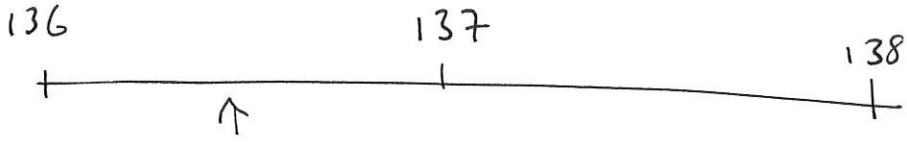
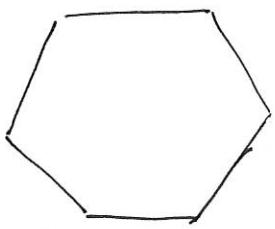
(1)

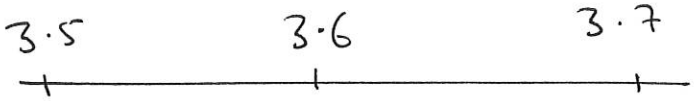


LB = 136.5

UB = 137.5

(2)

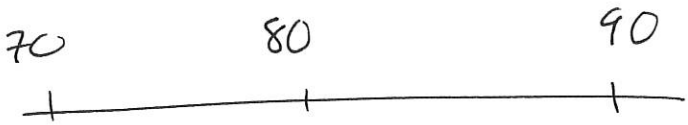




UB = 3.65

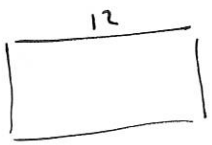
a) UB for hexagon = $6 \times 3.65 = 21.9$

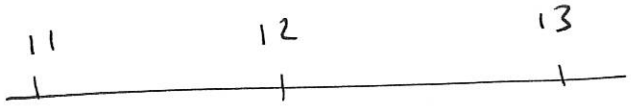
b) Area



UB = 85
LB = 75

Length





UB = 12.5
LB = 11.5

Width = $\frac{\text{Area}}{\text{length}}$

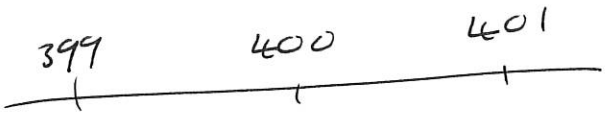
min Width = $\frac{\text{min Area}}{\text{max Length}} = \frac{75}{12.5}$

$= 6$

(3)

speed = $\frac{\text{Dist}}{\text{Time}}$.

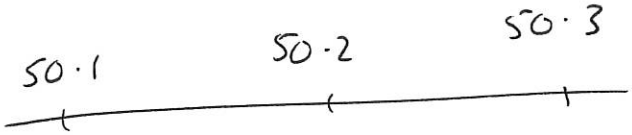
Distance



UB = 400·5

LB = 399·5

Time



UB = 50·25

LB = 50·15

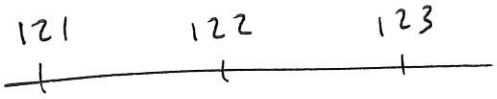
$$\text{Max Spd} = \frac{\text{Max Dist}}{\text{Min Time}} = \frac{400 \cdot 5}{50 \cdot 15}$$

$$= 7 \cdot 986 \ldots$$

$$= 7 \cdot 99 \ (3sf)$$

(4)

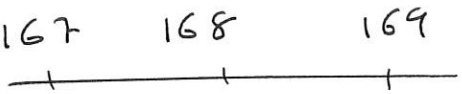
A



UB = 122.5

LB = 121.5

B



UB = 168.5

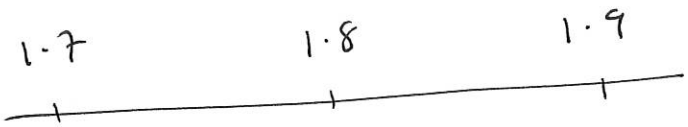
LB = 167.5

Max Difference = Max B − Min A

= 168.5 − 121.5

= 47.

(5)



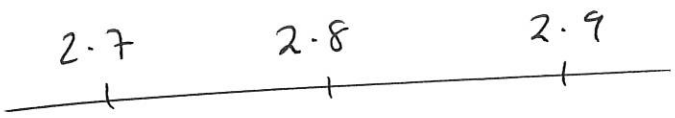
LB = 1.75

UB = 1.85

Min $(4j+1)$ = $4 \times 1.75 + 1$ = $\underline{8}$.

