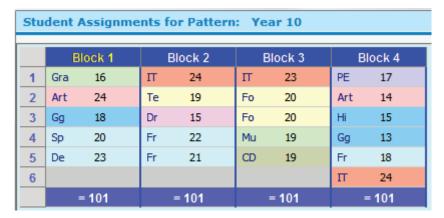# Devising a timetable for your school exams

This paper is about a way of devising the most efficient exam timetable for your internal school examinations, for end of term exams, 'Mock' exams or 'Prelims'.

Lower down the school the number of sessions required for all the subject exams may be obvious, but where there are optional subjects it is less clear.

For example, in this year 10:

Student Assignments for Pattern: Year 10

	Block 1		Block 2		Block 3		Block 4	
1	Gra	16	IT	24	IT	23	PE	17
2	Art	24	Te	19	Fo	20	Art	14
3	Gg	18	Dr	15	Fo	20	Hi	15
4	Sp	20	Fr	22	Mu	19	Gg	13
5	De	23	Fr	21	CD	19	Fr	18
6							IT	24
	= 101		= 101		= 101		= 101	

There are 4 blocks, but those 4 blocks would not be a good structure for the exam timetable.

Reason : Geography (and other subjects like Art, French, etc) appears into different blocks. Normally you'd want the Geography students to have their exam all at the same time, so there can be no collusion with some students getting advance notice of the questions.

This paper discusses how to get the best structure (with a single geography exam, etc) very quickly (in a couple of minutes).

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Devising the simplest structure for the Exam Timetable

In the options pattern shown on page 1, repeated here, there are 4 blocks so at least 4 exam sessions would be needed.
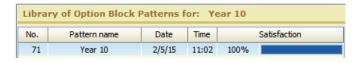But 4 of the subjects are in more than one column: Geography, Art, French, IT.
(Food Technology also has two groups but can be treated as one because they are both in the same column.)

So we can guess that the number of exam sessions might be
4 + 4 = 8 sessions (assuming for the moment that each subject needs only one exam paper).

To find out if 8 are needed, or more, and the best pattern for them, do as follows:

1. In *Options* go to the **Design a Pattern Screen**, and select the options data for this population of students.
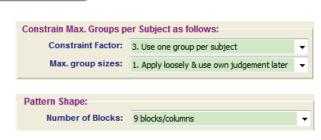
Library of Option Block Patterns for: Year 10				
No.	Pattern name	Date	Time	Satisfaction
71	Year 10	2/5/15	11:02	100%

2. Click on   [⚙ Auto-Create]   and then on   [📋 Customize ...].

3. Set the values as shown here.

    One Group per subject:

    Set the Number of blocks equal to your best guess (or your best guess +1). In this example we'll use 9, just in case that many are needed:
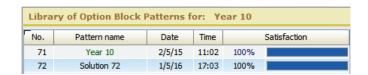
Constrain Max. Groups per Subject as follows:
Constraint Factor:	3. Use one group per subject
Max. group sizes:	1. Apply loosely & use own judgement later

Pattern Shape:
Number of Blocks:	9 blocks/columns

Then click   [✔ Apply]   then   [🧑 Go]

In seconds it gives one or more **100%** solutions, needing only 8 blocks.
See the next page for a discussion of this.

Click [OK] and [Yes] to store the 100% solution(s) in the Library.

4. To view the proposed pattern, select the solution eg. number 72 here:

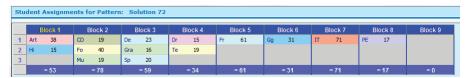| Library of Option Block Patterns for: Year 10				
No.	Pattern name	Date	Time	Satisfaction
71	Year 10	2/5/15	11:02	100%
72	Solution 72	1/5/16	17:03	100%

then: [🔍 View Pattern]

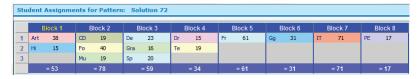and: [🧑 Assign/View Students]

The result is discussed on the next page.

In this example, we guessed (to be on the safe side) that 9 sessions might be needed. But in fact it can actually fit into just 8 exam sessions:

Student Assignments for Pattern: Solution 72

	Block 1		Block 2		Block 3		Block 4		Block 5		Block 6		Block 7		Block 8		Block 9
1	Art	38	CD	19	De	23	Dr	15	Fr	61	Gg	31	IT	71	PE	17	
2	Hi	15	Fo	40	Gra	16	Te	19									
3			Mu	19	Sp	20											
	= 53		= 78		= 59		= 34		= 61		= 31		= 71		= 17		= 0

= 8 sessions needed

The numbers at the bottom show how the students are taking exams in each session.
(There are 101 students in total in this Year 10.)

In this school the Maths, English and three Sciences are not in the option blocks, but are setted core blocks, so the full requirement for exam sessions is:

Student Assignments for Pattern: Solution 72

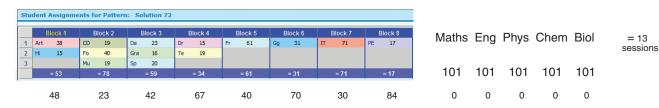|	Block 1		Block 2		Block 3		Block 4		Block 5		Block 6		Block 7		Block 8		Maths	Eng	Phys	Chem	Biol
1	Art	38	CD	19	De	23	Dr	15	Fr	61	Gg	31	IT	71	PE	17					
2	Hi	15	Fo	40	Gra	16	Te	19													
3			Mu	19	Sp	20															
	= 53		= 78		= 59		= 34		= 61		= 31		= 71		= 17		101	101	101	101	101

= 13 sessions

If your students are allowed to go home on 'study leave' when they don't have an exam then the pattern above shows how sessions will need a supervisor /invigilator.

