SCAN ME	TOPIC	: 			
1 The race times, x,	to the nearest minu	te, of the first 10 fir	ishers in the L	ondon marathon	are show
124 1	24 127 127	128 129	130 130	131 131	
The data is coded	using the formula	$y = \frac{x - 120}{x - 120}$			
(a) Work out the	coded value for the	4 runner who finishe	d in 3 rd place.		(1)
One of the coded	race times is 2.5 mi	nutes.	L.		
(b) Work out the	original race time for	or this coded value.			(1)
$\overline{x} = 128.1$	$\sigma = 2.468$ (t	a 3 decimal places)			
(c) Using these va of the coded va	lues, or otherwise, alues.	work out the mean (\overline{y}) and standard	l deviation (σ_y)	(2)
(a) $127 - 120 = 1$.75	(c) $\overline{y} = \overline{x - 120}$			
$\frac{(a) 127 - 120}{4} = 1$.75	(c) $\overline{y} = \overline{x - 120}$ 4			
(a) $127 - 120 = 1$ 4	.75	(c) $\overline{y} = \overline{x} - 120$ 4 = 128.1 - 12 4	20		
$\begin{array}{c} (a) & \underline{127 - 120} = 1\\ 4 \\ \hline \\ (b) & \underline{x - 120} = 2.5\\ 4 \end{array}$.75	(c) $\overline{y} = \overline{x - 120}$ 4 $= 128.1 - 12$ 4 $- 2.025$	20		
(a) $127 - 120 = 1$ 4 (b) $x - 120 = 2.5$ 4 x - 120 = 10	.75	$\begin{array}{rcl} (c) & \overline{y} = \overline{x} - 120 \\ & 4 \\ \hline & = & 128.1 - 12 \\ \hline & 4 \\ \hline & = & 2.025 \end{array}$	20		
(a) $127 - 120 = 1$ 4 (b) $x - 120 = 2.5$ 4 x - 120 = 10 x = 13	.75	$\frac{(c)}{y} = \frac{\overline{x} - 120}{4}$ $= \frac{128.1 - 12}{4}$ $= 2.025$ $\sigma_y = \sigma_x$	20		
(a) $127 - 120 = 1$ 4 (b) $x - 120 = 2.5$ 4 x - 120 = 10 x = 13	.75	$(c) \overline{y} = \overline{x} - 120$ 4 $= 128.1 - 12$ 4 $= 2.025$ $\sigma_y = \sigma_x$ 4	20		
(a) $127 - 120 = 1$ 4 (b) $x - 120 = 2.5$ 4 x - 120 = 10 x = 13	.75	$(c) \overline{y} = \overline{x} - 120$ 4 $= 128.1 - 12$ 4 $= 2.025$ $\sigma_y = \sigma_x$ 4 $= 2.468$	20		
(a) $127 - 120 = 1$ 4 (b) $x - 120 = 2.5$ 4 x - 120 = 10 x = 13	.75	$(c) \overline{y} = \overline{x} - 120$ 4 $= 128.1 - 12$ 4 $= 2.025$ $\sigma_y = \sigma_x$ 4 $= 2.468$ 4	20		
(a) $127 - 120 = 1$ 4 (b) $x - 120 = 2.5$ 4 x - 120 = 10 x = 13	.75	$(c) \overline{y} = \overline{x} - 120$ 4 $= 128.1 - 12$ 4 $= 2.025$ $\sigma_y = \sigma_x$ 4 $= 2.468$ 4 $= 0.617$	20		
(a) $127 - 120 = 1$ 4 (b) $x - 120 = 2.5$ 4 x - 120 = 10 x = 13	.75	$(c) \overline{y} = \overline{x} - 120$ 4 $= 128.1 - 12$ 4 $= 2.025$ $\sigma_y = \sigma_x$ 4 $= 2.468$ 4 $= 0.617$	20		

