Question 1)

a) $\mu = 16.72$

$\sigma = 4.21$

$$P(x > 18.95) = P\left(z > \frac{x - \mu}{\sigma}\right)$$

$$= P(z > \frac{18.95 - 16.72}{4.21} = 0.5296$$

$$Look\ at\ Zscore\ Table = P(z > 0.53) = 0.2981$$

b) The sampling method that was used in this queston was random sampling. The technique was just to google and analyse the responses. The issues that arise from this method is that we do not know where the research was done for, was this research for the Ottawa area? Global? By not knowing this we can say that this is not a representative of the sample population in the report.

c) $P(a < \bar{x} < b)$

$$= P(\frac{a - \mu}{\frac{\sigma}{\sqrt{\eta}}} < z < \frac{b - \mu}{\frac{\sigma}{\sqrt{\eta}}})$$

$$P(15.95 < \bar{x} < 18.95)$$

$$= P\left(\frac{15.95 - 16.72}{\frac{4.21}{\sqrt{30}}} < z < \frac{18.95 - 16.72}{\frac{4.21}{\sqrt{30}}}\right)$$

$$P(-1.04 < z < 2.86)$$

$$0.9979 - 0.1492 = 0.8487$$

Question 2)

x	x^2
16.2	262.44
14.2	201.64
22.4	501.76
18.5	342.25

21.7	470.89
12.9	166.41
15.8	249.64
$= 121.7$	$= 2195.03$

$$S = \sqrt{\frac{\Sigma(x - \bar{x})^2}{n - 1}}$$

$$= \sqrt{\frac{\Sigma x^2 - \frac{(\Sigma x)^2}{n}}{n - 1}}$$

$$= \sqrt{\frac{2195.03 - \frac{(121.7)^2}{7}}{7 - 1}}$$

$$= 3.6329$$

This sample was taken randomly but we can not know for a fact if it came from a rural area or not. The sample size is not large enough to determine this answer.