KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

MOI GIRLS HIGH SCHOOL

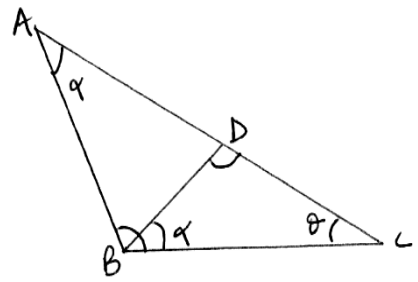
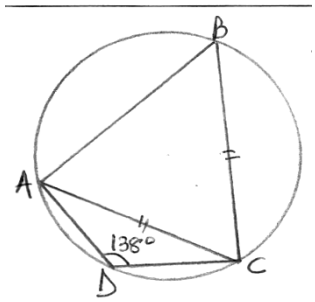
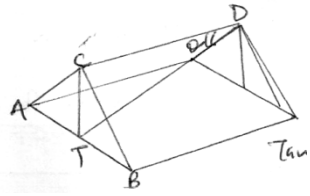
MATHEMATICS

PAPER 1

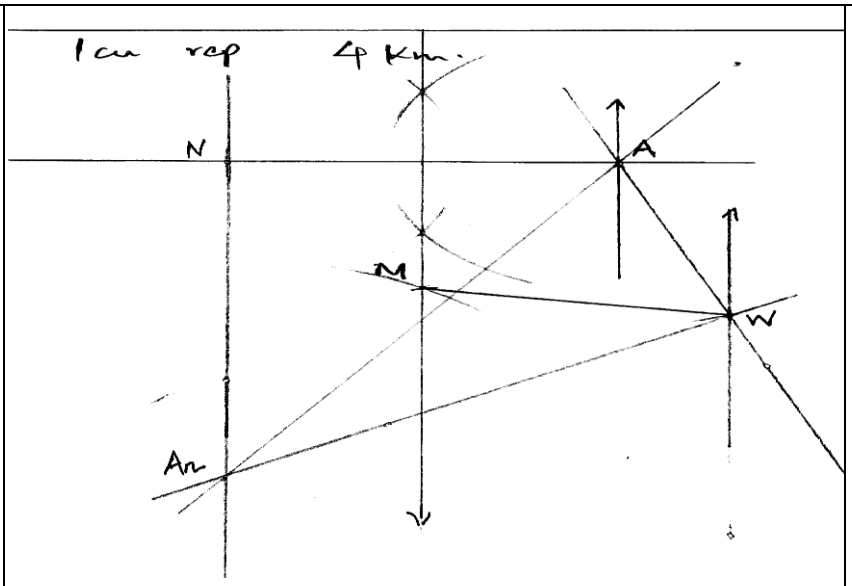
SCHOOLS NET KENYA
Osiligi House, Opposite KCB, Ground Floor
Off Magadi Road, Ongata Rongai | Tel: 0711 88 22 27
E-mail:infosnkenya@gmail.com | Website: www.schoolsnetkenya.co

