LINEAR TRANSFORMATION OF DATA

OLD DATA

15 $x \rightarrow x + 5$ 3

8

4

9

9

9

13 $\pm x = 19$ + 4(5) + 2(x + 5) = 39

Mean(x) =
$$\frac{2x-19}{9}$$
 = 4.75 Mean(x+5) = $\frac{2(x+5)}{9}$ = $\frac{39}{9}$ = 9.75

- New Mean = Old mean $\pm d$ Mean $(x \pm d) = Mean(x) \pm d$
- 3 NEW SD = DLD SD NEW VARIANCE = DLD VARIANCE SD $(x \pm d) = SD(x)$ $VAR(x \pm d) = VAR(x)$

$$\Sigma(t-35) = -15$$
 $\Sigma(t-35)^2 = 82.23$

Calculate the mean and standard deviation of these times taken to do the crossword

[4]

$$SD(t) = SD(t-35)$$

$$= \frac{\{(t-35)^2 - (\{(t-35)^2\})^2\}}{n}$$

$$= \frac{82\cdot23}{12} - (\frac{-15}{12})^2$$

$$SD(t) = 2.3180$$

Esme noted the test marks, x, of 16 people in a class. She found that $\Sigma x = 824$ and that the standard deviation of x was 6.5.

(i) Calculate
$$\Sigma(x-50)$$
 and $\Sigma(x-50)^2$. [3]

NEW

NEW

-50

$$x-50$$
 $x-50$

OLD DATA

 -50
 $= NEW DATA$
 $= x = 824$
 $= x =$

$$6.5^{2} = \frac{2(x-50)^{2}}{16} - \left(\frac{24}{16}\right)^{2}$$

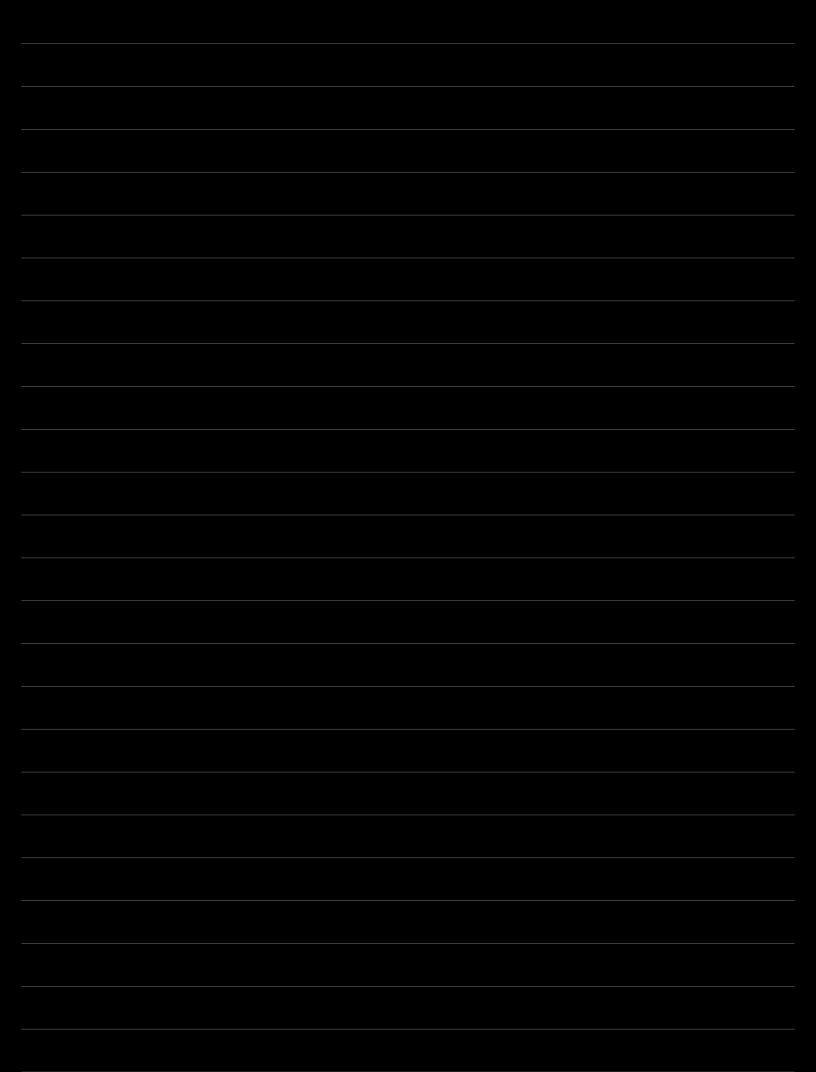
$$2(x-50)=712$$

40 A sample of 36 data values, x, gave
$$\Sigma(x - 45) = -148$$
 and $\Sigma(x - 45)^2 = 3089$.

(i) Find the mean and standard deviation of the 36 values.

- [3]
- (ii) One extra data value of 29 was added to the sample. Find the standard deviation of all 37 values.

[4]



44	The values, x , in a particular set of data are summarised by		
	$\Sigma(x-25)=133,$	$\Sigma (x - 25)^2 = 3762.$	
	The mean, \bar{x} , is 28.325.		
	(i) Find the standard deviation of x .		[4]
	(ii) Find Σx^2 .		[2]