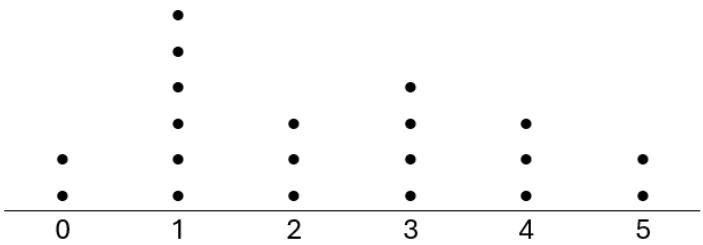
Qn	Solutions	Marks
	SECTION A	
1a	$\frac{82.98\times\sqrt{8.93}}{4.45}$ $=\frac{80\times\sqrt{9}}{4}$ $=60$	M1 A1
1b	$\frac{1397074}{548\times10^{6}}\times100$ $=2.55\times10^{-1}$	M1 A1
2a		0(more than 1 error) M1 (1 error) M2(0 error)
2b	$\frac{2+2}{2}$ $=2$	 B1
2c	$\frac{6}{20}$ $=\frac{3}{10}$	 B1
3a	$\frac{(n-2)\times180}{n}$ $=\frac{(15-2)\times180}{15}$ $=156^{o}$	 M1 A1
3b	$\angle EFD=180-156$(base angle of an isosceles triangle) $=12$ $\angle DCF=360-156-156-20-12$(sum of angle in a quadrilateral) $=16$	M1 M1 A1
4a	**2** **240** **2** **120** **2** **60** **2** **30** **3** **15** **5** **5** **1** $2^{4}\times3\times5$	 B1

<table>
<tr><th>Qn</th><th>Solutions</th><th>Marks</th></tr>
<tr><td>4b</td><td>$240a = 2^4 \times 3^1 \times 5^1 \times a$
$240a = 2^4 \times 3^1 \times 5^1 \times (3^1 \times 5^1)$
$a = 3 \times 5$
$= 15$</td><td>B1</td></tr>
<tr><td>4c</td><td>
<table>
<tr><th></th><th>Green</th><th>Black</th></tr>
<tr><td>2</td><td>240</td><td>210</td></tr>
<tr><td>3</td><td>120</td><td>105</td></tr>
<tr><td>5</td><td>40</td><td>35</td></tr>
<tr><td></td><td>8</td><td>7</td></tr>
</table>
LCM of 210 and 240
$= 2 \times 3 \times 5 \times 7 \times 8$
$= 1680$

$blue = \frac{1680}{240} = 7$
$red = \frac{1680}{210} = 8$
</td><td>M1

B1

B1</td></tr>
<tr><td>5a</td><td>Price of the car at a 10% discount
$= 22500 \times 90\%$
$= \$20\,250$

Percentage profit
$= \frac{28\,888 - 20\,250}{20\,250} \times 100\%$
$= 42.7\%$</td><td>M1

A1</td></tr>
<tr><td>5b</td><td>Amount of deposit+ Instalment (Mary)
$=(20\% \times 28888)+(58 \times 510)$
$= \$35\,357.80$

Amount of deposit+ Instalment (Jane)
$=(15\% \times 28888)+(60 \times 520)$
$=\$35\,533.20$
He should accept the offer from Jane as Jane will pay a higher amount of money ($35533.20) as compared to Mary(35357.80)</td><td>M1

