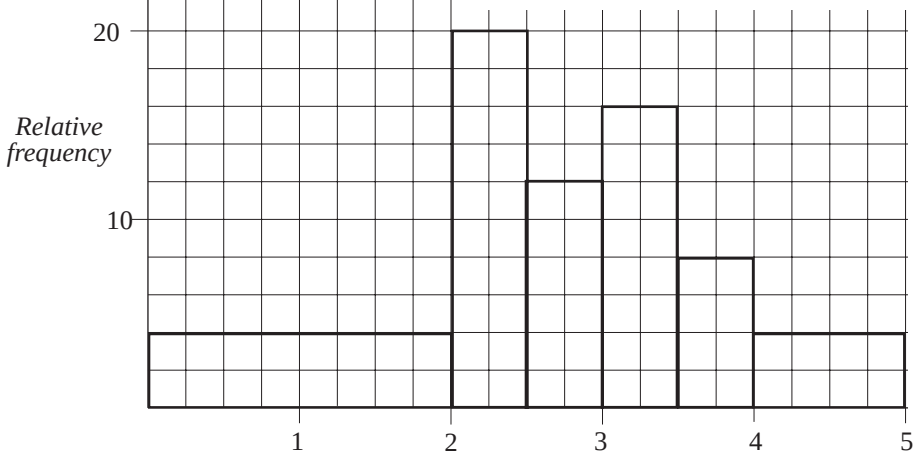
Revision Test 20.5 Answers

1. (a)

Time	0-2	2-2.5	2.5-3	3-3.5	3.5-4	4-4.5
Freq.	8	10	6	8	4	4
Class width	2	0.5	0.5	0.5	0.5	1
Rel. freq.	4	20	12	16	8	4



Rel. frequencies B2

histogram B1

(b) 0 (since all tracks in the first interval could have been actually in 0-1) B1

(c) 10 (since all tracks in the interval 2-2.5 could fall in this interval) B1

(d) $\text{proportion} = \frac{16}{40}$ B1

$\text{so number} = \frac{16}{40} \times 140 = 56$ B1 *(7 marks)*

2. (a)

1	181°
2	93°
3	51°
4	35°

(one mistake B1) B2

(b) $\frac{416}{672} = \frac{r^2}{4^2} \Rightarrow r = 4 \times \sqrt{\frac{416}{672}} \approx 3.15 \text{ cm}$ M1 A1

(c) pie charts (–1 for each error) B3

(d) overall attendance has dropped B1

Division 1's share of attendance has increased, etc. B1 *(9 marks)*

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3. (a)

	males	*females*
mean	78	76.3
s.d.	6.27	6.94

means B1

s.d. B2 B2

(b) Males have a slightly higher mean value with slightly lower s.d. B1

(c) Overall slightly less than the average. B1 *(7 marks)*

4. (a) (i) 18.5 B1

(ii) $35 - 13 = 22$ M1 A1

(b)

0–	10–	20–	30–	40–	50–	60–	70–80
(3	8	20)	34	50	57	59	60

B2

(c) cumulative frequency graph (minor error B2) B3

(i) 37-38 (ii) $47 - 26 = 21$ B1 M1 A1

(d) The median time is much increased, but there is a similar interquartile range. B1

The first sample might have been taken from one particularly good operator. B1 *(13 marks)*

5. (a) (i) Her index weights all items equally. B1

Her index does not include important items, e.g. housing, transport. B1

Using estimated prices in 1986 is not accurate. B1

(ii) Wage bargaining, pension and benefit increases, etc. B1

It gives a good representative value for the overall increase in prices. B1

(b) (i) Costs have risen steadily from 1986 to 1989. B1

(ii) $80\,000 \times \frac{106}{72} \approx 118\,000$ M1 A1 *(8 marks)*

6. (a) $\frac{\text{no. of deaths}}{\text{total population}} = \frac{608}{96} \approx 6.\dot{3}$ M1 A1

(b) Use of 9, 1, 2, . . ., etc. B1

Use of 0.08, 0.24, . . ., etc. B1

$(9 \times 0.08) + (1 \times 0.24) + (2 \times 0.24) + (6 \times 0.28) + (16 \times 0.12)$

