THIRD SPACE LEARNING

The Secondary School Guide to Effective Maths Interventions

How to plan, structure and teach one to one maths lessons to raise attainment in the pupils who need it most

SLT Guides

Contents

Introduction

Here at Third Space Learning, we've provided online one to one maths tuition to students in schools across the UK since 2013. We've learnt a lot along the way about what makes an effective one to one intervention programme - including what not to do!

In this guide, we'll share the knowledge and expertise we've acquired from providing one to one maths support to over 150,000 students to help you get the most out of your own in-school interventions.

While this guide focuses on one to one interventions, many of the tips and strategies can be applied to small group learning.

Why do schools choose to implement interventions?

School interventions are highly specific additional activities, usually in maths and English at primary school, focusing on the specific needs of one or more children.

Schools implement interventions for many reasons, all of which stem from a particular student or group of students requiring additional support over and above classroom teaching.

- Even in well-planned and well-delivered lessons, it's not always possible to give every student the support they need in a class of 30.
- Interventions are a good way to address individual gaps and misconceptions.
- More focused support can boost engagement and confidence as well as attainment.
- Many students will feel more willing to attempt work they find challenging away from their peers.

Why are maths interventions particularly important?

In maths, unaddressed gaps are especially problematic. The nature of the subject means children's learning needs to build on a solid understanding of essential foundation concepts.

A student who has, for example, not grasped the values of numbers at foundation stages will struggle much more with understanding the concepts of addition and subtraction. As these gaps escalate, they cause students to fall further and further behind as they struggle to keep up in class. This also has a huge impact on confidence and self-esteem and can lead to 'maths anxiety', thus creating a vicious cycle.

It's for this reason that the link between KS2 performance and eventual KS4 performance is stronger in maths than any other subject. Students who leave primary school without the skills and knowledge required will find it harder to catch up in secondary school. Maths is based on building knowledge and other subjects don't necessarily require prerequisite skills.

Maths skills have a profound long-term impact on both individuals and society, and early difficulties in maths tend to be compounded as students move through their education. This drives a particularly strong link between maths attainment at Key Stages 2 and 4. There is therefore an urgent need to tackle learning loss in maths, particularly at primary school level.

'A Space for Maths' - CFEY Report - Loic Menzies, Baz Ramaiah and Catherine Boulton

Why one to one?

School interventions are highly specific additional activities, usually in maths and English at secondary school, focusing on individual children's specific needs.

Schools implement interventions for many reasons, all of which stem from a particular student or group of students requiring additional support over and above classroom teaching.

Children's gaps are different so the more personalised and focused you can make your interventions the more effective they will be at raising attainment.

Research suggests that one to one tuition is one of the best ways of achieving this.

> On average, one to one tuition is very effective at improving student outcomes. One to one tuition might be an effective strategy for providing targeted support for students that are identified as having low prior attainment or are struggling in particular areas.
>
> **Research from The Education Endowment Foundation into one to one tuition**

Here are some of the advantages of one to one tuition:

- Target and address individual gaps and misconceptions
- Adapt pitch and pace of delivery to suit each student
- Encourage students to verbalise their maths
- Drive engagement by framing questions around each student's hobbies and interests
- Integrate formative assessment throughout
- Build confidence away from the rest of the class
- Target Pupil Premium and other per-student funding
- Save costs in the long run as students make accelerated progress

How to plan your one to one intervention strategy

1. Review existing interventions
2. Identify your target groups
3. Set your success criteria
4. Decide who will run the interventions
5. Allocate your funding
6. Identify the right topics to teach each student
7. Schedule your interventions

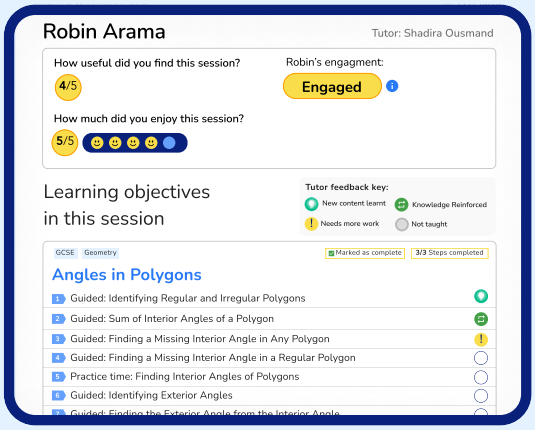
1 Reviewing existing interventions

Gather any available data on interventions you've led over the past few years.

