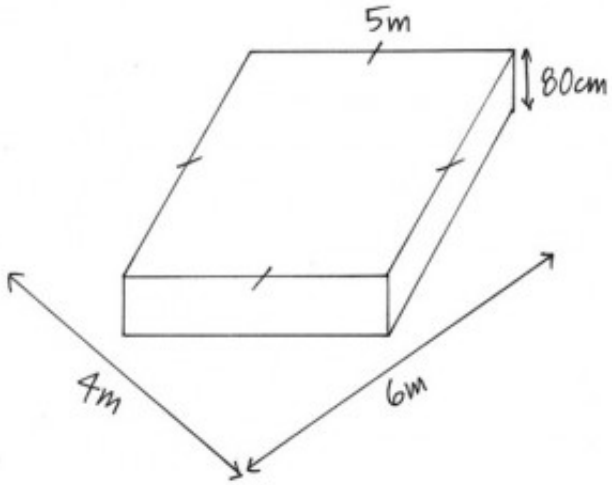
Veggie Garden Maths – Year 8

Thought starter: Do you know where the ingredients that make up a packet of chips come from?

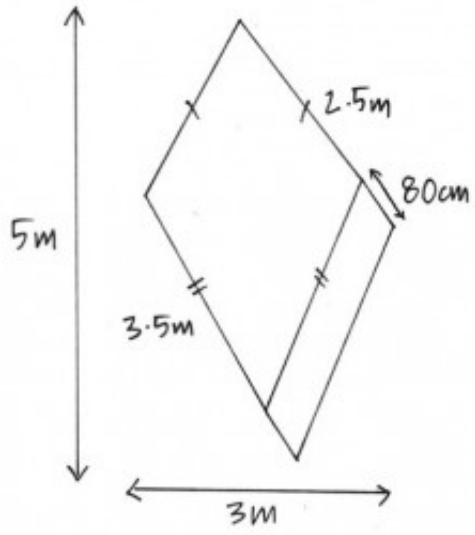
Food and water is essential to our survival. 50,000 years ago, when we were dashing about the savannahs and forests, humans hunted and gathered their food. Now things have changed. We don't catch our food anymore; it comes to us in nice-looking processed packages. Food is best for you when you know the ingredients and it is grown locally. Most processed food (stuff that comes in a wrapper, bottle, package or box) contains things that no one can pronounce let alone knows the origins of. This is why growing your own vegetables is such a great idea!

1. Tony and Sam are building some vegetable garden beds.

Tony



Sam



Tony and Sam want to construct these garden beds. They went to the local hardware store to find wood to surround the bed. Wood was available in 2.5m x 20cm, which was perfect. Calculate how many

pieces are required for each bed (show your workings).

i. Tony

ii. Sam

2. Tony and Sam need to fill each bed with soil. Calculate how much soil is required (show your workings).

i. Tony

ii. Sam

3. Tony and Sam now need to plant out their garden beds. Sam's favourite veggie is broccoli, so they have decided to plant

both garden beds with just broccoli. Each plant is required to be spaced 50cm apart in order to grow properly. Calculate the maximum number of broccoli plants that will be able to fit in Tony and Sams garden beds (show workings).

i. Tony

ii. Sam

4. Tony and Sam now need to cover their vegetables with some straw to retain moisture in their soil. Calculate how much area they need to cover each vegetable patch.

i. Tony

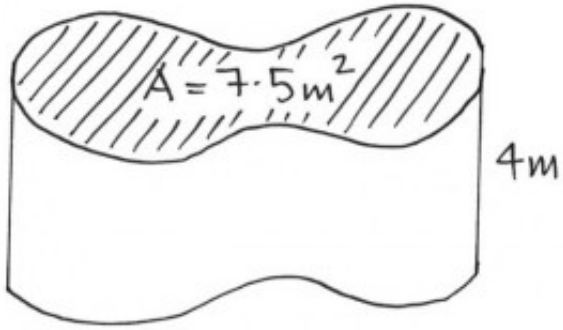
ii. Sam

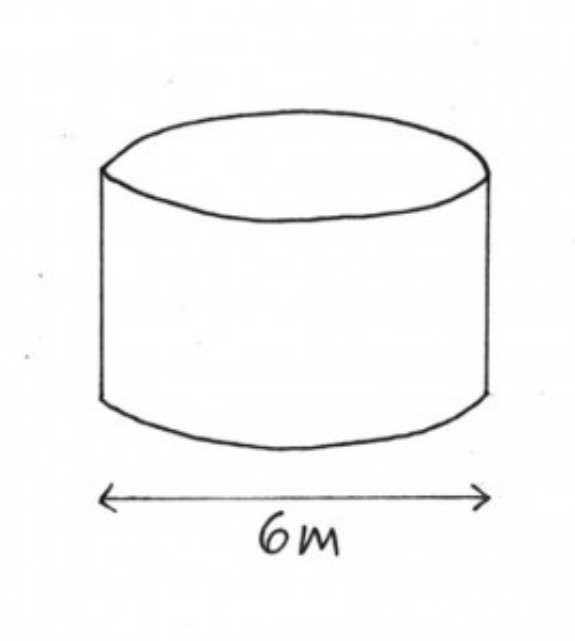
5. If a trapezium garden bed has a total area of $30m^2$ and side lengths of 10m and 5m, calculate the height of the garden bed?