$+(12 \times 0.04)$ M1 A1

$= 5.52$ A1

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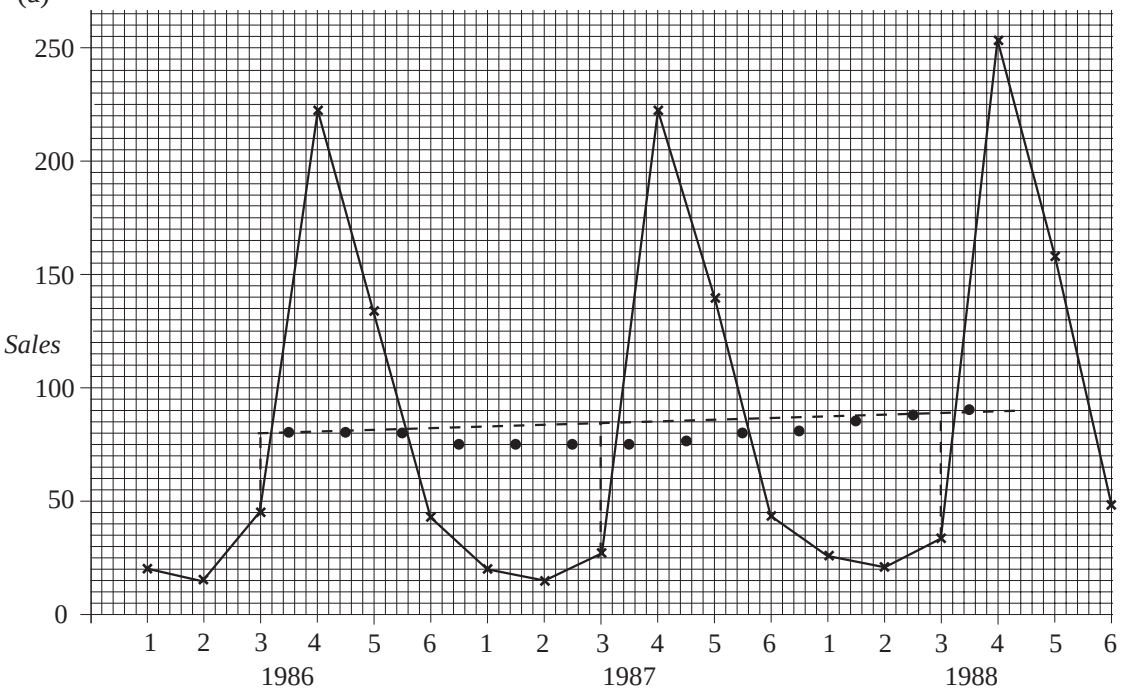
(c) The population of Norwest is not in the same ratio as the standard population. B1

(d) Max value $= \frac{44}{21.5} = 2.0465$ M1 A1

Min value $= \frac{44}{22.5} = 1.9556$ A1 *(11 marks)*

7. (a)



(–1 for each error) B4

(b) 6 point moving averages

80		
80	6 point	B1
80		
77	values	B3
77	(–1 for each error)	
78	plotting	B1
78		
79		
80		
81		
86		
89		
90		

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(c) Average below trend line $= \frac{1}{3}(35 + 56 + 56) = 49$ B1