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🕨 🔀 👩 @1stclassmaths The heights, *h*, to the nearest centimetre, of 10 students are summarised below. 2 $\sum h = 1776$ $S_{hh} = 236.4$ (a) Work out the mean (\bar{h}) and standard deviation (σ_h) (3) The data is coded using the formula c = h - 165(b) Work out the mean (\overline{c}) and standard deviation (σ_c) for the coded values. (2) $\bar{h} = 1776 = 177.6 \text{ cm}$ (b) $\bar{c} = \bar{h} - 165$ (a) = 12.6 236.4 $\sigma_h \equiv$ = 4.862 cm $\sigma_c \equiv \sigma_h$ 10 $\sigma_h = 4.862$ (Total for Question 2 is 5 marks) The masses, *x*, to the nearest kg, of 8 cows are summarised below. 3 $\sum x = 4120$ $\sum x^2 = 2\ 121\ 856$ (a) Work out the mean (\bar{x}) and standard deviation (σ_x) (3) The data is coded using the formula $y = \frac{x}{5} - 100$ (b) Work out the mean (\bar{y}) and standard deviation (σ_y) for the coded values. (2) $\bar{x} = 4120 = 515 \text{ kg}$ (b) $\overline{y} = \overline{x} - 100$ (a) 8 = 2.65... $= \frac{515}{5} - 100$ $2\ 121\ 856\ -\ 515^2$ $\sigma_x =$ = 0.529 8 = 3 = 2.65 kg

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2

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(Total for Question 2 is 5 marks)

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4 The daily temperatures, x, to the nearest °C, are recorded for 30 days in Antarctica

The data is coded using the formula y = x + 50

$$\sum y = 210$$
 $\sum (y - \overline{y})^2 = 172$

(a) Work out the mean daily temperature for the 30 days.

(b) Work out standard deviation of the daily temperatures for the 30 days. (3)

(2)

$\bar{y} = 210 = 7$	(b) $\sigma_y \equiv 1$.72 = 2.394		
30		30		
$\overline{y} = \overline{x} + 50$				
$7 = \overline{x} + 50$				
$\overline{x} = -43^{\circ}\mathrm{C}$	$\sigma_x \equiv \sigma_y$,		
	$\sigma_x = 2.3$	894 °C		
		(Tota	l for Question 4 is 5 ma	rks)
Jim wants to convert the dat He codes the data using the $\sum m = 1300$ \sum (a) Work out the mean dail	ta from kilometre formula $m = \frac{x}{1.6}$ $m^2 = 84550$ y distance cycled	to miles. $\frac{1}{6}$, where the units $\frac{1}{6}$, in km , for the 20	of <i>m</i> are miles.	(2)
	ation of the daily	distance cycled in	km , for the 20 days.	
(b) Work out standard devi	ation of the daily	distance cyclea, m	, 101 010 20 00 js.	(3)
(b) Work out standard devia a) $\overline{m} = 1300 = 65$	(b) $\sigma_m =$	$84\ 550\ -\ 65^2$	$\sigma_m = \sigma_x$	(3)
(b) Work out standard devi a) $\overline{m} = \underline{1300} = 65$ $\underline{20}$	(b) $\sigma_m =$	$\frac{84\ 550\ -\ 65^2}{20}$	$\sigma_m = \frac{\sigma_x}{1.6}$	(3)
(b) Work out standard devi (a) $\overline{m} = 1300 = 65$ 20 $\overline{m} = \overline{x}$	(b) $\sigma_m =$	$\frac{84\ 550\ -\ 65^2}{20}$	$\sigma_m = \frac{\sigma_x}{1.6}$ $1.58 = \sigma_x$	(3)
(b) Work out standard devi (a) $\overline{m} = 1300 = 65$ 20 $\overline{m} = \frac{\overline{x}}{1.6}$	(b) $\sigma_m =$	$\frac{84\ 550\ -\ 65^2}{20}$	$\sigma_m = \frac{\sigma_x}{1.6}$ $1.58 = \sigma_x$ 1.6	(3)
(b) Work out standard devi a) $\overline{m} = 1300 = 65$ 20 $\overline{m} = \frac{\overline{x}}{1.6}$ $65 = \frac{\overline{x}}{1.6}$	(b) $\sigma_m =$	$\frac{84\ 550\ -\ 65^2}{20}$	$\sigma_m = \frac{\sigma_x}{1.6}$ $1.58 = \sigma_x$ 1.6 $\sigma_x = 1.58 \times 1$.6
(b) Work out standard devi a) $\overline{m} = 1300 = 65$ 20 $\overline{m} = \frac{\overline{x}}{1.6}$ $65 = \frac{\overline{x}}{1.6}$	(b) $\sigma_m =$	$\frac{84\ 550\ -\ 65^2}{20}$	$\sigma_m = \frac{\sigma_x}{1.6}$ $1.58 = \frac{\sigma_x}{1.6}$ $\sigma_x = 1.58 \times 1$ $\sigma_x = 2.53 \text{ km}$.6
(b) Work out standard devi a) $\overline{m} = 1300 = 65$ 20 $\overline{m} = \frac{\overline{x}}{20}$ $\overline{n} = \frac{\overline{x}}{1.6}$ $\overline{5} = \frac{\overline{x}}{1.6}$ $\overline{x} = 104 \text{ km}$	(b) $\sigma_m =$	$\frac{84\ 550\ -\ 65^2}{20}$	$\sigma_m = \frac{\sigma_x}{1.6}$ $\frac{1.58}{1.6} = \frac{\sigma_x}{1.6}$ $\sigma_x = 1.58 \times 1$ $\sigma_x = 2.53 \text{ km}$.6
(b) Work out standard devi a) $\overline{m} = 1300 = 65$ 20 $\overline{m} = \frac{\overline{x}}{1.6}$ $\overline{65} = \frac{\overline{x}}{1.6}$ $\overline{x} = 104 \text{ km}$	(b) $\sigma_m =$	84 550 - 65 ² 20 58	$\sigma_m = \frac{\sigma_x}{1.6}$ $1.58 = \frac{\sigma_x}{1.6}$ $\sigma_x = 1.58 \times 1$ $\sigma_x = 2.53 \text{ km}$.6