MOI GIRLS ELDORET KCSE TRIAL AND PRACTICE EXAM 2016
PAPER 1
MARKING SCHEME

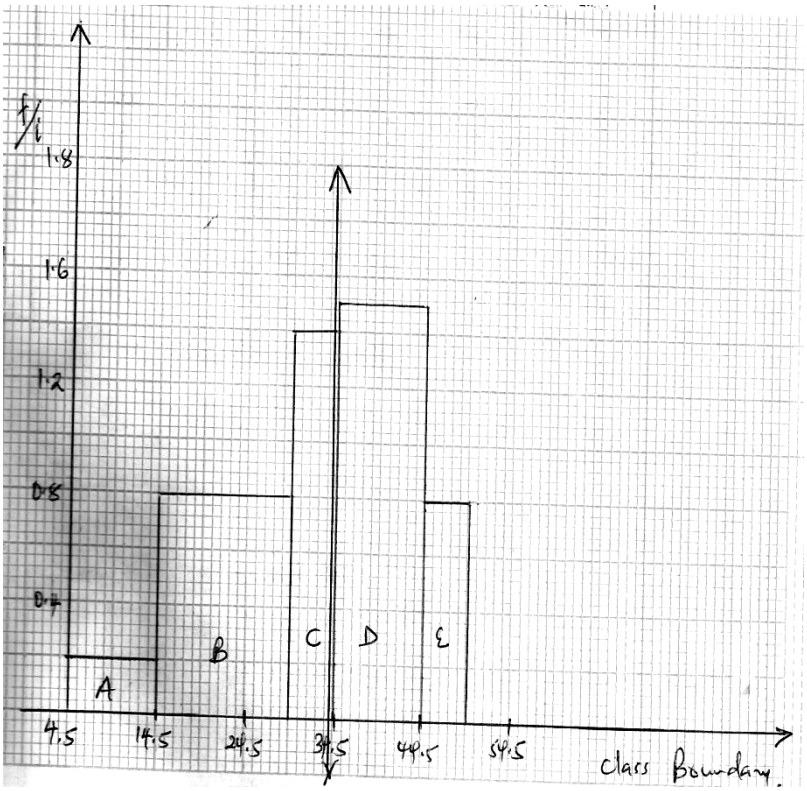
NO	WORKING	MKS	COMMENTS
1.	Numerator $2^3/_7 - 1^5/_6 = 1\ \frac{18-35}{42} = \frac{25}{42}$ ⇨ $^{25}/_{42} \times {}^6/_5 = {}^5/_7$ Denominator $^2/_3 \times {}^9/_4 - 1^1/_7 = {}^2/_3 - {}^8/_7$ $= \frac{21-16}{14} = {}^5/_{14}$ $\therefore = {}^5/_7 \times {}^{14}/_5 = 2$	M1 M1 A1	Simplification of numerator Simplification of denominator C.A.O
		03	
2.	$\bar{x} = \frac{95}{10} = 9.5$ let A = 10 d: -5 | -2 | 3 | 2 | -3 | 0 | -2 | 5 | -7 | 4 | -5 d^2: 25 | 4 | 9 | 4 | 9 | 0 | 4 | 25 | 49 | 16 | 145 $Sd = \sqrt{\frac{145}{10}\left[\frac{-5}{10}\right]^2}$ $= \sqrt{14.5-0.25} = \sqrt{14.25} = 3.775$	M1 M1 A1	Values of d^2 at leant 7 √ one at formula To 4 st
		03	
3.	i) at P y= o ∴ 3(0) + 4(x) = 12 x = 3 P(3,0) ii) $y = -{}^4/_3 x + 3$ $m_1 = {}^{-4}/_3$ m2 =3/4 $\frac{y-0}{x-3} = {}^3/_4$ $4y = 3x - 9$ ∴ $Y = {}^3/_4 x - 2^1/_4$	B1 B1 M1 A1	For co-ord For gradient Exp for equation
		04	
4	$\frac{90}{100} mP = 1440$ $Mp = \frac{1440}{90} \times 100 = 1600$ $\frac{120}{100} cp = 1440$ $CP = \frac{1440}{120} \times 100 = 1200$ Profit = 1600 – 1200 = 400	M1 M1 A1	Exp for mp Exp for Cp
5	Volume = $\frac{22000}{5}\ cm^3$ ----------> $= 4400cm^3$ $4400 = {}^{22}/_7 \times r^2 \times 14$ $r^2 = \frac{4400 \times 7}{22 \times 14} = 100$ ∴ r= 10cm	M1 M1 A1	exp to obtain volume exp to obtain radius
		03	
6.	$\underline{\text{Numerator}} = 5(4 - 9x^2)$ $= 5(2 - 3x)(2+3x)$ ----------> $\underline{\text{Denominator}}$	M1	Fact of numerator

