

Pearson Tutoring

Planning and Delivering Maths
Tutoring





1. Introduction

Objectives of this training module

1. To offer a 'toolkit of strategies' to support your tutoring.
2. To help you to help students in need of a 'boost'.





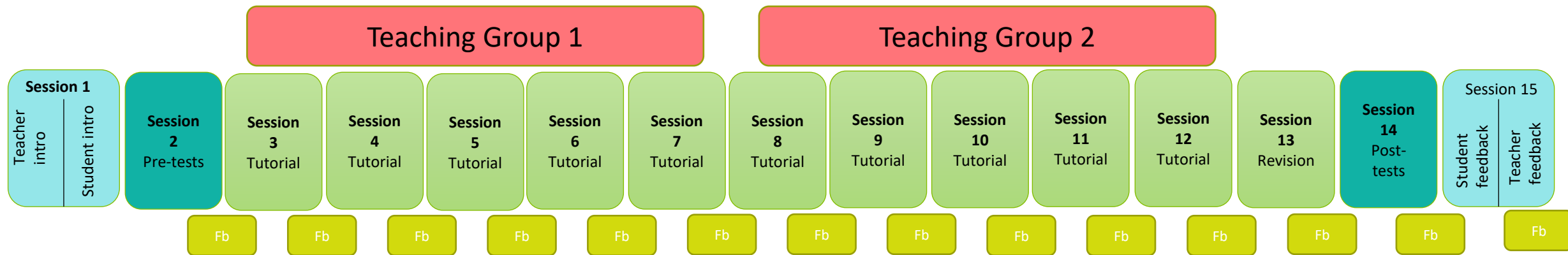
Objectives of this training module

As qualified teachers, you will already have teaching strategies, so we will particularly focus on:

1. How best to prepare resources
2. Strategies specifically for online tutoring.

First impressions

Here is a reminder of the 15-sessions tutoring block.



You will be introducing yourself in:

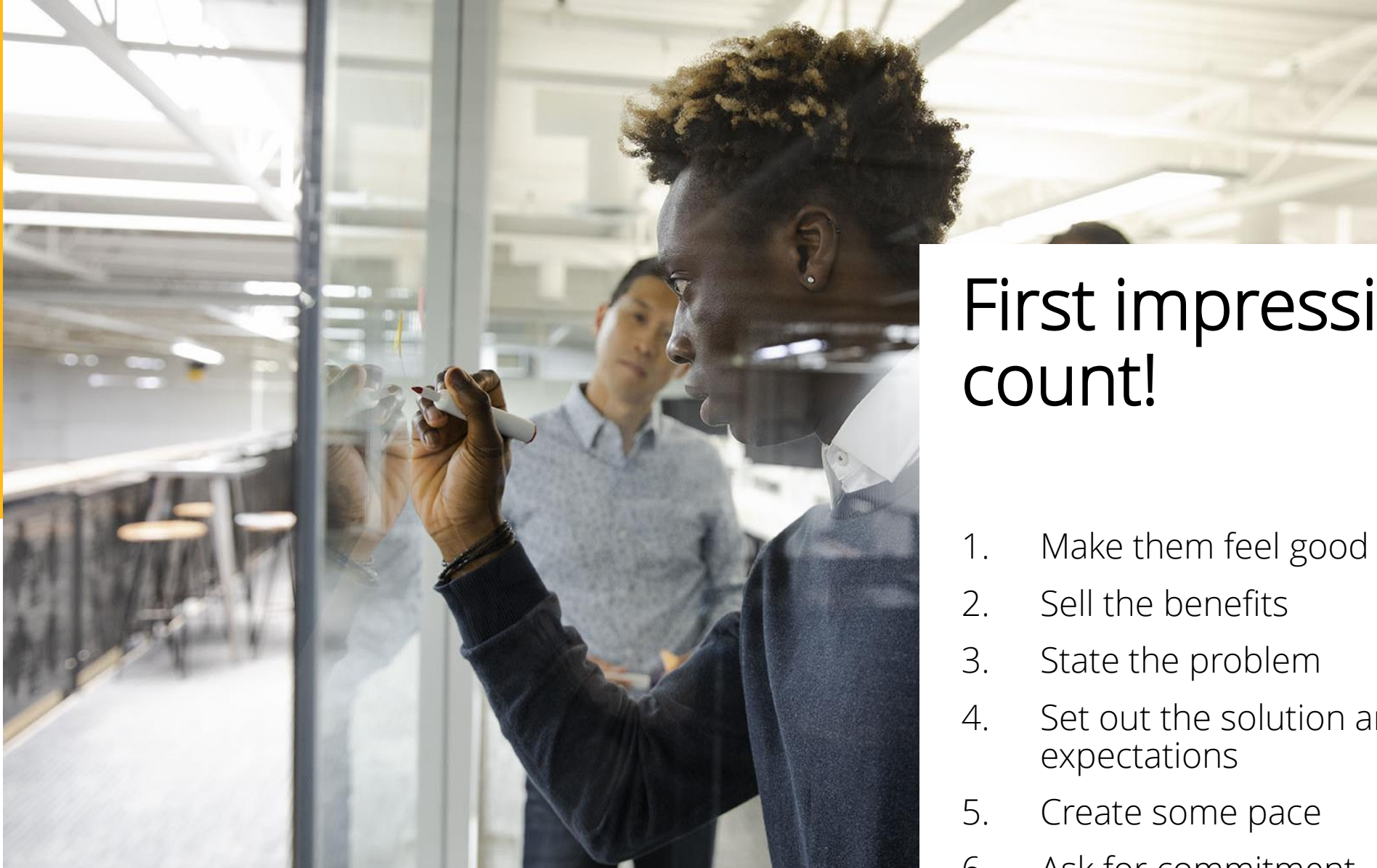
- The intro session and
- Potentially the pre-test session



Activity: First impressions

Before you continue with the training, pause and...

