***9 – AIL - MATHS INVESTIGATION DUE: WEEK - 5***



**The humble milk carton**

In this environmentally conscious age, manufacturers are always looking for the most efficient and economical ways of packaging food and drink.

***Investigation Question:***

***Does it take more cardboard to make two separate 1-L milk cartons or one 2-L carton***?

***ENGAGE:***

1. Make a ***3-D*** pencil diagram of your milk carton.
2. Find the dimensions (length, width and height) of the part of the milk carton that holds the milk (you may need to make some assumptions). Do these dimensions give a volume of 1L? Label them on the diagram and calculate to show how these dimensions give a volume of 1-L.

***EXPLORE:***

1. Carefully open out the carton along its seams and make a ***scale drawing*** of

the net of the carton.

1. Find the ***area*** of the cardboard required to make the carton.
2. Find the minimum area of cardboard required to make a 2-L carton. Show your calculations.

***EXPLAIN:***

1. Make a ***scale drawing*** of the net of your 2-L carton. Calculate and show

how its dimensions give a volume of 2-L.

***ELABORATE:***

1. (a) Use your answers to Question 4&5 to answer the Investigation ques.

(b) Does it take twice as much cardboard to make a carton with twice the volume?

(c) Which carton is more efficient form of packaging?

***EVALUATE:***

1. Explain any assumptions you have made in your calculations of area

and volume for both the 1-L and 2-L cartons.

1. List the advantages and disadvantages of selling milk in 2-L instead of

1-L cartons.