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	assinations
6 The weekly wages, <i>w</i> , to the nearest pound, are recorded for	6 employees at a company.
The data is coded using the formula $x = \frac{w - 800}{z}$	
$\sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{i$	
$\sum x = 66 \qquad \sum x^2 = 4356$	
(a) Work out the mean weekly wage, in pounds, of the 6 en	nployees. (2)
(b) Work out, to the nearest pound, the standard deviation o of the 6 employees.	of the weekly wages (3)
(a) $\bar{x} = 66 = 11$ (b) $\sigma_x = 4356 - 11^2$	$\sigma_x = \sigma_w$
6 6	5
$\sigma_x = 24.5967$	$24.5967=\sigma_w$
$\overline{x} = \overline{w} - 800$	5
5	$\sigma_w = 24.5967 \times 5$
$11 = \overline{w} - 800$	$\sigma_w = \pounds 123$
5	
$55 = \overline{w} - 800$	
$\overline{w} = \pounds 855$	
[]	Fotal for Question 6 is 5 marks)
7 The masses, <i>m</i>, of ten 1p coins are recorded in grams.	Fotal for Question 6 is 5 marks)
(7) The masses, <i>m</i> , of ten 1p coins are recorded in grams. The data is coded using the formula $x = 1000m - 3500$	Fotal for Question 6 is 5 marks)
7 The masses, <i>m</i> , of ten 1p coins are recorded in grams. The data is coded using the formula $x = 1000m - 3500$ x = 640 S _m = 17 284	Fotal for Question 6 is 5 marks)
(7) 7 The masses, <i>m</i> , of ten 1p coins are recorded in grams. The data is coded using the formula $x = 1000m - 3500$ $x = 640$ $S_{xx} = 17\ 284$ (a) Work out the mean mass in grams of the ten 1p coins	Fotal for Question 6 is 5 marks)
7 The masses, <i>m</i> , of ten 1p coins are recorded in grams. The data is coded using the formula $x = 1000m - 3500$ $x = 640$ $S_{xx} = 17\ 284$ (a) Work out the mean mass, in grams, of the ten 1p coins.	Fotal for Question 6 is 5 marks) (2)
 7 The masses, <i>m</i>, of ten 1p coins are recorded in grams. 7 The data is coded using the formula x = 1000m - 3500 x = 640 S_{xx} = 17 284 (a) Work out the mean mass, in grams, of the ten 1p coins. (b) Work out the standard deviation, in grams, of the masses 	Fotal for Question 6 is 5 marks) (2) es of the ten 1p coins (3)
7 The masses, <i>m</i> , of ten 1p coins are recorded in grams. The data is coded using the formula $x = 1000m - 3500$ $x = 640$ $S_{xx} = 17\ 284$ (a) Work out the mean mass, in grams, of the ten 1p coins. (b) Work out the standard deviation, in grams, of the masses (a) $\bar{x} = 640 = 64$ (b) $\sigma_x = 17284$	Fotal for Question 6 is 5 marks)(2)(3) $= 41.574$
(1 7 The masses, <i>m</i> , of ten 1p coins are recorded in grams. The data is coded using the formula $x = 1000m - 3500$ $x = 640$ $S_{xx} = 17\ 284$ (a) Work out the mean mass, in grams, of the ten 1p coins. (b) Work out the standard deviation, in grams, of the masses (a) $\overline{x} = 640 = 64$ (b) $\sigma_x = \sqrt{\frac{17284}{10}}$	Fotal for Question 6 is 5 marks)(2)(3) $= 41.574$