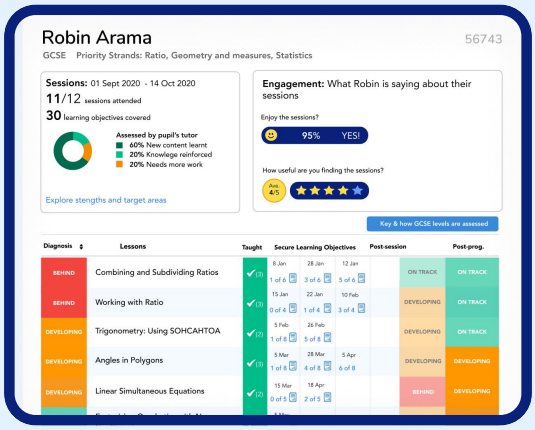
It's not always easy to do, but try and look at the percentage of students who've met targets and compare this to students who were not taking part. Alternatively, compare progress made for students whilst taking part in the intervention with progress over the previous period.

For some interventions, this may be easier than others and it may depend on the tracking and monitoring systems available to you.

Students signed up for one to one support from Third Space Learning receive individual session reports as well as an ongoing progress report which is updated after each session. These enable schools to clearly and easily measure the impact of the intervention on each student.



Session reports show content covered and progress made in each session



Progress reports show how gaps are being plugged and content is being secured over time

2 Identifying your target groups

You'll probably already have an idea of the students in your school who would benefit from additional one to one maths support.

Schools who sign up to Third Space Learning tend to choose the following groups of students to receive the weekly online one to one maths lessons:

- Year 7 students who did not meet age related expectations in year 6
- Students in receipt of Pupil Premium
- Students whose education has been particularly badly affected by school closures
- Students with Special Educational Needs, most notably Dyslexia and Autism
- KS4 students at risk of not achieving their target GCSE maths grade

Whilst many schools - understandably - leave their maths interventions until Year 10, as this is when the need is often greatest with the impending GCSE examinations, it's often more effective to start lower down the school.

This means you can spend a good amount of time building solid maths foundations and helping to really secure KS3 content, meaning students will be able to hit the ground running when it comes to KS4 and GCSE revision.

Particularly in the aftermath of the pandemic, we're seeing more and more schools focus on lower KS3 when choosing the students they'd like to receive weekly Third Space Learning tuitions sessions.

3 Setting your success criteria

Clearly, data showing that an intervention has been effective in raising student attainment is the best way to measure success, but you may also wish to consider some other criteria:

- Has the students' class teacher(s) noticed any improvement in the cohort?
- Have there been any positive changes in confidence and engagement?
- Do students look forward to the additional one to one support?
- Are students now more willing to participate in class?

Documenting where you'd like to see improvements - and how you're going to measure this - is a great way to make sure any interventions you implement have the desired effect on your students.

4 Deciding who will run the interventions

Ideally, any one to one maths interventions will be delivered by tutors or staff who specialise in maths as they'll be best placed to develop your students' maths skills and ensure they've built the necessary building blocks to succeed. That said, given the shortage of maths specialists in secondary schools, you may choose to look to an external maths intervention.

> Where schools choose to use staff who might not be maths specialists, research from the Education Endowment Foundation suggests that they will be most successful when they are 'experienced, well-trained and supported – for example, delivering a structured intervention.'
>
> **Research from The Education Endowment Foundation into one to one tuition**

Advantages of an external intervention

Less impact on staff workload

Using external providers frees up your teachers to do what they do best.

Easier to manage

A good external provider will take care of managing the intervention with minimal disruption to the school.

Additional funding

Through the National Tutoring Programme Funding, schools can work with external tuition providers that have been quality assured by the DfE.

Better monitoring and reporting

It's in an external provider's interest to provide detailed progress reports to ensure you can see impact and continue to use them.

A more evidence-based approach

External providers will have data from thousands of students and schools to inform the most effective intervention approach.

