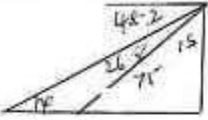
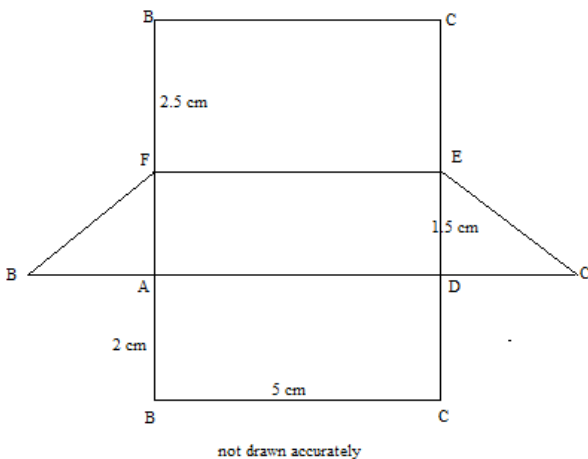


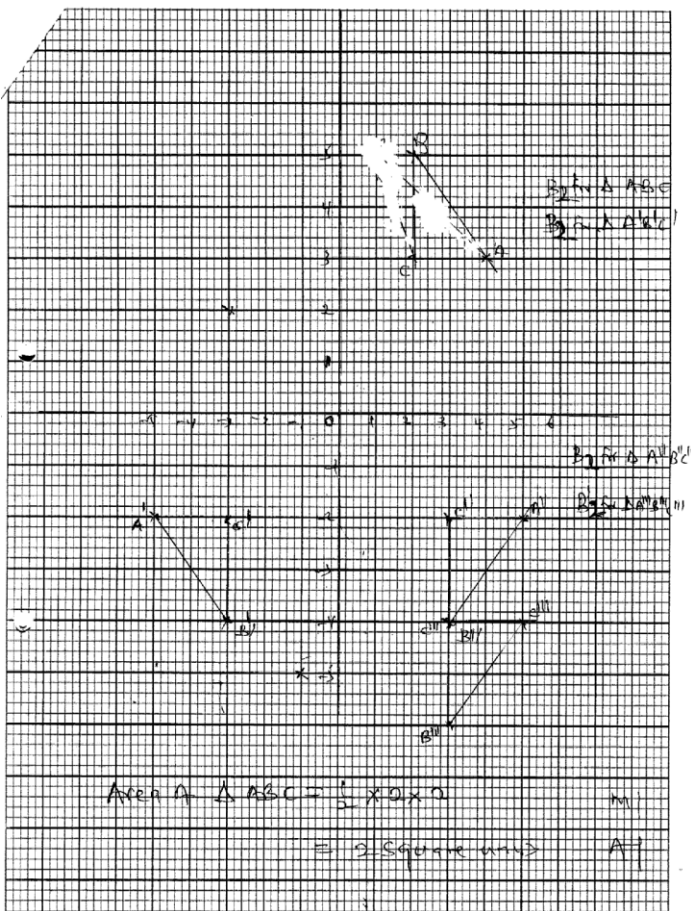
5.	$\begin{aligned} & \text{GCD is } xy^2 \\ & xy^2(9x^2 - 4y^2) \\ & xy^2(3x - 2y)(3x + 2y) \end{aligned}$	A1 M1 A1	
		3	
6.	$\begin{aligned} 12 - 2x &> 18x - 8 \\ &= 20x > -20 \\ &x < 1 \\ 18x - 8 &\geq -28 - 2x \\ 20x &\geq -20 \\ X &\geq -1 \\ -1 &\leq x < 1 \end{aligned}$ <p>Integral solutions: 0,1</p>	M1 M1 A1	
		3	
7.	$\begin{aligned} \left(\frac{3^3}{2^3}\right)^{x+7} &= \left(\frac{2^2}{3^2}\right)^{-3x} \\ \left(\frac{3}{2}\right)^{3(x+7)} &= \left(\frac{3}{2}\right)^{6x} \\ 3(x+7) &= 6x \\ 3x + 21 &= 6x \\ 3x &= 21 \\ x &= 7 \end{aligned}$	M1 M1 A1	
		03	
8.	<p>L.C.M of 50 and 80 = 400</p> <p>Number of poles = $\frac{400}{50} + \frac{400}{8}$ = 13</p>	B1 M1 A1	
		3	
9.	<p>Coordinates: 0,2.5,6.0,10.5,16.0,22.5,30</p> <p>A = $\frac{1}{2} \times 1 (6+30) + 2(2.5+6.0+10.5+16.0+22.5)$ = 72.5</p>	B1 M1 A1	
		03	
10.	<p>93 x 450 000 100 418 500 418500 x 100 113 370,353.98 = 370, 354</p>	M1 M1 A1	
		03	