Write down three things you will say or do to make a good first impression with your students.



First impressions count!

1. Make them feel good
2. Sell the benefits
3. State the problem
4. Set out the solution and your expectations
5. Create some pace
6. Ask for commitment

Activity: motivation

Before you continue with the training, pause and...

List the strategies you will employ to motivate your students during tutoring sessions.

Keep them motivated

- ✓ Address each student by name near the start of the lesson.
- ✓ Give students a task they can do to build their confidence when needed.
- ✓ Provide students with challenge intermittently.
- ✓ Offer choice, e.g. "Shall we look at this activity first, or this one?"
- ✓ Remind students of the high expectations you have for them.
- ✓ Set goals.
- ✓ Harness students' interests (where possible).
- ✓ Manage students' anxiety, e.g. "It's OK to be stuck – we all get stuck now and again'.
- ✓ Encourage self-reflection, e.g. "Did you find that easy or hard? Explain why."
- ✓ Give effective feedback (with suggestions for improvement).
- ✓ Be enthusiastic (whether you feel it or not!).

Keep them motivated... online

- ✓ Give 'talk' a dynamic quality
 - annotate to illustrate
- ✓ Keep instructions simple
 - verbal and on screen
- ✓ Invite students to think aloud
 - because you can't look over their shoulder!
- ✓ Maintain a good pace
 - set an amount of time for thinking or tackling a task
- ✓ Frequently check up on students
 - ask if they know what they are doing, if they are understanding etc.

Adapting *or creating* resources

Remember, the teacher will choose **two groups of 5 lessons**.

These will form the basis of Tutorials 1 – 10.

However, you will need to adapt the resources and/or create appropriate resources from Active Learn:

1. use only activities relevant to the Pearson tutoring model (do **not** set homework)
2. to take account of small group tutoring of 3 students (1:3 model), rather one student (the 1:1 model that *Tutors' Guild resources* are based on)
3. to enhance what is there to cater specifically for the needs of the students you are tutoring.

1) Which activities to use and not use from *Tutors' Guild resources*

- Lesson Plan ✓
- Starter activity ✓
- 2 main activities ✓
- Homework activity X *These can be used as additional activities in sessions*
- Activity answers ✓

2) The 1:3 tutoring model

- Underlining, circling, labelling and matching



Pause and think – what would you....?

- Have a system for students taking it in turns

decision-maker
→ goes first

commenter
→ agrees/disagrees

explainer
→ explains their answer

3) Meeting the specific needs of students

Coming up... we will look at how you can adapt *Tutors' Guild* lessons or create your own from Active Learn resources to:

Include a variety of **assessment for learning**

Make use of **Metacognition**

Provide effective **feedback**.



2. Assessment for Learning



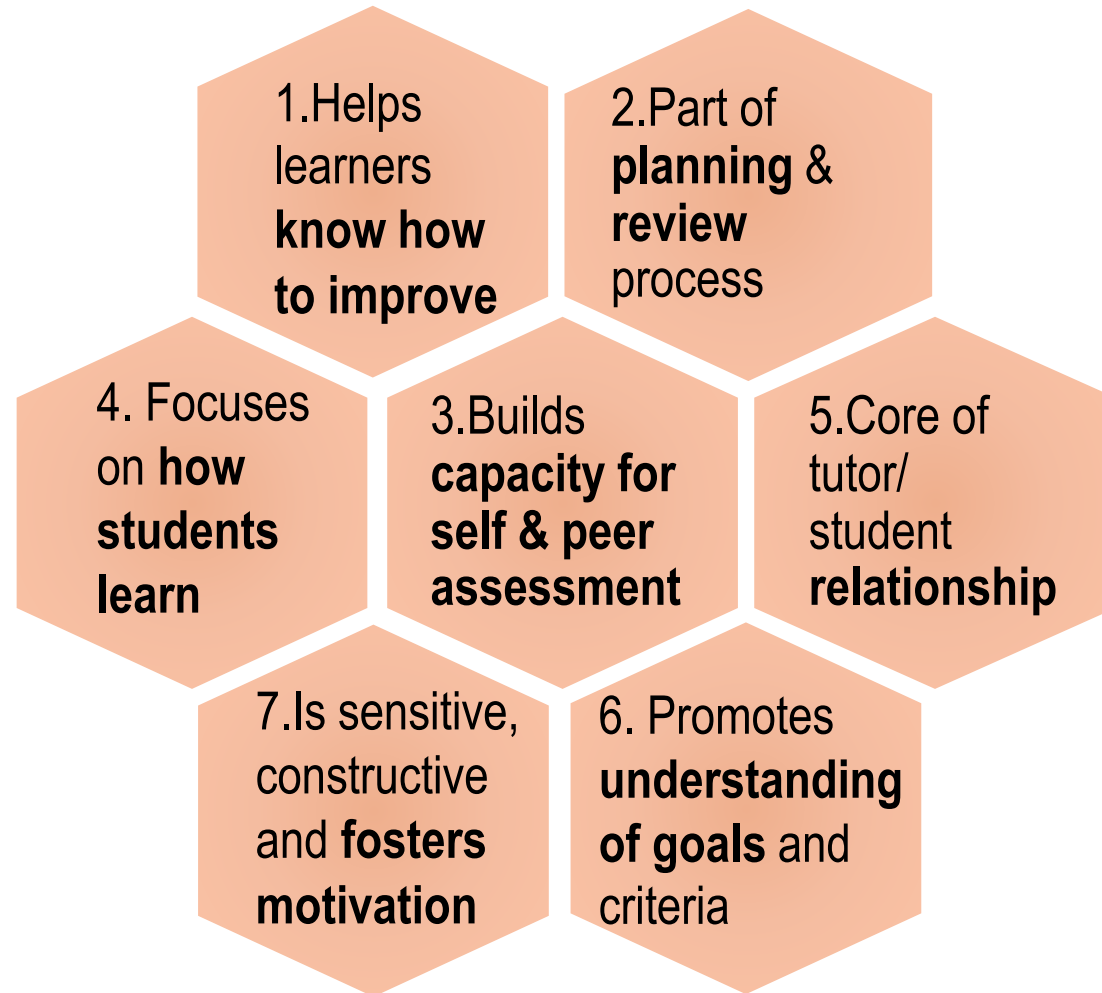
Assessment for learning (AfL)