More ratings and reviews

You'll be able to read case studies and reviews from other schools who've used the provider to help decide if they're right for you.

> The way the tuition is set up is seamless. The kids get on, they connect with their tutor and they love it. One of the Deputy Heads recently observed a session and he immediately said "This is fantastic!". I was thrilled that he had the opportunity to see how engaged the students were.
>
> **Darren Madourie, Head of Year 11, Holte School, Birmingham**

5 Allocating your funding

Many schools use their Pupil Premium funding to fund their interventions. For the 2024/2025 academic year, eligible secondary students will receive **£1,050**.

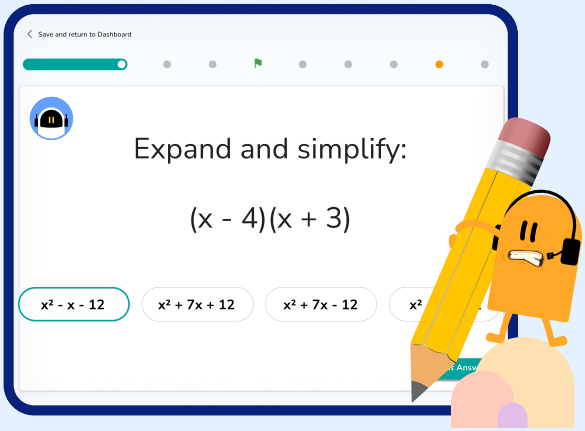
While schools will no longer receive additional ring-fenced tutoring funding such as National Tutoring Programme funding or Recovery Premium from September 2024, the DfE is still strongly encouraging schools to continue to offer one to one maths interventions such as tutoring next academic year:

> Tutoring is an effective and well-evidenced targeted approach to increase the attainment of disadvantaged pupils. Tutoring should supplement and be linked explicitly to high-quality classroom teaching. We strongly encourage schools to continue to fund tutoring using Pupil Premium from September 2024, following the final year of the NTP.
>
> **Department for Education – Using Pupil Premium: Guidance for School Leaders – February 2024**

6 Identifying the right topics to teach each student

One to one interventions are so effective because they can be targeted to plug each student's individual gaps and misconceptions, so it's vital that these are diagnosed prior to starting your chosen intervention programme. Rather than teaching each student the same content, you'll want to set time aside to identify what will be most beneficial for each individual student. Alternatively, if you're using an external provider, make sure you speak to them about how they make sure the intervention is personalised.

- **Ask their maths teacher.** They will be able to tell you broadly which areas the students struggle with and whether these are common throughout the class or if different students have different gaps.
- **Use assessment data.** You may already have formative assessment data to show you which areas different students struggle with. Alternatively, your external intervention provider may start the programme with a diagnostic assessment.



For example, before their first Third Space Learning session, all students complete an interactive diagnostic assessment which enables us to generate a completely personalised programme of learning designed to plug each student's gaps and misconceptions.

You'll want to think about whether it's more important to you to align completely with what topics are being taught in class, or whether you'd rather focus on plugging individual gaps. It's often worth speaking to the class teacher who will be able to tell you whether they think pre-teaching would be the most valuable way to use the intervention, or if a child has specific learning gaps that need plugging, or if it is in fact just a case of building a child's confidence and fluency in number recall.

Tuition is more likely to make an impact if it is additional to and explicitly linked with normal lessons, so even if you're focusing solely on gaps, you may wish to try to align these with what's happening in class as much as possible.

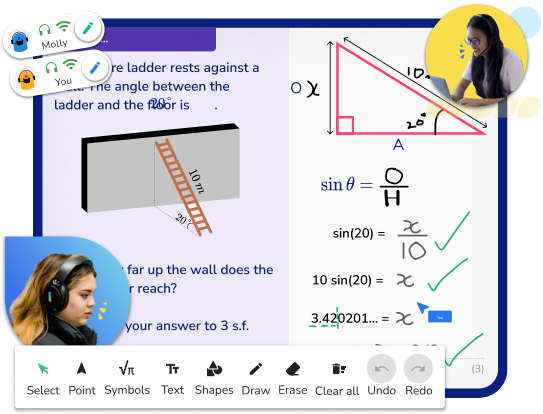
Research from The Education Endowment Foundation into one to one tuition

For example at Third Space Learning, we've developed an approach that gives schools the best of both worlds.