(1 7 The masses, <i>m</i> , of ten 1p coins are recorded in grams. The data is coded using the formula $x = 1000m - 3500$ $x = 640$ $S_{xx} = 17\ 284$ (a) Work out the mean mass, in grams, of the ten 1p coins. (b) Work out the standard deviation, in grams, of the masses (a) $\overline{x} = 640 = 64$ (b) $\sigma_x = 17284$ 10 10	Fotal for Question 6 is 5 marks)(2)(3) $= 41.574$
(1 7 The masses, <i>m</i> , of ten 1p coins are recorded in grams. The data is coded using the formula $x = 1000m - 3500$ $x = 640$ $S_{xx} = 17\ 284$ (a) Work out the mean mass, in grams, of the ten 1p coins. (b) Work out the standard deviation, in grams, of the masses (a) $\overline{x} = 640 = 64$ (b) $\sigma_x = \sqrt{17284}$ 10 $\overline{x} = 1000\overline{m} - 3500$ $\sigma_x = 1000\sigma_m$	Fotal for Question 6 is 5 marks)(2)es of the ten 1p coins(3) $= 41.574$
(1 7 The masses, <i>m</i> , of ten 1p coins are recorded in grams. The data is coded using the formula $x = 1000m - 3500$ $x = 640$ $S_{xx} = 17\ 284$ (a) Work out the mean mass, in grams, of the ten 1p coins. (b) Work out the standard deviation, in grams, of the masses (a) $\overline{x} = 640 = 64$ (b) $\sigma_x = \sqrt{\frac{17284}{10}}$ $\overline{x} = 1000\overline{m} - 3500$ $\sigma_x = 1000\sigma_m$ $64 = 1000\overline{m} - 3500$ $41.574 = 1000\sigma_m$	Fotal for Question 6 is 5 marks) (2) es of the ten 1p coins (3) = 41.574
(1)(1)(1)7 The masses, m, of ten 1p coins are recorded in grams.The data is coded using the formula $x = 1000m - 3500$ $x = 640$ $S_{xx} = 17\ 284$ (a) Work out the mean mass, in grams, of the ten 1p coins.(b) Work out the standard deviation, in grams, of the masse(a) $\overline{x} = 640 = 64$ (b) $\sigma_x = \sqrt{17284}$ 10 $\overline{x} = 1000\overline{m} - 3500$ $\sigma_x = 1000\sigma_m$ $64 = 1000\overline{m} - 3500$ $41.574 = 1000\sigma_m$ $3564 = 1000\overline{m}$	Fotal for Question 6 is 5 marks) (2) es of the ten 1p coins (3) = 41.574
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(1 7 The masses, <i>m</i> , of ten 1p coins are recorded in grams. The data is coded using the formula $x = 1000m - 3500$ $x = 640$ $S_{xx} = 17\ 284$ (a) Work out the mean mass, in grams, of the ten 1p coins. (b) Work out the standard deviation, in grams, of the masse (a) $\overline{x} = 640 = 64$ (b) $\sigma_x = \sqrt{17284}\ 10$ $\overline{x} = 1000\overline{m} - 3500$ $\sigma_x = 1000\sigma_m$ $64 = 1000\overline{m} - 3500$ $41.574 = 1000\sigma_m$ $3564 = 1000\overline{m}$ $\sigma_m = 0.041574$ g $\overline{m} = 3.564$ g	Fotal for Question 6 is 5 marks) (2) es of the ten 1p coins (3) = 41.574
(1 7 The masses, <i>m</i> , of ten 1p coins are recorded in grams. The data is coded using the formula $x = 1000m - 3500$ $x = 640$ $S_{xx} = 17\ 284$ (a) Work out the mean mass, in grams, of the ten 1p coins. (b) Work out the standard deviation, in grams, of the masse (a) $\overline{x} = 640 = 64$ (b) $\sigma_x = \sqrt{17284}\ 10$ $\overline{x} = 1000\overline{m} - 3500$ $\sigma_x = 1000\sigma_m$ $64 = 1000\overline{m} - 3500$ $41.574 = 1000\sigma_m$ $3564 = 1000\overline{m}$ $\sigma_m = 0.041574$ g $\overline{m} = 3.564$ g	Fotal for Question 6 is 5 marks) (2) es of the ten 1p coins (3) = 41.574