Teaching and Learning in a One Hour Class: Classroom Practice and Planning

Mathematics

Megan O' Brien
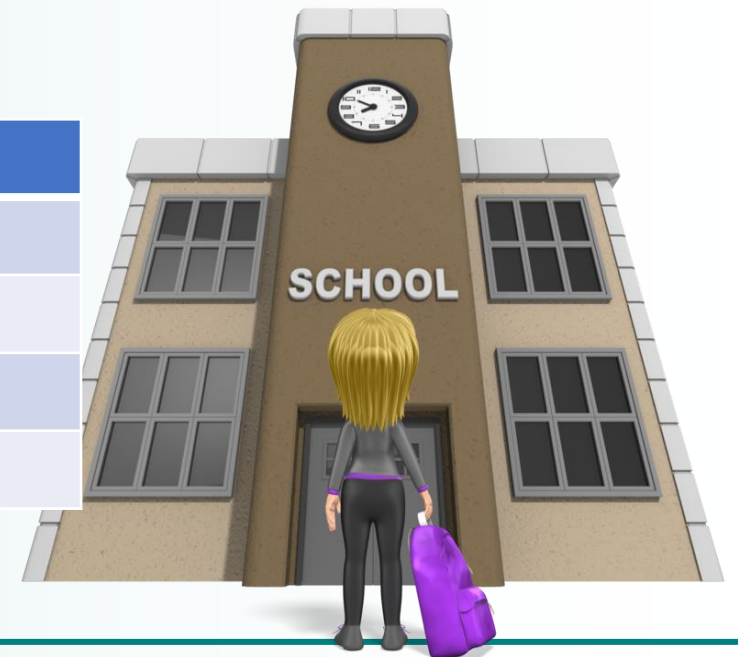Coláiste Dún an Rí, CMETB

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Transition of One Hour Classes in My School

- New school in Kingscourt, Co. Cavan-opened in 2016
- Introduced one hour classes in 2018 – we had 3 years in the school at the time
- Before this we had 9 x 40 minute classes on Monday and Tuesday, and 8 x 40 minute classes for the remainder of the week
- Offer TY and LCA programmes

	Before 2018	After 2018
Junior Cycle	4 x 40 minute classes	3 x 58 minute classes
Senior Cycle		4 x 58 minute classes
TY		2 x 58 minute classes
LCA		2 x 58 minute classes

Transition of One Hour Classes in My School

Concerns/challenges

- Contact time is reduced

- Planning

- 1 hour is a long time

- Behaviour and classroom management

- Students missing time- a lot to catch up on

- Introduction of movement/brain breaks

The Journey So Far

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SCHOOL

Transition of One Hour Classes in My School

Advantages

- Less stressed, not working against the clock- more focused class

- Effective teaching and learning

- More one to one time

- Differentiation

- 1 hour time slot for planning

- Easier to plan for-6 classes instead of 9 classes a day

- More time and opportunities for different strategies and activities

- Better student-teacher relationships

- More time for formative assessment

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Subject Planning for a One Hour Class

Long term planning

- Has not really changed
- Get more units of learning covered in the year (depends on the year and students)
- Linking chapters and different concepts in the course
- Let students know what the long term and short term plans are

Short Term Planning for a One Hour Class

✓ New Junior cycle - Units of learning

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DEPARTMENTAL UNIT OF LEARNING

An tSraith Shóisearach do Mhúinteoirí
Junior CYCLE for teachers

An tSraith Shóisearach do Mhúinteoirí
Junior CYCLE for teachers

Unit Name: Geometry investigation: Triangles
Year Group: 2nd   Time: 3 weeks

DEPARTMENT LEVEL PLANNING

Learning Outcomes: *from the Specification* Strands: GT2(a) GT3(a)(b)(c)(d)(e) N3(a)(b) N4 AF2	**Learning intentions:** Students will learn how to: • Recognize different triangles and construct the triangles (constructions 10,11, 12, 13, 14) • Create and evaluate proofs of geometrical proposition • Investigate and display an understanding of the theorems 2, 4 and 6 • Investigate the theorem of Pythagoras and Pythagorean triples •
Links to unifying stand: Communication Problem Solving Connections Representation Building blocks	**Key skills linked:** Being numerate, being literate, manage information and thinking, working with others, being creative,