It is likely you already regularly use AfL in your teaching or tutoring.

Activity: Before you continue with the training, pause, and...

Think of reasons why AfL is so central to effective 1:3 tutoring.

Why is assessment for learning important?





AfL in Pearson tutoring

Assessment for learning is an integral part of:

- Using the Pre-test
- Continuous formative assessment and differentiation
- Spaced learning
- Revision and test preparation.

Finding out about your students

You will gather information about your students' in two key ways:

1. **During Block Setup**, you can discuss each student's:
 - level of attainment
 - progress
 - key learning needs

Pre-Prog

Prog
Setup +
Intro

Finding out about your students

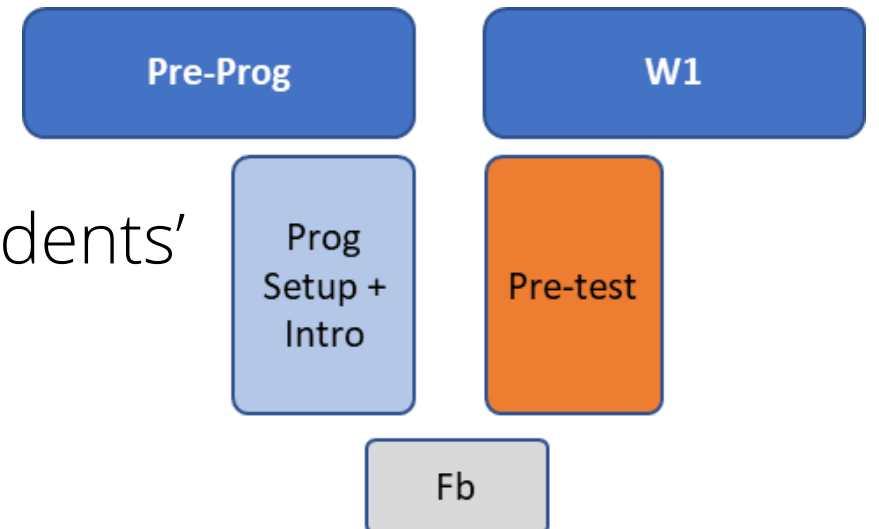
You will gather information about your students' in two key ways:

1. **During Block Setup**, you can discuss each student's:

- level of attainment
- progress
- key learning needs

2. **From the Pre-test**, you will learn about students' strengths / weaknesses in:

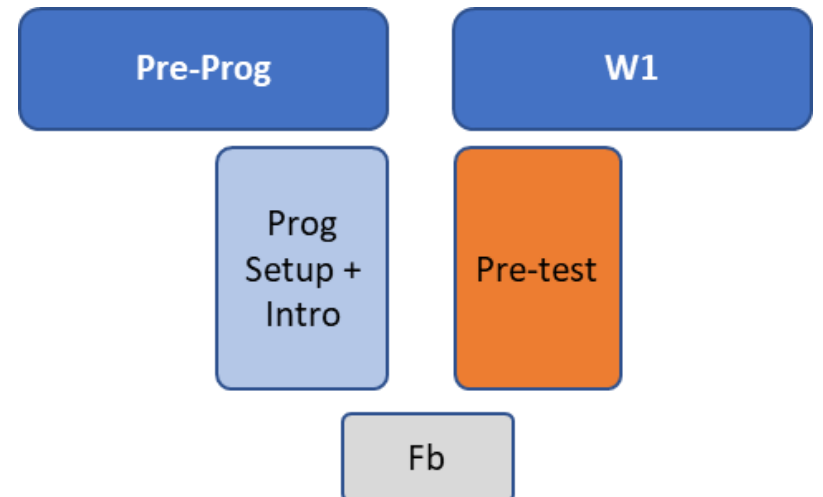
- knowledge
- skills.



Using the information

Use the information you gather from the Block Setup and Pre-test to:

- help plan each tutoring session
- clarify and communicate learning goals to each student
- motivate students.





Activity: Pre-test analysis

You will see a Pre-test question and responses from students A, B and C.

What do the responses tell you about each student's:

1. Areas of strength –
their knowledge (e.g. of concepts) and/or skills (e.g. in answering test questions)
2. Areas for further development –
in certain concepts; in gauging the meaning of questions; in communicating answers.