The '**Teacher Selection**' option is perfect for schools who want to remain completely in control and choose topics for each student each week - they'll still be able to see the results of the diagnostic assessment to help inform this selection.

The '**Diagnostic Assessment**' option automatically selects lessons for each student each week based on their initial and ongoing assessment results, with the option to override this if they wish.

Schools are free to choose different options for each student.



As well as thinking about which topics to teach and how this aligns with what's being taught in class, you'll also want to think about the order in which topics are taught. We recommend focusing on core concepts such as place value first, which will have an impact on all other areas of the maths curriculum.

If your interventions are focusing on GCSE revision, it can also be useful to think about which topics come up most frequently, are worth the most marks, and trip students up most often.

At Third Space Learning, we've analysed past papers, QLA data and our own internal programme data to inform the best possible GCSE revision programme, helping schools make the most of the lead up to GCSEs.

7 Scheduling your interventions

First, you'll want to decide how long you'd like the intervention to last, and indeed how long each session should run.

Duration

Research suggests that a 12-15 week programme is most effective for raising attainment.

Research from The Education Endowment Foundation into one to one tuition

In our experience, we've found that 45 minutes to an hour once a week is about the right length to maximise fluency and retention while still giving enough time for exploration and greater depth with more difficult misconceptions.

Schools using Third Space Learning are free to keep students on the programme for as long as they like, but most schools rotate their cohort every 1-2 terms.

Timetabling

The relationship between your students and the person delivering the intervention is key, so it's important to try and schedule your interventions so that students can learn with the same person in each session.

At Third Space Learning, students learn with the same tutor at the same time each week, helping to develop that all-important rapport, and making it easier to timetable.

You might choose to run your interventions at the same time as your classroom maths lessons or outside of this time.

The most popular approach for schools using Third Space Learning is to schedule the sessions outside of their timetabled whole class maths lessons. This means students aren't missing out on valuable time with their teacher but have dedicated time to consolidate their learning and plug outstanding gaps.

Whatever lesson your students will be missing for the intervention, the less disruption you can cause to them and the rest of their class, the less they will be missing valuable learning opportunities. Rather than taking students out one at a time, can you run the intervention with multiple students at once?

For schools using Third Space Learning, up to 15 students can receive one to one support in the same timeslot, minimising disruption and making it much easier to timetable.

Space

You'll also need to consider where you have space to run your intervention. If possible, find a quiet location for your interventions away from distractions where the student is able to go every week to focus fully on the lesson and maths.

Planning

As well as scheduling the interventions themselves, you'll also need to set aside some planning time.

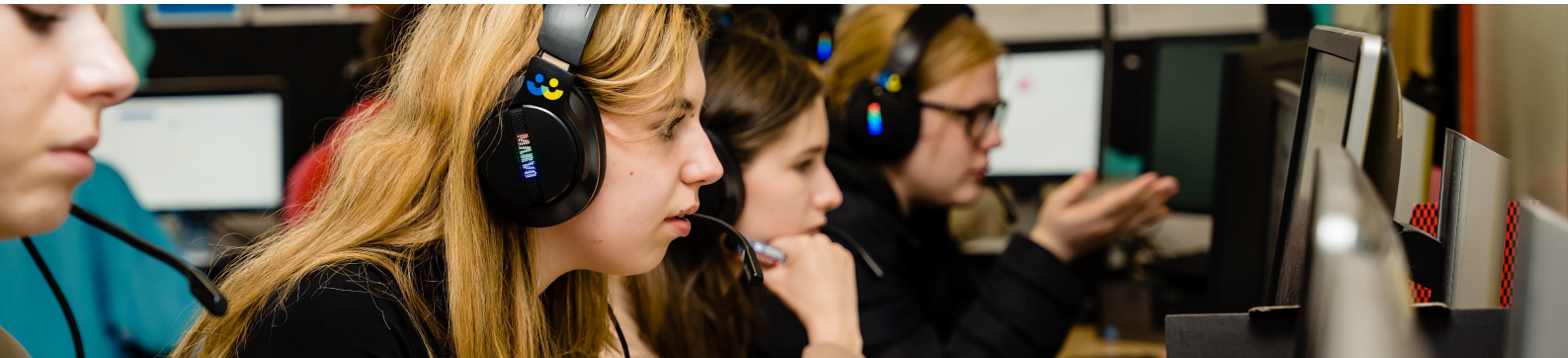
How much time you need to set aside generally depends on who is delivering the intervention. If it's a non math specialist, you may need more time to identify exactly what topics you'd like to be taught and to whom, and to ensure the intervention teacher is clear on what to teach in each lesson.

