

## Mock Revision B (F4 only) [51] MARKSCHEME

1.

- (a)  $80 - 73, 72, 74$  (71.5, 71, 72) M1  
*Reading off and subtracting from 80*

= 7, 8 or 6

- 4, 3, 3.5 (with evidence)  $\Rightarrow$  M1A0 A1  
*Answer must be consistent with their graph. Must be integer*  
*Note: 57-50 = 7!*

- (b) Median line at 37 (dot OK) B1  
 $\pm \frac{1}{2}sq$

Quartiles at 30 and 44 and box formed B1  
 $\pm \frac{1}{2}sq$

*Top line on 3 cm box must be seen*

Whiskers joined to 17 and 57 B1  
*Accept 17 - 18 and 57 - 58  $\pm \frac{1}{2}sq$*

[5]

2.

- (a)  $x^2 - y^2$  B2  
 $x^2 + xy - xy - y^2$  B1  
*(4 terms seen any 3 correct)*

- (b) (i)  $(x-9)(x-4)$  B2  
*B1  $(x \pm 9)(x \pm 4)$*

(ii) 4 and 9 B1ft

[5]

3.

- (a)  $A \propto d^2$  or  $A = kd^2$  M1

When  $d = 15, A = 90$

$90 = 225k$  M1

$k = 0.4$  or  $\frac{2}{5}$

$\therefore A = 0.4d^2$  A1

*Accept  $A = \frac{2}{5}d^2$  oe*

- (b)  $d = 20 \Rightarrow$

$A = 0.4 \times 20^2$

$A = 160$  A1

*160 unsupported SCI*

(c)  $A = 250$

$250 = 0.4d^2$

$d^2 = \frac{250}{0.4}$

M1

Dep on M2 in (a)

$= 625$

M1 dep

Accept  $\sqrt{\text{(their 625)}}$

$d = 25$

A1

[7]

4.

(a)	$9\sqrt{3}$ 81 59049	<b>1</b> <b>1</b> <b>1</b> 1 AO1.2 1 AO1.3a 1 AO2.1a		
(b)	3 -1 4	<b>4</b> 1 AO1.2 3 AO1.3b	M1 for [1 <sup>st</sup> diffs] 8 14 20 and [2 <sup>nd</sup> diffs] 6 6 AND B1 for $3x^2$ or $a = 3$ Or M1 for their $6 \div 2$ AND M1 for $(6 \ 14 \ 28 \ 48) - (3 \ 12 \ 27 \ 48)$ or $3 \ 2 \ 1 \ 0$	Accept any correct method

5.

(a)	50	<b>2</b> 2 AO1.3a	B1 for $\frac{1}{6}$	
(b)	(i) $\frac{2}{5}$ oe	<b>1</b> 1 AO2.1b		
	(ii) $\frac{1}{5}$ oe	<b>1</b> 1 AO2.1b		
(c)	No evidence that Dan knows what Ethan is thinking as over the 15 trials the relative frequency of $\frac{1}{5}$ is very close to the theoretical probability of $\frac{1}{6}$	<b>2</b> 1 AO2.5a 1 AO3.3	M1 for reason not including reference to $\frac{1}{5}$ relative frequency or $\frac{1}{6}$ theoretical probability  FT their (a) and (b)	

6.

(a)	He could be correct with reference to not knowing the maximum or minimum values for the time so the range could lie between 20 and 50 oe	<b>1</b> 1 AO3.4b		The maximum could be less than 50 minutes The exact data is not given for times on the histogram
(b)	37	<b>3</b> 1 AO1.3b 1 AO2.1a 1 AO2.3a	M2 for $10 \times 2.1 + 5 \times 3.2$ oe  Or M1 for correct interpretation of vertical scale e.g. 1 cm = 0.5 or area scale e.g. 1 cm <sup>2</sup> = 2.5 trains or 0.4 cm <sup>2</sup> = 1 train	e.g. $14.8 \times 2.5$ oe [1 cm <sup>2</sup> = 2.5 trains]

7.

(a)(i)		10, 12, 14, 15, 16, 18	B1	cao
(ii)		12, 18	B1	cao
(b)		$\frac{7}{10}$	M1	for 7 or indicating correct region or for 10, 14, 16, 11, 13, 17, 19 listed
			A1	for $\frac{7}{10}$ oe

8.

55	P1 for $\sqrt{\frac{253.5}{6}}$ (=6.5) P1 for $2 \times "6.5"^{33} \div 10$ (=54.925) A1 cao
----	--

9.

sight of  $(\frac{1}{2} \times \frac{1}{5})$  or  $(\frac{1}{3} \times \frac{3}{5})$  or  $(\frac{1}{6} \times \frac{1}{10})$  M1  
correct evaluation of at least two correct products M1  
*ie, any two of  $\frac{1}{10}$  or  $\frac{2}{15}$  or  $\frac{1}{60}$  (oe)*  
 attempt at addition of their three relevant products M1  
 $\frac{1}{20}$  A1  
*oe  $\frac{27}{60}$  is the most likely alternative*

[4]

**alternatively**

correct evaluation of at least two M1  
 of  $(\frac{1}{2} \times \frac{1}{5})$  or  $(\frac{1}{3} \times \frac{3}{5})$   
 or  $(\frac{1}{6} \times \frac{1}{10})$   
*ie, any two of  $\frac{1}{10}$  or  $\frac{2}{15}$  or  $\frac{1}{60}$  (oe)*  
 attempt at addition of their three relevant products M1  
 $1 - (\frac{1}{2} \times \frac{1}{5} \times \frac{1}{3} \times \frac{3}{5} + \frac{1}{6} \times \frac{1}{10})$  M1  
 $\frac{1}{20}$  A1  
*oe  $\frac{27}{90}$  is the most likely alternative*

[4]

10.

$a + b = 29$  B1  
*Sight of 29 alone is not B1*  
 $12 \times 25 + 21 \times 35 + 38 \times 45 + 55a + 65b$  M1  
 (= 4400)  
 $55a + 65b = 1655$  A1  
*oe*  
 $55a + 55b = 1595$  M1  
*oe  $65a + 65b = 1885$  for balancing and attempting to eliminate.*  
 $10b = 60$  A1  
 $10a = 230$   
 $a = 23, b = 6,$  A1  
*Need both*  
*Ucb, 1cb used B1, M0, A0, M1, A0 possible.*

[6]