GLIM PROJECT - MEASUREMENT

INTRODUCTION

This school introduced the International Baccalaureate Middle Years Program in 2003.The school's aim through the implementation of the IB, MYP is to develop independent learners across curriculum areas while encouraging the use of a variety of learning styles by each year level across years 7 to 10.

Years 7 uses 'The Three Storey Intellect', 'The Six Thinking Hats' and 'preferred learning style' to develop thinking and independent learner skills in the students. Classes are mixed ability groupings ranging from students who experience learning difficulties across the ability range to talented and gifted students.

The students selected for the GLIM activity are the classes taught by Teacher A, one class, and Teacher B, two classes. Students in the classes are mixed ability with talented students rather than gifted students identified through the pre entry assessment and regular maths assessment and activities. The pre entry assessment is conducted during term 3 of the student's sixth year. A range of assessments including Maths and general reasoning are given and results are forwarded on to the College to enable staff to identify student needs. At the commencement of Year 7 the students work through activities to find their preferred learning style then created a network web of their preferred learning styles. At the commencement of each maths topic the students complete a 'KWL', what they know, what they want to learn and what they have learnt. Although teachers of Year 7 Maths in 2005 have not identified any Gifted Maths students, there is a number of talented Maths students for whom teachers provide additional challenging activities related to presented topics.

For the GLIM study Teacher A and Teacher B presented the measurement unit of study as a self directed learning unit. Students were provided with the topic outline and activities to complete within a given time frame. The assessment task was challenging so students could use existing, new and discovered knowledge to enable them to complete the task. Teachers became facilitators, teaching specific key concepts and being a support person so students could investigate and develop their existing knowledge as well as discover new knowledge and strategies to problem solve. Students were able to confer with their peers during the unit so sharing of their knowledge was a key element in the unit also.

The measurement unit covered the CSF ll learning outcomes of:

Measuring and Estimating	4.4	Read simple scales.
	5.1	Recognise and select appropriate metric units and levels of accuracy for measuring quantities.
	5.2	Select instruments to measure length.
	5.2	Select, use and adapt instruments to measure length.
	5.3	Use judgements of the size of metric units to make and refine estimates of quantities.
	5.4	Make designs that exhibit symmetries.
Using relationships	4.1	Measure the area of regular and irregular polygons.
	4.2	Calculate the area of a polygon.
	5.1	Obtain areas by counting squares.
	5.2	Develop and use rules to calculate perimeters of polygons.
	5.2	Develop and use rules to calculate areas of shapes based on rectangles.
	5.2	Develop and use rules to calculate areas of shapes based on triangles.

2. REFLECTIONS ON PROFESSIONAL DEVELOPMENT COMPONENTS

The components covered valuable areas for teacher training and implementation focussing on both the theoretical and practical aspects of working with GLIM. Procedures introduced were immediately transferable to the classroom and course writing at our school, e.g. the Garden Bed format for preparing units.

In particular, procedures for identifying GLIM and the importance of catering for a variety of learning styles have now been taken as a priority in Year 7 Maths.

John Munro's extensive knowledge and ability to develop interesting ideas in specific topics such as Number, Space etc., were valuable resources and encouraged participants to develop these skills for the benefit of their students.

Being able to canvas ideas in the group was also useful but, on some occasions, working with both Primary and Secondary teachers, although interesting, was not the most efficient, as the level of Mathematics discussed was not relevant.

Overall, however, the sessions were thought provoking with many useful ideas applicable to the classroom, not only to enhance the learning for GLIM but for all students.

3. TEACHING PROJECT

The **learning needs targeted** by the measurement unit were:

Topic knowledge of converting units of length, accurately measuring units of length, determining perimeters and areas of polygons.
Students verbalising knowledge and understanding of measurement.
Student ability to be a self directed learner and complete the teaching/learning activities.
Student development of new knowledge and application of knowledge to problem solve.
Student competency to problem solve appropriately and imaginatively.
Student's ability to utilise peer knowledge and problem solving strategies.
Catering for the wide range of student ability in the mixed ability group.

Planning for GLIM students:

The **self directed** unit on measurement contained a detailed work plan covering all key concepts.
The listed exercises from the text enabled students to work at their **own pace**.
Extension activities using text challenges and technology enabled students to **extend** thinking and application skills,
The assessment task provided students with a **challenging option** enabling them to exhibit understanding and application of measurement concepts.

Approach to teaching

The self directed unit of study for measurement worked well for the talented and high achieving students who worked at their own pace and completed all the exercise work accurately.
A number of students were able to investigate the challenging activities and the technology task with success.
Less able students found the self directed unit difficult to complete for a number of reasons including time management and reading comprehension.

Teacher procedures

Initially teaching procedures corresponded to the students' level of application within the unit when teaching key concepts.
As students progressed through the exercises teacher instruction was not at the level of most students, as the more able students had worked passed the concepts and the less able students had not reached the concepts.
More able students approached the self directed task well with the teacher as a facilitator utilising teacher time only when they had an enquiry about a concept or exercise. Less able students preferred teacher directed sessions so they could concentrate on the key concepts as they are being taught. Teacher direction enabled them to complete set exercises with teacher assistance.

During application on the assessment task all students needed specific demonstration and teaching of one concept by the teacher.

Connections to creative ideas

Students were able to connect their creative ideas to the measurement unit through practicing to prove the Gulliver's adage for measurement; the development of a role-play on La Grange, French mathematician; the homework tasks for perimeter and area; the challenging tasks, which consolidated knowledge from the exercises in the detailed work plan and the technology tasks.

The assessment task had a creative component incorporated into it.

Discussion of student samples

Assess Task Sample A use of scale; clear diagrams; rules not shown; chose to do own furniture; imaginative ideas for objects; research and compared prices showing initiative; limited evaluation of process

Sample B no use of scale; adequate diagrams; rules explained but no calculations; chose to do own furniture but no scale shown; research for prices showing initiative; Satisfactory evaluation of the process

Sample C no use of scale; good explanation of the process but limited diagrams; rules shown; chose to do own furniture; research for prices showing initiative; satisfactory evaluation of the process

Reflection

The self directed measurement unit was an appropriate teaching learning tool for the talented and high achieving students as they were able to work through at their own pace and challenge themselves to complete all the set tasks and extend themselves to further investigations when working through the assessment task. GLIM students would have the ability to consolidate their learning processes through assisting their peers during the application periods when all students are working through the exercises. Also when completing the evaluation and reflection criteria on the assessment task criteria sheet GLIM are able to verbalise in written form their learning processes.
Initially all students were motivated to participate in the Gulliver's adage activity, then in the creation and performance of a role play on the life of La Grange, the French mathematician. Role play performances lacked imaginative outcomes as the students' history of the era is limited and no research time was given during class.
When the students began the exercise task work they displayed various levels of interest and self learning towards the measurement unit. The less motivated students required assistance throughout and on all aspects of the unit. The talented and high achieving students were able to work through the exercises with minimal teacher assistance and were keen to work at their own

pace. They provided assistance to their peers whenever asked and actively ensured the exercise work was complete so they could take up the challenge tasks provided in the unit.

Linking curriculum

The measurement unit is linked to SOSE through the mapping and scale unit as students needed to be able to read information to create scale drawings in a plan format for specific items in the assessment task. Also Technology (Textiles) is linked as students needed to be able to visualise how material could be used to cover an object as well as know how material is purchased.

Motivation to learn

The unit was designed as a self directed unit of study to motivate student independent learning across the Year 7 Mathematics classes.
Some students enjoyed the chance to work at their own pace and take advantage of extension activities. The motivated students were efficient time managers within the class through working consistently on the set tasks. Others found the unit challenging to self motivate themselves to complete set tasks and attempt the extension tasks due to their poor time management skills. They were unable to maintain a consistent effort during application to set tasks.
The motivated students used prior knowledge and acquired new knowledge and skills easily. The other students were unable to use prior knowledge effectively and had difficulty in developing their knowledge and skills independently.

Journal

Although students did not keep a journal they were asked to complete an eveluation at the end of the unit.
The majority of students were happy with the process of self-directed learning although not all work was completed. Some struggled with the assessment task and the application of measurement knowledge.
Some student comments:
"I thought the idea of a self-directed unit is good because everyone can look at the things they need to improve on"
"I really enjoyed the measurement unit because I could work at my own pace"
"I reacted in a positive way to the unit and ticked off all of the parts as I had to."
"My reaction to this task [Assessment task: Kit furniture] was shock because I didn't know how to put the furniture together in theory. So that was a set back. To ensure I finished all parts of the unit, I worked quickly in class, and if I had any homework I'd doit as soon as I got home."
"I enjoyed this unit despite it being a bit difficult because I felt very independent and made me get straight into my work."

4. KEY ISSUES FOR CEO CONSIDERATION

- Keeping track of participating schools progress at implementing GLIM programs.
- Best practice professional development for Maths teachers across year levels.
- Professional development in maths topics to develop real life situation tasks across ranges of ability and for GLIM.
- Develop and maintain a readily accessible web site as a 'blog' or ideas bank, ensuring Maths teachers are notified of the web address. Teachers should be encouraged to add their good ideas to the 'blog' (ideas bank).
- Set up a GLIM network for teachers and students.

- To source inspirational speakers for GLIM and/or teachers.
- GLIM Maths Challenge days, either regional or central.

5. WHERE TO NEXT?

This school has recently introduced the IB Middle Years Program so there is currently a review of Mathematics courses throughout Years 7 to 10, with particular attention to the inclusion of Higher Order Thinking skills. As units are reviewed and developed it will be possible to incorporate structures and activities to identify, motivate and interest GLIM.

Having completed and trialled the topic ”Measurement” for Year 7, it will be used as a model for teachers when writing further units. As topics are rewritten in 2006 each will include some initial identification of skills and interests for GLIM, as well as activities based on the “Garden Bed” format to ensure a wide variety of tasks.

By the end of 2006 the Year 10 course will have been completely redeveloped and will be able to incorporate an extension/special interest component to cater for GLIM.

With a current Timetable review occurring there is an opportunity to recommend blocking of classes at Year 7 and 8 to allow for more flexibility in grouping like-ability students and enable the teacher to more directly address the specific needs of GLIM.

Develop a problem solving tasks bank for each topic across the year levels. Topic centred and using real life situations.

6. APPENDICES

Appendix A: Course Information:
Unit overview Garden Bed Format.doc
Unit Outline IB Format. pdf
YEAR 7 Measurement Unit Teacher Notes.doc
Measurement Assignment Teachers notes.doc

Appendix B: Student Task Sheets
Self-Directed Worksheets.doc
Gulliver's travels.doc
Estimation length.doc
Most unusual area.doc
Measurement Assignment.doc

APPENDIX A – UNIT OVERVIEW MEASUREMENT YEAR 7

Learn new ideas in particular cultural, social or historical contexts	**Link new ideas in scientific-mathematical ways**	**Link emotions/feelings with new ideas**
What measurement system did the Lilliputians use to make Gulliver's clothes? (Excerpt from Gulliver's travels by J. Swift) When was the Metric System developed?	Develop a conversion chart for metric units of length / area. Rules for perimeter and area of quadrilaterals. Develop the rule for area of a triangle from a rectangle.	How did Louis Lagrange feel when he was arguing for a base of 10 with his colleagues? Role play the discussion between them.
Draw attention to the cultural, historical aspects of ideas	Learn ideas in symbols, abstract ideas, to think about them in a general way	The feelings / attitudes linked with ideas

Link new ideas in words, in sentences, in more abstract ways	***Link new ideas in particular contexts and in images***	**Learn the actions that go with new ideas**
Draw up a KWL chart on Measurement What do the prefixes kilo, centi, and milli mean? Answer the key question: Why do carpenters and seamstresses use different units of measurement?	Estimate the lengths of various everyday objects Find objects with a particular area Measure and make a scale diagram of your desk Decide on the materials needed to make an item of furniture. Do the SINE "Boxes and Cartons" activity	Find the most unusual object with a particular area Use your body to show 60cm, 1 m^2 etc Mark out an area with masking tape on the floor a piece 60cm X 3.2m and fit the pieces needed for an item of furniture in it.
Think about the ideas in words, paraphrase or summarise them, work on links between verbal concepts	Remind students to think about ideas in real-life contexts, visualise them	Use actions to represent ideas, to imagine the ideas changing

APPENDIX A - MEASUREMENT ASSIGNMENT

YEAR 7 MEASUREMENT REASONED PIECE

A . Drawing Your Desk

Your school's general assistant is a good carpenter. Carpenters like to work in mm. She wants to build a table similar to the one in your classroom. You need to draw up some plans and give her sufficient measurements so she can make a good replica.

1. Discuss in your group how you will go about this task and then share with the other groups. A summary of processes may include the following:
   - Decide what measurements need to be taken.
   - Draw up a sketch on paper
   - Measure each required length and record on the sketch.
   - Plan to make a scale drawing. Decide how long I00mm will be on paper using a sensible ratio.
   - Lengths can be converted and then an accurate diagram drawn to represent the table.

2. The carpenter needs to put a trim around the edge of the tabletop.

   a) How long does it have to be?

   b) Can you work out a way of calculating this length without measuring all four sides?

3. She also needs to buy material to make a cloth cover. The material comes in 1.2m widths.

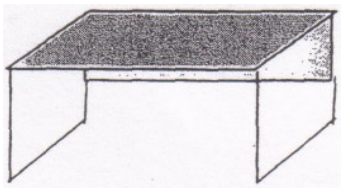
   a) Will this be wide enough for some overhang of about 10cm on the edge? If not what will she have to do?

   b) How much does she need to buy?

Present your diagrams, calculations and answers neatly and clearly

B. Investigating Kit Furniture – or– A piece of furniture of your choice.

You have seen a nice sleek desk in kit form at the local shops but it costs $125. It is a simple top and two side boards with a back board joining top and sides that comes half way down. The dimensions on the kit box say 800 by 600 by 680 and it looks like the 800 is the length of the desk.



The material is board with a nice finish but the local hardware shop sells this same material for $110 per 3200mm long sheets of 600mm wide. The kit gives all the fittings and all you need is a screwdriver and hammer.

You will compare costs and the equipment needed to make the piece of furniture from a kit or by buying the materials separately.

a) Decide on the height of the desk.
b) Cut a sheet of paper or mark it out with masking tape on the carpet to represent the sheet of wood from the hardware shop. Now work out whether one sheet of wood will be enough. Explain how you decided this.
c) How many screws will you need? What will be the cost of buying these?
d) What else would you need to consider in making your own furniture (e.g. cost of mistakes)?
e) Should you make the desk with the help of an adult or buy the kit?
f) Discuss what else comes in kit form and how much you might save eg the making of kit sandwiches.

Reflection and Evaluation of Measurement Reasoned Piece

Question 1 What resources did you use to complete the task?

Question 2 Did you seek assistance from others to understand the task? Who were they and how did they assist you?

Question 3 What did you have to take into consideration when you constructed the desk and other piece of furniture?

Question4 How difficult did you find the designing of your own piece of furniture?

Question 5 What difficulties did you have when you needed to do the measurements for the pieces of furniture?

Question 6 How did you investigate the costing of the pieces of furniture?

Question 7 T'he Measurement Unit has been a self directed task, that is you have been responsive for making sure you complete all of the activities and the assessment task. Discuss your reactions to this unit and what you did to ensure you worked through all parts of the unit.

Question 8 What problems did you have with the unit ? 'What are your suggestions for improving this type of learning task?

APPENDIX A MEASUREMENT ASSIGNMENT – TEACHER'S NOTES

ACTIVITY 11 - Drawing up a Desk or Table

MEASUREMENT IDEA: Measurements are used to make comparisons, ratios are used for relative size

Purpose: This activity provides a realistic opportunity for students to measure and draw lengths.
They will see the connection between centimetres and millimetres in practice.
It integrates the number strand by giving a good sense of comparative numbers when making a map or scale drawing.
Students should develop the shortcut for getting the perimeter of a rectangle as equal to the
sum of twice the lengths and breadths.

GROUP: Small groups
CSF LEVEL: 4 to 6 YEAR LEVEL: 5 to 8
EQUIPMENT NEEDED: Tape measures, calculators, set squares or grid paper, rulers, paper for drawing.

TASK
Give each small group the following problem.
"Your school's general assistant is a good carpenter. Carpenters like to work in mm. She wants to build a table similar to the one in your classroom. You need to draw up some plans and give her sufficient measurements so she can make a good replica."

Each group can discuss how they will go about this task and then the groups can share. A summary of processes may include the following:

- Decide what measurements need to be taken.
- Draw up a sketch on paper
- Measure each required length and record on the sketch.
- Plan to make a scale drawing. Decide how long 100mm will be on paper using a sensible ratio.
- Lengths can be converted and then an accurate diagram drawn to represent the table.

The carpenter needs to put a trim around the edge of the tabletop.
How long does it have to be? Can you work out a way of calculating this length without measuring all four
sides?

She also needs to buy material to make a cloth cover. The material comes in 1,2m widths. Will this be wide enough for some overhang of about 10cm on the edge. If not what will she have to do? How much does she need to buy?

QUESTIONS TO ASK STUDENTS WHILE THEY WORK

- Why did you select to measure that length?
- Why did you select that ratio?
- Did you use informal units to give a rough estimate of the size?
- Why might units other than mm be reasonable to use? When might you need to be more accurate and use mm.
- In words, what might be a general rule for calculating the perimeter of a rectangle? Will this work for all rectangles? Why? What shorthand symbols might we use for this rule?

HINTS FOR TEACHERS
The school desk is ideal if it is not too complicated. Otherwise the teacher's table might be easier.
Use cm tape measures (not inches) with mm marked. Otherwise you will need to spend time on how to use the correct side of the tape.
A related but harder task is given in the secondary pack - Kit Furniture.

ACTIVITY 12 - Kit Furniture

MEASUREMENT IDEA: Measurements are used to make comparisons, ratios are used for relative size.

Purpose: Students need to make some realistic decisions where measurements can be used to alculate and inform the decision making.

GROUP: Small groups
CSF LEVEL: 4 to 6 YEAR LEVEL: 6 to 10
EQUIPMENT NEEDED: Tape measures, calculators, rulers, paper for drawing, sticky tape to make a model
desk, scissors, screws and fitting commonly used for chipwood furniture kits (students could find out
these in the hardware shop and find out the cost in advance).

TASK
The teacher sets up the scenario. "You have seen a nice sleek desk in kit form at the local shops but it
costs $125. It is a simple top and two side boards with a back board joining top and sides that comes half
way down. The dimensions on the kit box say 800 by 600 by 680 and it looks like the 800 is the length of
the desk. The material is board with a nice finish but the local hardware shop sells this same material for
$110 per 2 800mm long sheets of 600mm wide. Estimate the number of screws you will need and the
equipment if you have to make it. The kit gives all the fittings and all you need is a screwdriver and
hammer. Should you make the desk with the help of an adult or buy the kit?"
As a class, discuss some of the issues that are involved when deciding whether to make yourself, hire
labour to make it, or buy a kit.
As a class, discuss what other things are ready made or in kit form that can be purchased or made at
home. Which ones make sense to make yourself? Why?

QUESTIONS TO ASK STUDENTS WHILE THEY WORK

- If you brought the material, how would you work out how to cut it? Draw up sketches to illustrate.
- Would it help to make a model?
- What things do you need to take into consideration in making the desk yourself?
- What things do you need to take into consideration when making, say, sandwiches?

TEACHERS SHOULD LOOK FOR

- Appreciation of the use of millimetres in the measurements
- Us of labels on drawings used to figure out how the wood can be used
- Consideration of order of activities and need for equipment
- Recognition of the risks involved in making a desk from scratch for the first time and how these risks are minimised

CSF STATEMENTS
Measuring and
estimating
4.1 Choose attributes and standard units appropriate to the task
4.2 Make judgments about the relative size of objects based on comparison to known benchmarks or standard units
4.3 Draw and construct objects using accurate measurements
5.3 Use judgements of the size of metric units to make and refine estimates of quantities
Using relationships
4.2 Investigate the relationship between area and perimeter and calculate area of a polygon.

TEACHERS SHOULD LOOK FOR

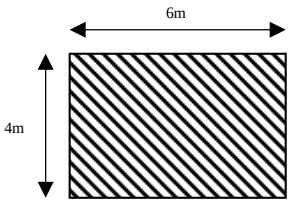
- Estimates of lengths
- Use of measuring instruments including the place for reading the start, the reading of mm and cm
- Estimates for calculations and knowledge of appropriate use of multiplication and division
- Devising that the perimeter of a rectangle is twice the sum of the length and the width.
- Working with lengths when areas are covered in practice.
- Ability to imagine and add 10cm to both sides of the width for deciding on the cloth.

CSF STATEMENTS
Measuring and estimating
4.4 Use measuring instruments, reading simple scales and measuring accurately to the nearest marked
gradation, taking into account the degree of exactness required
5.1 Recognise and select appropriate metric units and levels of accuracy for measuring quantities and
rates
Using relationships
4.1 Measure and compare the perimeter and area of regular and irregular polygons.
5.2 Develop and use rules to calculate perimeter of polygons and circles, areas of shapes based on triangles, rectangles and circles, and volumes and surface areas of rectangular prisms.
5.3 Calculate and use rates.

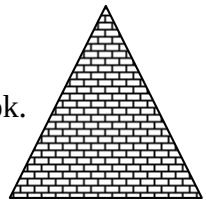
APPENDIX B – SELF-DIRECTED WORKSHEETS

YEAR 7 MEASUREMENT

NAME:_____



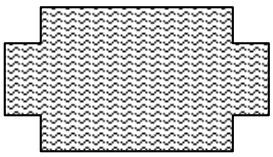
- In this section of the unit you will be making decisions about the skills you still need to learn and the work you need to practise.



- **Paste** each of these instruction sheets into your Maths Workbook.

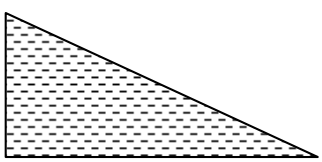
- Follow the instructions and **TICK** each section or exercise as you complete it. Do as much practice in each section as you need to improve your skills. If you do not need to complete one section put a **cross** in the box.

- All work must be set out **logically and neatly** in your workbook, showing your reasoning, with exercises and problems numbered.



- Don't forget to **ask** for help if you need it

- Do not waste time. You will need to work efficiently to complete these worksheets in 2 weeks.



UNITS OF LENGTH: (1 week)

***Without asking for any help do**

- the 10 Quick Questions on p 260 of your text book ☐

***Correct** these questions on p 664. ☐

*For EACH question which was **incorrect** in the*10 Quick Questions* complete the following READING and EXERCISES from your text book:

Question Incorrect	Read this page	Do these questions	
1 or 2	p 250-1	Ex 7A q (1,2) a,e, i	☐
3 or 5	p 254-5	Ex 7B q (5, 6) a,e,i	☐
4	Ask teacher for help	Ex 7B q 2 a,e,i,g	☐
6	p 254-5	Ex 7B q 8 a,c,e	☐
7 or 8	p 250-1	Ex 7A q 5	☐
9 or 10	Practise by measuring the lengths of your eraser and pen. Have a friend check it for you.		☐

*Collect a copy of **"Estimation - Length"** Worksheet. Complete this for **HOMEWORK**. Hand it in to your teacher for checking when you have finished. ☐

***Without asking for any help do** the 10 Quick Questions 2 on p 267 ☐

*For EACH question which was **incorrec**t in the *10 Quick Questions* complete the following READING and EXERCISES from your text book:

Question Incorrect	Read this page	Do these questions	
1	Discuss with teacher	Ex 7A q 2 b,d,e	☐
2	Discuss with teacher	Ex 7A q 5	☐
3,4,5	p 261-2	Ex 7C q 1,2,3 LHS	☐
6		Ex 7C q 11	☐
7	Discuss with teacher	Ex 7C q 12	☐
8		Ex 7C q 18,22	☐

If you did not have any difficulty **continue**….

*When you have finished the practice above, ALL students are to **complete**

- Puzzle p 266 ☐
- Ex 7C q 15,16 ☐
- Read "**Perimeter**" p 267, copy blue box from p268 into your workbook ☐
- Ex 7D q (1,2,3) a,e,i,j ,q 12 ☐

EXTENSION: Start this activity if you have finished the work above and you have time.

- Collect a Laptop Computer and complete "A Metric Unit Converter" following the instructions from p265 of your text ☐

AREA (1 week)

***Without asking for any help do**

- the 10 Quick Questions on p 294 of your text book ☐

*Correct these questions on p 666 ☐

*For EACH question which was **<u>incorrect</u>** in the*10 Quick Questions* complete the following READING and EXERCISES from your text book:

Question Incorrect	Read this page	Do these questions	
1 or 2	p 280-1	Ex 8A q 1 LHS	☐
3	p 282 Worked Example 1	Ex 8A q 2 LHS	☐
4	p 267	Ex 8A q 5 LHS	☐
5 or 6	p 282 Worked Example 2	Ex 8A q 4 LHS	☐
7	p 285-6Worked Example 3a	Ex 8B q 2 LHS	☐
8	p 285-6Worked Example 3b	Ex 8B q 3 LHS	☐

*When you have finished the practice above, ALL students are to complete

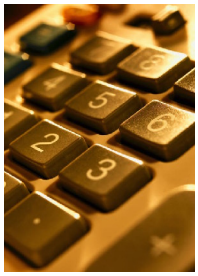
- Ex 8B Q 4,7,11,14 ☐
- Read p 295, Worked Example 5 or your teacher will go through finding the **area of a triangle** with you. ☐
- Ex 8D q (1,2,) LHS, q 3,5,7 ☐
- Collect a Find the **"Most Unusual Object"** sheet. Complete it for HOMEWORK and hand it in. ☐
- Read about **Scale** on p 514 and Worked example 1and 2 on p 515 ☐
- Ex 13A q (1,2) a,c,e,g,i ☐

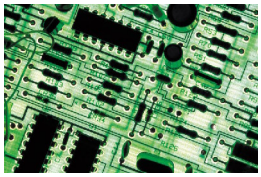
EXTENSION: Start this activity if you have finished the work above and you have time.

- Draw up a conversion chart for units of area (Reference p 290) You can use a computer if you wish. ☐
- Collect and complete the Volume: Boxes and Cartons SINE 33 activity sheet. ☐

APPENDIX B - MOST UNUSUAL AREA

AREA






Name:_____

Find and draw a diagram of the **most unusual object** you can find with an area of:

1. 0.5 m^2

2. 3 mm^2

3. 1km^2

4. 15cm^2

This sheet is due on:_____