All questions are for both separate science and combined science students

Q1.

This question is about life cycle assessments (LCAs).

(a) Milk bottles can be made from glass or from a polymer.

The table below shows information about milk bottles of equal volume.

	Glass	Polymer
Raw materials	Limestone Sand Sodium carbonate	Crude oil
Energy needed to process raw materials in kilojoules	6750	1710
Energy needed to manufacture bottle in kilojoules	750	90
Mass of bottle in grams	200	20
Mean number of times used during lifetime of bottle	25	1
One disposal method at end of useful life	Recycled to make different glass products	Recycled to make different polymer products

Evaluate the use of glass for milk bottles compared with the use of a polymer for milk bottles.

Use features of life cycle assessments (LCAs) in your answer.

Use the table above.		

(b)

Milk is also sold in cardboard cartons.		
A carton is made using 40 cm³ of cardboard.		
The density of the cardboard is 0.40 g/cm ³ .		
Calculate the mass of the carton.		
Use the equation:		
$density = \frac{mass}{volume}$		
	Mass =	g
		(Total 9 m