

## why

There are three main goals of the Mathsquad Year 7 Preparation Classroom Program for Schools;

1. Improve students knowledge of key skills
2. To maximise students' retention of key skills
3. To communicate to students which skills are fundamental to students' learning of mathematics

## what

- Weekly worksheets covering the same skills each week
- Online video tutorials and practice questions for each skill

## how

A recommended approach...

Allocate a 45 minute window each week to the Year 7 Preparation Classroom Program.

Print one booklet for each student. Read through the information page at the start of the booklet to unpack structure and expectations.

Show students your school's personalised webpage that links to the video tutorials and practice questions for each skill.

Following this, each week in your Mathsquad session carry out the following steps.

1. Ask students to open their booklets and complete the set sheet independently (all students to complete Sheet 1 in week 1, then Sheet 2 in week 2 and so on).
2. Once students have finished their worksheet they choose a skill that they would like to learn more about (perhaps a question they have skipped or a question that they have been unable to correctly answer in past sheets). Students use the online resources to improve their knowledge of this skill.
3. *Students correct their own worksheet, perhaps using a projected copy of the solution file (immediate feedback)*
4. Students document their results on their Progress Chart (observable improvement)
5. Ask students who has improved and celebrate (positive reinforcement)
6. After the lesson ends, collect students' workbooks and progress charts and spend a moment looking through students' work to ensure the task is being carried out with a good effort (accountability) and also to identify students who may need to engage in the program outside of the allocated time. For example, you may contact parents and explain how they can use the online resources at home or offer additional help yourself outside of class.

# considerations

Initially students are unlikely to be able to complete all the questions within a worksheet. For some students, this can cause some uneasiness. Classwork is generally seen as a task to be completed in full, however this requirement is often unachievable for many students and can lead to unhelpful acts of copying answers or students not doing anything at all. Mathsquad worksheets are set with the expectation that students are to complete as many questions as they can each week. I believe it is much more important for students to give their best effort and try to improve over time than to copy a friend's answers.

While students will have access to online video tutorials and practice questions for all skills it is important to set realistic expectations for how students should engage with these resources.

# elaborations

## **The Progress Chart (see final page for printable Progress Chart)**

The Progress Chart is a grid that gives students space to document their progress once their worksheets have been corrected. The central columns give space for each worksheet and students use a highlighter to document which questions have been correctly completed. Having a visual representation of their progress is a great motivator for students. It also shows students and teachers what skills are known and what skills need to be learnt or improved. This is particularly valuable as there is class time allocated for students to improve a skill of their choice.

# modifications

## **Incorporate formal assessments**

Before starting the Year 7 Preparation program, I run a pre-test to see what skills students already have. Then, at the end of each term I complete another assessment so I can track students' progress over time. From these progress assessments I can celebrate students' learning and put measures in place for students who haven't progressed as much as I'd hoped. I find that the formal assessments increase the effort students' input into their learning, especially if they are getting assistance when completing their worksheet.

## **Teacher corrects worksheet outside class**

Step 3 of the above routine involves students correcting their worksheet during class. While this allows for immediate feedback and exposes students to some exemplary working out, I would recommend that teachers correct students' worksheets outside of class from time to time. By correcting the worksheets myself I can see what types of mistakes students are making and address these as a class. It also gives me the opportunity to give students feedback. A little tip on this is to provide the feedback on the worksheet for the following week as students are more likely to act on the feedback if it is connected to some work they are about to complete. Seeing students' work two to three times each term seems to be a good balance, so if incorporating the formal assessments, one or two mid-term teacher corrections are likely to be sufficient.

# support from research

Theories around spaced practice and the retrieval effect support the use of repetitively revisiting the same skills over an extended period of time as an effective strategy for improving retention. Spaced practice, as the phrase elicits to, refers to the process of giving students multiple opportunities to practice a given skill spaced over time. This strategy, sometimes referred to as multiple exposures, has been identified as one of ten High Impact Teaching Strategies (HITS) by the department of Education (2017) and Hattie (2009) found an effect size of 0.71 for spaced practice compared with the effect size of 0.41 for massed practice. Similarly, the retrieval effect is a widely replicated finding that the retrieval of information produces learning (Dunlosky et al., 2013). While the concept of 'if you don't use it, you lose it' is familiar to almost everybody, it is good to know it's backed up by research!

## references:

*High Impact Teaching Strategies*. (2017, June). Department of Education and Training Melbourne. Retrieved from [www.education.vic.gov.au/Documents/school/teachers/support/highimpactteachstrat.pdf](http://www.education.vic.gov.au/Documents/school/teachers/support/highimpactteachstrat.pdf)

Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J. & Willingham, D. T. (2013). 'Improving students' learning with effective techniques: promising directions from cognitive and educational psychology', *Psychological Science in the Public Interest* 14 (1) pp. 4-58.

# Progress Chart

		1			2				3	4	5				6	7				8	9				10	11			12	13	14	15		16	17	18	19		20	21
	Tables	a	b	c	a	b	c	d			a	b	c	d		a	b	c	d		a	b	c	d		a	b	c	a	b		a	b			a	b	a	b	
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## Notes

Sheet 1	Focus skill: Comments:
Sheet 2	Focus skill: Comments:
Sheet 3	Focus skill: Comments:
Sheet 4	Focus skill: Comments:
Sheet 5	Focus skill: Comments:
Sheet 6	Focus skill: Comments:
Sheet 7	Focus skill: Comments:
Sheet 8	Focus skill: Comments:
Sheet 9	Focus skill: Comments:
Sheet 10	Focus skill: Comments: