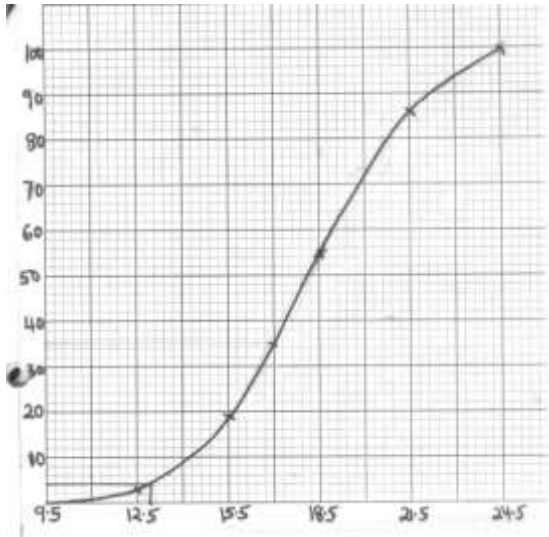


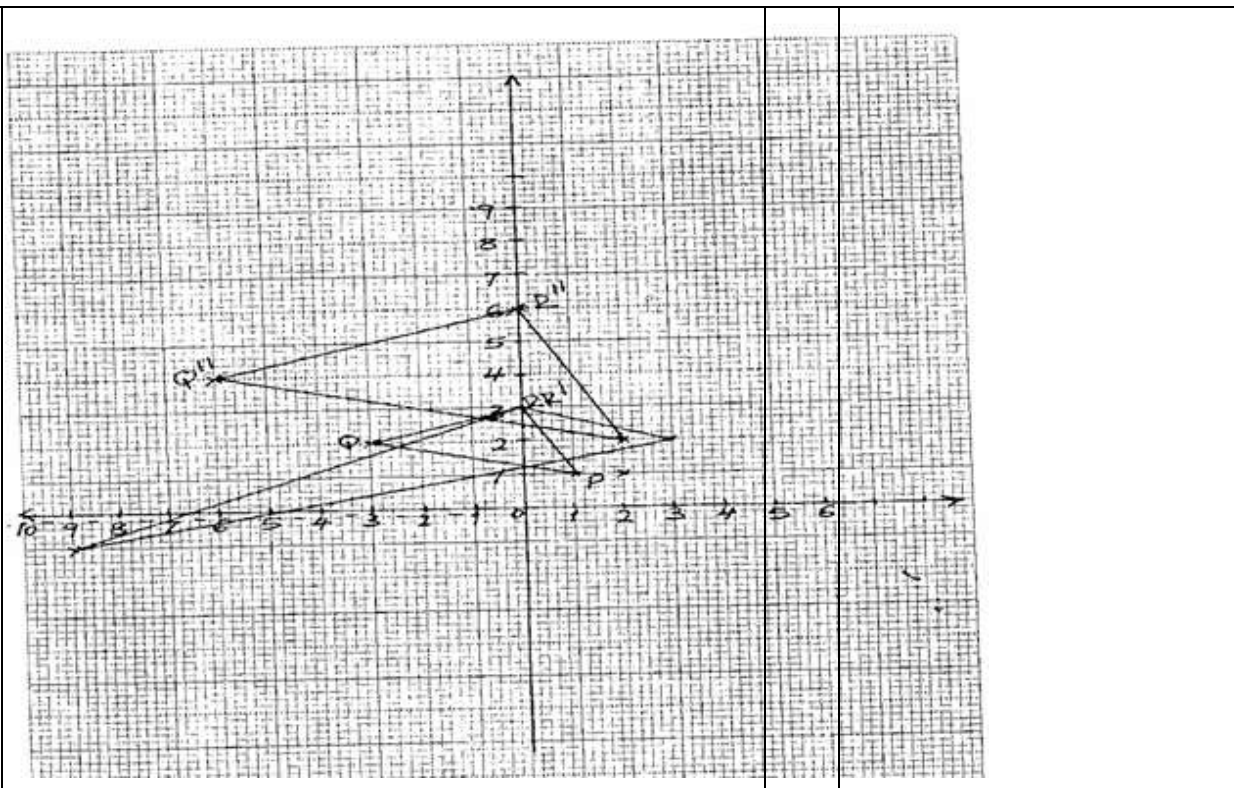
FORM 4 MATHS MARKING SCHEME

1.	<p>No</p> <p>0.7841</p> <p>$0.1356^{1/2}$</p> <p>Log 84.92 = 1.929</p> <p>0.5310</p> <p style="text-align: center;">Log</p> $\begin{array}{r} \bar{1}.8944 \\ \bar{1}.1323 \\ \hline 2 \end{array} = \frac{\bar{1}.5662}{1.4606}$ $\frac{0.2853}{\bar{1}.1753}$ $\frac{\bar{3}}{3} + \frac{2.1753}{3} = \bar{1}.7251$ <p style="text-align: center;">$\bar{1}.7251$</p>	M1 M1 M1 A1	✓ logs ✓ oper
2.	<p>3. Difference in longitude = $10 + 35 = 45^0$</p> <p>$\therefore \text{length of Arc } AB = \frac{45}{360} \times 2 \times \pi \times 0.5$</p> <p>$= \frac{1}{8} \pi = 0.125\pi$</p>	M1 M1 A1	
3.	<p>a)</p> $\frac{2+a}{2} = -2 \Rightarrow 2+a = -4$ <p>$a = -6$</p> $\frac{3+b}{2} = -2.5 \Rightarrow 3+b = -5$ <p>$b = -8$</p>	B1	
	<p>b) $\therefore (a, b) = (-6, 8)$</p> $r = \sqrt{(2 - -6)^2 + (3 - -8)^2} = \sqrt{185}$ <p>$\therefore (x - 2)^2 + (y - 3)^2 = 185$</p> $x^2 - 4x + 4 + y^2 - 6y + 9 = 185$ $x^2 + y^2 - 4x - 6y - 172 = 0$	M1 M1 A1	

4.	$x = y + \sqrt{x^2 + a^2}$ $x - y = \sqrt{x^2 + a^2}$ $(x - y)^2 = x^2 + a^2$ $(x - y)^2 - x^2 = a^2$ $\pm \sqrt{(x - y + x)(x - y - x)} = a$ $\pm \sqrt{(2x - y)(-y)} = a$ $\pm \sqrt{y^2 - 2xy} = a$		
5.	$\left(\frac{2}{3}x + 20\right) + \frac{5}{6}x + 10^0 = 90$ $\frac{9}{6}x + 30 = 90$ $\frac{9}{6}x = 60^0$ $X = 40^0$ $= \text{Tan}(x + 20)$ $= \text{Tan } 60$	M1 A1 B1	

CUBE								
6.	1	2	3	4	5	6		
	1	2	3	4	5	6	7	
	2	3	4	5	6	7	8	B1
	3	4	5	6	7	8	9	
	4	5	6	7	8	9	10	
	a) i) $P(6) = \frac{4}{24} = \frac{1}{6}$							B1
	ii) $P(6 \text{ or } 9) = \frac{1}{4}$							
	$P(6) = \frac{4}{24}$							B1
	$P(9) = \frac{2}{24}$							B1