GCSE Maths Pre-test question

A hotel charges

£67.90 per person per night

£19.50 for a dog, per night.

1. Estimate the cost of two adults and their dog staying at the hotel for two nights. (3 marks)
2. Is your estimate an overestimate or underestimate? Explain. (1 mark)

Student A (Awarded 1 Mark)

Estimate the cost of two adults and their dog staying at the hotel for two nights.

(3 marks)

$$\begin{array}{r} 67.90 \\ \times \quad 2 \\ \hline \pounds 135.80 \\ \hline \end{array}$$

$$\begin{array}{r} \pounds 135.80 \\ + 19.50 \\ \hline \pounds 155.30 \\ \hline \end{array}$$

Is your estimate an overestimate or underestimate?
Explain.

(1 mark)

Overestimate because it is
over £100

Student B (Awarded 2 Marks)

Estimate the cost of two adults and their dog staying at the hotel for two nights.

(3 marks)

£67.90 - about £70
£19.50 - about £20

Is your estimate an overestimate or underestimate?
Explain.

(1 mark)

Overestimate because
rounded up

Student C (Awarded 0 Marks)

Estimate the cost of two adults and their dog staying at the hotel for two nights.

(3 marks)

$$\begin{array}{r} 6790 \\ + 195 \\ \hline 6985 \\ \hline \end{array}$$

Is your estimate an overestimate or underestimate?
Explain.

(1 mark)

underestimate

Activity: Pre-test analysis

Compare what you have written down as

- 1) areas of strength and
- 2) areas for further development for each student with the suggestions that follow.

You can include these types of notes in the feedback you provide to teachers in the feedback forms after each tutoring session.

Learning from the Pre-test Student A

Areas of strength	• Good 'translation' of word problem to a relevant calculation. • Clear demonstration of working. • Knows how to multiply and add money (and possibly decimals). • Knows how to 'explain' (i.e. write a sentence:, because...).
Areas for development	Gaps in understanding of • what it means to estimate; • how to identify an overestimate/underestimate.

Learning from the Pre-test Student B



Areas of strength	• Demonstrates a strategy for tackling word problems (i.e. circles 'Estimate'). • Understands what it means to estimate / overestimate / underestimate. • Knows how to round money (including rounding up when £__.50). • Demonstrates the beginnings of clear working. • Knows how to 'explain' (i.e. write a sentence:, because...)
Areas for development	Gaps in understanding of • how to accurately 'translate' a word problem into relevant calculation(s).

Learning from the Pre-test Student C

Areas of strength	
Areas for development	Gaps in understanding of • how to accurately 'translate' a word problem into relevant calculation(s); • using place value to line up digits when adding; • how to identify an overestimate/underestimate; • how to explain' (i.e. write a sentence:, because...). (This student may struggle with literacy, as writes 'underestmtte'.)

Using insights to inform planning

Activity: Pause, and consider for a moment...

How would you tailor your lessons to accommodate areas of strength and development you have identified?

How might this support and encourage students?



Using insights to inform planning

Activity: Pause, and consider for a moment...

How would you tailor your lessons to accommodate areas of strength and development you have identified?

For example, you may ensure you definitely highlight students strengths; but you actually spend most time tackling areas of development. Explain this to students!

How might this support and encourage students?

For example, students may need reassurance that there will be many opportunities to revisit knowledge and skills throughout the sessions.

Some ideas for tailoring your plans

Supporting development of extended responses

Use the snapshot facility on Bramble so students can upload their written answers.

Display these alongside each other on the screen.

They could be used to draft a model answer collaboratively.



