Refurbishing a room – Teacher notes

Activity description

This Decision Maths activity is an introduction to critical path analysis.

The tasks are based on decorating and furnishing a bedroom, and take students through the process of constructing an activity network and calculating the minimum completion time for the project.

Suitability and time

Level 3 (Advanced)
1–2 hours

Resources

Student worksheets
Optional: slideshow

Equipment

Calculators
Optional: internet access

Key mathematical language

Network, algorithm, critical path, float, forward and backward pass

Notes on the activity

The first three slides introduce the background to critical path analysis.

The later slides can be used to introduce the scenario then demonstrate the method, as follows:

After showing activities A to D in the table on slide 4, students can be given page 1 of the student sheets and asked to complete Task A. You could then use the rest of slide 4 to show one possible way of completing the table.

Then give students a copy of slide 4 so that they can follow slide 5 which shows how to draw and use an activity network to find a critical path. Students can then be asked to complete Tasks B–D on page 2, using the activities they had suggested in Task A (that is using the table they completed on page 1).

Slide 6 lists the main steps in the method for finding a critical path.

Give students a copy of slide 5 (the activity network) before you show them slide 7 which lists the critical activities and their starting times.

Slide 8 shows the other activities together with their floats. Students can then be asked to use their own activity networks to complete Tasks E and F.

During the activity

Students can work on the activities in pairs or small groups and their solutions shared with the whole group.

Points for discussion

The 'Think abouts' on the slideshow can aid class discussion as you demonstrate the method. Include estimates of the time taken to complete each activity, and how to set up the precedence table and activity network and then use it so solve the problem.

At the end of the activity, discuss other points such as how the time required will depend on how many helpers there are, and the need for at least one helper so that some activities can occur simultaneously.

The reflection questions at the end of the slideshow and student sheets could be used in your discussion. Include practical considerations such as whether or not it is feasible to do all of the work in one day, how best to fit in time for eating and sleeping, and so on.

Extensions

Students could consider similar projects such as refitting a bathroom or replanting flowerbeds. Imagine what is involved in building an Olympic stadium!

Answers

Answers are included on the slideshow, but students should be reminded that there may be more than one way that the critical path analysis may be completed.