11.	$ \begin{aligned} x+y &= 100 \\ 5x+10y &= 600 \\ 5x+5y &= 500 \\ \underline{5x+10y} &= \underline{600} \\ -5y &= -100 \\ y &= 20 \\ x &= 80 \end{aligned} $ <p>20 sh 10 coins } 80 sh 5 coins }</p>	M1 M1 A1																			
		03																			
12.	 $ \begin{aligned} \tan 75^\circ &= \frac{h}{60} \\ h &= 60 \tan 75^\circ = 223.92 \\ \tan \alpha &= \frac{223.92}{200} \\ \alpha &= 48.2 \\ \text{Angle of depression} &= 48.2 \end{aligned} $																				
13.	$ \begin{aligned} D &= M/V \\ 0.6 &= \frac{384}{0.6} \Rightarrow \frac{20}{7} \times 3.2 \times 3.2 \times h \\ 640 &= 32.18h \\ h &= 19.89 \end{aligned} $ <table border="1"> <tbody> <tr> <td>M1</td> </tr> <tr> <td>M1</td> </tr> <tr> <td>A1</td> </tr> <tr> <td>3</td> </tr> </tbody> </table>	M1	M1	A1	3																
M1																					
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A1																					
3																					
		10																			
14.	<p>(a) Modal class 150 - 154</p> <table border="1"> <thead> <tr> <th>Class</th> <th>f</th> <th>cf</th> </tr> </thead> <tbody> <tr> <td>140 - 144</td> <td>3</td> <td>3</td> </tr> <tr> <td>145 - 149</td> <td>16</td> <td>19</td> </tr> <tr> <td>150 - 154</td> <td>20</td> <td>39</td> </tr> <tr> <td>155 - 159</td> <td>10</td> <td>49</td> </tr> <tr> <td>160 - 164</td> <td>1</td> <td>50</td> </tr> </tbody> </table>	Class	f	cf	140 - 144	3	3	145 - 149	16	19	150 - 154	20	39	155 - 159	10	49	160 - 164	1	50	B1	
Class	f	cf																			
140 - 144	3	3																			
145 - 149	16	19																			
150 - 154	20	39																			
155 - 159	10	49																			
160 - 164	1	50																			

	$M = L + \frac{n-2-c}{f} \times i$ $= 149.5 + \frac{25-19}{20} \times 5$ $= 151$	M1 M1 A1	
		4	
15.	$a) x + \frac{1}{5}x = 180$ $x = 150$ $180 - 150 = 30$ $b) \frac{360}{30} = 12 \text{ sides}$	M1 A1 A1	
		3	
16.	 <p style="text-align: center;">not drawn accurately</p>	B1 B1 B1	All angles correct All lengths correct Correct labelling Measurement must be correct
		3	
SECTION II			
17.	<p>A)</p> $7y - 5x - 20 = 0$ $x = \frac{5}{7}y - 4$ $x \text{ intercept} = -4$ <p style="text-align: center;">Type equation here.</p> <p>b)</p> $y = \frac{5}{7}x + \frac{20}{7}$ $m_1 = \frac{5}{7} \quad m_2 = \frac{-7}{5}$ $\frac{y-3}{x+5} = \frac{-7}{5}$	A1 M1 M1	

	$5y = -7x - 4$ c) $3y - 8x = 3$ $m_3 = m_4 = \frac{8}{3}$ at point $(0, -3)$ $\frac{y+3}{x} = \frac{8}{3}$ $y = \frac{8}{3}x - 3$ d) $y = \frac{5}{7}x + \frac{20}{7}$ $y = \frac{8}{3}x - 3$ $\frac{5}{7}x + \frac{20}{7} = \frac{8}{3}x - 3 \rightarrow \frac{5}{7}x - \frac{8}{3}x = -\frac{20}{7} - 3$ $x = 3, y = 5$ (3,5)	B1 M1 M1 B1 M1 A1 B1	
		10	
18.		M1	
(a)	(i) 800×0.2 $= 160 \text{cm}^3$	A1	
	(ii) 160×2000 $= 320,000$	M1	
	(iii) Cement = $\frac{2}{8} \times 32000$ $= 80\,000$	A1	
(b)	Bags = $\frac{80000}{50}$ $= 1600$	M1	
(c)	Ballast = $\frac{3}{8} \times 320000$ $= 120\,000$ tones $= 120$ lorries	A1	
		B1	
		10	

19.



$$\begin{pmatrix} 0 \\ -2 \end{pmatrix} + \begin{pmatrix} 2 \\ -5 \end{pmatrix} = \begin{pmatrix} 2 \\ -7 \end{pmatrix} \quad M_1$$

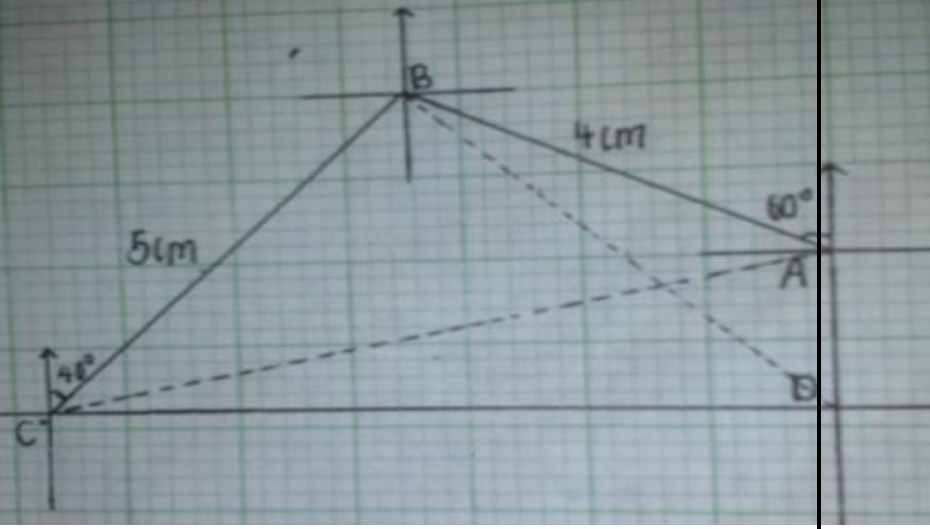
$$\begin{pmatrix} 0 \\ -2 \end{pmatrix} + \begin{pmatrix} 4 \\ -3 \end{pmatrix} = \begin{pmatrix} 4 \\ -5 \end{pmatrix} \quad M_1$$

$$\begin{pmatrix} 0 \\ -2 \end{pmatrix} + \begin{pmatrix} 2 \\ -3 \end{pmatrix} = \begin{pmatrix} 2 \\ -5 \end{pmatrix} \quad M_1$$