Statements of learning linked:
SOL 1,15,16,17,24

Key concepts:
Types of triangles, theorem, proof, construction, SSS, ASA, RHS, SAS, Pythagoras theorem, similar, ration and proportion, different types of angles

Possible Learning Experiences:
Rich learning activities for students, opportunities to develop Key Skills and use Formative Assessment

• Investigate Pythagoras theorem using an investigation approach e.g. https://www.projectmaths.ie/documents/MathsCounts2017/GrazingGazelles.pdf or use construction 13 and construct several right angle triangles and see if students can see the pattern/relationship between all the right angled triangles and translate this into algebra
• https://www.projectmaths.ie/documents/MathsCounts2019/Run%20Johnny%20Run...maths%20to%20the%20rescue_Y2_HL_S2.pdf
• https://www.projectmaths.ie/documents/modulars/2/Module1Notes.pdf
• https://nrich.maths.org/1309
• Discover Pythagoras theorem in everyday life using maths eyes
• Use nrich website
• https://nrich.maths.org/5639
• https://www.pbslearningmedia.org/resource/trigonometry-pythagorean-triples/pythagorean-triples-school-yourself-geometry/

Assessment:
What will students say, make, write or do to show their learning and understanding?
• Students will complete several exercises from active maths 1 **and 2** to test and develop their understanding of the learning outcomes
• Students will use peer assessment and self-assessment to develop their understanding of the operations

• Students will be involved in several group work activities, such as tarsia puzzles, so they can demonstrate the skills they have learned and use peer teaching to further develop these skills.
• Draw diagrams and make models to show and understand Pythagoras theorem
• AOL: Class test. H/w success
• AFL: Feedback, self-assessment of set question created, teacher questioning of knowledge on sets, star and a wish

Literacy: worded problems, formulating proofs and explaining their answers

Numeracy: constructions, recognising a pattern between numbers, discovering Pythagorean triples.

Success criteria:
• Can students construct and recognise the different triangles?
• Can students understand and use theorems 2, 4 and 6?
• Can students use the terminology associated with triangles?
• Can students see proportionality between some triangles and use this to find missing angles and lengths
• Can students recognise a Pythagorean triple and use Pythagoras theorem?
• Can students recognise relationships between shapes and numbers and generalise this relationship using algebra
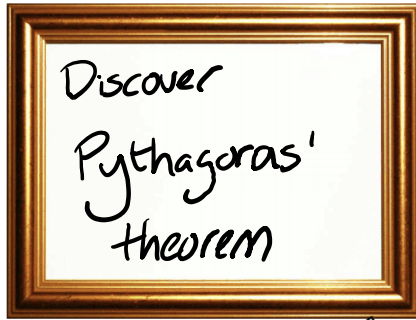
Differentiation:
• Worksheets and problem rich tasks will be differentiated
• Students will be given theorems and then they investigate them
• Use calculators
• Definitions and key words will be given

Reflection:

The 5 minute Lesson Plan

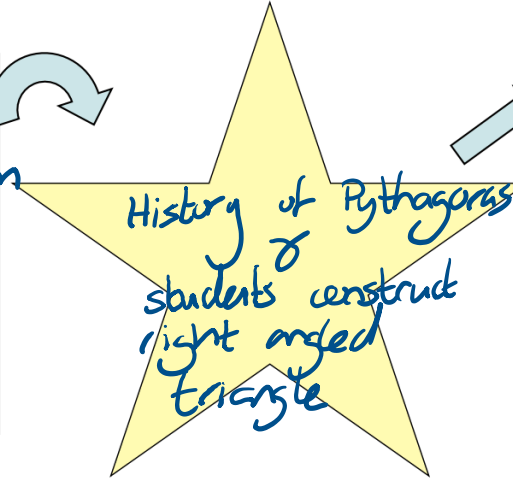*....print and scribble your way to Outstanding!*

