planning a route.