	$\frac{4}{24} + \frac{2}{24}$							
	$\frac{6}{24} = \frac{1}{4}$							
7.	(a) $s = 8^3 - 5 \times 8^2 + 3 \times 8 + 4$ $512 - 320 + 24 + 4$ $= 220\text{m}$							
	(b) $V = \frac{ds}{dt} = 3t^2 - 10t + 3$ $= 3 \times 10^2 - 10 \times 10 + 3$ $300 - 100 + 3$ $= 197\text{m}$							

<p>8</p>	$(x + 2)(x - 5) = 60$ $x^2 - 5x + 2x - 10 = 60$ $x^2 - 3x - 70 = 0$ $x^2 - 10x + 7x - 70 = 0$ $x(x - 10) + 7(x - 10) = 0$ $(x - 10)(x + 7) = 0$ $x = 10$ $x = -7$ <p>Length $10 + 2 = 12\text{m}$</p>	<p>M1</p> <p>M1</p> <p>A1</p>	
<p>7.</p>	<p>Upper class limits 12.5, 15.5, 18.5, 21.5 24.5 Cumulative frequency 3, 19 55, 86,100</p>  <p>b) i) Median = 50th 18.2 ± 0.15 ii) Leaves below 13 = 4 leaves leaves below 17 = 35 leaves leaves between 13 and 17 = $35 - 4 = 31$</p>	<p>B1</p> <p>B1</p> <p>S1</p> <p>P1</p> <p>C1</p> <p>B1</p> <p>B1</p> <p>B1</p> <p>M1</p> <p>A1</p>	<p>May be implied.</p>

<p>8.</p>	
<p>9.</p>	<p>(b) (b)</p> $\begin{pmatrix} 3 & 0 \\ 1 & 1 \end{pmatrix} \begin{pmatrix} P & Q & R \\ 1 & -3 & 0 \\ 1 & 2 & 3 \end{pmatrix} = \begin{pmatrix} P^1 & Q^1 & R^1 \\ 3 & -9 & 0 \\ 2 & -1 & 3 \end{pmatrix}$ <p>(c)</p> $\begin{pmatrix} \frac{2}{3} & 0 \\ -\frac{2}{3} & 2 \end{pmatrix} \begin{pmatrix} 3 & -9 & 0 \\ 2 & -1 & 3 \end{pmatrix} = \begin{pmatrix} P^{11} & Q^{11} & R^{11} \\ 2 & -6 & 0 \\ 2 & 4 & 6 \end{pmatrix}$ <p>Coordinates $P^{11} (2, 2)$ $Q^{11} (-6, 4)$ $R^{11} (0, 6)$</p> <p>(d) It an enlargement centre origin (0, 0) scale factor 2</p> $\begin{pmatrix} \frac{2}{3} & 0 \\ -\frac{2}{3} & 2 \end{pmatrix} \begin{pmatrix} 3 & 0 \\ 1 & 1 \end{pmatrix} = \begin{pmatrix} 2 & 0 \\ 2 & 2 \end{pmatrix}$ <p>for triangles B1</p>

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