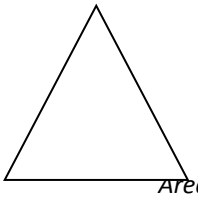
	$= 6x^2 - 4x + 3x - 2$ $= 2x(3x - 2) + 1(3x - 2)$ $= (2x + 1)(3x - 2)$ ---------->$\frac{5(2-3x)(2+3x)}{(2x+1)(3x-2)} = \frac{-5(2+3x)}{2x+1}$	M1 A1 03	
7.	 $\frac{BC}{DC} = \frac{AC}{BC}$ $\frac{14}{7} = \frac{AC}{14}$ $AC = \frac{14 \times 14}{7} = 28cm$ $AD\ 28 - 7 = 21cm$	M1 M1 A1 03	Identifying corresponding value. Exp for AC Value of AD
8.	$\frac{3-x}{2} \geq \frac{x+1}{3}$ $9 - 3x \geq 2x + 2$ $7 \geq 5x \therefore X \leq 1^2/_5$ ---------- $\frac{X+1}{3} \geq \frac{2x+1}{-3}$ $-3x - 3 \leq 6x + 3$ $-6 \leq 9x \therefore x \geq -^2/_3$ ---------- $-^2/_3 \leq x \leq 1^2/_5$ $X = 0, 1$	M1 M1 A1	Upper value Lower value List of values
9.	 <ABC= 42º Opp <s in a cyclic Quard <ACB = 180º - 2(42)º = 96º Sm of <s in a	M1 M1 A1 03	Exp for <ACB √reason given (tied to m_1 above scored) △
10.	 $CT = \sqrt{8^2 - 4^2}$ $\sqrt{48}$ ---------- $\frac{\sqrt{48}}{18}$ ---------- $\theta = \tan^{-1} 0.3849$ $= 21.05º$ $Tan\ \theta =$	B1 M1 A1 03	Att. Of prism Exp To min 4 sf.

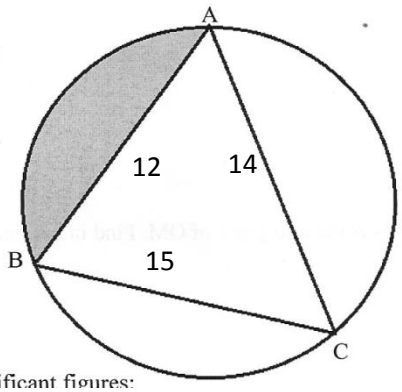
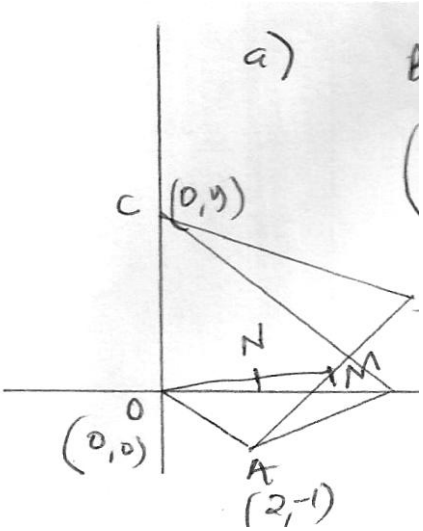
11	Let cost of pen = x ex bk = y 5x + 3y = 135 x 4 4x + 5y = 160 x 5 20x + 25y= 800 20x + 12y =540 13y = 260 ∴ y=20 X = 135-3(20) = 15 5 Pen = 15 , ex bk =20	M1 M1 A1 B1	For forming √attempt to solving any method Cost of pen Cost of ex bk.
12.	$\frac{4}{0.2356} = 4\left(\frac{1}{2.356x10^{-1}}\right)$ = 4(4.244) = 16.976 $(0.9873)^3 = (9.873 \times 10^{-3})$ = 0.9624 Total => 16.976 + 0.9624) = 17.9384 ≈ 17.94	M1 M1 A1	Soln of LHS Soln of RHS To 4 sf
		03	
13.	Spacing = displacement No of rect = 5/5 = 1 X: -1.5, -0.5, 0.5, 1.5, 2.5 Y: -2.25, -5.25, -6.25, -5.25, -2.25 Area 1 { 2.25 + 5.25+6.25+5.25+2.25 = 21.25units^2	M1 M1 M1 A1	Value of x Value of y √ subst Accept fraction ($21\frac{1}{4}$)
		04	
14	Sin (3x – 35)º = Cos (x + 20) ∴ 3x – 35 + x +20 = 90º ----------> 4xº - 15º = 90º 4xº = 105 X = 26.25º	M1 A1	Equating to 90º
		02	
15.	Distance = 100m = 0.1km Time = 5sec = 5/3600 hrs Speed = 0.1 ÷ 5/3600 = 72 kmh^{-1}	M1 M1 A1	Conversion of values Exp for speed
		03	
16.	840 = 2x2x2 x3x5x7 1280 = 2x2x2x2x2x2x2x2x5 GCD = 2^3 x5 ----------> Dimension = 0.4 x 0.4m = 0.16m^2	M1 M1 A1	Exp in factor form Identifying the GCD Dimension
		03	