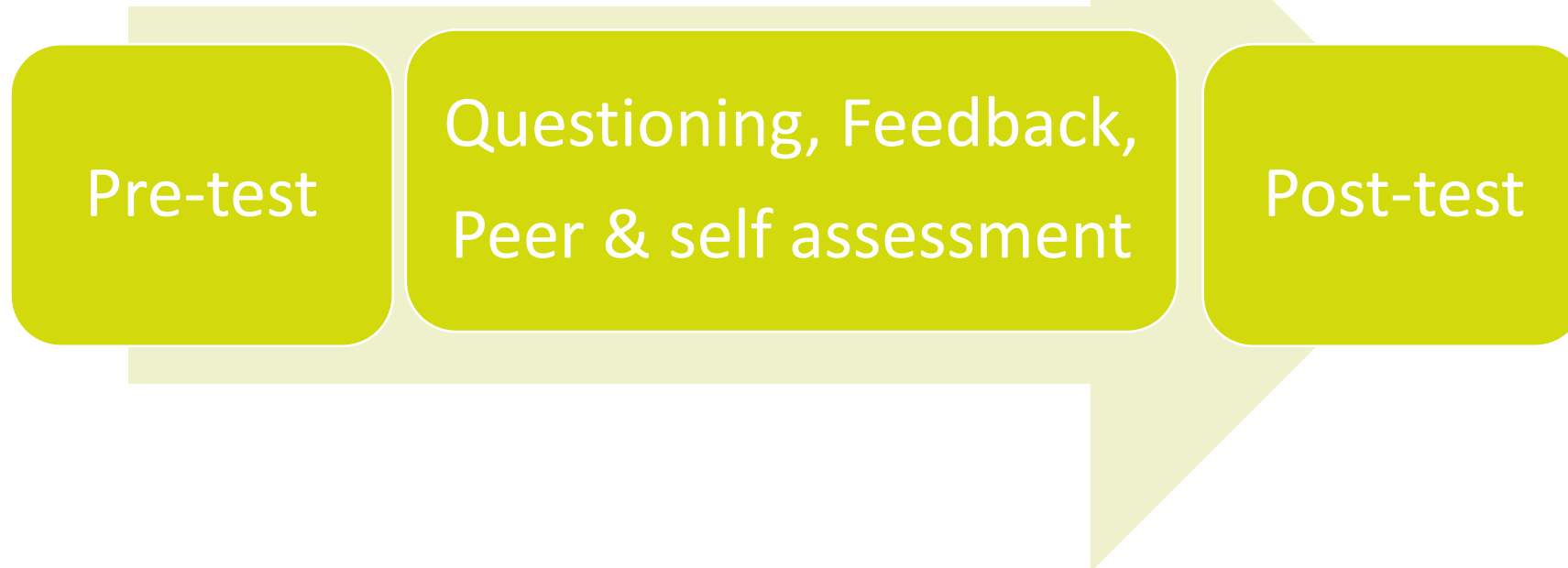
Some ideas for tailoring your plans

Supporting gaps in knowledge and understanding

- Use Starters or Plenaries to revisit, recap or quiz, whilst maintaining topic focus for the Main Activity.
- Where available, use homework activities in the *Tutors' Guild* resource as an additional source of ideas for mini activities.
- You may have short activities of your own you know work well to support specific topics, or you may wish to spend a short amount of time showing a relevant online video, e.g. one of the free online lessons available at the [Pearson UK Learning channel](#). Please review all online content in advance.

Continuous formative assessment

Build in opportunities to make the most of the online platform to monitor students' growing understanding.



Continuous formative assessment

Some other examples to support you:

- **Quick checks of understanding** such as quizzes, thumbs up, recap starter activities, mini whiteboards, traffic lights, snapshots of written answers.
- **Open questions**
 - Inserting '*Might*' into a question – makes it less certain and more open.
 - Asking '*why is this an example of...*' – encourages reasoning.
 - Asking '*why is this a wise decision?*' – requires application of judgement.
 - Asking '*how did you solve that problem?*' – elicits procedural understanding.
- **End-of-session reflective questions** (covered later: in metacognition).

Differentiation: support

Visualisation - drawing pictures and diagrams

- e.g. in Maths to support work on shape;





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Scaffolds provide a tool, or structure, with each chunk of learning

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Scaffolds provide a tool, or structure, with each chunk of learning

- e.g. in Maths: move through concrete → pictorial → abstract to support understanding of concepts;

AND you can use the *Tutors' Guild* lesson plan (support activities) where available



Differentiation: stretch

Bounce answers between students:

For example:

- 'Hafsa, what do you think of Matt's answer?'
- 'Lucy, could you develop Mohammed's answer to include more detail?'
- 'Hamid, how might you combine all we've heard into one answer?'

Differentiation: stretch

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Enquiry questions stimulate high level thinking.

For example, ‘How could we find out...’ ‘Is this a testable question’



Differentiation: stretch

Bounce answers between students:

For example:

- 'Jessica, what do you think of Ben's answer?'
- 'Jo, could you develop Kiran's answer to include more detail?'
- 'Salma, how might you combine all we've heard into one answer?'

Enquiry questions stimulate high level thinking.

For example, 'How could we find out....' 'Is this a testable question'

AND you can use extension activities.

Using spaced learning

Spaced learning helps memory and retention

It involves the repeated revisiting of knowledge and skills, with intervals (involving non-related activity) between repetitions.

Knowledge and understanding should be regularly revisited through lessons, enabling fluency and encouraging confidence.



Using spaced learning: additional ideas

- Plan short and frequent review sessions;

Even in the same lesson— work through the same thing at the beginning and end (and don't be afraid to do it in exactly the same way... it is amazing what students miss the first time, and what they pick up the second time).

Using spaced learning: additional ideas

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- Review over an extended period of time;
Visiting a concept twice (quickly) is better than once (and spending longer). And include with a bigger space between the first and second visit.

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- Review over an extended period of time;
Visiting a concept twice (quickly) is better than once (and spending longer). And include with a bigger space between the first and second visit.
- Tell students you are doing 'spacing' to help them to remember, i.e. emphasise the importance of retention and encourage students to work at recalling concepts.

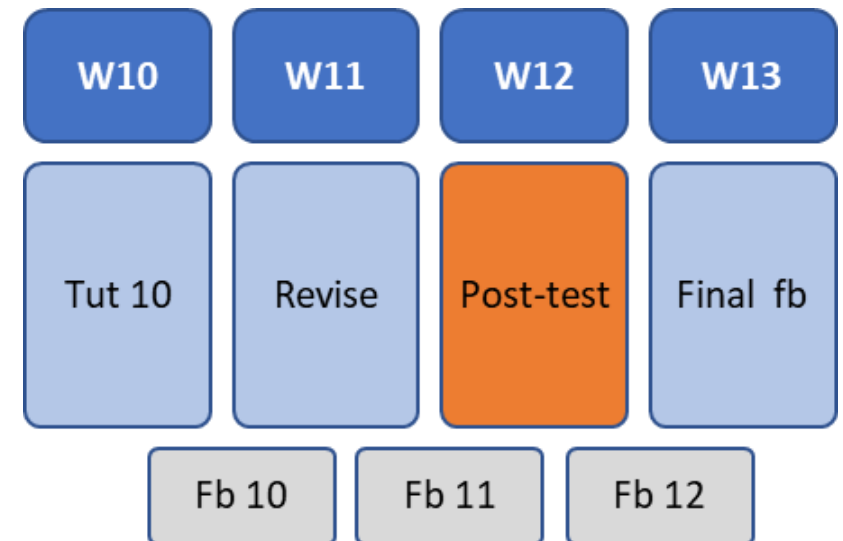
Test preparation

You will need to help students prepare for tests:

- Just before taking the Pre-test
- During the revision session
- Just before taking the Post-test

With test preparation you should aim to:

- Reduce test anxiety
- Increase motivation
- Refine test/exam skills where possible.