(6)

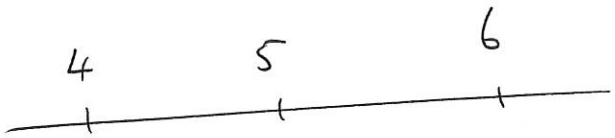
Distance



UB = 2.85

LB = 2.75

Speed



UB = 5.5

LB = 4.5

$$\text{Time} = \frac{\text{Dist}}{\text{Spd}}$$

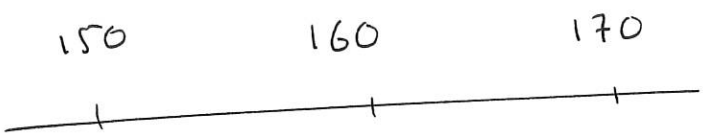
$$\text{Max Time} = \frac{\text{Max Dist}}{\text{Min spd}} = \frac{2.85}{4.5}$$

$$= 0.633 \text{ hours}$$

$$= 38 \text{ minutes.}$$

(7)

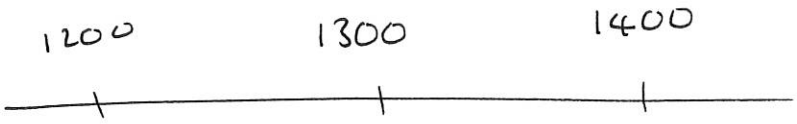
Pile



UB = 165

LB = 155

Sheets



UB = 1350

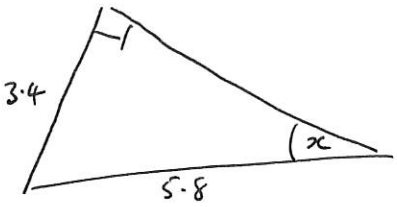
LB = 1250

$$\text{max thickness} = \frac{\text{max ht of pile}}{\text{Min No. of sheets}} = \frac{165}{1250}$$

$$= 0.132.$$

(8)

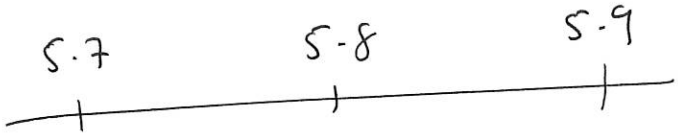
a)



$$\sin x = \frac{3.4}{5.8}$$

$$x = 39.9 \quad (1dp)$$

b)

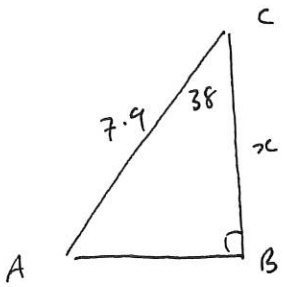


UB = 5.85

LB = 5.75

(9)

a)

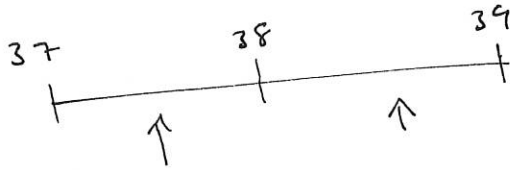


$A = C \times H$

$x = \cos(38) \times 7.9$

$= 6.23$ (3sf)

b)



LB = 37.5

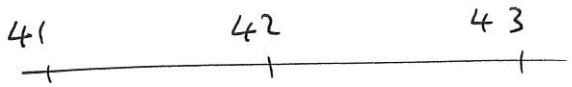
UB = 38.5

(10)

a

UB = 42.5

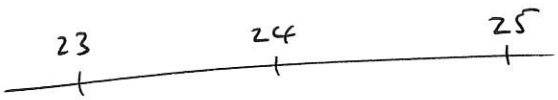
LB = 41.5



b

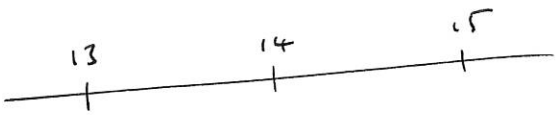
UB = 24.5

LB = 23.5



c UB = 14.5

LB = 13.5



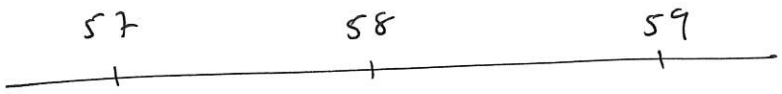
$$\text{Min}\left(\frac{2a}{b-c}\right) = \frac{\min(2a)}{\max(b-c)} = \frac{\min(2a)}{\max(b)-\min(c)}$$

$$= \frac{2\times 41.5}{24.5-13.5} = 7.5454\ldots$$

$$= 7.5 \ (2\text{sf})$$

(11)