17	 *1 cm rep 4km* *b) 8.8 x 4 = 35.2 km ± 0.4 ---------->* *Bearing => 215º ± 1º ---------->* *c) must ⊥ bisector ---------->* *Arc drawn for angle ---------->* *Distance = 4 x4 = 16 km ---------->*	*S1* *B1* *B1* *B1* *B1* *B1* *B1* *B1* *B1* *B1* *B1*	 *V line AN* *Vline AW* *Vline AuW* *Vline N An*
		10	
18	*a) 2+12+7+15+x =40* *x = 4* *b)* *Graph*		

CB	*4.5 – 14.5*	*14.5 – 29.5*	*29.5 – 34.5*	*34.5 – 44.5*	*44.5 – 49.5*
Fd	*0.2*	*0.8*	*1.4*	*1.5*	*0.8*

	 *Total area A = 10 x 0.2 = 2* *B = 15 x 0.8 = 12* *C = 1.4 x y = $^{6}/_{20}$* *y= $^{6}/_{1.4}$ = 4.286* *$^{6}/_{1.4}$ x 5 = 2d = $\underline{4.286}$* *5* *Line drawn between 4th & 5th s/square* *Value = 29.5 + 4.3 = 33.8*		
19.	*a)* 51 km *oyugi 24km 27km H/Bay* *7.00am 7.30am 7.30am* *Distance = 51 -------($^{1}/_{2}$ x 48)* *= 27 km ---------->* *A . speed = 48 + 60 =108 kmh^{-1} ---------->* *Time = $^{27}/_{108}$ x 60 min = 15 min ---------->* *⇨ 7.45 am ---------->* *b) from Oyugi* *= 24 + $\underline{15}$ x 48 ---------->* *60* *= 36 km ---------->* *c) Time $\left(\frac{36}{60} \times 60\right)$ min = 36min* *Travelling time = 36 – 15 ---------->* *21 min ---------->* *Distance = 15 km* *Speed = 15 ÷ $^{21}/_{60}$ ---------->* *= $42^{6}/_{7}$ kmh^{-1}*	*M1* *M1* *M1* *A1* *M1* *A1* *M1* *M1* *M1* *A1*	*Obtaining distance* *Obtaining speed* *Exp for time* *Exact time given* *Exp for tot dist*
		10	
20.	*a)Let initial be x* *initial cost = $\underline{2000000}$ ---------->*	*M1*	