In this typical scenario a specialist interventions teacher would be spending 30-50 minutes per student delivering the intervention as well as 10-20 minutes prep; in addition there is likely to be 10 minutes input from each student's class teacher. In comparison, if using an external provider, they will do the prep and delivery that the teacher would otherwise do, leaving only the class teacher input to do.

If you opt for an external provider, you may need to set aside less time.

Schools using Third Space Learning need only a few minutes per student each week to review the upcoming lessons and past progress reports.

> We used a different provider before and it was a nightmare. It wasn't catered to the pupils and I had to check every session each week to make sure it was appropriate. Third Space is much easier the support has been fabulous
>
> **Elspeth Macdonald, Assistant Headteacher, Bishop Challoner Secondary School, Basingstoke**



One to one teaching techniques

Many of the same principles that apply to good class teaching apply to 1-to-1, but there are different demands for both tutor and student within a 1-to-1 intervention programme.

Having delivered over 1 million one to one maths lessons to over 100,000 students, we've learnt a lot about the most effective ways to teach one to one.

Here are 20 tried-and-tested techniques for one to one teaching:

1. Build interest and rapport
2. Get familiar with each student
3. Recap prior learning
4. Share learning objectives
5. Teach key vocabulary
6. Use AfL to adjust pitch and pace
7. Link learning to students' interests
8. Encourage mathematical discussions
9. Move from Concrete to Pictorial to Abstract
10. Use Variation Theory
11. Put questions in a real-world context
12. Vary the method used
13. Use scaffolded teaching
14. Ask questions
15. Use bar modelling techniques
16. Foster a growth mindset
17. Guide the student through the lesson
18. Encourage student to think about their own learning
19. Reward, praise and encourage the student
20. Teach the tutor

1 Build interest and rapport

As part of their training, all tutors explore how best to build rapport with their students, including spending a little time at the start of each lesson to discuss their day or anything else they'd like to share.

2 Get familiar with each student

We also ask each student's teacher to let us know if they have any particular additional needs which helps tutors prepare for the programme.

3 Recap prior learning

We encourage our tutors to create a linking question from past lessons to kick-start learning in the next.

4 Share learning objectives

Tutors start each lesson by talking through the concept, asking open-ended questions to encourage students to share what they already know.

5 Teach key vocabulary

Ask students to explain key words in their own words to assess and correct any faulty understanding. Our tutors often simplify key words for students, for example discussing the difference between ratio and proportion.

6 Use AfL to adjust pitch and pace

Tutors are trained not to move on from content that a student is yet to secure and to assess throughout the lesson to ensure the lesson is appropriate for each student.

7 Link learning to students' interests

During our initial assessment, we also ask students to tell us about their hobbies and interests, as well as questions to understand their academic attainment. This helps tutors to build a strong relationship with each student.

8 Encourage mathematical discussions

All our tutors are trained to encourage active learning and promote discussion rather than lecturing, asking students to explain their working out or verbalise their reasoning. Involving the student in the process of learning promotes a more thorough consolidation of learning and promotes metacognitive development.

9 Use the 'Concrete, Pictorial, Abstract' approach to deepen understanding

Where possible, we use images and diagrams to support students learning to help students to make sense of the mathematics.

10 Use Variation Theory

A key mastery approach to mathematics is conceptual and procedural variation, which enables students to develop conceptual understanding and fluency in parallel. Conceptual variation show students different ideas that underpin a mathematical concept; framing conceptual variation through questions such as 'what's the same', and 'what's different' between representations will help students distinguish the essential and obscure characteristics of a maths concept.

