Revision A F4 (End of Year Exam) [46] MARKSCHEME

1.

(a)		7 13 21 28 32	**2** 2 AO1.3a	**B1** for consistent frequencies with one error	
(b)	(i)	12	**1** 1 AO2.1a		
	(ii)	correct graph	**2** 2 AO2.3b	**B1** for 5 correct points plotted **FT** *their* table	tolerance ±2 mm
(c)		correct box plot	**3** 1 AO2.1a 2 AO2.3b	**B1** for ends of 5.4 and 6.2 **B1** for UQ = 6.05 and LQ = 5.8 **B1** for median = 6.0	tolerance ±2 mm
(d)	(i)	Fran and she has a higher median **oe**	**1** 1 AO2.1b		
	(ii)	Fran and she has a lower range/IQR	**1** 1 AO2.1b		
(iii)		accept any correct answer	**1** 1 AO2.4a	e.g. Fran and she has a higher median **oe** or Jenny and she has a higher jump than any of Fran's **oe**	

2. (a) When $x = 3$, $3^3 - 3 < 29$
When $x = 4$, $4^3 - 4 > 29$ substitutes both 3 and 4 into equation [M1]
Since there is a sign change there is a root between 3 and 4 [R1]

(b) Substitutes a value between 3 and 4 into $x^3 - x = 29$ [M1]
Substitutes 3.1 to get < 29 and 3.2 to get > 29 [M1]
Substitutes 3.15 to get < 29 [M1]*
Answer is $x = 3.2$ [A1] dep*

3.

$n^2 - n + 1$ oe	M1	for correct deduction from differences, eg. 2nd difference of 2 implies $1n^2$ or sight of $1^2, 2^2, 3^2, ..$
	M1	for sight of $1^2, 2^2, 3^2, ..$ linked with 1, 2, 3, ...
	A1	for $n^2 - n + 1$ oe

4.

(a) 1.029 B1

(b) $650\,000\,000 \times 1.029^{18}$ M1,A1

1 087 401 937 A1

Allow 1 087 000 000

[4]

5.

(a)		0.45 **oe**	**2** 1 AO1.3a 1 AO2.1a	**M1** for 1 – (0.3 + 0.25) If 0 scored, **SC1** for 0.72
(b)	**(i)**	9	**2** 1 AO1.3a 1 AO2.1b	**M1** for 0.3 × 30 **oe**
	(ii)	Correct explanation	**1** 1 AO3.4b	e.g. May need to play more times or she may not be very good at this game

6.

(a)	**(i)**	-13	**1** 1 AO1.3a		
	(ii)	15	**1** 1 AO1.3a		
	(iii)	$\frac{x+3}{5}$ **oe**	**2** 1 AO1.1 1 AO1.3a	**M1** for correct first step $5x = y + 3$ or a flow diagram with + 3 and ÷ 5	Accept equivalent flow diagram
(b)		3 2	**4** 1 AO1.3b 3 AO3.1b	**B1** for 17 or 42 **M2** for (128 – 53) ÷ (42 – 17) **oe** or 3 Or **M1** for 128 – 53 or 42 – 17 or 75 or 25	Alternative: **B1** for $17d + e = 53$ **B1** for $42d + e = 128$ **M1** for a subtraction with at most one error e.g. $25d = 75$

7.

144% or 1.44 seen	B1	
$\sqrt{1.44}$ or 1.2	M1	oe
their 1.2 × 32	M1dep	
38.4	A1	

8.

(a) $\frac{3}{5} \times \frac{1}{30}$ or $\frac{2}{5} \times \frac{7}{10}$ M1

Either correct

$\frac{3}{5} \times \frac{1}{30} + \frac{2}{5} \times \frac{7}{10}$ M1 dep

Adding 2 correct products

$= \frac{15}{50} = \frac{3}{10}$ oe A1

Note: Using made up numbers is acceptable provided answer is correct

(b) Their $\frac{3}{10} \times N = 120$ M1

Any form eg $N = \frac{120}{0.3}$ *or* $120 \times \frac{10}{3} = 400$ A1

[5]