	x trial cost = $\frac{2000000}{x-40}$ ---------->	M1	
	$\frac{2000000}{x-40} - \frac{2000000}{x} = 2500$ $2500x^2 - 1000000x = 80{,}000{,}000$ ---------->	M1	
	$x^2 - 40x - 32000 = 0$ $x^2 + 160x - 200x - 32000 = 0$ ----------> $(x-200)(x+160) = 0$	M1	
	$X = 200$ or -160 ∴ $X = 200$	A1	
	b) $= \frac{55}{100} \times 2000000$ ----------> $= 1{,}100{,}000$	M1	Exp of %
	Count = $\frac{1{,}100{,}000}{160} = 6{,}875$	M1 A1	÷ by 160
	c) $= \frac{9}{15} \times 1{,}100{,}000$ $= 660{,}000$	M1 A1	
		10	
21	a) Digram $\tan 54º = \frac{h}{3}$  $H = 3\tan 54º$ $= 4.129$ Area = $\frac{1}{2} \times 6 \times 4.129 \times 5$ $= 61.935cm,^2$	M1 M1 A1 M1 M1 M1 A1	
	b) Volume cylinder = $\frac{22}{7} \times 14 \times 14 \times 7$ $= 4312cm^3$ Total vol = 4312 + (61.935 x 20) = 4312 + 1238.7 $= 5{,}550.7cm^3$ L.S.F = $\frac{26}{520} = \frac{1}{20}$ V.S.F = $\frac{1}{8000}$ ∴ Vol = $\frac{5550.7 \times 8000}{1000000}$ $= 44.41m^3$	M1 M1 A1	
		10	
22.	a) $s = 3+2(2) - 5(2)^2$ ----------> $= -13m$	M1 A1	Subrt
	b) $3+2t - 5t^2 = 0$ $3+3t-5t-5t^2 = 0$ ----------> $(3+5t)(1-t) = 0$ $t = -\frac{3}{5}$ or 1 ∴ t= 1 second ---------->	M1 A1	
	c) $v = 2 - 10t = 0$ $t = \frac{1}{5}$ $s = 3+2(\frac{1}{5}) - 5(\frac{1}{5})^2 = 3\frac{1}{5}$ min	M1 M1 A1	Exp for v= 0 Exp for s
	d) $v = 2 - 10(0)$ $= 2m/s$	M1 A1	

	e) $a = -10 m/s^2$	*B1*	
		10	
23.			
	significant figures:		
	a) $\cos C = \frac{14^2 + 15^2 - 12^2}{2 \times 14 \times 15}$	*M1*	
	$\cos C = 0.6595$	*M1*	
	$C = 48.74º$	*A1*	
	b) $\frac{12}{\sin 48.74º} = 2r$	*M1*	
	$r = \frac{6}{\sin 48.74°}$	*M1*	
	$= 7.982cm$	*A1*	
	c) Area sector $= \frac{97.48}{360} \times 3.142 \times 7.982^2$	*M1*	
	$= 54.21cm^2$	*M1*	
	Area $\triangle = \frac{1}{2} \times 7.982^2 \times \sin 97.48$		
	$= 31.59cm^2$	*M1*	
	Area sh $= 54.21 - 31.59$	*A1*	
	$= 22.62cm^2$		
		10	
24.			*Exp for An* *Exp for NC*
		M1	
	BC is // OA		

	$\begin{pmatrix} 4 \\ 3-y \end{pmatrix} = k \begin{pmatrix} 2 \\ -1 \end{pmatrix}$ $K = 2$ $-2 = 3 - y$ $Y = 5$ b) i) $M = \left(\frac{4=+2}{2}, \frac{3-1}{2}\right) = (3,1)$ $N = (^3/_2, ½) = (1.5, 0.5)$ ---------- $\overline{AN} = \begin{pmatrix} 1.5 \\ 0. \end{pmatrix} - 2\begin{pmatrix} \\ -1 \end{pmatrix} = -0.5\begin{pmatrix} \\ 1.5 \end{pmatrix}$ ii) $NC = \begin{pmatrix} 0 \\ 5 \end{pmatrix} - 1.5\begin{pmatrix} \\ 0.5 \end{pmatrix} = -1.5\begin{pmatrix} \\ 4.5 \end{pmatrix}$ ii) $AC = \begin{pmatrix} 0 \\ 5 \end{pmatrix} - 2\begin{pmatrix} \\ -1 \end{pmatrix} = -2\begin{pmatrix} \\ 6 \end{pmatrix}$ c) $AN = \lambda Ac$ $-0.5\begin{pmatrix} \\ 1.5 \end{pmatrix} = -2\lambda\begin{pmatrix} \\ 6 \end{pmatrix}$ $\lambda = ¼$ $AN = ¼ Ac$ and they Share Point A	**A1** B1 M1 A1 M1 A1 B1 M1 A1	