Procedural variation is more useful for multi-step operations and comparing successive procedures, such as calculating two different sets of numbers. In your interventions, you can do this by framing questions such as 'what do you notice about...', 'is there a relationship between...'.

11 Put questions in a real-world context

Our tutors are expected to connect all maths learning to the real world. For example, a tutor is teaching rounding, they may ask students to round up the total of people in their hometown.

12 Vary the method used

It is important to give students the tools to approach a question on their own, rather than just answer a question correctly. That's why our tutors teach multiple ways to approach the same problem.

13 Use scaffolded teaching

We find the best way to plug gaps and build confidence is to start with plenty of support and then gradually move towards encouraging students towards independent practice and applying their knowledge to new contexts.

14 Ask questions

Asking a student 'how did you get that answer?' or 'how do you know you're correct?' encourages quality student talk and boosts fluency, reasoning, and problem solving.

15 Use bar modelling techniques

When tackling word problems, these help students choose an operation, or visualise the problem. Taking this online in the intervention sessions helps to make this interactive for our students.

16 Foster a growth mindset

Maths anxiety is a very real issue and helping students to feel confident to 'give it a go' is really important. We advise that, like our tutors, you focus praise on effort and willingness to try, rather than just finding the right answer.

17 Guide the student through the lesson

The flow of a one to one lesson may not match the flow of a classroom lesson; as such it is important to signpost during the session so that students don't get "lost" in the learning.

18 Encourage students to think about their own learning

Your intervention sessions should always include time for metacognition. Try asking 'what we have learned today?', as well as 'how' you have learned it at the end of each lesson.

19 Reward, praise and encourage the student

In an intervention setting where a student may have less confidence, praise can be especially useful. You should take care to phrase corrections constructively and positively.

20 Teach the tutor

One technique we use is reversing roles and asking students to “teach” their tutors a concept instead, helping to secure understanding and build confidence.

Structuring your one to one lessons

One to one interventions are best when they’re tightly structured.

Research from The Education Endowment Foundation into one to one tuition

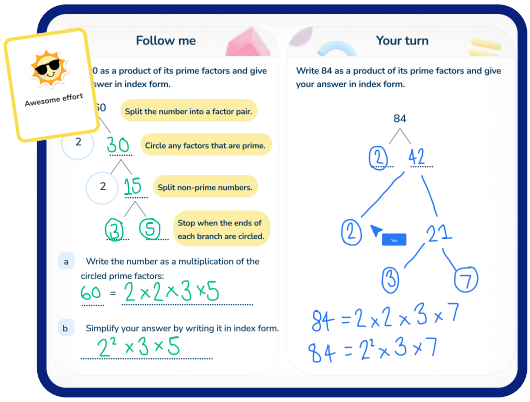
You’ll want to make sure your intervention lessons follow a consistent structure that you’re confident enables your students to make the most of the additional one to one time.

Here at Third Space Learning, our lessons follow a dedicated structure that takes students from guided practice, through to independent practice and finally encourages students to apply that knowledge to a range of different contexts.

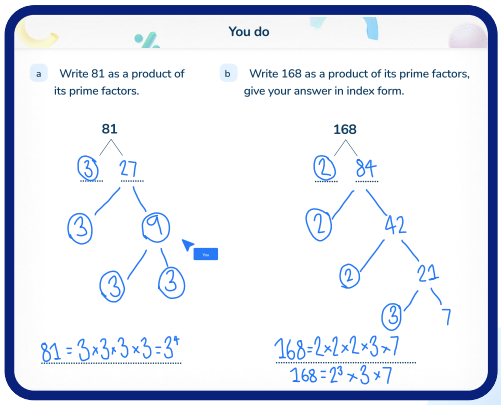
This looks slightly different for our standard lessons to our GCSE revision lessons, which you can see on the next page.