$$A = \frac{1}{2} \times 2 \times 2 \quad M_1$$

$$= 2 \text{ square units} \quad A_1$$

20.	<p>a) $2c + 9g = 98200$ $3c + 4g = 96000$</p> <p>b) $(2 \ 9)c = (98200)$ $3 \ 4 \ 9 \ 96000$ $2 \ 9 = 1 \ (4 \ -9)$ $3 \ 4 \ 19 \ -3 \ 2$ $-1 \ (4 \ -9) \ (2 \ 9) \ (c) = -1 \ (4 \ -9)(98200)$ $19 \ -3 \ 2 \ 3 \ 4 \ 19 \ -3 \ 2 \ 96000$ $(c = -1 \ (-471200))$ $G \ 19 \ -102600)$ $(c = (24800))$ $G \ 54000)$</p> <p>Cows = Ksh 24800 Goats = Ksh. 5400</p> <p>c) i) Selling price = $2 \times 24800 \times 1.3 + 9 \times 5400 \times 1.4$ = 132 520</p> <p>d) $132520 - 98200 \times 100\%$ 98200 34.95%</p>	<p>B1</p> <p>B1</p> <p>M1</p> <p>B1</p> <p>M1</p> <p>A1</p> <p>M1</p> <p>A1</p> <p>M1</p> <p>A1</p>	
		10	
21.	<p>i) $AN = \frac{2}{3}B - A$ ii) $BM = \frac{2}{5}a - b$ iii) $AB = B - A$ i) $OX = OB + BX$ = $B + K(2A - B)$ = $\frac{2}{5}KA + (1 - k)b$ $OX = OA + AX$ = $(1 - h)a + \frac{2}{3}hb$</p> <p>ii) $\frac{2}{5}ka + (1 - k)b = (1 - h)a + \frac{2}{3}b$ $\frac{2}{5}k = 1 - h \dots\dots\dots(i)$ $1 - k = \frac{2}{3}h \dots\dots\dots(2)$ From (1) $h = 1 - \frac{2}{5}k$ $1 - k = \frac{2}{3}(1 - \frac{2}{5}k)$ $K = \frac{5}{11}$ $h = 1 - \frac{2}{11}$ = $\frac{9}{11}$ $OX = \frac{2}{5} \times \frac{5}{11}a + b(1 - \frac{5}{11})$ = $\frac{2}{11}a + \frac{6}{11}b$</p>	<p>B1</p> <p>B1</p> <p>B1</p> <p>B1</p> <p>B1</p> <p>B1</p> <p>M1</p> <p>M1</p> <p>M1</p> <p>A1</p> <p>A1</p>	
		10	

22.	 <p>(b) (i) 35km (ii) 33.5km (iii) S75°W (iv) S42°E (c) Area of ADC = $\frac{1}{2} \times 6.7\text{cm} \times 1.8\text{cm} = 6.03\text{cm}^2$ Area of ABC = $s = \frac{1}{2}(7 + 4 + 5) = 8$ $\sqrt{8(8-7)(8-4)(8-5)} = \sqrt{96}$ 9.7980cm² Total area 6.03cm² + 9.7980cm² = 15.828cm² Area of the scale 1cm² = 25km² 15.828cm² × 25km² = 395.7km² 395.7km² × 100 = 39570hectares</p>		
23. a).	$\text{L.S.F} = \frac{10.5}{21} = \frac{x}{x+20} \quad 21x = 10.5x + 210 \quad X = 20$ <p>Hence h = 20 + 20 = 40cm $L = \sqrt{40^2 + 21^2}$ = 45.177cm Slant length of the frustum</p> $\frac{45.177}{x} = \frac{21}{10.5}$ <p>X = 22.588cm L = 45.177 - 22.588 = 22.589</p> <p>S. $A = \pi[2R^2 + (RL - rl) + r^2]$</p>	M1 M1 A1 M1 A1 M1	
b).	$22/7[2 \times 21^2 + (21 \times 45.177 - 10.5 \times 22.589) + 10.5]$	M1 M1	

c).	$=22/7 [882 + 711.39 + 110.25]$ $=5352.14\text{cm}^2$	M1 A1	
		10	
24.	$S = t^3 - 6t^2 + 9t + 5$ $\frac{ds}{dt} = 3t^2 - 12t + 9$ At $t = 0.5$ seconds. Gradient = $3(0.5)^2 - 12(0.5) + 9$ $= 3.75\text{m}$ when $\frac{ds}{dt} = 0, 3t^2 - 12t + 9 = 0$ $t^2 - 4t + 3 = 0$ $(t-1)(t-3) = 0$ $t = 1$ or 3 seconds when $t = 1, S = 1 - 6 + 9 + 5$ $= 9\text{m}$ When $t = 3\text{s}, S = 3^3 - 6 \times 3^2 + 9 \times 3 + 5$ $= 5\text{m}.$ $\frac{d^2s}{dt^2} = 6t - 12$ At $t = 1, \frac{d^2s}{dt^2} = 6 \times 1 - 12 = -6$ \therefore at $(1,9)$ max turning point At $t = 3\text{s}, \frac{d^2s}{dt^2} = 18 - 12 = 6$ At $(3,5)$ Min. turning point.		