M1

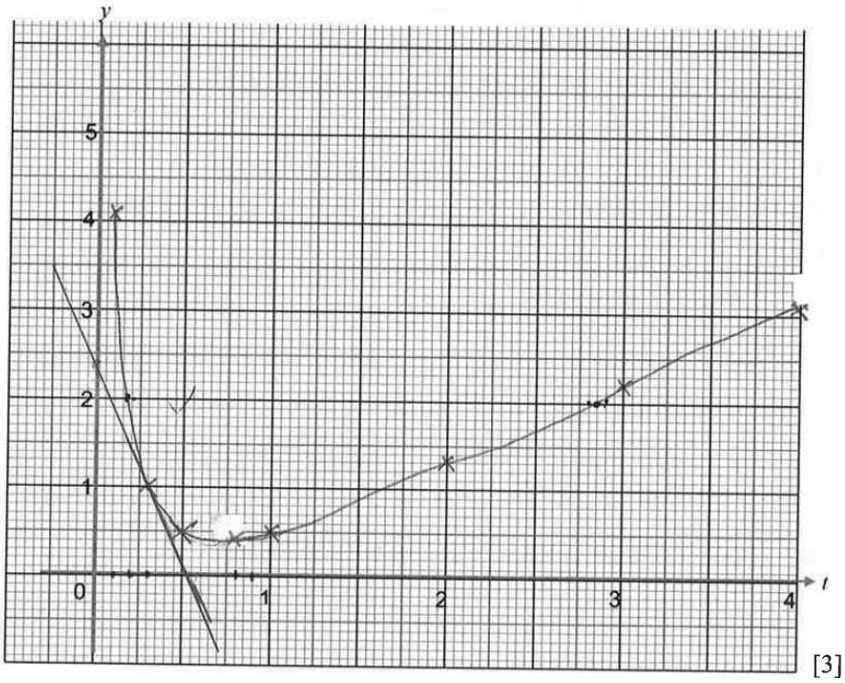
A1</td></tr>
<tr><td>6a</td><td>$\sqrt{(2-5)^2 + (5-9)^2}$
$= 5\,units$</td><td>M1
A1</td></tr>
</table>

<table>
<tr><th>Qn</th><th>Solutions</th><th>Marks</th></tr>
<tr><td>6b</td><td>$gradient = \frac{9-5}{5-2}$
$= \frac{4}{3}$
$y = \frac{4}{3}x + c$
$9 = \frac{4}{3}(5) + c$
$9 = \frac{20}{3} + c$
$c = 9 - \frac{20}{3}$
$c = \frac{7}{3}$
$y = \frac{4}{3}x + \frac{7}{3}$</td><td>M1 for either m or c

A1</td></tr>
<tr><td>6c</td><td>AB and BC has the same gradient.
$x = 5 + 3 = 8$
$y = 9 + 4 = 13$
$(8, 13)$</td><td>B1,B1</td></tr>
<tr><td>7a(i)</td><td>$3uv + 2v - 12u - 8$
$= v(3u+2) - 4(3u+2)$
$= (3u+2)(v-4)$</td><td>M1
A1</td></tr>
<tr><td>7a(ii)</td><td>$2x^2 - 11x + 5$
<table><tr><td>2x</td><td></td><td>-1</td><td>-x</td></tr><tr><td>x</td><td></td><td>-5</td><td>-10x</td></tr><tr><td></td><td></td><td></td><td>-11x</td></tr></table>$(2x-1)(x-5)$</td><td>M1

A1</td></tr>
<tr><td>7b</td><td>$\frac{9x^3}{4} \div \frac{3x^2}{8}$
$= \frac{9x^3}{4} \times \frac{8}{3x^2}$
$= \frac{72x^3}{12x^2}$
$= 6x$</td><td>M1

A1</td></tr>
<tr><td>8a</td><td>$\frac{20}{t} = 2.5$
$t = \frac{20}{2.5}$
$t = 8s$</td><td>B1</td></tr>
</table>

Qn	Solutions	Marks
8b	$\frac{speed}{20}=\frac{14}{20}$ $speed=\frac{14}{20}\times 20$ $=14\text{ m/s}$	M1 A1
8c	Distance =Area under the graph $\frac{1}{2}\times(22+50)\times 20$ $=720\ m$	M1 A1
9a	$y=3+\frac{1}{2(3)}-1=2.2\ or\ 2\frac{1}{6}\ or\ 2.17$	B1
9b,		B2 : all points correctly plotted B1: 4-7 points correctly plotted B1 points joined smoothly.
9c	0.17, 2.82	B1,B1 (FT)
9d	Tangent drawn -4.56 Range -5 to - 4.33	B1 B1
10a	$360-85$ $=275^{\circ}$	M1 A1
10b	The total length of wire $=5.2+3.9+\left(\frac{275}{360}\times 2\pi(3)\right)$ $=23.5cm$	M1 for $\left(\frac{275}{360}\times 2\pi(3)\right)$ A1
11a	Angles and length plot correctly. 75°, 122° or 6.2cm drawn correctly	B2 B1
11b	Perpendicular bisector with construction lines seen.	B1
11c	Accurate measurement of QX. (FT)	B1

