Year 10- Math lesson

In my first lesson with the class, I worked with my ST to carefully structure the lesson to employed a range of strategies to cater for the range of students and to compile information on how they learn (See Appendix 4: Sequence 1 Lesson Plans). As students started to arrive, I gave them explicit instructions to unpack and start working on the 'Do Now: All About Me' activity as a means of classroom management to help students settle in to class (4.2.1) (Kohler-Evans, 2009). The survey collected evidence on student characteristics and learning preferences through asking questions such as "I like to learn using/when…" and established an inclusive classroom through acknowledgement of student input (1.2.1, 4.1.1) (See Appendix 5: Do Now: All About Me). Following this, I explicitly outlined the learning intentions of the lesson to help students set learning goals for the lesson and utilised a range of activities to help students build this knowledge (4.3.1) (See Appendix 4: Sequence 1 Lesson Plans).

Before moving onto the new concept of quadrilaterals, I conducted a pre-test to check students understanding of congruency and similarity of triangles which they covered in the previous lesson but was vital to help their understanding of harder geometry (5.1.1). I had set up an online Socrative quiz to help gather and provide students instantaneous feedback to gauge their understanding, however over half the class did not have access to internet on their phone. Fortunately, in preparation for technological issues, I had printed off copies of the test to give out to students who did not have access and had students mark their own papers (See Appendix 6: Geometry Quiz). The data from the quiz indicated that students were familiar with naming the tests for congruency/similarity of triangles, but had difficulty in applying these tests for complex similarity problems. As such, I was able to provide student instantaneous feedback (5.2.1) on their progress and was able to adapt the lesson to revise areas of weaknesses before moving onto the new concept (3.2.1, 1.3.1, 1.5.1).

Following on from the quiz, I went through content of quadrilaterals and assigned two-tiered (general and extension) questions to the class to complete whilst enforcing a quiet working environment. Through reflection and discussion with my supervising teacher, a good attempt at utilising a range of teaching strategies was employed to help to differentiate for the spectrum of needs (3.3.1,1.5.1,.1.3.1).

Going through the "Do Now" responses highlighted that students enjoyed a mixture of a quiet classroom when working and also team/discussion activities (1.2.1). Thus, I tried to incorporate these elements in my second and third lesson with the class. In the second lesson, I first established clear learning intentions, before asking students which questions they had difficulty with for homework and encouraged their classmates to come to the board to help explain questions to the class and practice their mathematical explanation, providing me the opportunity to teach theory whilst also providing student feedback (3.1.1, 3.2.1, 5.1.1). Following this, I went through more theory on quadrilaterals before enforcing a quiet classroom environment to complete assigned questions (See Appendix 4: Sequence 1 Lesson Plans). Having focused on developing a good student-teacher relationship with the class has helped to improve class participation which is likely to lead to improved student outcomes (Hinton, Warnke, & Wubbolding, 2011). However, from conversation with my ST and reflection on the lesson, I felt that I needed to further differentiate the tasks to accommodate for the various learning styles of the students to improve engagement.

Differentiated instruction addresses the various rates of learning and styles to help all students achieve curriculum outcomes and create positive attitudes towards learning (Konza, 2008). As such, in my third lesson with the class, I incorporated a group investigation activity to help students derive formulas related to angle properties of polygons. The range of learning activities such as team work and use of simulations in this exploratory activity helped to address the diverse range of student learning needs and encouraged peer-assisted

learning (1.3.1, 1.5.1, 3.3.1) (See Appendix 4: Sequence 1 Lesson Plans) (See Appendix 7: Polygon Investigation Activity). Upon reflection and feedback from my supervising teacher, we both felt that this lesson was highly effective in engaging the class and provided adequate time and opportunities for different learners to explore the concept.

Thus, through lesson sequence 1, I illustrated the development of my teaching knowledge and skills through Standard 1 and Standard 3 through collecting data from conversation, surveys and reflection to better understand how my students learn and using this knowledge to trial a range of teaching strategies to differentiate my teaching to improve its efficiency.

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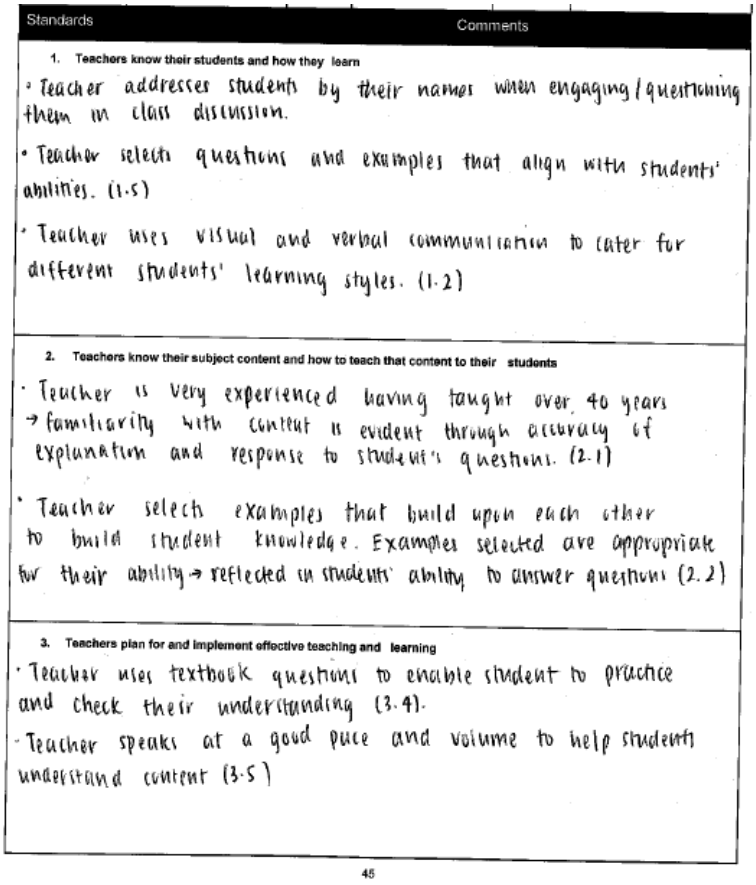
Appendix 2: Lesson Observation

Standards addressed:

1.1.1 Physical, social and intellectual development and characteristics of students

1.2.1 Understand how students learn

Through analysis of classroom proceedings of the ST teaching the Year 10 Mathematics class, I am able to visualise and understand the classroom dynamic and effectiveness of the classroom strategies used to align with the appropriate developmental stage and ability of the students.



