

## Revision F4 (Topics 11-15) [39] MARKSCHEME

1. (a) When  $x = 1$ ,  $1^3 + 10 \times 1 < 24$   
 When  $x = 2$ ,  $2^3 + 10 \times 2 > 24$     substitutes 1 and 2 into equation    [M1]  
 Since there is a sign change there is a root between 1 and 2    [R1]
- (b) Substitutes a value between 1 and 2 into  $x^3 + 10x = 24$     [M1]  
 Shows solution is between 1.8 and 1.9    [M1] soi  
 Substitutes 1.80 to get  $< 24$  and 1.81 to get  $> 24$     [M1]  
 Substitutes 1.805 to get  $< 24$     [M1]\*  
 Answer is  $x = 1.81$     [A1] dep\*

2.

Reading from graph at LQ and UQ    M1

*Accept any indication  $19 - 11 = 8$  for example  
 Can read from 10.25 and 30.75*

11 (mins) and 19 (mins)    A1

*Either order. (10.25 gives 11.125, 30.75 gives 19.5). Reading  
 from graph 1 mm tolerance rule applies.*

[2]

3.

(a)	Outcomes not equally likely <b>oe</b>	<b>1</b> 1 A03.4b	
(b)	Larger number of trials	<b>1</b> 1 A03.4a	
(c)	0.09 - 0.16	<b>2</b> 1 A01.3a 1 A02.1b	<b>M1</b> for $\left(\frac{48}{150}\right)^2$ or $0.35^2$ or any reasonable estimate ( <b>FT their (b)</b> )

4.

(a)  $4m + 12 + 6m - 15$     M1  
*Allow one error*

$10m - 3$     A1  
*Allow  $10m + -3$*

(b)  $6x + 9y = 27$      $4x + 6y = 18$   
and    or    and    M1  
 $6x + 4y = 2$      $9x + 6y = 3$   
*Allow one error in either first*

$5y = 25$     or     $5x = -15$     M1dep  
*or second method mark*

$y = 5$     or     $x = -3$     A1

$x = -3$     and    and  $y = 5$     A1  
*SCI correct answers only or correct answers by T&I*

(c) (i)  $(x + 8)(x - 2)$     B2  
*B1 for  $(x \pm 8)(x \pm 2)$*

(ii)  $x = -8$  and  $x = 2$     B1  
*ft. from their factors, must have both solutions*

[9]