Year 7 lessons

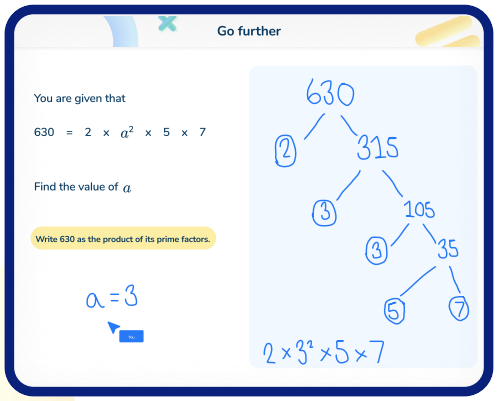
Concept



Guided practice

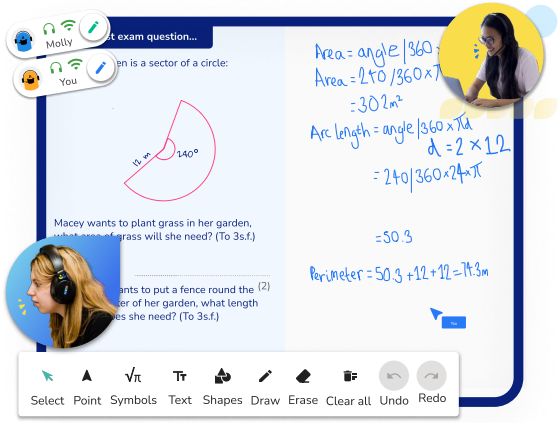


Independent practice

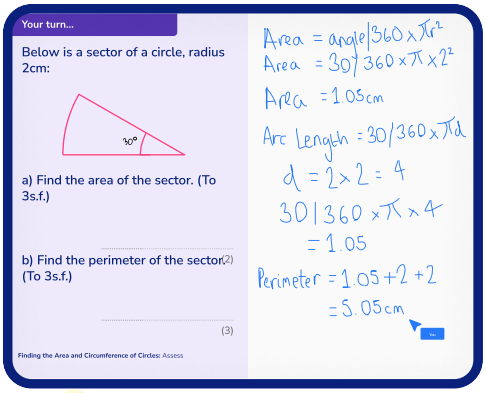


Application

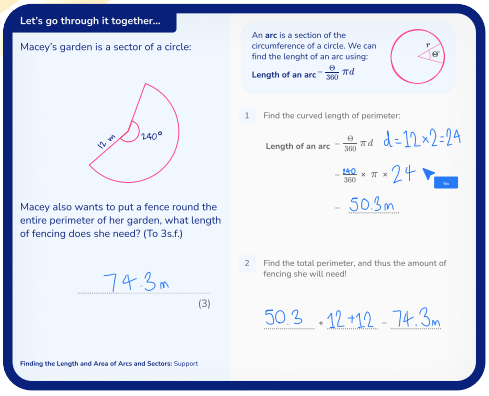
GCSE revision lessons



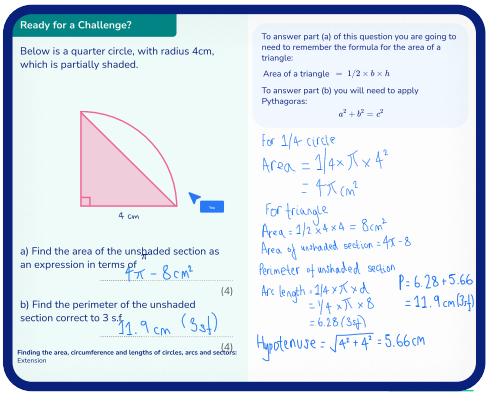
Try this exam style question



Your turn



Let's go through this together



Ready for a challenge?