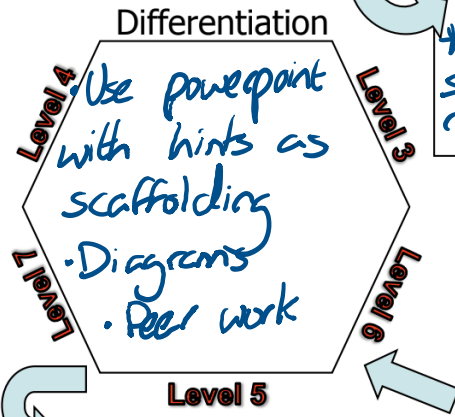## The BIG picture?

Discover Pythagoras' theorem

Objectives

* Recall the triangle constructions
* Explain the theorem of Pythagoras
* Find the longest side on a right angled triangle

Engagement?

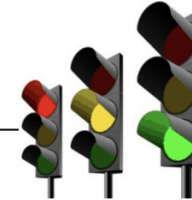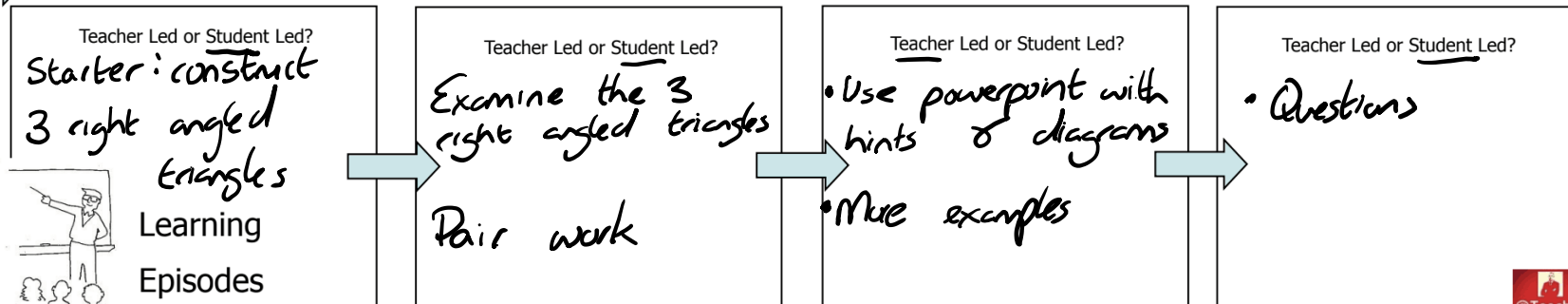History of Pythagoras & students construct right angled triangle

Stickability!

* Construct 3 right angled triangles
* Worked examples
* Questions

Differentiation

Level 4
Level 3
Level 2
Level 1
Level 6
Level 5

Use powerpoint with hints as scaffolding
• Diagrams
• Peer work

WORDS

hypothenuse, adjacent, opposite

along the way....

AfL

* Pair work
* Questions

Learning Episodes

Teacher Led or Student Led?
Starter: construct 3 right angled triangles

Teacher Led or Student Led?
Examine the 3 right angled triangles

Pair work

Teacher Led or Student Led?
• Use powerpoint with hints & diagrams
• More examples