<table>
<tr><th>Qn</th><th>Solutions</th><th>Marks</th></tr>
<tr><td>12a</td><td>$mean = \frac{50}{10} = 5$</td><td>B1</td></tr>
<tr><td>12b</td><td>There is an <u>extreme data of 23</u> and it is observed that 8 of the data are less than the mean of 5.
<u>Median will be a better measure</u> of central tendency.</td><td>B1

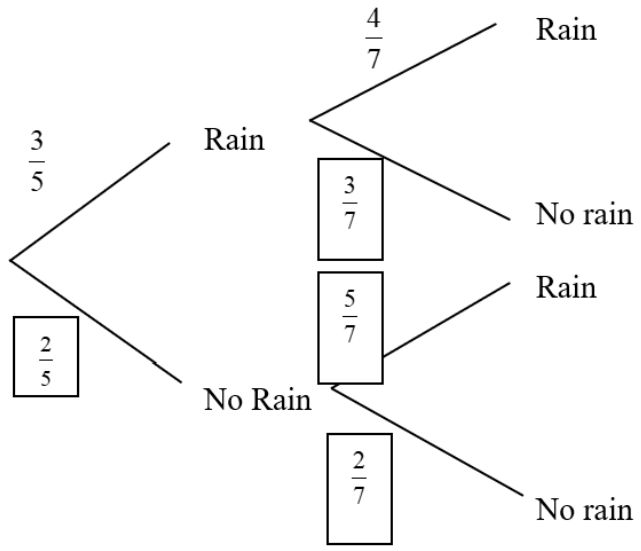
B1</td></tr>
<tr><td>12c</td><td><table>
<tr><td>Fogging of chemicals (20 units)</td><td>$(220\times 3)+(38\times 2)$</td><td>=736</td></tr>
<tr><td>Larvicide treatment(4 units)</td><td>$50+18$</td><td>=68</td></tr>
<tr><td>External mosquito trap</td><td>75×10</td><td>=750</td></tr>
<tr><td>Labour</td><td>$40\times\left[(3\times 2)+(0.5\times 20)\right]$</td><td>=640</td></tr>
<tr><td>TOTAL</td><td></td><td>=$2194</td></tr>
</table>
$2500-$2194 = $306

Yes, it is a reasonable quote as the company will <u>make a profit of $306.</u></td><td>M3: all workings are correct
M2: 1 error
M1: 2 errors

A1</td></tr>
<tr><td></td><td>SECTION B</td><td></td></tr>
<tr><td>13a(i)</td><td>$\angle GDE = 43^o$ (Angle in the same segment)</td><td>B1</td></tr>
<tr><td>13a(ii)</td><td>$\angle BDE = 90^o$ (Angle in a semicircle)
$\angle BDG = 90-43$
$= 47^o$</td><td>M1

A1</td></tr>
<tr><td>13a(iii)</td><td>$\angle ABF = 90-43 (\tan \perp radius)$
$= 47^o$</td><td>
B1</td></tr>
<tr><td>13b(i)</td><td>$\cos ine\ rule$
$\cos\angle YXZ = \frac{11^2+20^2-17^2}{2(11)(20)}$
$\angle YXZ = \cos^{-1}\left(\frac{11^2+20^2-17^2}{2(11)(20)}\right)$
$= 58.178$
$=58.2^o$</td><td>M1

A1</td></tr>
</table>

Qn	Solutions	Marks
13b(ii)	$\angle TYX = 253 - 180 - 39$ $= 34^o$ $\angle XTY = 180 - 39 - 34$(sum of angle in a triangle) $= 107^o$ $\frac{TY}{\sin 39} = \frac{11}{\sin 107}$ $TY = \frac{11}{\sin 107} \times \sin 39$ $= 7.24\ km$	M1 A1
14a(i)		B2=all correct B1=2 to 3 correct answers
14a(ii)	$\left(\frac{3}{5}\right)\left(\frac{3}{7}\right) + \left(\frac{2}{5}\right)\left(\frac{5}{7}\right)$ $= \frac{19}{35}$	M1 A1
14b(i)	\$550	B1
14b(ii)	$680 - 420$ $= \$260$	M1 A1
14b(iii)	$80 - 26$ $= 54$ workers	 B1
	TOTAL	**78 MARKS**