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| Name:  Teacher : | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | Date:\_\_\_\_\_\_\_\_\_ |
|  | **Year 12 Essentials**  **Area and Volume investigation**  ***Full working out MUST be shown to get full marks for each question.*** | | |
| **Total Time:** | 2 in class sessions |  | |
| **Weighting:** | 5% |
| **Equipment:** | To be provided by the student: Pen, pencil, ruler, scientific calculator | | |

You have been employed to design a chicken coup for free range hens. Free range means that there is 1 chicken in every 0.15 m2 (1500 per Hectare).

Farmer Kath has 600 chickens. Each chicken needs at least 20cm by 30 cmof floor space in the coup.

It needs at minimum 4 walls, three circular windows, doors and slanted roof of some kind (trapezium, triangle, parallelogram) for drainage.

***Draw your floor plan below***

***Draw your three dimensional design below.***

**What is the total surface area of your design?**

**If the wood cost $35 per square metre, how much would your chicken coup cost to build.**

The coup needs to be put in a field built from 150mof fencing. **Design three different paddocks for the chickens to roam in**. (*include all measurements)*



Ensuring the farm is free range, which of your paddocks is suitable for the accreditation? How can you tell?

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Farmer Kath has three 8m tall water towers, each with a diameter of 5 meters. What is the total capacity of all the tanks? (1m3 = 1Kl)

Every 100 chickens requires 75 litres of water per day. How many days could farmer Kath water her the chickens?

Lastly, farmer Kath wants to paint the water tanks and chicken coup in sky blue. If paint cost $60 for 4 litres, and 1 litre covers 27m2 How many litres of paint does Kath need?

How many tins would this be?

How much would this cost?

What is the total cost of building the chicken coup and painting water tanks?