

Achieved

NZQA Intended for teacher use only

Garden framing -*Finding out the best option for macrocarpa sleepers:**Option 1:*

200mm x 100mm by 2.1m = 20cm x 10cm x 210cm

210cm x 6 = 1260cm

\$66.78 x 6 = \$400.68

Removing GST: 400.68/1.15 = \$348.42*Option 2:*

200mm x 100mm x 4m = 20cm x 10cm x 400cm

400cm x 3 = 1200cm

\$130 x 3 = \$390

Removing GST: 390/1.15 = \$339.13

Option one would be best for this scenario because it maximizes the area of the garden whilst only costing \$9.29 more. As the primary focus is to maximize area space, this option would be better as it adds 60cm more to the timber while still being less than \$350. Option one costs \$348.42, and option two costs \$339.13. If the price difference was larger than \$9.29 I would say that option two is better as it would cost less for not a large change in timber size. But as this difference is under \$10, I think it is worth it to have the extra area space as this is one of the main requirements of the garden.

Dimensions:

Maximizing area space

Side 1	Side 3	Area
1m	5m	5m ²
2m	4m	8m ²
3m	3m	9m ²
4m	2m	8m ²
5m	1m	5m ²

Using this table, I have decided that each side of the garden will be 3 metres long. This area will be 9m². This also means that the garden will be in a square shape. This would look better than a rectangle and is neater.

Gardening mix -*Finding the amount and cost of gardening mix necessary:*

Finding the volume of garden needed to fill:

 $3 \times 3 \times 0.15 = 1.35\text{m}^3$

I did this because to find the volume it is base x height x depth. I removed 5cm from the top of where it needs to fill as it needs to sit 5cm below the top edge of the garden.

Removing space for water tank -

Removing part of the gardening mix to make room for the water tank:

Cylinder -

$$R = 0.25$$

$$H = 0.15$$

$$\text{Volume: } \pi r^2 h = \pi \times 0.25 \times 0.25 \times 0.15 = 0.029\text{m}^3$$

Removing the volume of the bottom cylinder from the garden that needs to be filled:

$$1.35\text{m}^3 - 0.029\text{m}^3 = 1.321\text{m}^3$$

$$1.321\text{m}^3 = 1321\text{L}$$

$$1321/40 = 33.025$$

$$\text{Rounded} = 34$$

After removing the volume of the water tank from where the gardening mix needs to be filled, it means the same number of gardening mix needed.

$$34 \times \$8.83 = \$300.22$$

$$\text{Removing GST: } \$300.22/1.15 = \$261.06$$

Total cost:

$$348.42 + 261.06 = \$609.48$$