Teacher Led or Student Led?
• Questions

R.McGill 2012 - @TeacherToolkit

@Teacher Toolkit

Practices of Teacher

- Engagement task at the beginning of lesson-starter resource

- Learning outcomes-refer to these throughout the class

- Success criteria-clear expectations

- Discovery and active learning methodologies

- Formative assessment

- Activities for different learning styles

- Differentiation

- Real world application
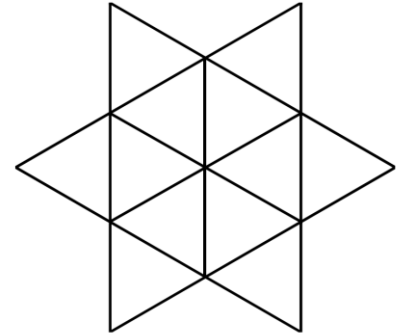
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Feedback Sheet

Fill in this self – reflection section once you have finished your test

Student Section – Self Reflection

Shade in on the bar chart where you think your understanding of this topic lies

Teacher

How long did you spend studying for this test?

_____

What area do you think you know best?

What part of this test did you find the hardest?

Section

Result: Percentage: Descriptor:

What You Did Well: Areas for Improvement:

Next Steps: (Editable by each dept) tick appropriate box

Revise Keywords	
Continue practising revision questions	
Ask more questions in class	
Etc...	

Student Section – To be filled in when corrected test is returned

One thing you are going to focus on:

Signed: _____   Signed:_____

(Student)   (Parent/Guardian)
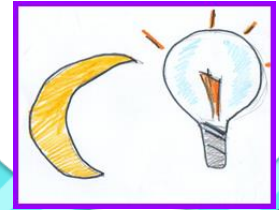
Date:_____

Movement/brain breaks

5-4-3-2-1

Do: 5 starjumps,
4 push ups,
3 burpees,
2 squats and
give a friend 1 high
five.

Simon Says

Follow the
instructions "Simon"
gives you.

Say what you see

Scissors, paper rock

Students challenge a
partner. Winners challenge
each other until a final
champion is found!

Shoulder to Shoulder

With a partner, students
match what the teacher calls
out. "Hand to head!" "Knee
to knee!" "Elbow to foot!"

Stretches

Stretch out your body – do
arms, leaning left and right.
Roll your neck around and
stretch either side. Do arm
windmills. Point your toes
and bend over to stretch
your back.

Strategies I Found Useful

Strategies	Resources/websites	AFL strategies	Socially distanced classroom
✓ Group work and pair work ✓ Peer teaching ✓ Flipped classroom ✓ Generating success criteria ✓ Graphic organisers ✓ Jigsaw ✓ Problem solving tasks ✓ Correction task ✓ Generate the rule	• Mini white boards • Tarsia puzzles • Geogebra • Microsoft Forms • Nrich • Project maths website • JCT website-classroom strategies(https://www.jct.ie/wholeschool/classroom_strategies) • Teams	✓ Traffic lights ✓ Peer teaching ✓ Questioning ✓ Students making tests ✓ Classwork questions ✓ Peer assessment ✓ Exit ticket ✓ Comment only feedback ✓ Reflection sheet at end of test ✓ Tarsia puzzles ✓ Spot the mistake	✓ Pair work-discussion and explanation ✓ Think pair share ✓ Jigsaw ✓ Microsoft forms ✓ Teams ✓ Fact sheets ✓ Graphic organisers

Impact on Teaching and Students' Learning Experiences

- ✓ Student voice and choice
- ✓ Active learning
- ✓ Deeper understanding
- ✓ More time for assessment for learning
- ✓ Student centred classroom
- ✓ More time for differentiation
- ✓ Get to know students better
- ✓ Better learning environment
- ✓ Better learners

Differentiation strategies
- Check in with students
- Colour coded worksheets
- Handouts
- Pair work
- Number line resource
- Independent work
- Graphic organisers
- feedback

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Use of Technology in the Online Space

Microsoft teams and one note

- Homework and PowerPoints used in class

- Share resources to improve understanding and reinforce ideas and skills

- Keep track of what was covered – students taking responsibility for their own learning