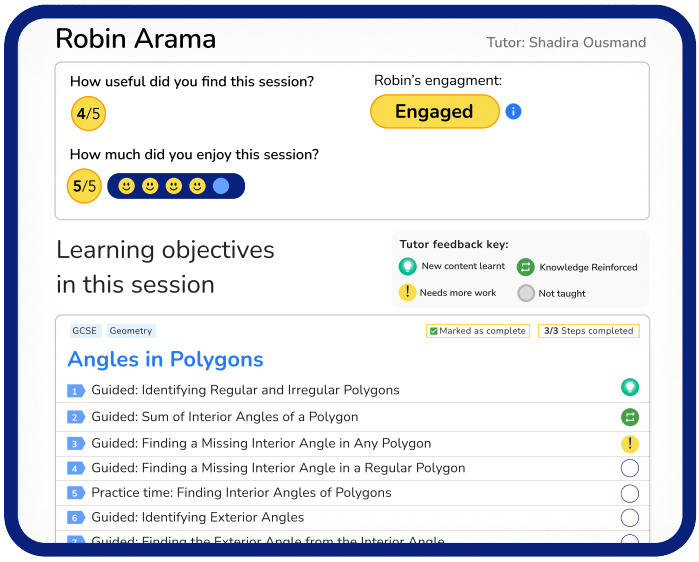
Recording and sharing student progress

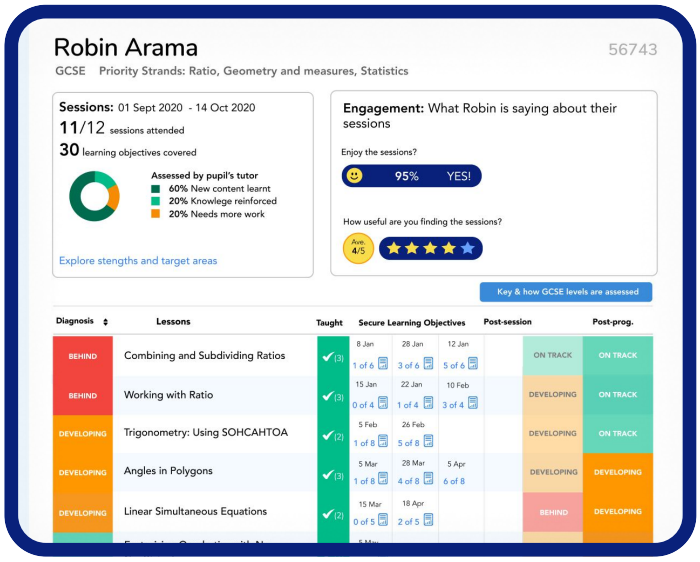
Progress can be recorded in any format which you find useful, but we suggest keeping it short and succinct to save your staff's time.

Try using a table for a row with each lesson, write in the learning objective and mark on a scale of 1-10 how secure the student was with the concept at the start and end of the lesson.

This is the approach our tutors use; for each of the stages in each individual learning objective (concept, practice and application), tutors mark one of the following:

- New content learnt
- Knowledge reinforced
- Needs more work





Then, over time, these individual session reports feed into each student's progress report, an ongoing track of progress made over time. Progress reports also show which learning objectives students are now completely secure.

Alternatively, you could record any learning in their workbook (following on from any teaching). This would mean it could be referred back to by the child, plus it would help with moderation and providing evidence of additional time.

Any progress data should always be shared with the class teacher so that they can adjust the activities they plan for the student in their whole class lessons. As with planning for the intervention, it's important to give the intervention leader and class teacher time to talk over this together. It's best to do this as soon as possible after the 1-to-1 session has taken place. This is why we send out session reports to class teachers on the day the session takes place.

In summary

- Interventions are necessary for students who require additional support over and above classroom teaching.
- Interventions are particularly important in maths, where a student falling behind can have more of a detrimental impact than other subjects.
- An extensive body of research suggests that one to one support is one of the best ways to raise attainment, especially in maths.
- One to one teaching places different demands on both student and teacher/tutor, so you'll need to make sure you adapt your teaching accordingly.
- One to one interventions are best when they're tightly structured, so it's worth spending time on finding the right structure that works for your school.

How to plan your one to one intervention strategy

1. Reviewing existing interventions
2. Identifying your target groups
3. Setting your success criteria
4. Deciding who will run the interventions
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6. Identifying the right topics to teach each student
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- Recording and sharing student progress doesn't have to be time consuming, but you do need to set aside some time to make sure you're keeping track of progress and adapting lessons accordingly.
- If you don't have access to maths specialists locally then online one to one interventions will be a better option for you - and just as effective.

If you're looking to implement a one to one maths intervention that's been used and trusted by thousands of schools across the UK, we'd love to have a chat about how we can help.

Do you have a group of students who need a boost in maths this term?

Each student could receive a personalised lesson every week from our specialist 1-to-1 maths tutors.

- Raise attainment
- Plug any gaps or misconceptions
- Boost confidence

Speak to us

thirdspacelearning.com

0203 771 0095

hello@thirdspacelearning.com

THIRD SPACE LEARNING