In Between Time

Task 25 ... Years 4 - 10

Summary

As time passes, both the minute hand and the hour hand move. Yet in the hour from each o'clock the minute hand repeats all its positions. It is the hour hand which has to journey for 12 hours before it begins to repeat its positions. This task first uses a thirty minute difference (embodying the idea of half of the hourly minute hand journey) to establish that students understand:

1. Time difference can be clockwise or anti-clockwise.
2. If the minute hand moves half an hour, then the hour hand has moved half of its journey towards the next (or previous) hour.

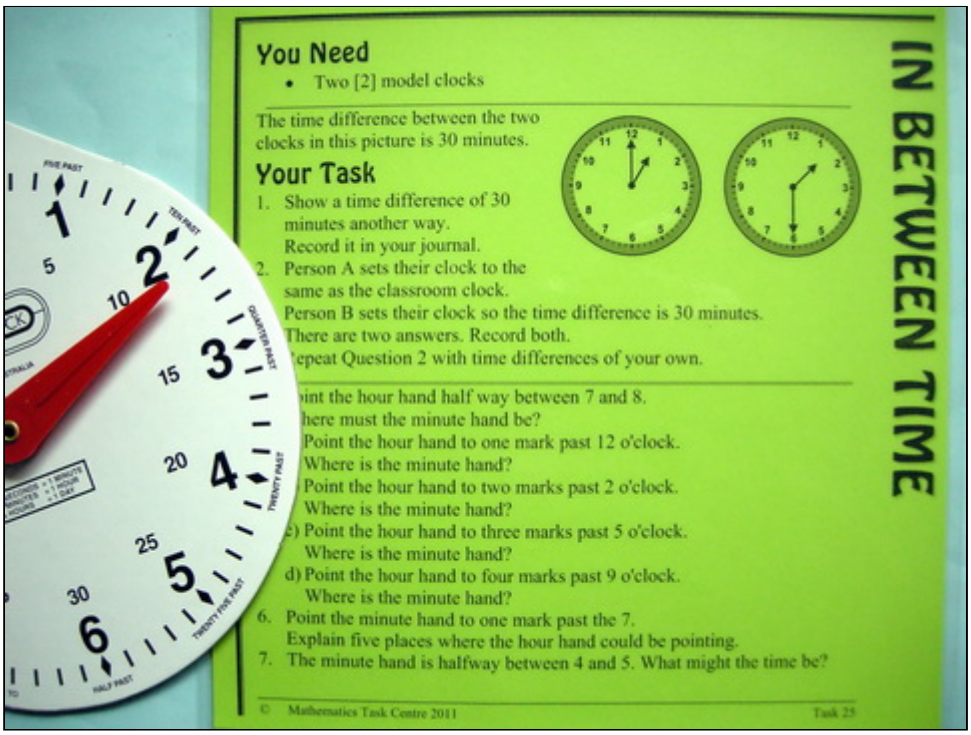
From this basis the students are challenged to set a position for one of the hands and explore where the other hand must, or sometimes could, be.

Materials

- Two clock faces
- Clock stamps or copied clock faces can be useful for recording

Content

- division of time into hours and minutes
- visualising the passing of time
- applying understanding of the interconnectedness of the hands of a clock
- visualising angles
- clockwise & anti-clockwise
- before and after a given time
- time difference
- fractions
- proportional reasoning



Iceberg

A task is the tip of a learning iceberg. There is always more to a task than is recorded on the card.

The key to this task is the 'travel' relationships between the minute and hour hands.

1. If the hour hand travels one mark past an o'clock it has travelled one fifth of its journey towards the

next hour. In the same time, the minute hand must have travelled one fifth of its (60 mark) journey to the next hour, ie: 12 marks (or minutes) on the clock face.

2. On the other hand, if the minute hand travels one mark past an o'clock it has travelled only one sixtieth of its journey to the next hour. In the same time, the hour hand must have travelled one sixtieth of its (5 mark) journey to the next hour, ie: one twelfth of one mark on the clock face.

With these understandings it is possible to accurately answer all the questions on the card. However, depending on the students being challenged, you may be content with approximate answers.

- Ask the students to also record the answers to the task card questions as digital time.
- Ask the students to invent problems like the ones on the card and record them in some way to create a class set of time problems.
- See Task 22, Time Together, for another time-based task.

Note: This investigation has been included in Maths At Home. In this form it has fresh context and purpose and, in some cases, additional resources. Maths At Home activity plans encourage independent investigation through guided 'homework', or, for the teacher, can be an outline of a class investigation.

- Visit the Home Page for more Background.
- For this specific activity click the Learners link and on that page use Ctrl F (Cmd F on Mac) to search the task name.

Whole Class Investigation

Tasks are an invitation for two students to work like a mathematician. Tasks can also be modified to become whole class investigations which model how a mathematician works.

First collect clocks for the classroom. The students can help with this by bringing some from home, and you could also visit garage sales and junk shops. Perhaps you could pool the clocks already in the school. You will need at least one clock per pair, but the lesson could work with one between four. To build your whole class investigation, follow the sequence of challenges on the card. Encourage discussion, explanation and justification.

At this stage *In Between Time* does not have a matching lesson on Maths300.

Is it in Maths With Attitude?

Maths With Attitude is a set of hands-on learning kits available from Years 3-10 which structure the use of tasks and whole class investigations into a week by week planner.

In Between Time is not in any MWA kit. However it can be used to enrich the *Chance Measurement* kit at Years 3/4 and Years 7/8.

Follow this link to Task Centre Home page.