- As a department, we share all of our resources on team

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Date	Classwork	Homework
8-12-2020	• Corrected homework Book 1 Ex 8.2 • Gave out revision questions for algebra • Started looking at arithmetic series (slides 15-24) and went through some examples	• Q1(i)-(iii), 2, 4, 6, and 7 pg 208 • Study for Christmas test
11-1-2021	• Went through first 3 questions on the Christmas test • Solutions on one note Christmas test solutions	• Q4 for homework and watch videos on how to do other questions
12-1-2021	• Went through 2nd Christmas test • Solutions on one note Christmas test solutions part 2	• Finish corrections
14-1-2020	• Started non-linear sequences • How to find the nth term of a quadratic sequence • How to recognise a cubic sequence https://teams.microsoft.com/l/file/DA166266-70D8-499B-BAC4-96E17AAB9AD5?tenantId=983a47cf-ac77-4a77-8853-fb4d85885928&fileType=pptx&objectUrl=https%3A%2F%2Fcmetb.sharepoint.com%2Fsites%2FCDARHLMaths2022%2FClass%20Materials%2FSequences%20and%20series%2FNon-linear%20sequences.pptx&baseUrl=https%3A%2F%2Fcmetb.sharepoint.com%2Fsites%2FCDARHLMaths2022&serviceName=teams&threadId=19:fe160854032c462f96fbe1cf9e4e693c@thread.tacv2&groupId=647a08cf-db72-46e2-98e7-59f251ecfdbe	• Pg 212 and 213 Q1, 2,3, 6(i) •
15-1-2020	• Correct homework	
15-1-2020 to 11-2-2021	All work on teams	
11-2-2021	• Corrected homework • Went through more questions on composite functions • Started to look at graphing linear functions using geogebra	Pg 132 Q15(a), 17, 20 and 21 and pg 137 Q1
12-2-2021	• Corrected homework • Took down notes on graphing linear functions and how to read a graph	pg 137 Q 3, 6, 7, 8, 10 and 11
	MIDTERM	
22-2-2021	• Transformations of linear functions	Activity on shifting and scaling graphs
23-2-2021	• Went through transformations of quadratic functions • notes quadratic transformations	questions 13, 14, 16, 17 and 19 on pg 139
24-2-2021	• Went though how to complete the square of a quadratic equation	
25-2-2021	• How to find the turning points of a function using completed square form	pg 142 questions 1, 2, 3, 7, 8 and 10.

Back to school March 2021

Date	Classwork	Homework
22-3-2021	Revision of functions Completed following questions in class pg 169 Q3, 4, 7, 8, 9, 10, 12, 15, 26, 35, 36, some of Q39, 43, 45, 48	Study for functions test on Friday
23-3-21	Revision of Pythagoras theorem and trig ratios from junior cert Looked at radians and how to convert from degrees to radians and vice versa	book 2: pg 211 Q1(iv), Q2(iii) pg 212 Q4iii, 8(iii) pg 213 Q14, 17, 19 and 22
26-4-2021	Corrected homework Ex 7.7 Started the sine rule	HW:pg 240 Q3, 4, 6
27-1-2021	Corrected homework Ex 7.7 Started sine rule	Hw: pg 244 Q1,2, 3, 5
30-4-2021	Area of a triangle Sector of circle	HW:pg 245 Q8, 10, 11 Pg 247 Q 5(i)(ii)(iii), Q6 (i)(iii)
6 and 7 April	Trig proofs	
15-5-2021	Trig proofs	

Homework/Classroom Work

➢ Important to give homework after one hour classes

➢ Bridge the gap between classes

➢ Reinforces skills and understanding

➢ Be aware of homework in other subjects

➢ Make sure there is a difference between classwork and homework

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Overall

- I hour classes allows for a more rounded education-developing different skills
- Prepares them for the real world and college
- Take responsibility for their own learning
- Time to differentiate
- Wellbeing of student and teacher

Questions and Answers