The student : staff ratio needed for such invigilating depends on:
- your school policy on invigilation, and
- the size of rooms available for the exams (eg. one large hall or several small rooms) and
- whether any of the exams are practical exams needing specialist rooms.

If your students are not allowed 'study leave' and need to be supervised when they are not taking an exam (and revising), then more groups will need covering by staff.
In this school, with 101 students in this Year 10, the number of students needing supervising for revision are shown in the bottom row below:

Student Assignments for Pattern: Solution 72

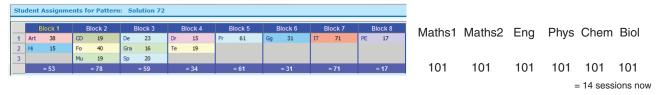|	Block 1		Block 2		Block 3		Block 4		Block 5		Block 6		Block 7		Block 8		Maths	Eng	Phys	Chem	Biol
1	Art	38	CD	19	De	23	Dr	15	Fr	61	Gg	31	IT	71	PE	17					
2	Hi	15	Fo	40	Gra	16	Te	19													
3			Mu	19	Sp	20															
	= 53		= 78		= 59		= 34		= 61		= 31		= 71		= 17		101	101	101	101	101
	48		23		42		67		40		70		30		84		0	0	0	0	0

= 13 sessions

From these numbers, bearing in mind the bullet points above, you can decide how many staff and rooms are needed in total (for exam sessions and revision sessions) for each of the 13 sessions.

(Methods of devising a timetable for this, using *TimeTabler* or *StaffCover*, will be discussed in a later paper).

Question : How can I adapt this method if some subjects need 2 or more exam sessions because they set 2 or more exam papers.

If it's a core subject then it's simple.   Eg. if Maths has 2 papers :

	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Block 7	Block 8
1	Art 38	CD 19	De 23	Dr 15	Fr 61	Gg 31	IT 71	PE 17
2	Hi 15	Fo 40	Gra 16	Te 19				
3		Mu 19	Sp 20					
	= 53	= 78	= 59	= 34	= 61	= 31	= 71	= 17

Student Assignments for Pattern: Solution 72

Maths1	Maths2	Eng	Phys	Chem	Biol
101	101	101	101	101	101

= 14 sessions now

But supposing **History** in this example needs 2 exam sessions ?
To find the new best pattern needs a bit more work. Follow these steps :

1. In *Options*, on the **Populations Screen**, select this year 10 population :

   And then click on [Create a Clone] to clone it. Make sure that you choose 'Yes - clone students and choices'.
   The Clone allows you to change data in the Clone (below) while keeping the original population intact and undamaged.

   On the same screen, change the number of Choices so it is 1 greater (for the extra History). ie. = 5 in this example.
   Then Close and Save.

   Populations

Population name	Choices
Year 10	4

   Populations (2)

Population name	Choices
+Year 10 (current)	5
Year 10	4

2. On the **Subjects Screen**, click on New and add an extra subject, in this case called **Hist-2** (for the extra History exam).

   Subject Details:
   Subject abbreviation: Hist-2
   Subject full name: History

4. On the **Students & Choices Screen**
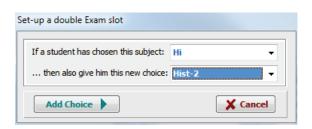   click on the [Other Checks ▼] button, and then select
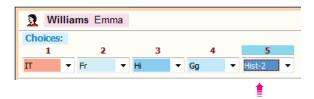   [Set-up a double Exam slot] and then [Continue].

   Select the correct subjects in the drop-down lists, as shown here :

   Click [Add Choice ▶]. For every student who was entered for Hi the program adds an extra subject Hist-2 (in this example).

   Set-up a double Exam slot
   If a student has chosen this subject: Hi ▼
   … then also give him this new choice: Hist-2 ▼
   [Add Choice ▶]   [✕ Cancel]

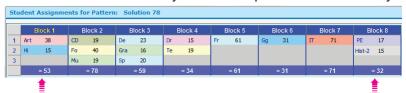   You can check this by clicking on [🧑 Choices] :
   Then Close and Save.

   Note: The program will show a lot of error messages …because at Step 1 you said students should have 5 choices and (apart from the History students) they have only 4. Ignore these error messages.

   Williams Emma
   Choices:

1	2	3	4	5
IT ▼	Fr ▼	Hi ▼	Gg ▼	Hist-2 ▼

   Repeat for any other subjects needing 2 exam sessions.

5. Then repeat the steps on Page 2. Ignore warning messages again.
   In a few seconds it shows you the new pattern with 2 History exams :

   Student Assignments for Pattern: Solution 78

	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Block 7	Block 8
1	Art 38	CD 19	De 23	Dr 15	Fr 61	Gg 31	IT 71	PE 17
2	Hi 15	Fo 40	Gra 16	Te 19				Hist-2 15
3		Mu 19	Sp 20					
	= 53	= 78	= 59	= 34	= 61	= 31	= 71	= 32

   In this particular case the extra History (Hist-2) has been able to go alongside PE because no-one in this particular population is studying both History and PE.
   You could have worked that out by studying the Clash Table.