

Questions

1.1 a) 15 ✓

b) $\text{mean} = \frac{\sum n}{n} = \frac{3.4 + 2.5 + 4.8 + 2.9 + 3.6 + 2.8 + 3.3 + 5.6 + 3.7 + 2.8 + 4.4 + 4 + 5.2 + 3 + 4.8}{15}$
 $= 3.7866$ ✓

c) $\underline{2.5 \quad 2.8 \quad 2.8 \quad 2.9 \quad 3.0 \quad 3.3 \quad 3.4 \quad 3.6 \quad 3.7 \quad 4.0 \quad 4.4 \quad 4.8 \quad 4.8 \quad 5.2 \quad 5.6}$

$\frac{15+1}{2} = 8 \quad \text{median} = 3.6$ ✓



e) $0.2 \times 15 = 3$ =

trimmed mean = $\frac{2.9 + 3 + 3.3 + 3.4 + 3.6 + 3.7 + 4 + 4.4 + 4.8}{9} = 3.6777$ ✓

f) No description - same mean ✓

1.2 (a)

18.71	21.41	20.72	21.81	19.29	22.43	20.17
23.71	19.44	20.50	18.92	20.83	23.00	22.85
19.25	21.77	22.11	19.77	18.04	21.12	

18.04 18.71 18.92 19.25 19.29 19.44 19.77 20.17 20.33 20.5 20.72 21.12 21.41 21.77 21.81 22.11 22.43
 22.85 23 23.71

mean = $(18.04 + 18.71 + 18.92 + 19.25 + 19.29 + 19.44 + 19.77 + 20.17 + 20.33 + 20.5 + 20.72 + 21.12 + 21.41 + 21.77 + 21.81 + 22.11 + 22.43 + 22.85 + 23 + 23.71) \div 20$
 $= 20.7675$ ✓

median = $\frac{20.91}{2} \rightarrow \frac{20.5 + 20.72}{2} = 20.61$ ✓

(b) $0.1 \times 20 = 2$ =

trimmed mean = 20.7431 ✓

c)



d) No - very close to each other ✓

1.6-

20°C:	2.07	2.14	2.22	2.03	2.21	2.03
2.05	2.18	2.09	2.14	2.11	2.02	
2.52	2.15	2.49	2.03	2.37	2.05	

$x = 20^\circ\text{C}$ samples

$o = 45^\circ\text{C}$ samples

1.6-



(b) $\bar{x}_1 = \frac{2.07 + 2.14 + 2.22 + 2.03 + 2.21 + 2.03 + 2.05 + 2.08 + 2.09 + 2.14 + 2.11 + 2.02}{12} = 2.1075$ ✓

$\bar{x}_2 = \frac{2.52 + 2.15 + 2.49 + 2.03 + 2.37 + 2.05 + 1.99 + 2.42 + 2.08 + 2.42 + 2.29 + 2.01}{12} = 2.235$ ✓

c) Yes, higher temperature results with high tensile strength values along with a few low ones ✓

d) Data becomes more distributed along the scale // more variance ✓

$$s^2 = \frac{1}{n-1} \left[\sum_{i=1}^n (x_i - \bar{x})^2 \right]$$
$$= \frac{1}{n-1} \left[\sum_{i=1}^n x_i^2 - \frac{(\sum x_i)^2}{n} \right]$$
$$3.4 + 2.5 + 4.8 + 2.9 + 3.6 + 2.8 + 3.3 + 5.6 + 3.7 + 2.8 + 4.4 + 4 + 5.2 + 3 + 4.8$$
$$3.7866$$

$$s^2 = 0.94266$$
$$s^2 = \frac{1}{14} \left(220.28 - \frac{56.8}{15} \right)$$