Standards	Comments
1. Teachers know their students and how they learn	• Teacher addresses students by their names when engaging / questioning them in class discussion. • Teacher selects questions and examples that align with students' abilities. (1.5) • Teacher uses visual and verbal communication to cater for different students' learning styles. (1.2)
2. Teachers know their subject content and how to teach that content to their students	• Teacher is very experienced having taught over 40 years → familiarity with content is evident through accuracy of explanation and response to student's questions. (2.1) • Teacher selects examples that build upon each other to build student knowledge. Examples selected are appropriate for their ability → reflected in students' ability to answer questions (2.2)
3. Teachers plan for and implement effective teaching and learning	• Teacher uses textbook questions to enable student to practice and check their understanding (3.4). • Teacher speaks at a good pace and volume to help students understand content (3.5)

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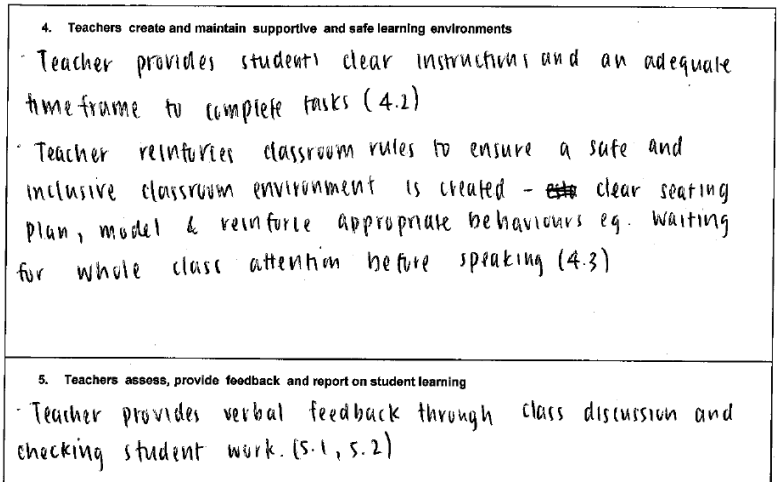


4. Teachers create and maintain supportive and safe learning environments	• Teacher provides students clear instructions and an adequate timeframe to complete tasks (4.2) • Teacher reinforces classroom rules to ensure a safe and inclusive classroom environment is created - ~~esta~~ clear seating plan, model & reinforce appropriate behaviours eg. waiting for whole class attention before speaking (4.3)
5. Teachers assess, provide feedback and report on student learning	• Teacher provides verbal feedback through class discussion and checking student work. (5.1, 5.2)

Appendix 3: Conversation with ST

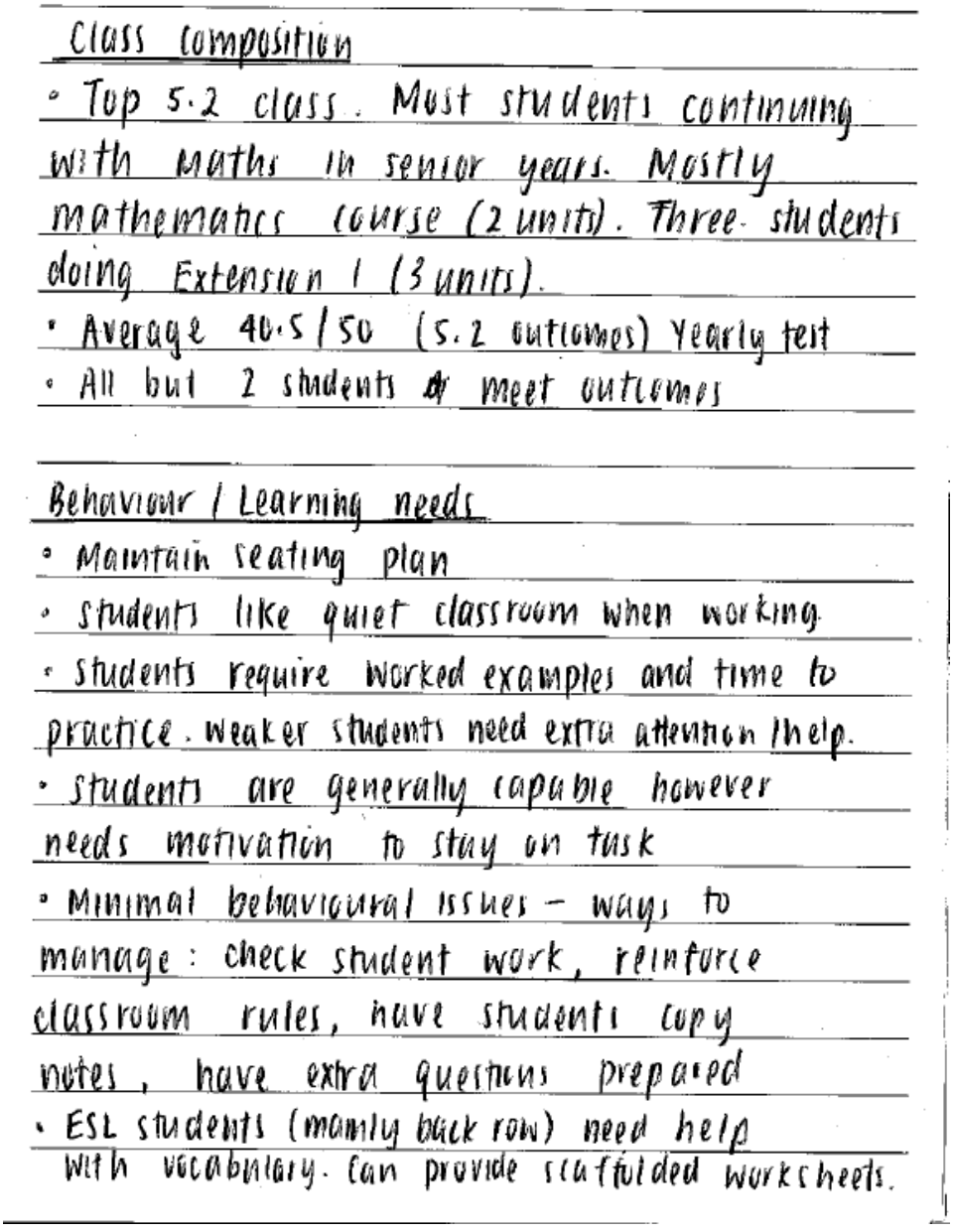
Standards addressed:

1.1.2 Physical, social and intellectual development and characteristics of students

1.2.1 Understand how students learn

6.3.1 Engage with colleagues to improve practice

Through conversation with my ST, I am able to understand the reasoning behind the classroom strategies implemented and gain insight into how to cater for individual student learning needs.



Class composition

- Top 5.2 class. Most students continuing with maths in senior years. Mostly mathematics course (2 units). Three students doing Extension 1 (3 units).
- Average 40.5/50 (5.2 outcomes) Yearly test
- All but 2 students meet outcomes

Behaviour / Learning needs

- Maintain seating plan
- students like quiet classroom when working
- students require worked examples and time to practice. Weaker students need extra attention/help.
- students are generally capable however needs motivation to stay on task
- Minimal behavioural issues – ways to manage: check student work, reinforce classroom rules, have students copy notes, have extra questions prepared
- ESL students (mainly back row) need help with vocabulary. Can provide scaffolded worksheets.

Appendix 4: Sequence 1 Lesson Plans

Standards addressed:

1.2.1 Understand how students learn

1.3.1 Addresses student diversity

1.5.1 Differentiates teaching

3.1.1. Establishes learning goals

3.2.1. Structures and sequences lessons

3.3.1 Uses a range of teaching strategies

Through gathering information about how my students learning (e.g. conversation with ST, lesson observations, surveys, lesson reflections), the following lesson plans demonstrate how I have differentiated my teaching using a range of teaching strategies to address the diverse spectrum of learning needs of the class.

Lesson 1 – Deductive Geometry – Quadrilaterals I

Teacher				**School**	
Lesson duration	80 minutes (Double)	**Year**	10	**Class**	
Curriculum area	Stage 5.2 Properties of Geometrical Figures	**Topic**	Quadrilaterals	**Date**	Term 4, Friday 13/10/2017 (Period
Lesson	Properties of Geometrical Figures – Quadrilaterals				
Syllabus Outcomes	A student: MA5.2-1WM Selects appropriate notations and conventions to communicate mathematical ideas and solutions MA5.2-1WM Interprets mathematical or real-life situations, systematically applying appropriate strategies to solve problems MA5.2-3 WM Constructs arguments to prove and justify results MA5.2-1 MG Calculates the angle sum of any polygon and uses minimum conditions to prove triangles are congruent or similar				
Syllabus Content	Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes (ACMMG244) • apply geometrical facts, properties and relationships to find the sizes of unknown sides and angles of plane shapes in diagrams, providing appropriate reasons - recognise that more than one method of solution is possible (Reasoning) - compare different solutions for the same problem to determine the most efficient method (Communicating, Reasoning) - apply the properties of congruent and similar triangles, justifying the results (Communicating, Reasoning) • apply simple deductive reasoning to prove results for plane shapes				

Lesson Intentions

By the end of this lesson, students will be able to:

- Apply logical reasoning to understand the properties of quadrilaterals.
- Understand the relationship between quadrilaterals

Assumed knowledge

- MA5.2-1WM Selects appropriate notations and conventions to communicate mathematical ideas and solutions
- MA5.2-1WM Interprets mathematical or real-life situations, systematically applying appropriate strategies to solve problems
- MA5.2-3 WM Constructs arguments to prove and justify results
- Familiarity with congruent and similar triangle proofs and concepts

Differentiation

Visual learners: Slides; worked examples on board. Topic quiz is provided on paper and online.

Auditory learners: Teacher communicates verbally to students; group/class discussion.

Kinaesthetic learners: Independent learning through doing questions with /without peer assistance.

Low literacy abilities: The information is presented visually and verbally to provide more opportunities to expose the information to the students. There is a focus on using mathematical terminology when communicating in the classroom. A safe learning is fostered to encourage students to discuss and share their thoughts to improve their literacy.

Higher ability students: Students are taught additional theory and provided extension questions to work on.

Focus for	Literacy	Numeracy	ICT
	Students engage their listening and comprehension capabilities through teacher directed instruction, class discussions and pair/group activities. Students practice expressing their opinions using the appropriate language.	Students are required to critically analyse a range of shapes to determine their congruency/similarity. Students are required to communicate using the appropriate mathematical conventions and apply appropriate mathematical techniques.	Powerpoint is used to visually present the information in a more efficient manner. Socrative (online quiz) platform is used to provide an opportunity to give students and the teacher instantaneous feedback.

Resources

- SmartBoard/Projector
- Powerpoint 10M5-1
- Do Now: All about me
- Stationery: Whiteboard markers, writing utensils, calculator
- Congruency/Similarity quiz. Online and paper.
- Textbooks

WHS

- The teacher should ensure the classroom arrangement does not have tripping hazards to prevent accidents when students navigate around the classroom.

Teaching and Learning Sequence			
Timing	**What teacher does and says**	**What students do and say**	**Assessment and**
Introduction 20 minutes	**<u>Set up classroom/Do Now – 10 min</u>** -Turn on SmartBoard. Put up presentation. -Welcome students as they enter. -Ask students to collect the 'Do Now'. Ask students to get out their workbook/writing utensils and complete the 'Do Now: All About Me" **<u>Introduction/Expectation Setting – 10 min</u>** -Introduce myself to the class -Go through class expectations. Discuss these expectations and come to an agreement with the students. -Go through lesson objective.	-Students unpack and start working on the 'Do Now' -Students discuss their sentiments towards the expectations and come to an agreement	
Body 60 minutes	**<u>Pre-Test – 20 min</u>** -Collect the 'Do Now' -Ask students to login to the online test (Socrative) on their phone. If students do not have access, give students the paper test. -Ask students to complete the test questions independently such that the teacher can understand independent and the overall class ability. -Give students 15 minutes to complete the test -Collect paper tests	-Students complete pretest on phone or on paper.	Formative assessment. Verbal and written feedback is given.

Body	**<u>Revision – 15 minutes</u>** -Go through online Socrative data and go over questions that students struggled with. -Reinforce to students it is important to know the relevant tests and how to apply them as they form the basis for future geometry questions. **<u>Construction of Quadrilateral Family tree – 25 minutes</u>** -Model to students how to construct the quadrilateral family tree to demonstrate how quadrilaterals are related. Ask students to copy the tree in their workbook. Ask students to work on the following questions in class / at home if they do not finish. All students: Chapter 10C 1) 2) 5) 6) all q Extension questions: Chapter 10C 7) a-d Teacher walks around to ensure students are on task. Teacher helps students with questions.	. -Student copy down answers if they did not answer question correctly -Students copy down the theory in their book. -Students work on the problems independently or with their peers	
Conclusion	**<u>Homework and conclusion – 5 minutes</u>** - Remind homework expectation -Ask students to pack up and wait for the bell behind their desks.	-Student copy down homework -Students pack up and wait for the bell.	

Lesson 2 – Deductive Geometry – Quadrilaterals II

Teacher Education Student				**School**	
Lesson duration	80 minutes	**Year**	10	**Class**	
Curriculum area	Stage 5.2 Properties of Geometrical Figures	**Topic**	Quadrilaterals	**Date**	Term 4, Monday 16/10/2017 (Period 3+4)
Lesson Title/Focus	Properties of Geometrical Figures – Quadrilaterals				
Syllabus Outcomes	A student: MA5.2-1WM Selects appropriate notations and conventions to communicate mathematical ideas and solutions MA5.2-1WM Interprets mathematical or real-life situations, systematically applying appropriate strategies to solve problems MA5.2-3 WM Constructs arguments to prove and justify results MA5.2-1 MG Calculates the angle sum of any polygon and uses minimum conditions to prove triangles are congruent or similar				
Syllabus Content	Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes (ACMMG244) • apply geometrical facts, properties and relationships to find the sizes of unknown sides and angles of plane shapes in diagrams, providing appropriate reasons - recognise that more than one method of solution is possible (Reasoning) - compare different solutions for the same problem to determine the most efficient method (Communicating, Reasoning) - apply the properties of congruent and similar triangles, justifying the results (Communicating, Reasoning) • apply simple deductive reasoning to prove results for plane shapes				

Lesson Intentions

By the end of this lesson, students will be able to:

- Understand the properties of each quadrilateral
- Apply the properties of quadrilaterals to solve problems

Assumed knowledge

- MA5.2-1WM Selects appropriate notations and conventions to communicate mathematical ideas and solutions
- MA5.2-1WM Interprets mathematical or real-life situations, systematically applying appropriate strategies to solve problems
- MA5.2-3 WM Constructs arguments to prove and justify results
- Familiarity with congruent and similar triangle proofs and concepts

Differentiation

Visual learners: Slides; worked examples on board.

Auditory learners: Teacher communicates verbally to students; group/class discussion.

Kinaesthetic learners: Independent learning through doing questions with /without peer assistance; students are given opportunity to demonstrate their understanding on the board.

Low literacy abilities: The information is presented visually and verbally to provide more opportunities to expose the information to the students. There is a focus on using mathematical terminology when communicating in the classroom. A safe learning is fostered to encourage students to discuss and share their thoughts to improve their literacy.

Higher ability students: Students are taught additional theory and provided extension questions to work on.

Focus for	**Literacy**	**Numeracy**	**ICT**
	Students engage their listening and comprehension capabilities through teacher directed instruction, class discussions and pair/group activities. Students practice expressing their opinions using the appropriate	Students are required to critically analyse a range of shapes to determine their congruency/similarity. Students are required to communicate using the appropriate mathematical conventions and apply appropriate mathematical techniques.	Powerpoint is used to visually present the information in a more efficient manner.

Resources	**WHS**
• SmartBoard/Projector • Powerpoint 10M5-2 - Stationery: Whiteboard markers, writing utensils, calculator - Textbook	• The teacher should ensure the classroom arrangement does not have tripping hazards to prevent accidents when students navigate around the classroom.

Teaching and Learning Sequence

Timing	**What teacher does and says**	**What students do and say**	**Assessment and**
Introduction 10 minutes	**Prepare for class/Introduction– 10 min** - Put presentation on SmartBoard -Welcome students as they enter. -As students enter class, ask students to get out their workbook/homework and textbook.	-Students get out their materials	

Body 65 minutes	**<u>Homework check – 20 minutes</u>** -Ask students which questions they had trouble with -Call the roll to check if students completed the homework -Ask for volunteers/randomly select students to come to the board to help with the questions	-Students provide a list of questions they had trouble with -Students announce whether or not they have completed their homework -Students present their working out	Formative assessment. Verbal feedback is given.
Body	**<u>Properties of Quadrilaterals – 20 minutes</u>** -Revisit theory of properties of quadrilaterals. -Bring up textbook question Exercise 10C q9) 10) (pg 348) and do worked examples on the board -Assign student classwork/homework. **<u>Student Independent Work – 25 minutes</u>** -Ask students to work on the following problems either independently or quietly with their peers. Incomplete questions will be for homework.	-Students copy down theory -Students contribute to solving and copy down examples. Students work on the problems independently or with their peers	Formative assessment. Verbal feedback is given.
Conclusion	**<u>Homework reminder – 5 minutes</u>** - Remind homework expectation -Ask students to pack up and wait for the bell behind their desks.	-Student copy down homework -Students pack up and wait for the bell.	

Lesson 3 – Deductive Geometry – Quadrilaterals

Teacher Education Student				**School**	
Lesson duration	80 minutes	**Year**	10	**Class**	
Curriculum area	Stage 5.2 Properties of Geometrical Figures	**Topic**	Quadrilaterals	**Date**	Term 4, Wednesday 18/10/2017 (Period 1+2)
Lesson Title/Focus	Properties of Geometrical Figures – Quadrilaterals				
Syllabus Outcomes	A student: MA5.2-1WM Selects appropriate notations and conventions to communicate mathematical ideas and solutions MA5.2-1WM Interprets mathematical or real-life situations, systematically applying appropriate strategies to solve problems MA5.2-3 WM Constructs arguments to prove and justify results MA5.2-1 MG Calculates the angle sum of any polygon and uses minimum conditions to prove triangles are congruent or similar				
Syllabus Content	Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes (ACMMG244) •use dynamic geometry software to investigate the constancy of the exterior angle sum of polygons for different polygons (Reasoning) • apply the result for the interior angle sum of a triangle to find, by dissection, the interior angle sum of polygons with more than three sides - use dynamic geometry software to investigate the interior angle sum of different polygons (Reasoning) - express in algebraic terms the interior angle sum of a polygon with n sides, eg (Communicating) • apply interior and exterior angle sum results for polygons to find the sizes of unknown angles				

Lesson Intentions

By the end of this lesson, students will be able to:

- Recognise different types of polygons
- Define the exterior and interior angle of polygons
- Investigate the angle sum of polygons

Assumed knowledge

- MA5.2-1WM Selects appropriate notations and conventions to communicate mathematical ideas and solutions
- MA5.2-1WM Interprets mathematical or real-life situations, systematically applying appropriate strategies to solve problems
- MA5.2-3 WM Constructs arguments to prove and justify results
- Familiarity with congruent and similar triangle proofs and concepts

Differentiation

Visual learners: Slides; worked examples on board; deriving activity involves visualising; use of simulations

Auditory learners: Teacher communicates verbally to students; group/class discussion.

Kinaesthetic learners: Independent learning through doing questions with /without peer assistance; students are given opportunity to demonstrate their understanding on the board; deriving activity allows students to investigate concepts with their peers and online platforms; changing variables in the simulation to aid understanding

Low literacy abilities: The information is presented visually and verbally to provide more opportunities to expose the information to the students. There is a focus on using mathematical terminology when communicating in the classroom. A safe learning is fostered to encourage students to discuss and share their thoughts to improve their literacy.

Higher ability students: Students are taught additional theory and provided extension questions to work on.

Focus for	**Literacy**	**Numeracy**	**ICT**
	Students engage their listening and comprehension capabilities through teacher directed instruction, class discussions and pair/group activities. Students practice expressing their opinions using the appropriate language.	Students are required to critically analyse a range of shapes to determine their congruency/similarity. Students are required to communicate using the appropriate mathematical conventions and apply appropriate mathematical techniques.	Powerpoint is used to visually present the information in a more efficient manner. Angle simulations help students explore and build their knowledge.

Resources	**WHS**
• SmartBoard/Projector • Powerpoint 10M5-3 - Stationery: Whiteboard markers, writing utensils, calculator - Textbook - Worksheet – Deriving Angle Sum Formulas SIMULATIONS - Simulation Interior Angles NCTM https://illuminations.nctm.org/Activity.aspx?id=3546 - (Alternative) Simulation Interior Angles: http://www.mathopenref.com/polygoninteriorangles.html - (Alternate simulation) GeoGebra Interior Angles triangles: https://www.geogebra.org/m/zEF3vNYS - Simulation Exterior Angles: http://www.mathopenref.com/polygonexteriorangles.html - Sum Exterior Angles: https://www.geogebra.org/m/KWb7RrTu	• The teacher should ensure the classroom arrangement does not have tripping hazards to prevent accidents when students navigate around the classroom.

Teaching and Learning Sequence			
Timing	**What teacher does and says**	**What students do and say**	**Assessment and feedback strategies**
Introduction 10 minutes	**<u>Do Now/Introduction– 10 minutes</u>** - Put presentation on SmartBoard -Welcome students as they enter. -Ask students to collect both worksheets on their way in -Ask students to get out their workbook/writing utensils and complete the 'Do Now: Matching' while they wait -Once students have settled in, ask them to put down their pens and go through lesson objectives	-Students collect the worksheets as they enter -Students unpack and prepare for class -Students start working on the worksheet	

Body 65 minutes	**<u>Homework Check and Revision of questions – 25 minutes</u>** -Mark roll and check homework. -Ask students which questions they had trouble with -Ask for volunteers/randomly select students to complete problems on the board *Time can be flexible in this section – leaving more time for activity*	-Students announce whether or not they have completed their homework -Students share questions they are not sure about -Students work with the teacher to answer the questions	Formative assessment. Verbal feedback is given.
Body 65 minutes	**<u>Deriving formulas to calculate angles of a polygon – 40 minutes</u>** <u>15 minutes:</u> -Go through answers for the matching worksheet. -Define types of polygons. Ask students to copy down examples. -Model how to fill the first two columns of the deriving worksheet. <u>25 minutes:</u> -Instruct students to work independently or with their peers to discover the pattern to derive the formula. -Encourage students to try to use the simulations to help their understanding -Walk around to check student progress and help them answer discussion questions ALTERNATIVELY: If by the last 20 minutes students are able to complete the discussion questions. Go through discussion with class. Can also assign set 1 questions for homework.	-Students mark their worksheet -Students fill in worksheet -Students work on activity independently or with their peers	Formative assessment. Verbal feedback is given. Formative assessment. Verbal feedback is given.

Conclusion 5 minutes	**<u>Homework reminder – 5 minutes</u>** -Remind students to complete discussion question for next lesson to discuss.	-Student copy down homework	

Appendix 5: Do Now: All About Me

Standards addressed:

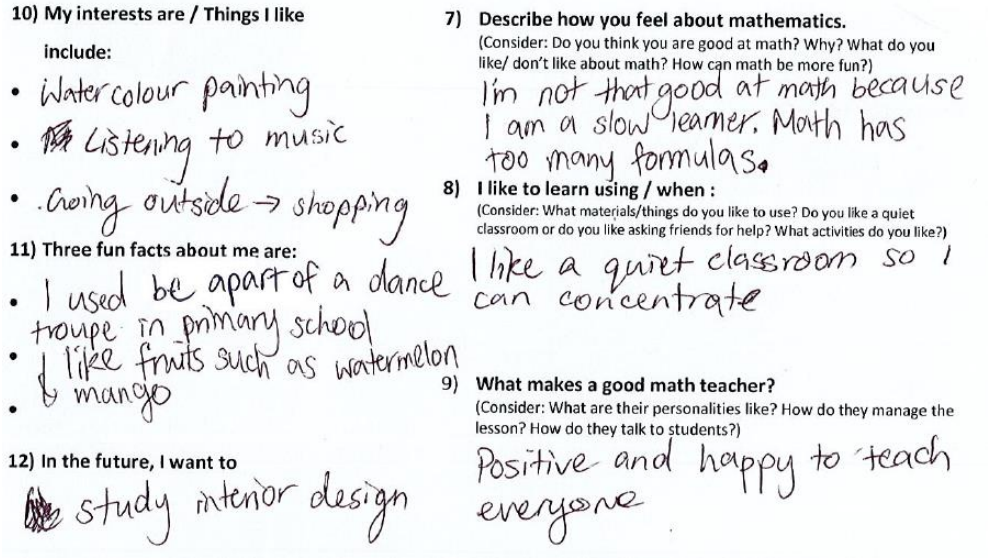
1.1.1. Physical, social and intellectual development and characteristics of students

1.2.1 Understand how students learn

4.1.1 Supports student participation

The following Do Now activity provides me the opportunity to engage and acknowledge student's opinions and better understand their characteristics and learning preferences. This activity also helps to create an inclusive classroom environment to model and support positive attitudes towards learning.

Sample 1:



10) My interests are / Things I like include:

- Watercolour painting
- Listening to music
- Going outside → shopping

11) Three fun facts about me are:

- I used be apart of a dance troupe in primary school
- I like fruits such as watermelon & mango

12) In the future, I want to

study interior design

7) Describe how you feel about mathematics.
(Consider: Do you think you are good at math? Why? What do you like/ don't like about math? How can math be more fun?)

I'm not that good at math because I am a slow learner. Math has too many formulas.

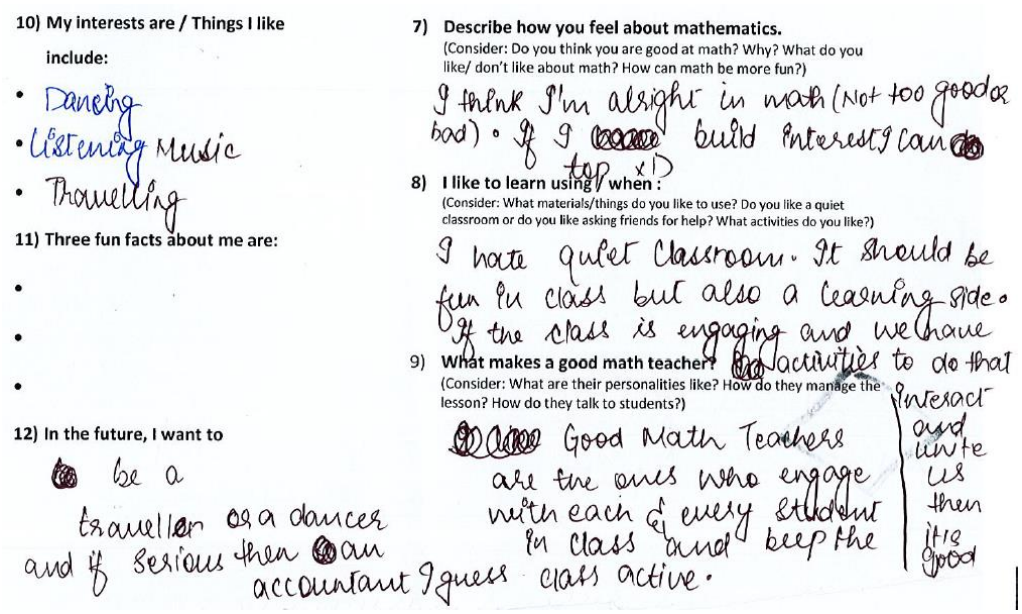
8) I like to learn using / when :
(Consider: What materials/things do you like to use? Do you like a quiet classroom or do you like asking friends for help? What activities do you like?)

I like a quiet classroom so I can concentrate

9) What makes a good math teacher?
(Consider: What are their personalities like? How do they manage the lesson? How do they talk to students?)

Positive and happy to teach everyone

Sample 2:



10) My interests are / Things I like include:

- Dancing
- Listening Music
- Travelling

11) Three fun facts about me are:

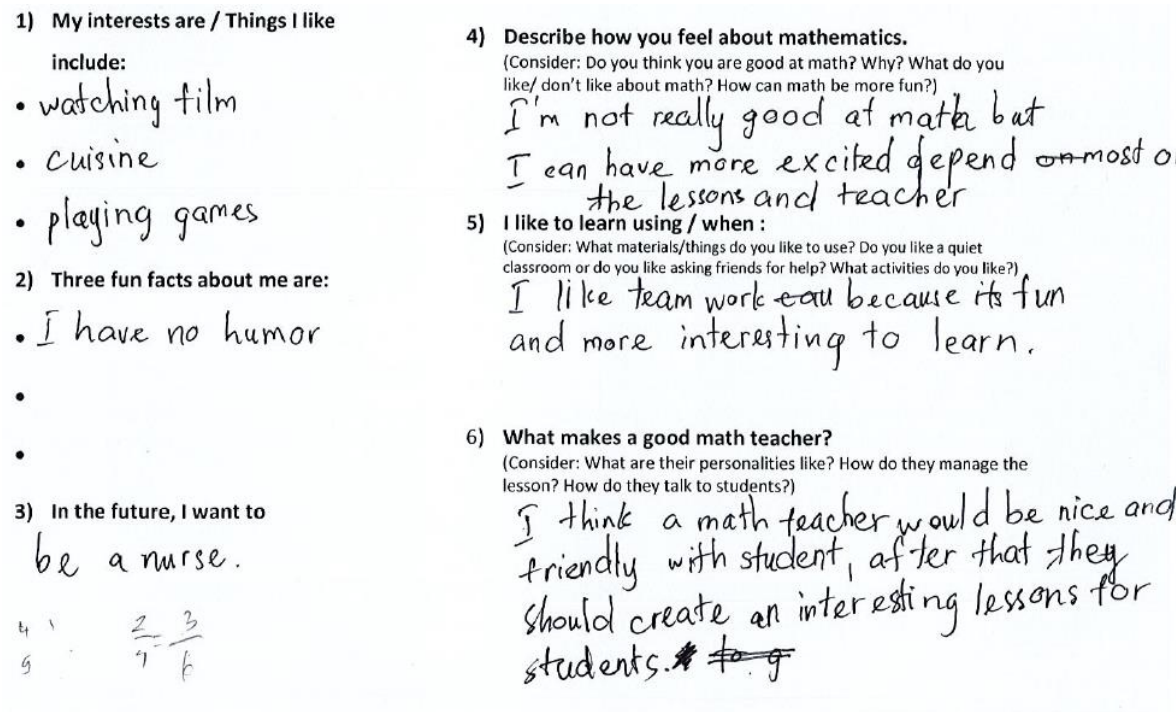
12) In the future, I want to be a traveller or a dancer and if serious then an accountant I guess

7) Describe how you feel about mathematics.
(Consider: Do you think you are good at math? Why? What do you like/ don't like about math? How can math be more fun?)
I think I'm alright in math (Not too good or bad). If I build interest I can top x1)

8) I like to learn using / when :
(Consider: What materials/things do you like to use? Do you like a quiet classroom or do you like asking friends for help? What activities do you like?)
I hate quiet classroom. It should be fun in class but also a learning side. If the class is engaging and we have activities to do that interact and unite us then it is good

9) What makes a good math teacher?
(Consider: What are their personalities like? How do they manage the lesson? How do they talk to students?)
Good Math Teachers are the ones who engage with each & every student in class and keep the class active.

Sample 3:



1) My interests are / Things I like include:

- watching film
- cuisine
- playing games

2) Three fun facts about me are:

- I have no humor

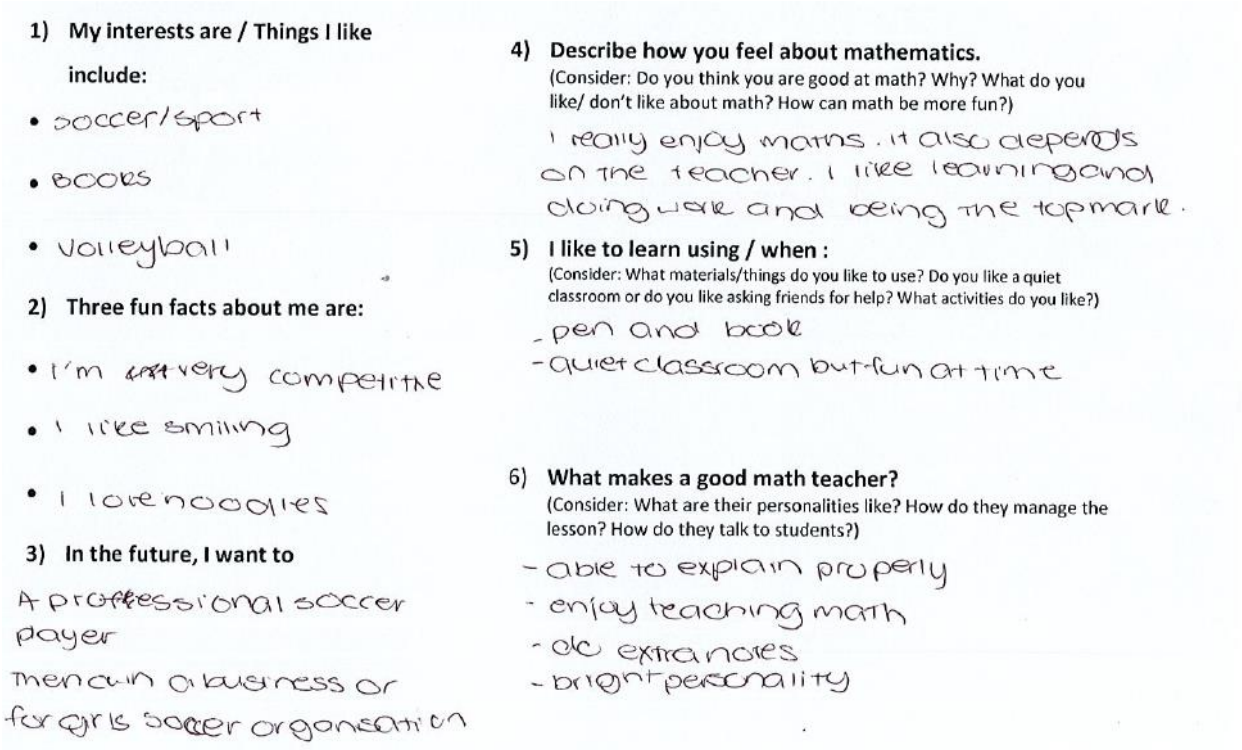
3) In the future, I want to be a nurse.

4) Describe how you feel about mathematics.
(Consider: Do you think you are good at math? Why? What do you like/ don't like about math? How can math be more fun?)
I'm not really good at math but I can have more excited depend ~~on~~ most on the lessons and teacher

5) I like to learn using / when :
(Consider: What materials/things do you like to use? Do you like a quiet classroom or do you like asking friends for help? What activities do you like?)
I like team work ~~can~~ because its fun and more interesting to learn.

6) What makes a good math teacher?
(Consider: What are their personalities like? How do they manage the lesson? How do they talk to students?)
I think a math teacher would be nice and friendly with student, after that they should create an interesting lessons for students. ~~to g~~

Sample 4:



1) **My interests are / Things I like include:**
- soccer/sport
- books
- volleyball

2) **Three fun facts about me are:**
- I'm very competitive
- I like smiling
- I love noodles

3) **In the future, I want to**
A professional soccer payer
Then own a business or for girls soccer organisation

4) **Describe how you feel about mathematics.**
(Consider: Do you think you are good at math? Why? What do you like/ don't like about math? How can math be more fun?)
I really enjoy maths. It also depends on the teacher. I like learning and doing well and being the topmark.

5) **I like to learn using / when :**
(Consider: What materials/things do you like to use? Do you like a quiet classroom or do you like asking friends for help? What activities do you like?)
- pen and book
- quiet classroom but fun at time

6) **What makes a good math teacher?**
(Consider: What are their personalities like? How do they manage the lesson? How do they talk to students?)
- able to explain properly
- enjoy teaching math
- ok extra notes
- bright personality

Appendix 6: Geometry Quiz

Standards addressed:

1.3.1 Addresses student diversity

1.5.1 Differentiates teaching

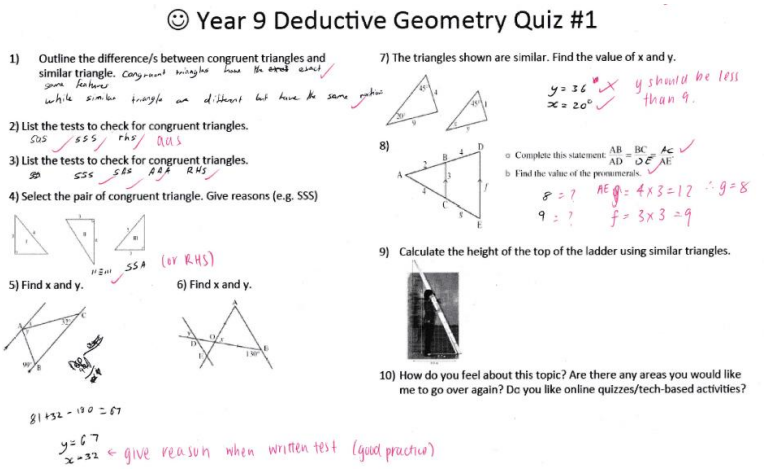
3.2.1. Structures and sequences lessons

3.3.1. Uses a range of teaching strategies

5.2.1. Provides feedback

Through the geometry quiz which contained questions of different abilities, I was able to differentiate the ability of the students and adapt the lesson to reflect students' understanding. I was able to determine areas of strengths, and revise areas of weaknesses to help improve outcomes. By having both online and physical versions of the paper also helps to cater for the student learning preference and circumstances. Through both mediums, I was able to gather data on their understanding, provide instantaneous feedback and determine their sentiments towards the use of technology.

Sample 1:



☺ Year 9 Deductive Geometry Quiz #1

1) Outline the difference/s between congruent triangles and similar triangle. Congruent triangles have the exact same features while similar triangle are different but have the same ratios

2) List the tests to check for congruent triangles. SAS SSS RHS AAS

3) List the tests to check for congruent triangles. SAS SSS SAS AAA RHS

4) Select the pair of congruent triangle. Give reasons (e.g. SSS)

II and III SSA (or RHS)

5) Find x and y.

81+32-180 = 67

y = 67

x = 32 ← give reason when written test (good practice)

6) Find x and y.

7) The triangles shown are similar. Find the value of x and y.

y = 36 ✗ y should be less than 9.

x = 20° ✓

8) a Complete this statement: $\frac{AB}{AD} = \frac{BC}{DE} = \frac{AC}{AE}$ ✓

b Find the value of the pronumerals.

g = ?

