Name: Michael Chipman			Date: 10/05/18
Subject: Mathematics	Class: 9MA21	Period: 1 (Rm C4)	
Topic: Measurement/Area and Surface Area			
Period Begins: 9:05	Period Ends: 10:20	No. of Students: 24	

Syllabus outcomes addressed:

MA5.2-11MG: A student calculates the surface areas of right prisms, cylinders and related composite solids. In particular, students:

- Calculate the surface areas of cylinders and solve related problems (ACMMG217)
  - recognise the curved surface of a cylinder as a rectangle and so calculate the area of the curved surface
  - develop and use the formula to find the surface areas of closed right cylinders: $2\pi rh + 2\pi r^2$ where r is the length of the radius and h is the perpendicular height
  - solve a variety of practical problems involving the surface areas of cylinders, eg find the area of the label on a cylindrical can
    - interpret the given conditions of a problem to determine whether a particular cylinder is closed or open (one end only or both ends) (Problem Solving)

Lesson outcomes:

I've introduced myself to the class!

Calculation of the surface area for various cylinders – full (enclosed), open, half-cut etc?

Links to previous lesson:

Cylinders can be considered circular prisms. Various standard prisms were treated in the previous lesson.

Assessment for learning:

Initial 5-question quiz, class discussion, questions written to board, plus questions from textbook.

Are there students with special needs that need to be catered for? If so how?

Not addressed in this (first) lesson

Equipment/resources required:

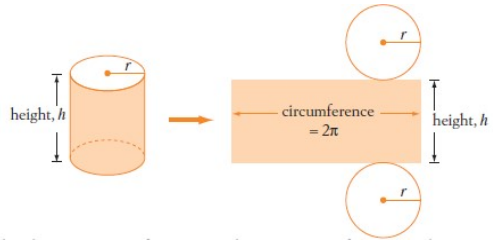
White board markers.
A can of baked beans, milo or something similar.
25 x blank pieces of A4 paper for rolling into a cylinder.
Casio calculator for problem solution is pre-loaded to the classroom PC in C4.

Safety:

N/A

Links to next lesson & Follow-up activities/homework:

Complete unanswered exercises as homwework.

Time:	Teacher activities…	Student activities…
	A. Put up 3 quick SA revision questions to the board. Include examples of a rectangular prism, triangular prism and a cube with a notch out at the corner. Mark the roll, and go through answers to questions with students.	Copy down quick-quiz questions and attempt answers in workbook. Respond appropriately as roll is marked. Volunteer answers as requested.
	B. Using the can of baked beans (or milo etc), illustrate for the class how rolling the can through one revolution brings every portion of the can'surface into contact with the flat surface of the board. Ask students to imagine what would happen if the curved surface were to unravel and become stuck to the board. **Q:** What shape would be left? **A:** A rectangle	Participate in discussion. Pay attention as teacher explanation is given. Ask questions if unsure about any point(s).
	Distribiute the A4 sheets. Once done, ask students to try folding the sheet to produce cylinders of different sizes. **Q**: Hany many different (right) cylinders, with no overlap, can be formed from a flat sheet of paper? **A:** 2 **Q:** How do you think the (external) surface area of the two cylinders would compare? **A:** They'd be the same! **Q:** What if we if now imagined including the circular ends? How would the surface area compare?	Participate in class Q&A throughout, and pay attention as example questions are answered. Make sure worked examples are copied down.
	Get student input, and tally class reponses on the board. Use three categories: SA(thin) < SA (fat) SA(thin) = SA(fat) SA(thin) > SA (fat)	Think about theh problem, and commit to one of the categories!
	C. Write up theory. Ref 5:04, p134 (Signpost 9). Note the error in following diagram (New Century Maths)!  	Diligently copy down theory.

	SA(cylinder) = area of two circles + area of rectangle Get students to complete the formula. **D.** After theory is presented, get students to reconsider the paper-folding exercise then perform this working. Ask them to think about how they might meaure the diameter of the end circles? 2 good answers might include: • derivation of the radius from the 'unravelled' edge of length $2\pi r$. • standing cylinders up on a second piece of paper and marking pairs of opposite points on the circular ends. Lines joining these pairs of points intersect at the circle centre, and thus the radius can be meaured. **E.** On the whiteboard, work through some example exercises of the sort given in Exercise 5:04, p 136 (Signpost 9). Include a solid cylinder, a pipe, and a half-cylinder. Answer questions with a student Q&A. Ask for responses from as many different students as possible. **F.** Get students to work on selected questions from the textbook (Ex 5:04, p136). Students complete any unanswered Qs for homework. **G.** Recap lesson for students. **H.** Issue 10 min NAPLAN practice test, and collect papers at conclusion of leson.	Offer up solutions/suggestions when asked. Again, think about the problem, and offer up an idea. Contribute to class disucssion. Work quietly on questions from textbook. Ask for help when required. Work on NAPLAN test.

Evaluation (Aspects you are targeting improvement add or substitute your own)

	Agree	Agree	Neutral	Disagree
• T & L strategies were effectively implemented	☐	☑	☐	☐
• I was able to generate a sense of purpose	☐	☑	☐	☐
• A high level of student participation was achieved	☐	☑	☐	☐
• My questioning was clear, concise and logically sequenced	☐	☐	☑	☐
• Pupils were interested and self disciplined	☐	☑	☐	☐
• Instructions were clear and easily understood by students	☐	☐	☑	☐
• I recognised and catered for individual differences	☐	☐	☐	☑
• I established and maintained and effective learning environment	☐	☐	☑	☐
• learning / using names.	☐	☐	☐	☑
•	☐	☐	☐	☐
•	☐	☐	☐	☐

What were the most effective elements of the lesson? Why?

Demonstration with can of M.W, A4 paper rolling and surveying student responses worked quite well. class interested and engaged.

What were the least effective elements of the lesson? Why?

Not knowing students' names! this handicaps classroom management – not being able to call out a student means I'm reduced to walking over to them, or else just speaking (loudly) to everyone so that the message often misses its mark.

If I were to repeat the lesson what would I change? How could I improve?

Need to think about how to get on top of students' names, and quickly. Thumbnail photos definitely not enough of a help here.