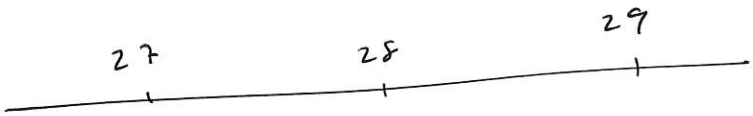
a



UB = 58.5

LB = 57.5

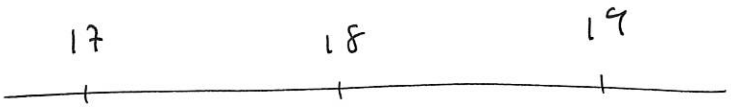
b



UB = 28.5

LB = 27.5

c



UB = 18.5

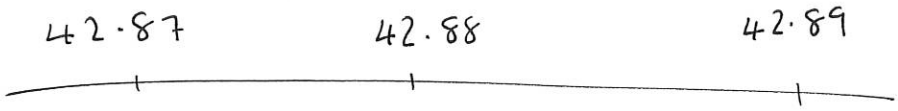
LB = 17.5

$$\max\left(\frac{a}{b-c}\right) = \frac{\max(a)}{\min(b-c)} = \frac{\max(a)}{\min(b) - \max(c)}$$

$$= \frac{58.5}{27.5 - 18.5} = 6.5$$

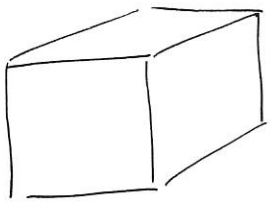
(12)

Vol



UB = 42.885

LB = 42.875



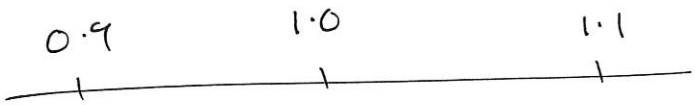
$\min l^3 = 42.875$

$\Rightarrow \min l = 3.5$

$\Rightarrow$ Min Area $= 6 \times 3.5^2 = 73.5$

(13)

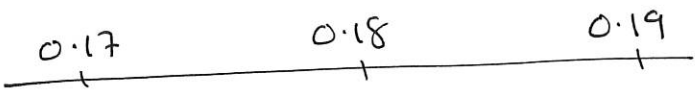
Vol



UB = 1.05

LB = 0.95

Depth



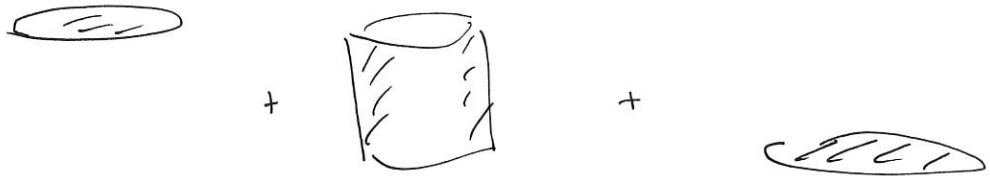
UB = 0.185

LB = 0.175

$\text{Vol} = x^2 \times \text{depth} \Rightarrow x^2 = \frac{\text{Vol}}{\text{depth}} \Rightarrow x = \sqrt{\frac{\text{Vol}}{\text{Depth}}}$.

$\text{Max}(x) = \sqrt{\frac{\text{Max Vol}}{\text{Min Depth}}} = \sqrt{\frac{1.05}{0.175}} = 2.45$

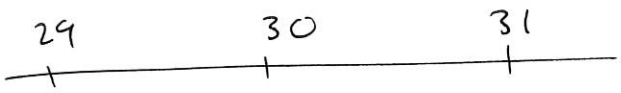
(14)



a) $= \pi \times 11^2 + 2 \times \pi \times 11 \times 30 + \pi \times 11^2 = 2833.7...$

$= 2800 \ (3sf)$

b)

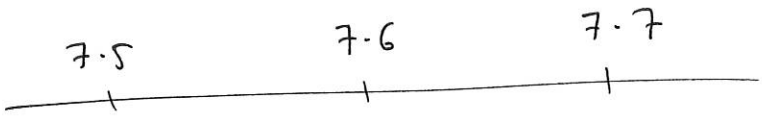


LB = 29.5

UB = 30.5

(15) $\pi \times 7.6^2 = 181 \ (3sf)$

b)



UB = 7.65

LB = 7.55