Revision session strategies

- Check in with students in advance about areas to cover.
- Limit the stretch.
- Remind students how much they can achieve (to motivate them).
- Source sample exam questions from the awarding body's website
- Collate some test-taking tips specifically for your students (refer to examiner reports and awarding body materials)

Revision session strategies



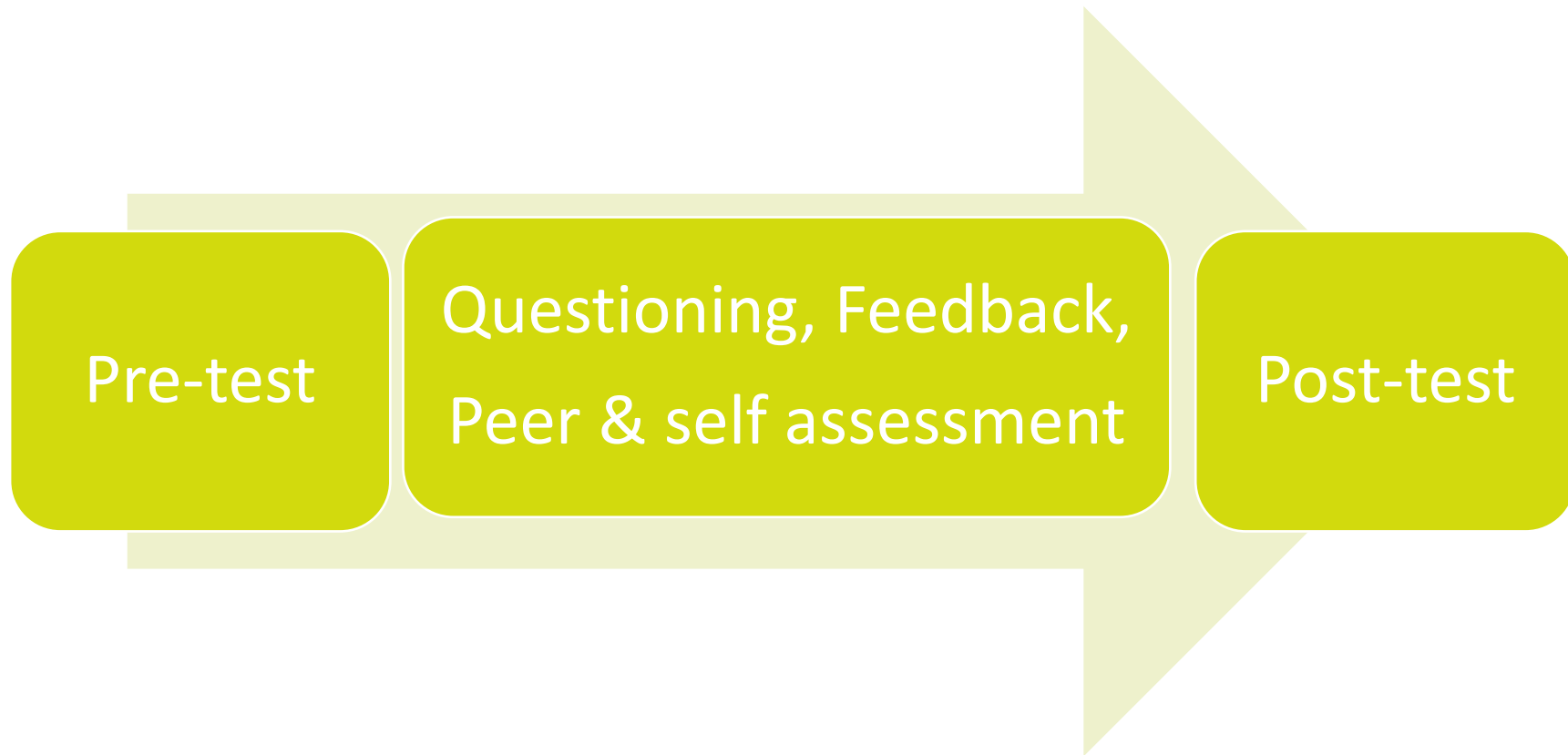
- At the start, revisit each student's learning goals.
- Match large (and small) points of progress against their goals, to build confidence and self esteem.
- Keep a good pace during the session
- Encourage positive self-reflection through questioning.
- Remind students that the Post-test is not high stakes:
 - It's a tool for them and their teacher to plan next steps in learning.
 - It allows them to practise their test technique
 - Any mistakes they might make are an opportunity to learn.



Address test anxiety – head on!

- Encourage students to, beforehand, close their eyes...
Imagine working through the test calmly and with confidence.
- Discuss what to do if they can't answer a question, e.g.
 - Identify the topic that the question refers to.
 - Write down a few key points about that topic.
 - Re-read the question.
 - Take deep breaths!
 - Don't be afraid to try.
- Encourage students to vocalise negative thoughts and feelings about the test. Write them down; then cross them out. Write positive thoughts and feelings.