6. Tony and Sam have each purchased the following shaped garden beds from their local hardware store. Calculate the volume of soil required to fill each of their garden beds (show your workings).

Tony

Sam





i) Tony

ii) Sam

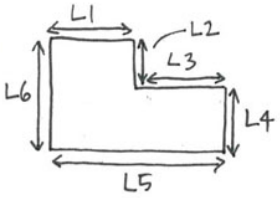
7. Design and sketch a garden given that you are restricted to an area of $8m^2$. Your garden can not be a rectangle. Calculate the perimeter of your garden.

8. What are the environmental benefits of growing and eating your own vegetables?

9. Write a letter to the school Principal outlining why it is important to have a school garden.

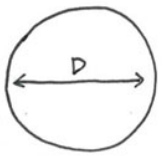
FORMULA SHEET

PERIMETER (P) = the distance around the outside edge of a figure



Composite shape

$P = L_1 + L_2 + L_3 + L_4 + L_5 + L_6$



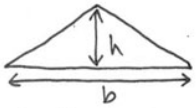
Circle

$P = \pi \times D$

$= \pi D$

AREA (A) = the amount of space contained in a flat space

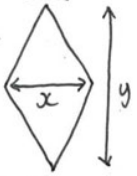
Triangle



$A = \frac{1}{2} \times b \times h$

$= \frac{1}{2} bh$

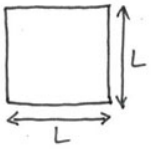
Kite



$A = \frac{1}{2} \times x \times y$

$= \frac{1}{2} xy$

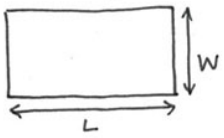
Square



$A = L \times L$

$= L^2$

Rectangle



$A = L \times W$

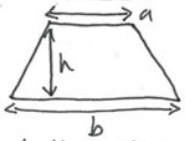
$= LW$

Circle

$A = \pi \times r \times r$

$= \pi r^2$

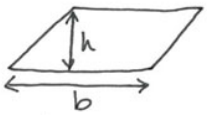
Trapezium



$A = \frac{1}{2}(a+b) \times h$

$= \frac{1}{2}(a+b)h$

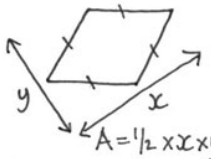
Parallelogram



$A = b \times h$

$= bh$

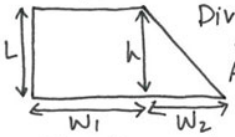
Rhombus



$A = \frac{1}{2} \times x \times y$

$= \frac{1}{2} xy$

Composite shapes



Divide into distinct shapes:
Area 1 - rectangle
Area 2 - triangle

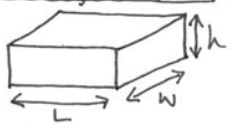
Total Area = Area 1 + Area 2

$= L \times W + \frac{1}{2} \times b \times h$

$= LW + \frac{1}{2} bh$

VOLUME (V) - the amount of area in a 3-D shape

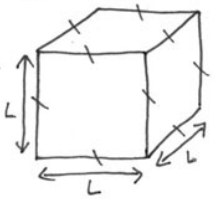
Rectangular prism



$V = L \times W \times h$

$= LWh$

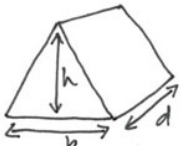
Square prism



$V = L \times L \times L$

$= L^3$

Triangular prism



$V = \frac{1}{2} \times b \times h \times d$

$= \frac{1}{2} bhd$

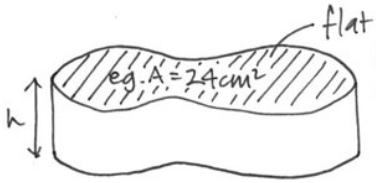
Any shaped flat prism

$V =$ area of flat shape $\times h$

$V =$ area circle $\times h$

$= \pi r^2 \times h$

$= \pi r^2 h$



$V =$ unusual shape $\times h$

$= 24 \times h$

$= 24h$