AE g = 4×3 = 12 ∴ g = 8

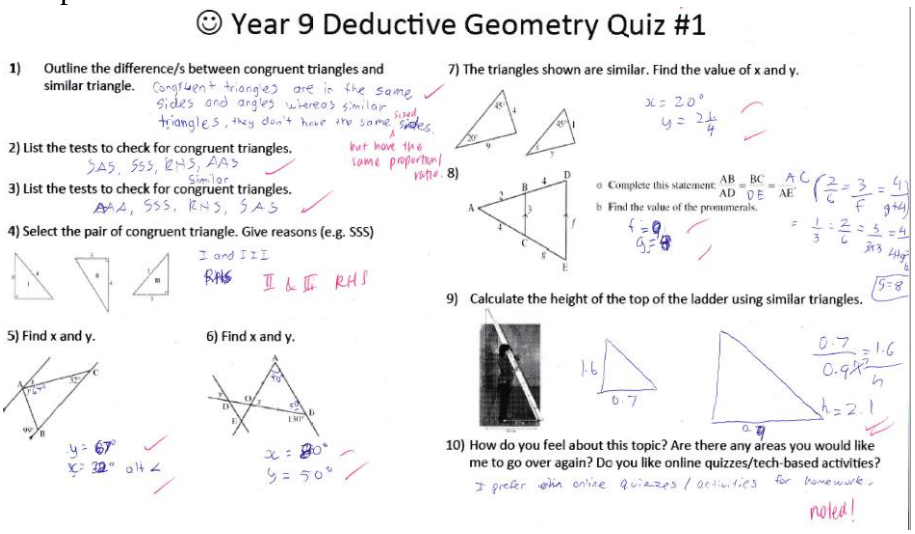
f = ?

f = 3×3 = 9

9) Calculate the height of the top of the ladder using similar triangles.

10) How do you feel about this topic? Are there any areas you would like me to go over again? Do you like online quizzes/tech-based activities?

Sample 2:



☺ Year 9 Deductive Geometry Quiz #1

1) Outline the difference/s between congruent triangles and similar triangle. Congruent triangles are in the same sizes and angles whereas similar triangles, they don't have the same sized sides, but have the same proportional ratio

2) List the tests to check for congruent triangles. SAS, SSS, RHS, AAS

3) List the tests to check for congruent triangles. ~~AAA~~ Similar, SSS, RHS, SAS

4) Select the pair of congruent triangle. Give reasons (e.g. SSS)

I and II ~~RHS~~ II & III RHS

5) Find x and y.

y = 67°

x = 23° alt ∠

6) Find x and y.

x = 80°

y = 50°

7) The triangles shown are similar. Find the value of x and y.

x = 20°

y = 2¼

8) a Complete this statement: $\frac{AB}{AD} = \frac{BC}{DE} = \frac{AC}{AE}$ $\left(\frac{2}{6} = \frac{3}{f} = \frac{4}{g+4}\right)$

b Find the value of the pronumerals.

f = 9

g = 8

$= \frac{1}{3} = \frac{2}{6} = \frac{3}{3\times3} = \frac{4}{4\times2}$

g = 8

9) Calculate the height of the top of the ladder using similar triangles.

1.6, 0.7, 0.9, h

$\frac{0.7}{0.9} = \frac{1.6}{h}$

h = 2.1

10) How do you feel about this topic? Are there any areas you would like me to go over again? Do you like online quizzes/tech-based activities?

I prefer with online quizzes / activities for homework.

noted!

Online version (Socrative)

Student Names	Total Score (0 - 100)	Number of correct answers	Outline the differencefs between congruent triangles and similar triangles.	List the tests to check for congruent triangles.	List the tests to check for similar triangles.	Select the pair of congruent triangles. Give reason for your answer.	Find x and y.	Find x and y.	The triangles shown are similar. Find the value of x and y.	Select the correct response.	Calculate the height of the top of the ladder using similar triangles.	How do you feel about this topic? How do you feel about using technology/online quizzes?
1	83	5	congruent triangles have same size and shape and are identical whereas similar triangles have equal angles or corresponding sides are equal	sss, sas, ass, asa, rhs	aaa, sss, sas, rhs	Triangle II and Triangle III (RHS)	x=32o, y=67o	x=80o, y=50o	x=20o , y = (9/4)	(i) DE (ii) AC g=8, f=9	h=1.8m	yes
2	50	3	.	side and angles	.	Triangle I and Triangle III (SAS)	x=32o, y=67o	x=80o, y=50o	x=20o , y= 4	(i) DE (ii) AC g=8, f=9	h=2.0m	yee
3	67	4	Similar triangles need to have all the same messurement. Congruent triangles need to have the same probability.	SSS SAS SSA ASA	SSS SAS SSA AAS ASA	Triangle II and Triangle III (RHS)	x=32o, y=67o	x=80o, y=50o	x=20o , y = (9/4)	(i) DE (ii) AC g=6, f=5	h=1.7m	this topic is great becuase it help me to improve my geometry maths. and the technology based activities is great to me.
4	83	5	Congruent triangles are the triangle have a same shape with another, but have a different measurement. Similar triangles are the triangle have an exactly the same shape and measurement with another	AAA SAS ASA AAS	SSS, SAS, ASA	Triangle II and Triangle III (RHS)	x=32o, y=67o	x=80o, y=50o	x=20o , y = (9/4)	(i) DE (ii) AC g=8, f=9	h=1.8m	I think that it is really suitable for apply in study Math, it helps me to review my lesson quickly and let me have an excited feeling in Math - a difficult and confusing subject.
5	83	5	Congruent triangles are triangles that have three same length sides. Similar triangles are triangles that have two same length sides	SSS SAS ASA. AAS RHS	AAA SSS SAS RHS	Triangle II and Triangle III (RHS)	x=32o, y=67o	x=80o, y=50o	x=20o , y = (9/4)	(i) DE (ii) AC g=8, f=9	h=1.8m	I like online quizzes.
6	33	2	congruent triangles are the exact same and similar triangles are the same kind but slightly different	Explanation, Show working, check	RHS	Triangle I and Triangle III (SAS)	x=32o, y=67o	x=80o, y=50o	x=20o , y= 4	(i) DE (ii) AC g=6, f=5	h=1.8m	This topic is kind of complicated because there are many things to remember
7	83	5	they are different	same sides	different angles	Triangle II and Triangle III (RHS)	x=32o, y=67o	x=80o, y=50o	x=20o , y = (9/4)	(i) DE (ii) AC g=8, f=9	h=1.8m	kahoot plz
8	50	3	congruent triangles are the thwy have the same angles or sides Similar Triangles are when they have the same ratio	SSS SAS RHS ASA	...	Triangle II and Triangle III (RHS)	x=32o, y=67o	x=130o, y=70o	x=20o , y= 4	(i) AC (ii) AE g=6, f=5	h=2.1m	I dont like this topic because 1. It won't help me for my future 2. i hate shapes
9	50	3	Congruent triangles are triangles that have same size same shape and equal angles Similar triangles are triangles that have two sides equal and two equal	SSS,SAS,ASA,AA S,RHS	SAS,SSS,ASA	Triangle II and Triangle III (RHS)	x=32o, y=67o	x=80o, y=40o	x =20o, y= (9/2)	(i) DE (ii) AC g=8, f=9	h=1.7m	
Class Scoring	53.0%	3.18	0.0%	0.0%	0.0%	63.6%	81.8%	63.6%	45.5%	54.5%	9.1%	0.0%