Assessment for learning



3. Metacognition

“Our job as teachers is not to ‘prepare’ kids for something; our job is to help kids learn to prepare themselves for anything.”

A.J. Juliani

Metacognition

Thinking about thinking



Sometimes we can be so busy teaching we can forget to assist with learning!

Students who need extra help are often those who are least aware of how to learn.

Activity: Metacognition in small group setting

Before you continue with the training, pause and...

Think of reasons why small group tutoring might be the ideal format for employing Metacognition strategies.

Thinking about thinking

Size of group means all students get a chance to talk.

Students have the space to think through their understanding.

Easy to pick up on a student who has misunderstood some concept/terminology.

Students are more likely to listen to each other and build on each other's contributions.

The sessions are more like being on a learning journey together.

Research on Metacognition

Three types of Metacognition:

1. Metacomprehension – our understanding of our knowledge
2. Metamemory – our strategies for recalling our knowledge
3. Problem-solving – thinking about what to do when you don't know what to do.

Martinez (2006)



Teaching Metacognition

We might appreciate the importance of Metacognition but ...
it's not always easy to see how to develop metacognitive skills.

Three strategies to foster Metacognition:

1. Using the 'Think aloud' strategy
2. Reflecting on learning including using K-W-L grids
3. Collaborative learning.

Activity: 'Think aloud' strategy

Research agrees that one of the best strategies to support metacognitive instruction is the 'Think aloud'.

Before you continue with the training, pause and...

Write down what you understand by the term 'Think aloud'.



What is 'Think aloud'?

Verbalising the thought processes with which you engage when completing a task.

- Students hear it broken down into the steps they need to take
- They see the challenges the task presents and how you work out those problems
- They see it's possible to change approach after making a mistake and that making mistakes is part of the learning journey.

Adding 'Think aloud' to tutoring sessions

Effective 'Think aloud':

- needs to be planned for before the tutoring sessions take place
is best done as live modelling (rather than 'here's one I made earlier!').

Basically, it needs to be built in to your less plan but not ready made on a slide!

'Think aloud' in a Maths lesson

Question: Find 17.5% of £42.00

What do I know about percentages?

It means 'out of 100'. But this is a decimal out of 100.

I remember about 10% - that's 10 out of 100.

And 5% is half that; half of 10%

Does that relate to 17.5%?

Oh yes, I remember working with 17.5% before.

17.5% is the same as $10\% + 5\% + 2.5\%$

Now I can get going.

10% of £42.00 = $\frac{1}{10}$ of £42.00, so $£42.00 \div 10 = £4.20$

5% is half of 10%, so $5\% = £4.20 \div 2 = £2.10$

2.5% is half of 5%, so $2.5\% = £2.10 \div 2 = £1.05$

And so, finally, $17.5\% = £4.20 + 2.10 + 1.05 = £7.35$

Reflecting on learning

You can use the **K-W-L grid** as a way to encourage reflection on learning.

What do I **K**now? (*start or middle of a session*)

What do I **W**ant to know? (*start or middle of a session*)

What have I **L**earned? (*end of a session*)

Using K-W-L

Before tutor input:

What do I **k**now about clauses?

- *They're in sentences and there are a few different kinds*

What do I **w**ant to know?

- *How can I pick a clause out of a sentence?*

After tutor input:

What have I **l**earned?

- *A simple sentence is a clause.*
- *All clauses have verbs (so different from phrases).*
- *A main clause makes sense on its own (so different from phrases)*
- *Main clause = most important thing in sentence (can't do without)*
- *Subordinate clause = extra information*

Reflective questions – Maths

- Have you met a problem like this before? What maths did you use to solve it?
- What words in the problem give you a clue about the maths to use?
- What other maths topics do you think this links to? Explain.
- Describe to me in words what you think you might do first.
- Have you got any other ideas for first steps?
- What relevant expressions or calculation(s) can you write down?
- What if the numbers were smaller/larger/multiples of 10...?



Reflecting at the end of a lesson

What did you learn today that you didn't know before?

Which bits of today's lesson should we revise next time?

Are there any bits of today's lesson you could teach someone else?

This type of input will also give you insights for when you come to complete the feedback form after each tutoring session.

Collaborative learning

Collaborative learning will help students to:

- reflect on their own learning
- learn from others as well as you as the tutor
- increase participation from more shy students
- increase everyone's engagement.



Collaboration: talk to everyone

Tip for questioning all students equally:

Write down the 3 students' names before each session.

- Each time you ask a student a direct question, put a tick next to their name.
- Try to keep the number of ticks even between students.

Collaboration: signalling uncertainty

Give students a 'not sure' option.

At the end of an activity, turn on the video.

Explain that you're moving on to the next piece of learning.

Ask students to express how things are going so far:

- thumbs up
- thumbs down
- thumbs in the middle.



Collaboration: students who don't participate

Switch to video use if a pupil is not contributing orally

Pick up on body language and watch for responses

e.g. 'Kyle, you smiled then. What were you thinking?'

Collaboration: 'busy hands'

When modelling an answer, keep students engaged by challenging them to say or write the answer before you write it.

For example:

- Pause before a key word or number
- Pause before writing the necessary punctuation in a sentence



Collaboration: assigning roles

Problem-solving is a key aspect of Mathematics teaching and learning. Students can be provided with a framework to help them through the problem-solving process.