giving estimate $= 93 - 49 = 44$ B1

(d) Overall underlying slightly increasing trend. B2 *(13 marks)*

8. (a) Bar chart or pie chart. B1

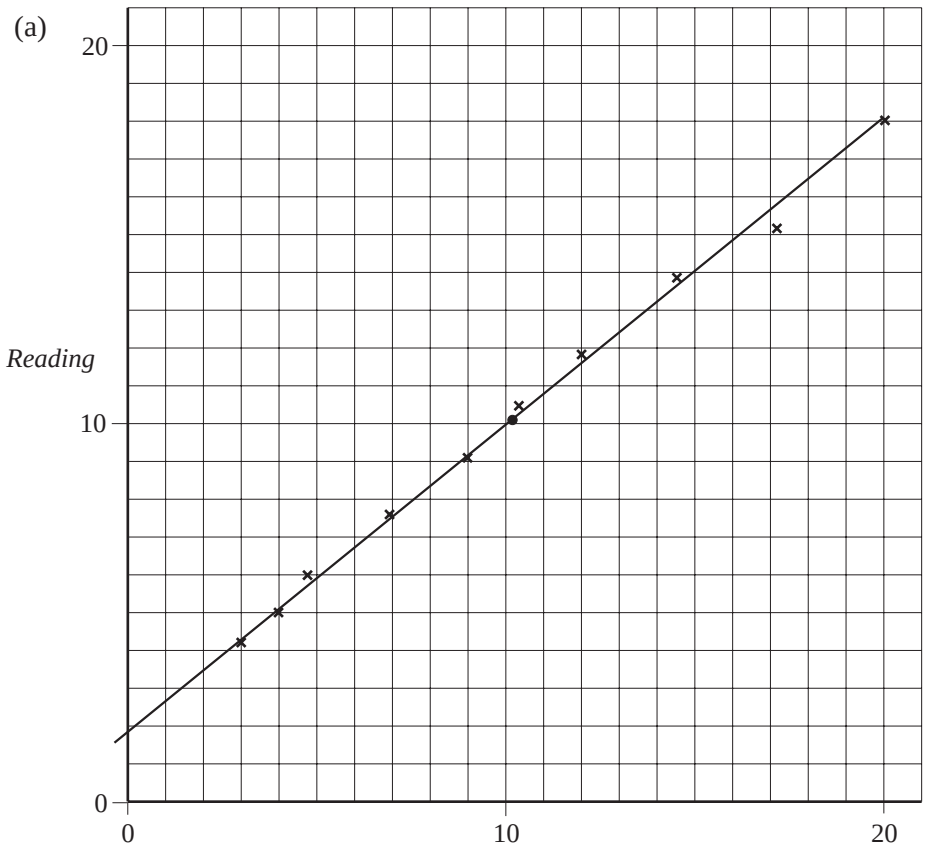
(b) (i)

	C	D	F	G	I	It	U	
	2	6	3	5	7	4	1	
	3	4	2	7	6	5	1	B1
$\lvert d \rvert$	1	2	1	2	1	1	0	
d^2	1	4	1	4	1	1	0	$\sum d^2 = 12$ B1

$$r = 1 - \frac{6 \times 12}{7 \times 48} = 0.786$$ M1 A1

(ii) Quite strong positive correlation. B1 *(6 marks)*

9. (a)



(–1 for each error) B4

(b) Line of best fit, passing through mean values (10.2, 10.17) B2 B1

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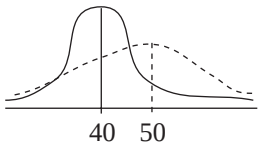
(c) $y = 0.8x + 2$ (B1 for one correct value) B3

(d) Weight of balance. B1 *(11 marks)*

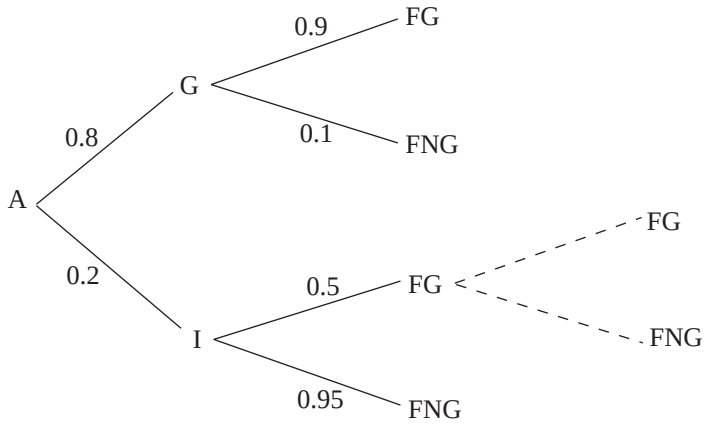
10. (a) $50 - \dfrac{(40 - 31)}{12} \times 16 = 38$ M1 A1

$50 + \dfrac{(67 - 40)}{12} \times 16 = 86$ B1

(b) Most will increase, and the spread of marks will increase. B1 B1

(c) 

B2 *(7 marks)*

11. (a) 

B2

(b) $0.8 \times 0.9 + 0.2 \times 0.05$ M1 A1

$= 0.73$ A1

(c) $(0.8 \times 0.1) + (0.2 \times 0.05 \times 0.5) + (0.2 \times 0.95)$ M1 A1

$= 0.275$ A1 *(8 marks)*

TOTAL 100 marks