For example:

- Understand the problem
- Translate the problem into a process or a series of mathematical processes
- Carry-out the mathematical process(es)
- Interpret, evaluate or reflect on the solution(s) obtained

Collaboration: speaking frames

Give students a speaking frame to help structure their oral responses.

For example:

- One way the author has made the text feel scary is when she ...
- The results of the experiment were not as I expected because...
- When you need to work out the area of a circle the first step is to...



Collaboration: sharing thoughts

Students write down their own idea on a piece of paper.

They share them with the group, either by showing the paper on video or taking a snapshot.

They compare ideas.

Tutor asks students if they would have chosen what another student chose and why/why not.

Summary



Metacognition aids learning. It gives students a framework for focussing on the task.

Metacognition is not specifically mentioned in any materials. When planning, you will need to look for opportunities for injecting it into your lessons.

Metacognition empowers students and gives them more control over their learning.



4. Feedback

Feedback

Which of these phrases offer *effective* feedback?

Ah! I'm not sure I would have done it that way.

Excellent. Well done.

Thank you for that idea.

Look again at what you've written...

That's a good answer. What clues did you use to help you reach it?

Can anyone add to what... said?

Great work!

That's a really good start...



Types of feedback

general	specific
positive	negative
about a task	about a student
immediate	delayed
offers verification	offers elaboration

Feedback

What does the research say?

Shute, V. J. (2007). Focus on formative feedback. *ETS (Educational Testing Service) Research Report*, Princeton, NJ. Retrieved 20 July 2020 from <http://www.ets.org/Media/Research/pdf/RR-07-11.pdf>



*Research
Report*

Focus on Formative Feedback

Valerie J. Shute

Research &
Development

March 2007
RR-07-11

Effective feedback is

general	✓ specific
---------	------------

If feedback is not specific or clear, it can impede learning and can frustrate learners. If possible, try to link feedback clearly and specifically to goals and performance. (Shute, 2007, p. 30)

Effective feedback is

general	✓ specific
---------	------------



“Well done. You have improved your representation of the tablecloth no end with the use of big brushstrokes, giving a sense of how it drapes. Now you need to focus a little more on your representation of the round objects. For example, the external surfaces of the onions appear a little fragmented and could have done with some more gradual shading to create a sense of the curves. Next time, perhaps think about where the light is coming from and how that could affect where you place different tones and colours.”

Effective feedback is

✓ positive	negative
------------	----------

Do not present feedback that discourages the learner or threatens the learner's self-esteem. (Shute, 2007, p. 30)

Use praise sparingly.

Effective feedback is

✓ about a task	about a student
----------------	-----------------

Feedback to the learner should address specific features of the learner's work in relation to the task, with suggestions on how to improve. (Shute, 2007, p. 30)

- Where am I going?
- How am I getting there?
- Where next?

Effective feedback is

✓ about a task	about a student
----------------	-----------------

Feedback 1

"You are a fantastic singer and performer. You sound great. I love that song, and it really suits you. You look good up there too - a real natural on stage. I did lose you a bit in the middle, though, when your confidence seemed to waver and you looked a little bit nervous. But well done."

Effective feedback is

✓ about a task	about a student
----------------	-----------------

Feedback 2

"This was a task where you were asked to focus on the performance. And such emotion... this really helped bring the lyrics alive. Excellent vocal control of the high notes too. The position of the body can make a real difference to performance, for example looking up more can help engage your audience. Why not try filming your performances to help you to become more aware of what your body is doing, as well as your voice?"

Effective feedback is

✓ immediate	✓ delayed
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When a student is learning a difficult new task (where difficult is relative to the learner's capabilities), it is better to use immediate feedback, at least initially. This provides a helpful 'safety net' so the learner does not get bogged down and/or frustrated... but when a student is learning a relatively simple task (again, relative to capabilities), it is better to delay feedback to prevent feelings of feedback intrusion and possibly annoyance. (Shute, 2007)

Effective feedback

offers verification	✓ offers elaboration
---------------------	----------------------

Feedback should describe the what, how, and/or why of a given problem. This type of cognitive feedback is typically more effective than verification of results. (Shute, 2007, p. 30)

Provide elaborated feedback in small enough pieces so that it is not overwhelming and/or discarded. (Shute, 2007, p. 30)

Effective feedback: a summary

general	✓ specific
✓ positive	negative
✓ about a task	about a student
✓ immediate	✓ delayed
offers verification	✓ offers elaboration



Effective feedback: a final note

YOU are not the only one who can give feedback.

When students give feedback to each other, they:

1. think about their own understanding;
2. make comparisons with their own work;
3. are encouraged to become more independent;

Today we worked on _____

Write the names of your group members in the numbered boxes.

In each box, write a value: 1- very well 2 – ok 3 – not very well

	Myself	2.	3.
Participated in discussion			
Contributed useful ideas			
Listened to others' ideas			
Wrote their answers clearly			
Could make this one improvement:			

Feedback activity 2



Think about some feedback you recently gave to a student.

Effective feedback reminder

- ✓ specific
- ✓ positive
- ✓ about a task
- ✓ usually immediate (but may be delayed, depending on the task)
- ✓ offers elaboration

Write down three ways your feedback was effective.
How could it have been improved?

Complete the quiz!

[Take the Module 3 Planning and Delivery Maths Tutoring Quiz](#)

Please submit your answers to the quiz. This will help us to know that you have been able to complete this training module and areas where you may require additional support.

Once you have completed the quiz, you will be able to view your results. We recommend that you save this pdf for future reference

Note: only your first quiz submission will be recorded in our records!



Pearson